Vaccines, Abortion, and Moral Coherence

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Introduction

The health benefits associated with relatively recent advances in vaccine therapy are well documented.[1] To mention just a few: in 1921 there were nearly 207,000 reported cases of diphtheria in the United States. In 1991, there were two. In the same year, apart from a small number (five to ten) of vaccine-associated cases, there were no reported cases of poliomyelitis, as compared with more than twenty-one thousand in 1952;[2] "The CDC projects that the world will be polio-free by

The initial research on this topic was done for the Pope John Center (now The National Catholic Bioethics Center). An earlier version of this paper was presented at The Catholic University of America in April 1998. I am grateful for the questions and comments of those who attended. The subject of this paper first came to my attention in connection with an essay by John Grabenstein, a vaccinologist and pharmacoepidemiologist (see note 18 below). Since that time he has provided invaluable assistance in helping me find and understand important parts of the medical literature.

[1]See, for example: Ian R. Tizard, *Immunology: An Introduction*, 4th ed. (Philadelphia: Saunders College Publishing, 1995); National Vaccine Program Office (NVPO), Department of Health and Human Services, *Disease Prevention through Vaccine Development and Immunization: The U.S. National Vaccine Plan—1994* (Washington, D.C.: Department of Health and Human Services, 1994); National Vaccine Advisory Committee, "United States Vaccine Research: A Delicate Fabric of Public and Private Collaboration," *Pediatrics* 100.6 (December 1997): 1015–20.

[2]Data of W.A. Orenstein, "Future Directions," published in *Proceedings of the 26th National Immunization Conference*, St. Louis, 1–5 June 1992 (Atlanta: Centers for Disease Control and Prevention) and reported in Georges Peter, "Childhood Immunizations," *New England Journal of Medicine* 327 (December 17, 1992): 1794–800.

2003."[3] Smallpox is said to be "eradicated globally" since late 1977, success that has rendered the vaccine itself normally unnecessary and even inadvisable since the risks associated with this vaccine are greater than the risk of contracting smallpox.[4] Even in the case of diseases that remain somewhat common, such as mumps—there were approximately 4,000 reported cases in the United States in 1991—it must be noted that this figure represents only about 2.6% of the 152,000 cases reported in 1968.[5] Occasional outbreaks of vaccine-preventable diseases, such as pertussis in Japan (1974–1979)[6] and measles in the United States (1989–1991),[7] have been traced to failure to use available vaccines.

Now, it is certainly difficult to isolate a single cause to explain why diseases have not occurred, and there is evidence that the health of populations owes much also to improvements in diet, sanitation, and other public health measures.[8] Nevertheless, such dramatic improvements in the health of the populations of the United States and of the world are attributed largely, though not exclusively, to policies of widespread immunization by vaccine.[9] Even assuming, then, that vaccines account for only a part of the improved health of the population in this country especially,[10]

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[3]Alan Dove and Vincent Racaniello, "The Polio Eradication Effort: Should Vaccine Eradication Be Next?" *Science* 277 (August 8, 1997): 779.

[4]Tizard, *Immunology*, 360–61, and Dove and Racaniello, "Polio Eradication," 779.

[5]Peter, "Childhood Immunizations," 1795.

[6]"In Japan in 1974 and 1975 two children died within 24 hours of receiving pertussis vaccine. As a result, pertussis vaccine use dropped to very low levels. The number of pertussis cases in Japan climbed from less than 1,000 cases in 1974 to more than 13,000 cases in 1979. In that year there were 41 deaths from pertussis," (Tizard, *Immunology*, 361). See also: E. J. Gangarosa, "Impact of Anti-Vaccine Movements on Pertussis Control: The Untold Story," *The Lancet* 351 (January 31, 1998): 356–61.

[7]"The U.S. measles epidemics of 1989–91, with over 55,000 cases and 136 deaths, have shown that many of the nation's children are at risk of preventable diseases because they are not vaccinated on the proper schedule during the critical first two years of life," (NVPO, ix). "Almost one-half of the cases occurred in unvaccinated preschool children, mostly minorities …. Emergency vaccination efforts contained the epidemics, but only after they had caused considerable avoidable suffering" (36). See also National Vaccine Advisory Committee, "The Measles Epidemic: The Problems, Barriers, and Recommendations," *Journal of the American Medical Association* 266 (1991): 1547–52. A more recent outbreak is documented in M. Carolina Danovaro-Holliday et al., "A Large Rubella Outbreak with Spread from the Workplace to the Community," *Journal of the American Medical Association* 248 (December 6, 2000): 2733–39.

[8]See David Magnus, "Gene Therapy and the Concept of Genetic Disease," available at *Ethics & Genetics*, a website maintained by the Center for Bioethics at University of Pennsylvania (www.med.upenn.edu/~bioethic/genetics/articles/12.gen.disease.html).

[9]See Peter, "Childhood Immunizations," 1794–95, and additional references therein.

[10]See Myron M. Levine and Orin S. Levine, "Influence of Disease Burden, Public Perception, and Other Factors on New Vaccine Development, Implementation, and Continued Use," *Lancet* 350 (November 8, 1997): 1386–92. See especially Table 2 (1388) and "The largest single market for vaccines in terms of revenues is in North America" (1390).

and in the world generally, the bulk of evidence indicates that vaccines are highly effective in protecting individuals from a variety of infectious agents (e.g., anthrax, diphtheria, tetanus, tuberculosis, and typhoid).

