

Part VII

Regulations and Ethics

Ethical Considerations

Louis M. Guenin

As natural phenomena are to the scientist, so are arguments to the philosopher. The philosopher

Richard Hare once said, “I like to give arguments for my position. They come in handy when people don’t agree with me.” Consider then the inclination of many among us—perhaps by virtue of being busy, or for other reasons—to pronounce a verdict, when a moral controversy comes along, by consulting aphorisms or slogans. By following this inclination, earnest people may unwittingly betray the moral views that they aspire to uphold. For they may fail to take account of the depth and subtlety of their respective moral views. This chapter presents arguments offered in support of using human embryos in research and therapy, sorting them into arguments that work and arguments that do not. I first review six arguments that I place in the latter category. Each of these purports to justify research that I happen to support. But inasmuch as a good case is not made better by overstatement, and no case is made by an unsound argument, I am going to disavow those six arguments. I urge other supporters of donated embryo use to disavow them as well, because, as Bernard Williams once said, openness to criticism is the homage that candor pays to truth. To support my own view, I shall go on to sketch arguments that, so I shall suggest, are sound. I shall then say a bit more about cloning in particular and shall close by remarking on the risk of abuses.

ARGUMENTS THAT DO NOT WORK

Imminent Death as Justification for Killing

Consider the argument that the imminent death of an embryo—for instance, a surplus embryo in a fertility clinic—justifies its consumption in research. A more extreme proposal would have us define a concept of embryo death according to which embryos not destined for intrauterine transfer are dead. This concept of death seems to defy common sense. The embryos that I contemplate as research subjects are alive. About this concept of death I doubt that it is necessary to say more.

Let us consider the plain argument that imminent death of an admittedly living embryo justifies killing it in research. In refutation of that argument, consider the following Wild West example. One day the notorious varmint Hatfield is riding about on his horse. Feeling tired, Hatfield elects to dismount beside the railroad tracks. He sits down and eventually dozes off, stretching out between the tracks. Sometime later, as Hatfield lies sound asleep, a train approaches at high speed. Whereupon there happens to ride onto the scene Hatfield’s archenemy, McCoy. Spotting Hatfield, McCoy gallops to the tracks, dismounts, and—just in the nick of time before the train arrives—yanks Hatfield from the tracks. McCoy then immediately pulls out his rifle, trains it on Hatfield, and kills Hatfield. In this case, even though Hatfield would have died under the wheels of the train a moment earlier, we hold McCoy guilty of wrongful killing. In general, the imminent death of a victim does not justify its killing. Embryo research will not be justifiable solely on the ground of imminent embryo death.

Nonindividuation Argument Against Zygotic Personhood

The nonindividuation argument against zygotic personhood runs as follows. Prior to formation of an embryo's primitive streak at day 14 of development, it can happen that the embryo splits into monozygotic twins. If twinning occurs, the twins can fuse. Hence it has been suggested that in respect of any embryo, one cannot say until day 14 whether there exists one individual or more. If one cannot say how many persons exist, it is untenable to say that any person exists. Another version of the nonindividuation argument begins from the premise that in twinning, an embryo vanishes and leaves no earthly remains. How could an individual person die leaving no earthly remains? If no corpse ever exists, there could not earlier have existed a person.

Thus does the nonindividuation argument characterize zygotic personhood as metaphysically impossible. The argument's biological sophistication has led many scientists to regard it as a clinching argument for embryo use. Despite that sophistication, the nonindividuation argument is susceptible to the following refutation owed to David Oderberg (Oderberg, 1997). Suppose at time t_0 a somatic cell x . By t_1 , x has divided, and there exist x 's daughter cells d_1 and d_2 . The process by which this has occurred, namely mitosis, is routine. Notice that as we look back at the history of x up to t_1 , we do not have any doubt that x was an individual cell. Plainly x had the capability of dividing, and in fact, x did divide, but it is not incoherent to say, and we unhesitatingly do say that for so long as x existed, x was an individual. As for the apparent puzzle of dying without leaving earthly remains, again a reflection on mitosis sheds light. Necrosis is not the only means by which a life form may cease to exist. Dividing is another means. It happens that after division, there is no corpse. So it is not metaphysically incoherent to say that an embryo capable of dividing is an individual. Or that an embryo that does divide was an individual before it divided.