The success of vaccines remains impressive despite the fact that all vaccines themselves present health risks of one kind or another.[11] The health risks associated with vaccinations have been the basis of rare but sometimes vigorous opposition to vaccinations at least from the beginning of this century (in *Jacobson* v. *Massachusetts*, concerning mandatory smallpox vaccinations) and have reappeared more recently, leading, for example to the National Childhood Vaccine Injury Act of 1986, designed to compensate individuals for reactions to federally approved and, in some cases, legally mandated vaccines.[12]

The opposition between the public health benefits of vaccination and the private health risks incurred by a given individual is complicated enough, but is, I submit, still too narrow for adequately addressing the question of the goodness of vaccines. It is too narrow because unless an opponent of vaccination raises objections based upon religious or personal liberty,[13] systematic or principled opposition to vaccinations tends to focus principally on the *health* risks associated with vaccines, just as proponents tend to focus on the health benefits of vaccination. Having acknowledged that this is the traditional field of dispute, I would like to consider another kind of opposition to vaccination, an opposition based not upon health concerns but on moral concerns. In other words, this paper does not aim to settle the dispute between those who favor and those who oppose vaccination based upon concerns to achieve certain health goals (although it will be necessary to address this dispute). Instead, this paper aims to assess the merits of opposition to certain vaccines, despite their acknowledged health benefits and despite the health risks of refusing them. This opposition arises due to moral disapproval of the manner in which those vaccines are produced. Hence, this paper focuses on the relationship between bodily health and disease on the one hand and moral good and evil on the other.

The health statistics reviewed above are drawn in part from a recent edition of an introductory text in immunology. This text recounts the many health benefits associated with the development and distribution of safe and effective vaccines. This text also reveals the narrowness of its concern by the manner in which it treats in particular the benefits derived from the measles vaccine:

[11]For example, vaccination against whooping cough (*Bordetella pertussis*) presents a risk of one death per million, whereas nonvaccination risks one death per 200 to 1,000 persons. The vaccine risks severe brain damage in one person per 310,000 as opposed to one per 2,000 to 8,000 persons who are not vaccinated. The vaccine also presents significantly lowered risk of encephalitis and seizures. See Tizard, *Immunology*, 361. See also Farrington, Nash, and Miller, "Case Series Analysis of Adverse Reactions to Vaccines," *American Journal of Epidemiology* 143.11 (1996): 1165–73.

[12]See S. A. Plotkin and E. A. Mortimer, *Vaccines*, 2d ed. (Philadelphia: W. B. Saunders, 1994), 933–57.

[13]See J. D. Swales, "The Leicester Anti-Vaccination Movement," *The Lancet* 340 (October 24, 1992): 1019–21.

> Since measles vaccine was introduced into the United States it has been estimated that it prevented 52 million cases of measles, 5,200 deaths, and 15,400 cases of mental retardation and produced a net savings of $5.1 billion to society. The overall savings in costs to society as a result of measles, mumps, and rubella vaccination in 1983 were calculated to be $1.3 billion with a benefit-cost ratio of 14:1. There is no doubt that routine childhood vaccination confers huge benefits on society as a whole and has been largely responsible for the control of viral diseases in our society. Few other scientific disciplines can claim to have had such an impact.[14]

The success of vaccinations in conferring health benefits upon society appears to confirm the goodness of the scientific discipline that produced vaccinations. Leaving aside the question of whether there are other or higher goals or achievements of at least some scientific disciplines, the author of this immunology text appears to answer what is essentially a moral or political question[15]—the goodness of vaccinations—in terms of health and financial benefits and risks or costs. Oversimplification occurs to the extent that potentially unacceptable moral costs are ignored. The only costs he takes into account are the few incidents of adverse reactions to vaccines that occur when routine vaccination policies are carried out on sufficiently large populations. This sort of cost–benefit analysis is not bad, but merely incomplete. The author assumes, as he should, that health is good, but he also appears to make the common assumption that there is no other significant or perhaps higher good that deserves attention.[16] Because it is possible that something more important than health might be jeopardized by some vaccines, it is insufficient to sanction the production and use of vaccines solely on the basis of their health benefits measured against their health risks and financial costs. To charge the author of the text in question with an incomplete treatment is not yet to accuse him of moral failure, but only of not raising the question of whether the production and use of all vaccines is itself free of moral difficulty.[17]

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[14]Tizard, *Immunology*, 373–74.

[15]See Peter, "Childhood Immunizations," 1799, for recognition of this.

[16]Cf.: "To our knowledge, no one argued that it would be morally wrong to eradicate smallpox through vaccination and other public health measures," Munson and Davis, "Germ-Line Gene Therapy and the Medical Imperative," *Kennedy Institute of Ethics Journal* 2.2 (June 1992): 137–58.

[17]Bringing this criticism against this text may appear unfair since it is a medical and not a moral text. Because the text contains no chapter or section thematically devoted to ethics it could be argued that moral concerns are left out of account in order that they be more fully treated elsewhere by others. This would be plausible were it not for the unobtrusive incorporation of moral judgments in the course of the text. For example, see Tizard's judgment about societal duties toward some individuals suffering from adverse reactions to live polio vaccine (365). The point is not that Tizard's judgment is bad, but that it too swiftly takes the health benefits as the exclusive or paramount concern in making moral claims. For a similar sweeping aside of moral or religious concerns in the face of health concerns see A. Mollinger et al., "High Incidence of Congenital Rubella Syndrome after a Rubella Outbreak," *Pediatric Infectious Disease Journal* 14.7 (1995): 573–78.

A Moral Objection to Certain Vaccines

Quite apart from the health benefits and risks associated with using or not using vaccines, some people oppose the use of certain common vaccines—such as *Varivax* (for chicken pox) and *Meruvax II* (for rubella)—because of the connection between the production of these vaccines and elective abortion.[18] The production of these and some other vaccines involves a stage in which viruses are grown in human cell culture. Because viruses can reproduce only inside living cells, they are placed in the human cell culture and allowed to grow in large quantities. The viruses are removed from the cell culture, inactivated or modified, and then processed further in order to produce the vaccine. There are two human cell lines that provide the cell cultures needed for producing vaccines. One of these lines, called WI-38, was developed in 1961 in Philadelphia from the normal lung tissue of a three-month-old female fetus obtained by surgical abortion.[19] The other line, called MRC-5, was developed from normal lung tissue of a fourteen-week-old male fetus, aborted "for psychiatric reasons."[20]

> The WI-38 human diploid cell line … has been shown to have one of the broadest human virus spectra of any cell population that has been tested and is especially useful for isolation of rhinoviruses. The cells are free of contaminating viruses, mycoplasmas or any other microorganism and do not form tumors when inoculated subcutaneously into terminal human cancer patients.[21]