To rehabilitate the nonindividuation argument, a proponent might contend that indivisibility is somehow intrinsic to the individuality of a person as it may not be to the individuality of a cell, so that a being that is divisible cannot be or correspond to a person (Guenin 2006). To buttress this claim, the proponent might offer the example that an adult individual cannot divide into surviving individuals. Or the proponent might contend that even if adult individual x could be split into surviving individuals—say, by a brain split and transplant operation in which, as imagined by philosophers of mind, x 's brain is split and each half is transferred into a new body so that each successor retains memories and otherwise achieves psychological continuity with x —it would not be the case that x is the same individual as either of its successors. One reply to this, owed to the whimsy of Peter King, is that it is possible to survive with only half a brain, though in such case one is restricted to a career in politics. But we may leave aside what adults can do.

We may reply to the proponent of the nonindividuation argument with two thoughts. First, what is feasible for an adult ought not constrain our thinking, because we know of the remarkable ability of an early embryo to split into surviving individuals. Second, the individuality of a being does not depend on its being the same individual, if it happens to split, as any of its successors. When an embryo has split, we may simply say that it was one individual until it split, that the individual ceased to exist when it split, and that two individuals have succeeded it. Thus may we render not only the possibility but the actuality of twinning consistent with individuality of the original embryo and with individuality of its twin successors. Given that the case of an embryo that does split resolves in this way, no impediment arises to individuality of an embryo that has not split.

According to this analysis, the nonindividuation argument fails to establish that an embryo cannot be a person. When monozygotic twinning occurs, it may be said that two persons succeed one person that ceases. But even if we defeat the contention that an embryo cannot be a person, there remains the question whether, for purposes of the duty not to kill, we should treat every embryo as a person. That a being "is a person" is not an empirical observation or an *a priori* truth. Calling a being a person is a shorthand reply to the moral question, "How should we treat it for this purpose?" The shorthand signifies our conclusion that we should classify

the being among those to whom we think all of us should accord a particular treatment. Whereupon we may fairly be asked what argument supports that conclusion. Failure of the nonindividuation argument leaves the door open to introduce, or oppose, arguments that we are obliged to treat all embryos as persons for purposes of the duty not to kill.

The Utilitarian Defense of Embryo Use

Utilitarianism commands us to maximize aggregate preference satisfaction for the universe of affected sentient beings. A familiar argument is that if, in regenerative medicine, we sacrifice a relatively small number of embryos in order to help millions, perhaps billions, of suffering people, we can achieve higher aggregate preference satisfaction than we would achieve were we to classify every embryo as a person for purposes of the duty not to kill.

John Stuart Mill, who with Bentham brought utilitarianism to prominence, learned calculus at the age of 5 years, but Mill did not envision the mathematical defect of his moral theory. The infirmity came to light through the work of economists in the 20th century. Consider that the number of affected sentient beings in respect of many policy issues, embryo use among them, is enormous. Collecting utility data from so many people would be a monumental task. A more fundamental failing is that there obtains no method of measuring utility. Utilitarianism presupposes a utility function for each member of the set of affected beings. A utility function is nowadays understood as a real-valued order homomorphism representing a transitive and connected binary relation defined by an individual on a set of alternatives. This understanding no doubt explains why many scientists have felt comfortable with utilitarianism and with a utilitarian defense of embryo research. Utilitarianism seems empirical, quantitative, precise. For physician scientists, utilitarianism evokes some of the thinking to which outcome studies, comparing benefits and costs, have accustomed them.

But if, for two or more individuals, a utilitarian seeks to sum the utilities of a given alternative, there obtains no common unit of measure. There does not exist a standard measure even for a single person. While it is easy to define, as a representation of an individual's positioning of alternatives, a real-valued order homomorphism, any of infinitely many other functions formed by affine transformations of that order homomorphism will also represent the positioning.

Though the problem of interpersonal incommensurability of utilities remains unsolved, on many occasions a utilitarian's audience either will be unaware of the problem, or willing to overlook it. For example, if a hospital were to propose construction of a new facility, and if that project would require demolition of the homes of 100 people, displacing those residents in exchange for reimbursement of their homes' fair market value and their moving expenses, a utilitarian might argue that future gains in utility produced by the project for perhaps hundreds of thousands of patients in future decades will exceed the disutility of the 100 who must presently relocate. Listeners will follow an argument such as this without worrying much about whether the utility calculation has been performed. For it may seem in such a case that for any plausible conversion ratio of units of measure, the comparison of utility between alternatives will be lopsided.

But when an advocated alternative is the killing of a life form that some people sincerely believe to be a person, not much tolerance will be found for an argument whose proponents cannot produce the calculation on which the argument purportedly rests. The root of the difficulty is the same as in the blinkered attempt to order, on the basis of supposed measures of quality, incommensurable college football teams.

Appeal to "Fact-Based Reasoning" Alone

The next argument proceeds by asserting that public advocacy concerning embryo use should appeal to "fact-based reasoning" alone, and that it therefore follows that objections resting on any other ground must give way to the progress of biomedical science. This argument serves as a euphemism for saying that appeals to religion

and various “insular” moral views do not have a place in public debate about science. In reply, we must observe that the view that scientific work grounded in fact-based reasoning should go forward without obstruction by moral views is itself a moral view. When an objection lies on grounds of wrongful killing, it is neither appropriate nor feasible to oust religion or moral views from the conversation. Of course we all agree that we should rely on facts as opposed to errors, but given facts, a normative discussion awaits.

A more sophisticated cousin of the foregoing argument, the call to “public reason” by John Rawls, would have us employ in public discourse only premises that can be supported without appeal to any particular comprehensive moral or religious view (Rawls 1993). That, in a moment, is what I shall try to do in stating my own view.

Noncomplicity Defenses

It has been suggested that even if the consumption of embryos in research is wrong, a government could support derivative research by eschewing complicity in the destruction of embryos. As it has been put by proponents of this move, one could distinguish between embryonic stem cell derivation and embryonic stem cell use. The National Institutes of Health (NIH) at one time adopted this view (65 Fed. Reg. 51976—51981 [2000]). It announced that it would fund projects classified as embryonic stem cell use. The notion seemed to be that this would avoid complicity in wrongful embryo-destructive derivation of stem cells.

In another scheme for purportedly conducting embryo research without complicity in embryo killing, fertility clinicians would perform the immunosurgery by which embryonic stem cells are derived from embryos. This scheme is probably impractical, as fertility clinicians do not do that kind of work. They do not customarily derive cell lines from embryos; they customarily nurture and transfer embryos so as to achieve pregnancies. Even if the scheme were practical, it shares with the derivation-use distinction the problem that when a chain of supply runs from someone who sacrifices an embryo to someone who experiments with the sacrificed embryo’s derivatives, we seem compelled to say from a moral point of view that the source and the recipient ride in the same boat. It is untenable to say that the experimenter is not complicit in the work of the supplier (Guenin 2005b).

Another noncomplicity strategy, recently played out in the United States, might be called “government surprise.” It would begin as a government announces that it will not fund research that effects or is consequent on destruction of embryos. Then, after this policy has become widely known, the government suddenly announces—in the United States, we saw this happen on August 9, 2001—that in the future it will disperse public funds for studies using derivatives of embryos already then sacrificed. The most cogent philosophical defense of this gambit that occurs to me might be to say that the government had not, prior to the second announcement, induced any destruction of embryos. It would say this on the supposition that theretofore, the government had given everyone to believe that it would not support such research. (The supposition may not be true with respect to the recent history of US government policy. Between the first and second announcements came the just mentioned NIH announcement that it would fund research on embryonic derivatives. What I am here calling “the first announcement” was a prohibition enacted by Congress as a rider to an appropriations bill [Pub. L. No. 104–99, Title I, §128, 110 Stat. 26, 34 (1996)]. But apart from this historical contingency, the government surprise scheme succumbs to the same objection that lodges against the two other schemes that I have just mentioned. The government surprise scheme would place those who participate in funded embryonic stem cell studies in the same boat with those who participate in nonfunded embryo-destructive stem cell derivation (Guenin 2004b, 2005b).