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[18]For discussion and commentary see: "Consenting to Vaccination for Rubella: Briefing Paper" in *Briefing*, published by Catholic Media Office (British Bishops), November 3, 1994, 6–8; "Pharmacists Debate Morality," *Catholic World Report* (October 1996); John Grabenstein, "On the Moral Acceptability of Certain Viral Vaccines," *The Catholic Pharmacist*, vol. xxix, no. iv (December 1996): 2–4; Laurence F. Roberge, "Aborted Fetal Cell Use in Rubella Vaccines: A Medical and Ethical Conflict," *HLI Reports* (May 1995). See also the comments of Albert Moraczewski, O.P., as reported in a Pittsburgh newspaper article (source uncertain) by freelance writer James McCoy ("New Pox Vaccine Began with Abortions," December 8, 1995): "Turning an abortion into a vaccine, Fr. Moraczewski concluded, means 'being an accomplice to the act of abortion'." Other common vaccines available in the United States produced using human cell lines are: Adenovirus Vaccine type 4 and type 7; Havrix and Vaqta (for Hepatitis A); MMR II (measles, mumps, and rubella); Imovax Rabies, Ipol, and Poliovax (inactivated poliovirus vaccines). It should be added that according to Roberge's report, the strain of virus used in *Meruvax* is itself taken from a boy who was aborted because his mother contracted rubella during pregnancy. For this Roberge cites S. A. Plotkin, "Development of RA 27/3 Attenuated Rubella Virus Grown in WI-38 Cells," *International Symposium on Rubella Vaccines* (London 1968).

[19]See L. Hayflick and P. Moorhead, "Serial Cultivation of Human Diploid Cell Strains," *Experimental Cell Research* 25 (1961): 585–621, and L. Hayflick, "The Limited *In Vitro* Lifetime of Human Diploid Cell Strains," *Experimental Cell Research* 37 (1965): 614–36.

[20]See J. P. Jacobs, C. M. Jones, and J. P. Baille, "Characteristics of a Human Diploid Cell Designated MRC-5," *Nature* 227 (July 11, 1970): 168–70.

[21]American Type Culture Collection (ATCC), *Cell Lines and Hybridomas*, CCL-75, rev. November 1994.

> MRC-5 cells replicate more rapidly and are less sensitive to adverse environmental factors than WI-38 cells. The MRC-5 cell line, like WI-38 (ATCC CCL-75), is susceptible to a wide range of human viruses, is suitable for the production of viral vaccines, and has been useful in senescence studies.[22]

These cell lines are maintained in such a way that they have an indefinite lifespan, providing all the cells needed for the production of vaccine and for some other uses. It is said to be unlikely that any additional human cell lines will be produced or needed for two reasons. First, for scientific purposes, it is desirable to make use of well-known cell lines that have proven over the years to be useful for these purposes and to be free of complicating or contaminating factors (as described in the preceding quotations). Second, any cell line such as these must be approved by the Food and Drug Administration, which means that it is probably financially prohibitive to try to gain the same approval for other lines when these have already proven effective.[23]

This situation generates a difficulty for people who both oppose abortion in principle and would like to have the benefits of these vaccines. Opposing abortion "in principle" here means moral condemnation of elective abortion itself without regard to circumstances, motives, or beneficial consequences.[24] The various reasons, theological or philosophical, that people might bring forward to support this opposition are not immediately relevant; it is necessary only that the opposition be principled. This kind of attention to moral good, i.e., moral good understood as decisively superior to goods of health and life, opens the door to a different order of opposition to vaccination. For using the vaccines produced in the manner described above appears to involve profiting from abortion and it is a question whether someone can both use these vaccines *and* oppose abortion without moral incoherence. Is the moral integrity of a person opposed to abortion compromised by benefitting from the research following the abortion, which research has led to the development of several powerful vaccines? Is it immorally opportunistic, vulture-like, or hypocritical for someone to take advantage of something he or she condemns as evil? Or, on the other hand, since the abortions have already been accomplished, is not the best course of action to pursue whatever good can be derived from these abortions? To answer these questions, it is necessary to try to determine the moral relationship of the use of these vaccines to the two abortions[25] that have already taken place and to try to determine whether the use of these vaccines either condones or promotes further abortions.

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[22]ATCC, *Cell Lines and Hybridomas,* CCL-171, rev. November 1994.

[23]For discussion of the financial burdens of FDA regulations on vaccine production, see David Mowery and Violaine Mitchell, "Improving the Reliability of the U.S. Vaccine Supply: An Evaluation of Alternatives," *Journal of Health, Politics, Policy, and Law* 20.4 (Winter 1995): 973–1000 and National Vaccine Advisory Commission, "United States Vaccine Research," *Pediatrics* 100.6 (December 1997): 1015–20.

[24]See John Paul II, *Evangelium vitae* (March 25, 1995), nn. 58–63. Compare Plato, *Crito,* 49a-b.

[25]The analysis given below to these two abortions applies also to the third abortion (mentioned in footnote 18 above), from which has been obtained a virus strain (as distinct from fetal parts) and which therefore is not more directly involved in vaccine production.