Denying That Clones Are Embryos

The last on this roster of arguments that do not work consists in the claim that somatic cell nuclear transfer performed in research is not cloning and does not produce clones or embryos, this because a suggested new

semantic regimen would withhold the term “cloning” from any instance of somatic cell nuclear transfer in research, would instead call that process “nuclear transplantation,” and would withhold “clone” and “embryo” from the products of that process.

For this context, I have elsewhere tried to sort out the relevant entities and events in a manner informed by biological and moral considerations (Guenin 2003). My analysis leads me to reject the proposed semantic regimen as to both process and products. The proposed terminology risks the appearance of trying to smuggle in a morally significant event—initiation of embryogenesis—by not mentioning it. In trying to withhold “cloning” and “clone” from processes and products of research, a proponent of the proposed terminology would contradict the ordinary and morally significant understanding of cloning as a genetic event, an event completed shortly after oocyte activation, regardless whether transfer to a uterus ensues. The goal that has motivated the proposed terminology, the goal of offering the public a sharp distinction between research and producing children, does not require legerdemain to attain. Rather we may implement a simple distinction, a distinction between “procreative cloning” and “nonprocreative cloning.” The distinction turns on a single observable event, intrauterine transfer.

As for “embryo,” any being that is of a kind capable of developing into a neonate upon transfer to a uterus is an object of moral concern. We implicitly acknowledge that concern when we classify every pre-fetal developing organism as an embryo. (In both scientific writing and popular speech, we have abandoned the textbook definition according to which “embryo” applies only to a conceptus older than 2 weeks.) Recognition of a being as an embryo does not end our moral investigation. We may conclude—for reasons that I shall shortly present, I believe that we should conclude—that we are not obliged to treat every embryo in the same way. But in respect of a product of somatic cell nuclear transfer, recognizing its inclusion within a discussant’s universe of moral concern is the place from which to begin our discussion with one who does not agree with us (Guenin 2004a).

ARGUMENTS THAT WORK

Argument from Nonenablement

To advance the proposition that embryonic stem cell research is virtuous if not obligatory, I have presented an argument that I call “the argument from nonenablement” (Guenin, 2001 Guenin [forthcoming]). I refer to an embryo that will never enter a uterus as an “unenabled” embryo. In the first instance, I have in mind a situation, which often arises with fertility patients, in which the one person in the world who, together with her partner, is empowered to decide about intrauterine transfer of an embryo formed from her oocyte decides that neither does she wish to have that embryo transferred into her nor does she wish to give the embryo to anyone else for intrauterine transfer.

There is no moral view of which I know that asserts a duty of intrauterine embryo transfer into oneself. That is to say that there is no moral view that asserts that a woman lies under a duty to undergo a transfer into her of an embryo that lies outside her. About such a procedure, we respect her autonomy. Imagine, therefore, that a woman declines intrauterine transfer, and in fact, forbids it. She, with her partner, donates to medicine either an embryo created during her fertility treatment, or an embryo that will be created by a scientist from their donated cells. Let us assume that this decision is final and that the embryo has left parental control. Such a donation to medicine I call an “epidosembryo.” I take this name from the Greek *epidosis* for a citizen’s great beneficence to the common weal.