Assuming, then, for the sake of the present discussion, that there are actions that are wrong or evil in themselves—without regard for the motive or intention with which they are chosen, the circumstances in which they are chosen, or the beneficial consequences that may arise from them—anyone who accepts this view needs to make some further assessment of how to behave. Living in a world in which one finds this sort of evil, and yet seeking to refrain from it, requires one to live with it either in an isolationist manner, by shunning all contact with evil and evildoers, or by thinking through the differences between tolerable and intolerable relations with evil, in view of the fundamental assertion that some things must never be done.[26] The traditional language for thinking about this problem relies upon three principles (or perhaps more accurately, three sets of distinctions), namely, the principle that one should choose the lesser evil, the principle of double effect, and the principle of cooperation.[27]

The first of these principles has not won general approval precisely because it appears to abandon the serious or principled opposition to immoral actions insofar as it requires or justifies that one voluntarily do evil at least on some occasions. Resistance to this claim—that it is sometimes necessary to do moral evil—leads people to focus more energy on the remaining principles. The principle of double effect is a set of distinctions for recognizing that one is not in the same way morally responsible for everything that may foreseeably result from what one deliberately chooses to do.[28] The principle of cooperation is a set of distinctions useful for separately assessing the responsibility of two or more agents engaged in some kind of joint activity. Specifically, these distinctions are used to analyze the moral responsibility of one person for cooperating or somehow assisting the activity of a principal agent whose action is morally bad (in any of a variety of senses). One matter concerning which the question of cooperation has received a great deal of attention over the last several years is the relation of fetal tissue research and transplantation to voluntary abortion.[29] Because of the prominence of discussions of cooperation in connection with this issue—

[26]See Plato, *Republic*, 496d-e.

[27]Russell E. Smith, "The Principles of Cooperation in Catholic Thought," in *The Fetal Tissue Issue*, ed. Peter Cataldo and Albert Moraczewski, O.P. (Braintree, Mass.: Pope John Center, 1994), 81–92.

[28]This principle is variously formulated and discussed. Herein, it will be treated in a specialized form for analyzing scandal.

[29]For example: J. T. Burtchaell, "Case Study: University Policy on Experimental Use of Aborted Fetal Tissue," *IRB: Review of Human Subjects Research* 10.4 (1988): 7–11; also the replies to Burtchaell: B. Freedman, "The Ethics of Using Human Fetal Tissue," *IRB: Review of Human Subjects Research* 10.6 (1988): 1–4; J. A. Robertson, "Fetal Tissue Transplant Research Is Ethical," *IRB: Review of Human Subjects Research* 10.6 (1988): 5–8; and Burtchaell's rebuttal, "The Use of Aborted Fetal Tissue in Research: A Rebuttal," *IRB: Review of Human Subjects Research* (March/April 1989): 9–12. See: National Institutes of Health, Advisory Committee to the Director, *Human Fetal Tissue Transplantation Research*, 2 vols. (Bethesda, Md.: National Institutes of Health, 1988); Russell E. Smith, "Principles of Cooperation," in *The Fetal Tissue Issue*, 81–92; and additional references in note 39 below.

especially considering the ban and repeal of the ban on federal funding for this sort of research—one might be inclined to try to understand the relationship between vaccines and abortion also in terms of cooperation. This would be mistaken and would lead to a confused assessment of the moral difficulty at issue.

The point here is another dimension of moral coherence.[30] To the extent that inappropriate distinctions are taken as adequate to a moral situation, we fail to face the moral issue. The result is that our thinking and speaking about the situation, and ultimately our actions themselves, can become clumsy because significant moral features are overlooked or misrepresented. If this clumsiness—the incongruity between the moral situation and what is said or done about it—is noticed by someone, the door is opened to a more adequate assessment and a coherent understanding of the moral phenomena. Alternatively, one might be led to conclude that morality itself is incoherent. This conclusion would be suggested if the original, inadequate moral assessment (now recognized as defective or clumsy) were taken to be the best moral assessment possible, as if moral concerns *always* distort what is at issue in human affairs. One antidote to this result is to present the terms for a morally coherent account. In order to justify this approach, it is necessary to distinguish the present issue from that of fetal tissue transplantation, for which the terms of cooperation might prove more adequate.

Fetal Tissue Transplants

The use of fetuses and fetal tissue in research was initially governed (between 1969 and 1973) by the Uniform Anatomical Gift Act. The 1975 Report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research added further qualifications, including that "those harvesting tissue could not have any part in the timing, method, or procedures used to terminate a pregnancy."[31] Following a 1987 Mexican report of improvement in Parkinson's patients who had received fetal neural tissue transplants, the National Institutes of Health convened the Human Fetal Tissue Transplantation Research Panel to consider ethical, legal, and social implications of this sort of research in the United States. "A substantial majority" of the panel members concluded that this was acceptable public policy, although they had some reservations concerning the need to separate the decision to abort from the decision to donate tissue. Despite this report, there was a presidential ban on federally funded research from 1988 until January of 1993, at which time the ban was lifted. The central concern in the debates on this issue has been determining the nature and significance of the connection of the research and transplantation to voluntary abortion.

Tissue Supply

At this time it is not necessary to review the arguments for and against fetal tissue research and transplantation, but only to focus on one significant point that

[30]I am grateful to Msgr. Robert Sokolowski for drawing my attention to the importance of emphasizing moral coherence.

[31]Mary Carrington Coutts, "Fetal Tissue Research," *Kennedy Institute of Ethics Journal* 3.1 (1993): 84. Coutts's article is the source for the information summarized here.

distinguishes vaccine production from the more popularly discussed uses of fetal tissue. When aborted fetal tissue is transplanted into others for experimental or therapeutic purposes, the very use of the tissue uses it up and additional uses require an additional supply of tissue, normally made available by further abortions. In vaccine production, the currently available cell lines provide all the fetal material that is needed now and, apparently, in the future. Indeed, the success of these particular cell lines makes it unlikely that any new lines will be developed (whether from induced or spontaneously aborted children). Hence, the production techniques themselves do not require further abortions. The moral difference between vaccine technology and tissue transplantation is not changed by the fact that the product labeling for Varivax, for example, states that each dose contains "residual components of MRC-5 cells including DNA and protein." These trace particles do not function in any sense as active components in the effectiveness of the vaccine.[32]

Still, it remains necessary to inquire into the relationship between the production of the vaccines and the two abortions that yielded the tissue. According to all available reports,[33] in both cases the decision to abort was independent of the desire to make use of fetal tissue. In other words, the abortions would have taken place whether or not the cell-line research would have followed. This means that the abortions were not undertaken in order to produce vaccines or to fulfill any other research purpose. Moreover, nothing indicates that the vaccine production *requires* cell lines from electively aborted fetuses; tissue that is sufficiently healthy to produce cell lines of the type requisite for vaccine production might have become available from a fetus that died from some other cause. Granted, healthy tissue is more commonly found in electively aborted fetuses, but nothing indicates that such tissue is necessarily unavailable from other sources. These points suggest that vaccine production and, hence, use is morally separable from abortion, even though current production in fact depends upon cell lines derived from aborted fetal tissue. Vaccine production and abortion are morally independent, which is to say that vaccine use and opposition to abortion are in principle morally coherent.