A distinction obtains between the developmental potential of an embryo that lies in a petri dish and will remain there, and an embryo that lies in a uterus, however it got there. In consequence of parental instructions

that an epidosembryo shall be used in research or therapy and shall not be transferred to a uterus, there does not obtain any morally significant chance that from such an embryo, an infant will develop. To put the matter in language that I owe to Hare, no possible person corresponds to an epidosembryo (Hare 1993). We also know, and this is purely empirical knowledge, that an embryo is not sentient. And that for lack of a cortex, an embryo cannot form preferences. Nor can an embryo adopt ends. Therefore nothing that we might do to an epidosembryo can cause it discomfort or frustrate it. Under these circumstances, and when we consider the duty of mutual aid asserted within each of the leading moral views, I claim that it is permissible to use some embryos, namely epidosembryos, in medicine.

As the preceding discussion makes clear, I rest the permissibility and virtuousness of epidosembryo use on the autonomous decisions of couples from whose cells such embryos originate. The moral analysis flows entirely from what it is that they decide. If it is permissible for those donations to be made, then it is permissible for recipient scientists to use epidosembryos as instructed.

Suppose that someone interjects that precisely because epidosembryos cannot form preferences, it is our obligation to act according to their advantage. I reply that we cannot promote any advantage of epidosembryos. Were we to refrain from using epidosembryos in research, we could not gain anything for them. Entry into the only environment by which they could attain birth has been forbidden by the only persons in the world empowered to decide on entry into that environment.

The argument from nonenablement is a consensus argument. It commands assent across a wide range of moral views. The argument from nonenablement differs from an appeal to imminent death as a means of justifying a killing. Nonenablement precludes a conceptus from attaining any of the attributes—autonomy, ability to feel pain, preferences, and, according to the traditional Thomist—Aristotelian teaching of Christianity, the attainment of a soul—whose infringement makes killing wrong. Nonenablement entails that there does not even correspond to an epidosembryo a possible person. It is not that death is imminent, but that development is bounded.

Replies to Objections

Let me now reply to some objections. The first objection asserts that the sacrifice of an embryo violates the second form of Kant's categorical imperative, the precept that we should treat "humanity. . . always at the same time as an end, never merely as a means" (Kant 4: 429). In this formulation, by "humanity" Kant understands rational nature. For this reason, the objection misapprehends Kant's view, which applies only to rational beings. The second form of the categorical imperative does not apply to mentally incompetent adults, infants, or embryos. That is not to say that Kant would take a cavalier view of the helpless. Kant would analyze our moral obligations toward these non-rational human beings as he would analyze moral questions in general. ("Human being," by the way, is not a decisive moral classification; the phrase obviously applies to any being of the species *Homo sapiens*, including any somatic cell.) Kant would ask whether we could without contradiction of the will adopt as a universal law whatever maxim we propose about how we shall treat such a being. We do not contradict our will by adopting as a universal law that we shall use epidosembryos, at no cost in potential lives, to provide to those who suffer the aid that we would wish were we in their shoes.

A second objection is the simple declaration that a zygote is a person. The most influential version of that objection appears in the official teaching issued within the latter part of the 20th century by the Sacred Congregation for the Doctrine of the Faith of the Roman Catholic Church. Its reasoning begins from the premise that all artificial methods of reproduction, including *in vitro* fertilization, are illicit. In adopting that stance, the magisterium anticipated a situation now before us—there exist surplus embryos whose creators have effectively consigned them, as the magisterium puts it, to an "absurd fate." Such embryos will either perish as waste or be frozen indefinitely, never entering a womb. So when the magisterium condemns embryo

destruction, it speaks consistently. It condemns destruction of embryos in research just as it condemns artificial reproductive practices that inexorably lead to destruction of embryos as waste. Others who approve of *in vitro* fertilization as presently practiced but oppose use of embryos in research fall into inconsistency. They implicitly approve the destruction of surplus embryos as waste while condemning the use of surplus embryos to help others.

Although the official Catholic view cannot be accused of inconsistency in the foregoing respect, on what ground does that view rest? Why condemn the destruction of an unenabled embryo in research? As one studies the magisterial instructions and looks for arguments, one finds a single argument. The argument is not scriptural. The ancients did not understand fertilization or embryogenesis and were not thinking of embryos in petri dishes. The argument purports to be biological. The argument is that because fertilization creates a new genome, fertilization creates a person (Sacred Congregation for the Doctrine of the Faith 1987).

This is an argument whose premise one must admit—the biology is correct, fertilization does produce a new genome—but whose conclusion does not follow. The argument presupposes a radical version of genetic reductionism. To say that a person is a genome is a view that even a materialist would not venture. It is a view contradicting the belief, held within the religious tradition from within which the argument is offered, that a person is a *corpore et anima unus*, a union of body and soul. I imagine that one reason that many people have not heard this argument is that it cannot be maintained consistently with the rest of Christian teaching. I suspect that eventually the argument will fade.

Another interpretation of Catholicism might lay stress on the notion, also advanced by the magisterium, that because we do not know whether an embryo is a person, we should exercise caution and act as if it were a person. But suppose that we could have a conversation with God. We would report that in 1998, we discovered how to culture embryonic stem cells. We explain that we have plans to relieve human suffering by the use of embryos that will never enter a womb. Is it plausible that He would tell us that He regards embryos that will never enter a womb as persons in the sense that He includes them in the universe of beings that He wishes us not to consume? I do not know of a tenable argument according to which an all-merciful and omniscient God would assert that preference. For He would know that unenabled embryos will never develop into infants. He would know that our efforts to aid actual lives would exact no cost in potential lives. Under these circumstances, there inexorably come to bear Christian social teachings, including the duty to love thy neighbor as thyself and “the law of charity” (Sacred Congregation for the Doctrine of the Faith 1974).

Cloning as a Special Case

You may have heard some people say that the justification of embryonic stem cell research lies in the circumstance that the embryo donors initially intended procreation when they created the embryos now regarded as surplus. The argument from nonenablement does not rely on any assumption of initial procreative intent. Hence the argument from nonenablement justifies not only embryonic stem cell research, but also nonprocreative cloning.

An objection peculiar to cloning might be this. An oocyte is created for a purpose, namely to issue in offspring, and it is wrong to divert an oocyte to any other purpose. This objection rests on an Aristotelian teleology that, since Darwin, does not exert much grip on our thought. We have learned from the history of medicine how mistaken we humans have often been in inferring purposes of various cells and structures of the human body. Our forbears would have said that bones are what hold us up; today we think of the marrow as a blood factory, and think it appropriate to transfer marrow from one patient to another. We have learned the remarkable adaptability of tissues and cells. We now actively engage in directing tissues and cells to serve chosen purposes in aid of sick patients, calling this treatment “conventional” drug therapy. It is unpersuasive to say that an oocyte can or should serve only one purpose.

From a religious point of view—and the teleological objection that I have just described now finds its greatest support in religious traditions—the ultimate arbiter is divine will. Imagine again that we could have a conversation with God. Would He say that oocytes may serve only the purpose of procreation? Such a rule would seem harsh inasmuch as we should have to measure its effect in suffering unrelieved. It would also seem puzzling insofar as every human female possesses from birth a quarter million or more immature oocytes.

That is all that I shall say here about the argument from nonenablement in general. I shall say a bit more about procreative cloning, the baggage of which those waiting to do nonprocreative cloning in research would like to rid themselves. About procreative cloning, we have developed a social consensus. We know from animal studies that the odds of producing healthy offspring in mammalian procreative cloning are so dismal that it would be irresponsible to attempt it in humans.

We have heard a considerable stir about legislating that consensus. I should only like to point out that the need for legislation is illusory. In 1998, the Food and Drug Administration (FDA) dispatched a two-page letter to fertility clinicians and to others known to have an interest in procreative cloning. The letter declared that, first, if anyone wishes to attempt human procreative cloning, they must file an investigational drug application, and second, if anyone files such an application, the FDA will deny it. This letter evidently scared the daylight out of even mavericks. Those reported by the press to be attempting cloning have not been attempting it within the United States. In consequence of four-fold statutory authority buttressed by an FDA regulation that took effect January 21, 2004 (Guenin 2005a), there is no need for legislation duplicating the FDA's interdiction.