One pertinent detail that I have not been able to discover is the exact manner in which the tissue was transferred from those who performed the abortions to those who initiated the research. Did the research teams make it known that they were seeking certain types of tissue in a certain condition and did this influence the time or manner of the relevant abortions? This is significant because it can determine the moral quality of the initial research work relative to the abortions. This can be seen clearly by considering the differences between ordinary abortions and abortions that

[32]In an earlier draft of this paper, I phrased this more cautiously. John Grabenstein assures me that such caution is unnecessary. In his words: "Very definitely, the trace particles have nothing to do with induction of immunity" (private correspondence, March 25, 1998).

[33]See: Hayflick and Moorhead, "Limited," 614–36; Jacobs et al., "Characteristics," 168–70; Alan Shaw of Merck & Co. quoted by James McCoy, "New Pox Vaccine Began with Abortions;" Charles A. Baechler of Merck & Co., letter to Nedra Freeman (April 14, 1997).

might be performed with a view to using fetal tissue for therapeutic or research purposes. In some of these cases it could happen that the manner of the abortion would be dictated by the need for certain amounts of, say, neural tissue in a certain condition. And so it might become necessary for fetal tissue collection to take place while the fetus still lives, or, more accurately, it might be necessary that the manner of fetal tissue collection itself be the cause of fetal death.[34] If some similar relationship obtained between the original abortionists and the researchers who developed the cell lines, these researchers would be morally implicated in the abortion. Nevertheless, judging those actions is not now the primary concern. Knowing the exact manner of the transfer of tissue would be significant for evaluating the moral character of the initial research uses of the fetal tissue, but it is not, I argue below, decisive for evaluating the use of the vaccines today.

Cooperation

Showing how the initial researchers *may* have been cooperatively involved in the two abortions helps to make clear how vaccine producers cannot be understood to be cooperatively involved. In the context of vaccine production, the principle of cooperation is (at most) applicable to evaluating the relationship between the people who performed the abortions and the people who initially obtained the tissue. This is because the principle of cooperation applies only when there is some shared, cooperative action. The two fundamental kinds of cooperation are called *material* and *formal*. At the simplest level of analysis, material cooperation occurs when someone contributes something that enables another person to perform some action. For example, a nurse assisting at an operation and someone who lends another person money cooperate materially in the operation and in the use of the money. Theologians distinguish many degrees and kinds of material cooperation, some forms of which are so closely connected to the principal action that the cooperator shares in the moral responsibility of that action. Nevertheless, this is not always the case. For example, an employer pays employees and thereby cooperates in their financial activities, but the employer remains normally free of moral responsibility for how employees use their money.

Formal cooperation, as opposed to material cooperation, is not merely a more intimate involvement in the wrongdoing, as if formal cooperation meant only that one were closer to the evil that is done. Rather, formal cooperation occurs when one person acts in relation to a wrongdoer in such a manner that the former person approves of and concurs in the wrongdoing. Obvious examples of this occur when one person, such as an employer or military commander, orders a subordinate to perform some action, but formal cooperation may also occur even in the case of a person whose action makes no overt contribution to the wrongdoing. For example, a teacher notices a student cheating on a test but does nothing. The teacher cooperates formally by failing to stop or punish the wrongdoing; the teacher concurs in the

[34]See James Bopp, Jr., "Fetal Tissue Transplantation and Moral Complicity with Induced Abortion," *The Fetal Tissue Issue* (Braintree, Mass.: Pope John Center, 1994), 61–79. It should also be noted that this sort of connection between abortion and tissue collection has been rejected in this country at least since 1975.

action and thus cooperates in the cheating without taking part in it. Formal cooperation requires some choice that allies one's will with the wrongdoing of another.

Now, in the present case, the only opportunity for cooperation in abortion occurs in connection with the initial transfer of tissue. Today, when a person receives a vaccine injection, there simply is no cooperative action with whoever performed the abortions.[35] The vaccine user provides no material assistance in the abortion nor acts in such a way as to will that the abortions take place. It is true as a matter of fact that the cell lines used to produce vaccines come from abortions, but abortion is not essentially necessary as a means to this end. This does not mean that the use of the vaccine is totally unrelated to abortion, but only that the distinctions that help to assess cooperation in evil do not provide a coherent moral analysis. Considering the independence—not only in time and place, but also morally—of vaccination from abortion, one comes to see that one achieves a morally coherent understanding of vaccination without essential relation to one's moral condemnation (or for that matter, approval) of abortion. The use of these cell lines for the production of vaccines is somewhat akin to the use of the organs of a murder victim for transplantation in order to benefit others.[36] A murder victim's organs are available because of a morally reprehensible deed, but their use to benefit someone else does not make the transplantation team or the recipient complicit in the murder. Once again, there simply is

[35]The only way in which this can be construed as cooperation is by turning the issue around and charging the abortionist with material cooperation in today's vaccination. But this is stretching the matter. Even supposing that a part of the abortionist's intended end were that the resulting tissue would become useful for therapeutic research, the indefiniteness of that end from the abortionist's perspective would make it difficult to call him or her a formal cooperator in the production of vaccines. Even though the tissue taken from the abortions has been used for vaccine production, it does not appear to be the case that the abortions were undertaken as part of the means for vaccine production.

[36]This sort of argument has often been used to defend the claim that, assuming certain procedural conditions, fetal tissue transplantation can be morally separable from elective abortion: Consultants to the Advisory Committee to the Director, National Institutes of Health, *Report of the Human Fetal Tissue Transplantation Research Panel*, vol. 1 (Bethesda, Md.: National Institutes of Health, 1988). See also R. Gillon, "Ethics of Fetal Brain Cell Transplants," *British Medical Journal* 296 (1988): 1212–13, and J. A. Robertson, "Ethical Acceptability of Fetal Tissue Transplants," *Transplantation Proceedings*, 22.3 (June 1990) 1025–27. Some might object to dead donor organ transplantation as dehumanizing in some way. For this reason it should be said here that although the effectiveness of the analogy presented above depends upon presupposing that there is nothing in principle objectionable in this practice, the argument of this paper as a whole does not. This paper does not defend any form of transplantation, but only the use of vaccines despite their production process, which involves fetal cell lines. This defense does not require that one also accept organ transplantation, but only that one accept that it is morally defensible (in some circumstances) to use one human body or body part for the benefit of others. This would perhaps require a long justification. At present, I draw attention first to the fact that human beings both do and are expected to put their bodies to use, even at some cost and some risk, for the benefit of others, especially family, friends, and fellow citizens. Second, I point to such phenomena as breast-feeding, which suggest that our bodies are not only our own, but evidently for (at least some) others.

no cooperative action between the murderer and the organ recipient or even the transplantation team. Acknowledging that it is distasteful to draw personal benefit from another's suffering, one must yet recognize that taking advantage of this situation in this manner is not, as such, morally evil or morally incoherent. Just as it would be preferable to receive organs without any murder having occurred, in the same way, it would be preferable if the vaccines had no connection with abortion. Nevertheless, the use of the vaccine is accidentally, not essentially related morally to those two abortions.

Association

The argument above holds that the use of vaccines whose production involves the use of fetal cell lines does not create a situation of cooperation with abortion or complicity with the original abortions. This use is not, however, entirely unrelated to abortion, and the fact that using the vaccines is not cooperation in abortion does not settle the matter. The gravity of abortion might require us to make extensive efforts to avoid wherever possible association with abortion, abortion providers, and people who promote abortion in one manner or another.[37] *Donum vitae* addresses this concern:

> The corpses of human embryos and fetuses, whether they have been deliberately aborted or not, must be respected just as the remains of other human beings. In particular, they cannot be subjected to mutilation or to autopsies if their death has not yet been verified and without the consent of the parents or of the mother. Furthermore, the moral requirements must be safeguarded, that there be no complicity in deliberate abortion and that the risk of scandal be avoided. Also, in the case of dead fetuses, as for the corpses of adult persons, all commercial trafficking must be considered illicit and should be prohibited.[38]

This excludes "complicity in deliberate abortion," and if being *complicit* means being an accomplice, it appears that avoiding complicity requires avoiding cooperation in or contributing to the performance of abortion. If it is true, as has been argued above, that the use of the vaccines in question cannot be understood to be a case of complicity in abortion, it would appear that there is no objection on the basis of this text.

The matter is, however, not so simple. The Latin version of the pertinent sentence—translated above as "Furthermore, the moral requirements must be safeguarded, that there be no complicity in deliberate abortion and that the risk of scandal be avoided"—reads as follows: *Praeterea, semper salva legis moralis praescriptio esse debet, quae excludit quamlibet cum abortu voluntario societatem et scandali periculum*. Literally: "Furthermore, the prescription of the moral law ought always to be preserved, which excludes the danger of scandal and any association with voluntary abortion." Now, excluding "any association" appears to be a stronger requirement than excluding complicity. An associate is more loosely related to some-

[37]See Carson Strong, "Fetal Tissue Transplantation: Can It Be Morally Insulated from Abortion?" *Journal of Medical Ethics* 17 (1991): 70–76.

[38]Congregation for the Doctrine of the Faith, *Donum vitae*, I, 4.

thing than is an accomplice. Still, *societas* is not a technical term, and it is necessary to determine what *Donum vitae* means by this wrongful association.

The moral standard for the treatment of fetal corpses stated throughout the relevant paragraph of *Donum vitae* is that they are to be treated just as the remains of any human being. This implies that Catholic faith is not in principle opposed to using fetal tissue available from abortions that have already occurred and transplanting it into others (in the same way, again, that organs may, without moral fault, be harvested from adults who have been killed). But one fundamental problem with this procedure—as many have noted—is that the widespread use of fetal tissue for transplantation purposes would very likely institutionalize a dependence of therapeutic health care upon abortion providers.[39] Institutionalized dependence of therapeutic health care on abortion providers means that additional fetal tissue made available through abortion would be the indispensably necessary means for certain therapies and perhaps even specialties. If this occurred, engaging in these professions would be formally or essentially dependent upon deliberate abortion, such that it would not seem to be morally coherent with principled opposition to abortion.

When *Donum vitae* rejects any association with voluntary abortion, it is reasonable to believe that it is this kind of association that is intended. It is unreasonable to believe that one must literally avoid all contact, speech, and association of any kind with voluntary abortion. Not only is such a standard impractically strict, the first sentence in the passage quoted above presupposes that there will be some association with the remains of voluntary abortion. If it is true that *Donum vitae* rejects the sort of association that renders principled opposition to abortion morally incoherent, the meaning of *societas* turns out not to be far from the meaning of "complicity" (which is used in the official translation), but it is still a standard that is more restrictive than simply avoiding cooperation. Again the text reinforces this by mentioning, at the same time, the need to avoid the danger of scandal.

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[39]For various discussions of the relationship between fetal tissue transplantation and voluntary abortion (and alternatives), in addition to articles cited above, see, for example: National Institutes of Health, Advisory Committee to the Director, *Human Fetal Tissue Transplantation Research*, 2 vols. (Bethesda, Md.: National Institutes of Health, 1988); Christopher Fung, "Alternatives to Using Fetal Tissue from Induced Abortions," *Journal of the American Medical Association* 264 (July 4, 1990): 34; D. Ware Branch et al., "Suitability of Fetal Tissues from Spontaneous Abortions and from Ectopic Pregnancies for Transplantation," *Journal of the American Medical Association* 273 (January 4, 1995): 66–68; Daniel Garry et al., "Are There Really Alternatives to the Use of Fetal Tissue from Elective Abortions in Transplantation Research?" *New England Journal of Medicine* 327 (November 26, 1992): 1592–95; John Robertson, "The Ethical Acceptability of Fetal Tissue Transplants," *Transplantation Proceedings* 22 (June 1990): 1025–27; Henry Greely et al., "The Ethical Use of Human Fetal Tissue in Medicine," *New England Journal of Medicine* 320 (April 29, 1989): 1093–96; Lois Margaret Nora and Mary B. Mahowald, "Neural Fetal Tissue Transplants: Old and New Issues," *Zygon* 31 (December 1996): 615–33; "What Research? Which Embryos?" *Hastings Center Report* (January-February 1995), 36–46.