I mention this because concern abounds that legislators, in their zeal to appear vigilant to their constituents, will sweep valuable research within the maw of prohibitions. That would be a shame when the likely incidence of procreative cloning seems nil. We ought to think carefully about imagined situations in which people purportedly would resort to cloning as a means of having children. Among prospective parents usually imagined for the procedure are carriers of alleles for recessive diseases and those affected by them, infertile couples, homosexual couples, and others. For reasons that I present elsewhere (Guenin [forthcoming]), I surmise that cloning will seldom be their first choice. A more likely choice will be *in vitro* fertilization followed by prenatal genetic diagnosis as a screening technique. Germ line intervention would also draw interest when it is feasible. Perhaps someday we shall even see the use of artificial chromosomes. Cloning does not offer the flexibility, safety, and other advantages of such alternatives.

Still there will arise objections to procreative cloning when the day comes, if it does, that the procedure is as safe as natural conception. One objection will be that the motivation of people who want to clone is a kind of unworthy narcissism. About this it must be said that if narcissism motivates some instances of asexual reproduction, it may motivate many more instances of natural reproduction. Perhaps we ought to shelve that objection.

There also abounds the prediction that a clone will undergo an identity crisis. As the scenario goes, a clone's knowledge that it shares the nuclear genome of a source will so burden the clone that the clone will not understand that he or she is a distinct person. I find this objection implausible. In a typical case, a clone will be about 25 years or more younger than the source, will grow up in a different environment, will meet different people, will have different experiences, and so forth.

We also hear speculation that asexual reproduction will threaten the nuclear family, and even that copying genomes by cloning will adversely affect the gene pool. Both eventualities seem improbable, the latter highly improbable unless the incidence of cloning becomes very high. In any case, we can respond to all these speculations by saying that if the day arrives that cloning is safe, we should revisit the question of its propriety. At that time, anyone proposing a governmental prohibition of cloning will need to explain why, if every other method of reproduction is private, this one should not be.

MORALITY AND THE SCOPE OF FUNDED RESEARCH

It is possible to state a public policy such that the scope of publicly funded research using embryos is congruent with what is, according to the foregoing reasoning, morally permissible. That policy, suitable for adoption by any government, is the following: *The government shall support biomedical research using human embryos that, before or after formation, have been donated to medicine under donor instructions forbidding intrauterine transfer* (Guenin 2005b). By virtue of the congruence of policy and morality, this policy manifests its justification. That attribute avails its presentation in public debate.

One move that does not avail in public discussion is to withhold “clone” and “embryo” from a product of nuclear transfer. Organismic cloning occurs when an activated oocyte assimilates a somatic cell’s nuclear DNA. This process is complete by the time that the activated oocyte divides. Ensuing development is called “embryogenesis.” The point worthy of emphasis is that no attempt at procreative cloning occurs unless the resultant embryo is transferred to a womb (Guenin, 2003, 2004a). The practice of somatic cell nuclear transfer in regenerative medicine is an instance of nonprocreative cloning.

Echoing claims that regenerative medicine could succeed if it eschewed use of embryos and confined itself to stem cells in the developed human, a number of suggestions have been broached about purported nonembryonic sources of pluripotent stem cells. It has been suggested, usually without pausing to state a moral argument, that pursuit of these alternatives would be a moral improvement. I have argued that even if the imagined technical feats could each be accomplished, the supposed moral superiority of pursuing these alternatives is illusory insofar as they would use or produce embryos or require for their defense an argument that justifies use of donated embryos in general (Guenin 2005c).

ETHICAL CONSTRAINTS

The following presents some thoughts about minimizing the risk of abuses. I first mention how we learn about such risks. We did not learn about the risks of recombinant DNA research, germ line intervention, or embryonic stem cell research and cloning from moralists hovering about scientific laboratories. We learned about those risks from the scientists who made the enabling discoveries. They and their colleagues, in each case envisioning what might come of their discoveries, acted promptly to bring before the public the question whether it would be moral to proceed. We should give credit to these scientists for their well-tuned moral barometers.