Moral Instruction and Scandal

Scandal is a theological concern in the sense that its technical meaning involves leading someone to sin or causing confusion as to what is a sin.[40] Even apart from the matter of sin, awareness of the significance of one's actions relative to the moral instruction of others has special relevance to the question of vaccinations, which is a concern primarily for parents. That is to say, if parents endeavor to teach their children that some actions, such as abortion, are bad in principle, they need to consider carefully whether the use of certain vaccines does not constitute a source of confusion for their children, who might at some point become cognizant of the factual dependence of some vaccines upon voluntary abortion. Can one coherently and plausibly defend the view that abortion is bad in principle and that yet the use of these vaccines is good? Can one teach one's children to understand this, or will it happen that they will understand the actions of their parents to belie their words? Will the lesson that is actually learned be that abortion is usually wrong, but sometimes it is beneficial, and that parents who try to hold otherwise are deluding themselves?

In addition to concern for the moral formation of their children, parents making decisions about the use of the vaccines under consideration might also question whether this use would appear to others as indifference to the moral quality of abortion, thereby lending some positive encouragement to others to have abortions or perhaps leading others to indifference or misunderstanding. Here it is necessary to distinguish, in the traditional language, between scandal given and scandal taken. Scandal is given when someone acts in such a way that an observer can be expected to be led astray. Scandal is taken when someone is led astray upon observing another person's behavior, whether that behavior has been rightly or wrongly interpreted. People who take moral matters seriously take reasonable steps to avoid giving scandal when possible, but there does not seem to be any limit to how much might need to be done to preclude the possibility of someone's taking scandal by misinterpreting one's own upright behavior. Plainly, it is sufficient to be reasonably cautious. This means that questions of scandal require prudence to evaluate the circumstances and the likely course of the actions of others. Consider the following two scenarios.

Someone could argue that the use of these vaccines displays an indifference to abortion. Indeed, some people do appear to believe that if the production of the vaccines involves aborted fetal tissue in any manner whatever the vaccines must be rejected.[41] Knowing this, anyone using the vaccine must also anticipate that another person may take scandal at one's actions, thereby leading the scandalized person to believe that the vaccine user does not genuinely oppose abortion, but only when it is

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[40]See Russell E. Smith, "The Principles of Cooperation and Their Application to the Present State of Health Care Evolution," *The Splendor of Truth and Health Care*, ed. Russell E. Smith (Braintree, Mass.: Pope John Center, 1995), 217–31, and "Ethical Quandary: Forming Hospital Partnerships," *The Gospel of Life and the Vision of Health Care*, ed. Russell E. Smith (Braintree, Mass.: Pope John Center, 1996), 109–23.

[41]"In carrying out research and treatment of human (or nonhuman) diseases, it is immoral to use embryonic and fetal tissue obtained from intentionally induced abortions. A major reason for opposing use of such tissue is that this is a form of complicity in moral

convenient. In their own way, the children being vaccinated might be susceptible to this view. Further, someone could believe that the availability and use of these vaccines might lead to further abortions by allowing ambivalent women to take consolation that some good might come out of having an abortion. This possibility is remote, admittedly, and yet it is not inconceivable as a contributing motivating factor.[42] Hence, this argument would lead one to refuse to use these vaccines, not because their use is in principle bad, but because someone else might through misunderstanding be led to some error.

Nevertheless, these considerations, while plausible, are not compelling. Someone could respond to these arguments, with at least equal plausibility, by saying that a woman deciding whether or not to abort her own child is likely to be completely unconcerned with whether the children of others have been adequately vaccinated. It is hard to imagine any drastic increase in the number of abortions because of vaccines; people have abortions for other reasons. Further, it could be argued that even if a woman were swayed in her decision by the presence of these vaccines, that would amount to no more than an excuse and a way to silence feelings of doubt or remorse. One person is not ordinarily responsible for another's rationalizations. Finally, this argument would say that the bare possibility that some hypothetical woman might be swayed to have an abortion is not as significant as the genuine responsibility of parents to protect their existing children from harmful, even deadly, diseases. In some cases (e.g., rubella, varicella, and adenovirus), there is not available an equally good vaccine that is produced without the use of cell lines from aborted fetuses.[43] Moreover, the health benefits at issue do not accrue only to their own children, but to all people within the community to which the children belong.

In the face of these opposing arguments regarding the relation of the use of these vaccines to future abortions, it would seem that more than one practical option is morally coherent. People who want to make a strong stand against abortion could refuse to use the vaccines, assuming that they could find adequate ways to protect themselves and others from disease.[44] When there are children involved, parents must recognize that they are responsible for reasonable measures to protect the

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evil," William E. May, Testimony before the NIH Human Embryo Research Panel, February 2, 1994. See the comments of Albert S. Moraczewski, O.P., quoted in note 18 above. See also Henry Greely et al., "The Ethical Use of Human Fetal Tissue in Medicine," *New England Journal of Medicine* 320 (April 20, 1989): 1095.

[42]There is discussion of the motivations of abortion in the literature concerning fetal tissue research. See: James Childress, "Ethics, Public Policy, and Fetal Tissue," 105–10; Dorothy Vawter and Karen Gervais, "Government by Myth: The U.S. Moratorium on Fetal Tissue Transplantation Research," *Conscience* 13.2 (Spring 1992): 31–32.