Embryo Use Only for Humanitarian Ends

For the present task, we ought first to define the sorts of research in which donated embryos would be eligible subjects. We, most of us, I suspect, would be appalled if human embryos were used—as were animals in studies of which we learned not so long ago—in testing industrial chemicals or cosmetics. Hence, we may stipulate—and the concept of epidosembryo embeds this condition—that only in humanitarian work may one consume a human embryo. Only epidosembryos, in other words, may be subjects.

Ectogenesis

We would also sensibly prohibit ectogenesis. That is, we would prohibit the development of an embryo in the laboratory beyond some specified number of days. British law prohibits development of an embryo beyond day 14 (Human Fertilisation and Embryology Act 1990, ch. 37, §3[3] [a]). Some have taken the laying down of the primitive streak as the first stage in the development of a nervous system. But the nonindividuation objection has become the most influential reason for adopting day 14 as a boundary. The demise of the nonindividuation objection would explode that rationale. Still we shall have to set some boundary if we wish to

preclude ectogenesis. As Bernard Williams once remarked, it is not uniquely reasonable that we draw a line at 14 days, but it is reasonable that we draw it (Williams 1986).

Oocyte Donation

There looms a risk of abuse in obtaining oocytes for use in nonprocreative cloning. Research might create an aggregate demand for substantial numbers of oocytes. This, it has been said, might lead to the exploitation of women. If asked, a circumspect scientist will say that science should use only the fruits of fully voluntary donations by women who want to help others. One could present a libertarian argument that a woman should be permitted to donate oocytes, and to receive compensation, as she wishes (Resnik 2001). An oocyte donor's considerable time, inconvenience, and discomfort alone would seem to warrant compensation. But availability of compensation could induce some women in need of money to undergo hyperovulation and oocyte recovery to their physical or psychological detriment. Concern is also expressed about "commodification" of oocytes. Hence, paternalistic prohibitions are frequently proposed. A plausible balance between paternalism and respect for autonomy would allow for compensated transfers of oocytes, but only in a regulated market. Rather than categorically prohibit compensation (as recommended in National Research Council and The Institute of Medicine 2005), and thereby risk unfairness to the donor, a bound may be set on the amount of compensation. Such a bound has already become a professional standard for an oocyte donation by one fertility patient to another (American Society for Reproductive Medicine 2000, which recommends a bound of approximately \$5,000). A compensation bound could serve to minimize the risk that women will unduly discount the risks of donation. Another source of oocyte donations may be women already undergoing fertility treatment. For them, selection of a recovered oocyte for donation imposes no additional physical burden. Were many such women to donate to research, the invisible hand effect could be a copious supply. One technological innovation that could increase the supply of oocytes available for research consists in the production of oocytes by induced differentiation of embryonic stem cells.

Immunity of Parents and Children From Patent Infringement Claims

We also have to decide whether to allow patents on embryos. A product of somatic cell nuclear transfer could plausibly be adjudged new, useful, and nonobvious, and not be a product of nature. In such case it would meet the criteria for award of a patent. But a patent on a method of forming a clone or the clone itself could render a human conception or birth assailable as a patent infringement. That would be a perverse result. The result already looms by dint of patents on DNA sequences (Guenin, 2000). In the case of both DNA and embryo patents, we can avoid untoward results by introducing a simple rule. Each country could amend its patent laws to provide as follows: *No claim of infringement shall lie against a parent or child as such.* This provision would leave commercial patent owners free to pursue each other on claims of infringement, but would render parents and children in their capacities as such immune from claims of infringement.

Any new technology poses some risk of abuse. It would be misleading to suggest that the risks of abuse in the case of embryo use are insubstantial. No one could claim to know that. But it would be uncaring of us to neglect the humanitarian work of which we are capable within the protective constraints that we have the power to impose.

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