[43]The rabies vaccine exists in two forms, one produced using MRC-5 cells and one produced using a fetal rhesus lung cell line. There are some treatment alternatives for preventing hepatitis A and poliomyelitis.

[44]This is of course a difficult practical question that can only be answered in the light of the circumstances of one's own living conditions and the possible health risks that can reasonably be expected to arise, for oneself, and for others that one might expose to

children (and to prevent the children from being a contagious threat to society).[45] This threat is no trivial element of what parents must examine when they consider whether their children will join them in making an equally strong stand against abortion. At the same time, someone else who understands and deplores the accidental relation of these vaccines to abortion, who thinks that his or her use of the vaccine will have no significant effect on any future abortions, and who finds no alternative, equally effective ways to guard against infectious diseases readily available could make use of these vaccines without falling into moral incoherence. No further harm is necessarily generated by using the vaccine; no obvious good is necessarily achieved by refusing it, and there are a variety of other ways parents might communicate the moral character of abortion to their children. Alternatively, some people might want to be especially rigorous in their opposition to abortion, much as some people will

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some illness. For discussions of religious opposition of subsets of a national population, see Conyn-van Spaendonck et al. "Circulation of Poliovirus during the Poliomyelitis Outbreak in the Netherlands in 1992–3," *American Journal of Epidemiology* 143.9 (1996): 929–35. Also: E. J. Gangarosa et al., "Impact of Anti-Vaccine Movements on Pertussis Control," *The Lancet* 351 (January 31, 1998), 356–61; Mellinger et al., "High Incidence of Congenital Rubella Syndrome after a Rubella Outbreak," *Pediatric Infectious Disease Journal* 14.7 (July 1995): 573–78; D. Rodgers et al., "High Attack Rates and Case Fatality during a Measles Outbreak in Groups with Religious Exemption to Vaccination," *Pediatric Infectious Disease Journal* 12.4 (April 1993): 288–92; P. Briss et al., "Rubella among the Amish: Resurgent Disease in a Highly Susceptible Community," *Pediatric Infectious Disease Journal* 11.11 (November 1992): 959–99; Centers for Disease Control, "Congenital Rubella Syndrome Among the Amish," *Morbidity and Mortality Weekly Report* (*MMWR*) 41.26 (July 3, 1992): 468–69, 475–76; Centers for Disease Control, "Outbreaks of Rubella among the Amish, *MMWR* 40.16 (April 26, 1991): 265; T. Novotny et al., "Measles Outbreaks in Religious Groups Exempt from Immunization Laws, *Public Health Reports* 103.1 (January-February 1988): 49–54.

[45]This raises a difficult medical question that goes beyond the scope of this paper. In any given population, there are a certain number of people who remain unimmunized against various diseases. Assuming that these people are a sufficiently small portion of the population (such that an outbreak would not lead to each case infecting on average more than one other person), the population is said to benefit from herd immunity (Theodore C. Eickhoff, "Airborne Disease: Including Chemical and Biological Warfare," *American Journal of Epidemiology* 144.8 Supp. (1996): S39–S46). Herd immunity could easily support some few isolated individuals and their families who objected to certain vaccines on moral grounds. Whether large numbers of people concentrated in one area, such as a parish, would present the risk of an epidemic would require additional medical research. Conyn-van Spaendonck writes: "The risk of poliomyelitis was restricted to religious subpopulations rejecting vaccination. Unvaccinated persons in the general population appeared to be protected by herd immunity and the persons above 40 years of age, by natural immunity" ("Circulation of Poliovirus," 934). David Mowery and Violaine Mitchell assess the herd immunity in the United States as "relatively fragile" based upon the childhood measles epidemic of 1989 to 1991 ("Improving the Reliability of the U.S. Vaccine Supply," 975). See also M. Carolina Danovaro-Holliday et al., "A Large Rubella Outbreak with Spread from the Workplace to the Community," *Journal of the American Medical Association* 284.21 (6 December 2000): 2733–39.

participate in public abortion protests. Such public opposition cannot be understood to be morally implied by opposition to abortion since it is unclear how or if those protests have any significant effect on the number of abortions one way or the other.[46]

Asserting the moral coherence of each of these practical approaches does not yet amount to asserting their moral equivalence. This paper takes no position on the relative rank of the two practical approaches. This paper is limited to asserting that it is conceivable that various people might find themselves in circumstances diverse enough to make either approach sensible, keeping in mind the qualifications mentioned above.

The Future

After all of this has been said, if one judges that the use of these vaccines is indeed morally coherent for those who condemn abortion, even if it is not unqualifiedly desirable, one must be prepared for a further challenge. If the use of these vaccines despite their connection with abortion were to become customary, and if people cease to be uncomfortable with the regrettable origins of these vaccines, it will probably become more difficult to maintain the distinction between the use of existing fetal cell lines for vaccines and the use of fetal tissue for research and transplantation, not to mention the various experimental uses of frozen human embryos. The distinction articulated above—between a noncomplicit, accidental relationship and an association that is incoherent with principled opposition to abortion—will probably become more difficult to defend in public. As the practice of fetal tissue research and transplantation spreads, the sorts of arguments presented above are likely to be recast and used in support of this sort of research and transplantation.[47]

This suggests that it is rhetorically difficult to display the moral coherence of using these vaccines while simultaneously opposing proliferation of the therapeutic use of aborted fetal tissue. This difficulty is not decisive for the question of vaccines, but neither is it irrelevant. Whatever the future may hold in this regard, it is essential to think seriously about the moral significance of these matters. It would be irresponsible to condemn vaccines and other powerful therapies for superficial or accidental moral reasons. The health benefits at issue are considerable, and weighty moral reasons must be given before it is coherent to accept what may be a serious loss of control over vaccine-preventable diseases.

[46]J. A. Robertson ("Ethical Acceptability,"1026), when considering fetal tissue transplantation, deems either scenario equally likely.

[47]Indeed, arguments similar to some of what has been written above have already been proposed to justify fetal tissue transplantation. See J. A. Robertson, "Ethical Acceptability," 1025.