

CLONING AND PROCREATION POLICY with Comments on Abortion

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Introduction

The historic Judeo-Christian view of man's nature, enshrined in the nation's foundational documents and legal codes, is suddenly under fresh and intense attack. The imminence of human cloning has forced a renewed confrontation with the roots of our understanding of man, and is crashing into public policy. Where the Founders and most Americans have believed that man is God's creation, endowed with inalienable rights, cloning and other forms of procreation activity threaten to reduce man to human manufacture.

The leading issue associated with cloning is the legitimacy of different means of human reproduction. Cloning totally divorces reproduction from all heterosexual functions and relations.² In this regard it is extreme, beyond all other reproductive means. Because no joining of sperm and egg occurs, ordinary parentage is destroyed. Moreover, because exact duplication of a single source genome occurs, a plethora of new concerns arises over the relation between the source of the genome and its unnatural progeny. Many writers have explored the ethics of these largely physical dimensions.³

In this context, U.S. public authorities thus far have withheld government support for cloning, allowing it to be examined ethically.⁴ President Clinton on March 4, 1997, directed the National Bioethics Advisory Commission to study and report on cloning ethics. On June 8, 1997, the Commission recommended a temporary ban pending further study.⁵ In Europe, the Director General of the World Health Organization and a bioethics panel of the European Commission abortifacient decided that human cloning is unacceptable.⁶ Over time, these prohibitions have been relaxed somewhat.

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² Including normal sexual relations as well as *in vitro* fertilization and related techniques. Leon R. Kass goes even further, saying that the new technologies constitute a "divorce of the generation of new human life from human sexuality..." (Leon R. Kass, *Toward a More Natural Science: Biology and Human Affairs* (New York: Free Press (Macmillan), 1985) 47), despite the fact that gestation still requires the female womb. Kass predicts the eventual development of a laboratory womb, permitting true "ectogenesis," or "sperm to term" "babies without sex"; *ibid.*, 47-48.

³ See, for example, *ibid.*, 64-69, and Leon R. Kass, "The Wisdom of Repugnance," *The New Republic*, 2 June 1997, 17-26.

⁴ William J. Clinton, "Prohibition on Federal Funding for Cloning of Human Beings: Memorandum for the Heads of Executive Departments and Agencies" (Washington, DC: The White House, Office of the Press Secretary, 4 March 1997), 2 p.

⁵ National Bioethics Advisory Commission, "Cloning Human Beings: Report and Recommendation" (Rockville, MD: NBAC, 9 June 1997), 110 p.

⁶ Robert Herman, "European Bioethics Panel Denounces Human Cloning," *Washington Post Health*, 10 June 1997, 19-20; "Council of Europe: No to Human Cloning," press release, 25 February 1997, [http://www.coe.fr/97/107a\(97\).htm](http://www.coe.fr/97/107a(97).htm) accessed 11 June 1998; World Health Organization, "WHO Director General Condemns Human Cloning," press release, 11 March 1997, <http://www.medscape.com/other/WHO/1997/mar/WHOCdemnsHumanCloning.html> accessed 11 June 1998.

A deep and penetrating examination of cloning and related issues is needed. While cloning has been in public discourse since the 1970s when the first “test-tube baby” was born,⁷ the coverage has been intermittent and incoherent. In addition, society needs to comprehend cloning from a spiritual point of view, as human beings are not only physical but also spiritual beings.

The Christian community has the particular capacity to study cloning’s spiritual and social dimensions and contribute meaningfully toward resolution of the associated policy questions. A significant body of Christian literature is available on the fundamentals of human nature and human procreation based on Holy Scripture, the bedrock source document for Christian faith and action. The consequences for public policy concerning cloning and other procreation issues can be explored by uniting this understanding with a knowledge of reproductive biophysics.

Christian contributions to cloning issues have been published. Generally they oppose human cloning, but are mixed concerning other procreation issues.⁸ They focus on implications of the broad parameters of Christian faith for cloning and sexual reproductive practice, but leave relatively unstudied the converse consequences of reproductive biophysics and of cloning in particular on faith-based traditional principles. The emphasis here is on these consequences, and their impact on not only cloning policy but also procreation policy in general. This paper begins with a review of the physical and spiritual nature of human life, and then examines cloning and other procreation issues.

The questions raised by cloning implicate a number of inter-related topics. These include twinning, tissue culture, implantation failure, birth control, and various types of reproductive technology other than cloning. To be coherent, public policy on procreation must deal with all of them consistently. The nub of concerns is personhood, and the pivot of acceptable procreation policy from a Christian perspective is to uphold human dignity, personhood and marriage as sacred.

⁷ The first claim of a “test-tube baby” (*in vitro* fertilization) was made in 1974, but the first documented instance culminated in the birth on 25 July 1978 of Louise to Lesley Brown. See Lane P. Lester and James C. Hefley, *Cloning: Miracle or Menace?* (Wheaton, IL: Tyndale House, 1980) 67-72. A seminal article on cloning was Joshua Lederberg, “Experimental Genetics and Human Evolution,” *The American Naturalist* 100 (September-October 1966) 519-531.

⁸ Kenneth D. Eberhard, “Genetics and Human Survival: A Christian Perspective,” *Linacre Quarterly* 40 (3; August 1973) 167-181; “Cloning: What Is Man?” *Christian Science Monitor* (Eastern Edition), 26 June 1978, p. E; “Cloning of Embryos Stirs Ethical Concerns,” *Christian Century* 100 (32; 10 November 1993) 1117; Richard A. McCormick, “Should We Clone Humans?” *Christian Century* 110 (33; 17-24 November 1993) 1148-1149; “Human Cloning and Catholic Teaching,” *Medical-Moral Newsletter* 31 (1; January 1994) 1-2; R. Geoffrey Brown, “Clones, Chimeras, and the Image of God: Lessons from Barthian Bioethics,” in John F. Kilner, Nigel M. de S. Cameron, and David L. Schiedermayer, eds., *Bioethics and the Future of Medicine: A Christian Appraisal* (Grand Rapids, MI: Eerdmans; 1995) 238-249; John R. Meyer, “Cloning Human Embryos: Why Artificial Human Procreation is Immoral,” *Linacre Quarterly* 62 (2; May 1995) 22-29; American Bioethics Advisory Commission, “Ban Human Cloning: Report of the American Bioethics Advisory Commission” (Stafford, VA: American Life League, 1997); John F. Kilner, “Stop Cloning Around; in the Flurry of Scientific Boundary Breaking, Let’s Remember that Humans Are Not Sheep” (Editorial), *Christianity Today* 41 (5; 28 April 1997) 10(2); The Church of Scotland, “1997 General Assembly Report - Cloning Animals and Humans: A Supplementary Report to the 1997 General Assembly from the Society, Religion and Technology Project, Board of National Mission” (Edinburgh, Scotland: General Assembly, 22 May 1997); Stephen G. Post, “The Judeo-Christian Case Against Human Cloning,” *America*, 21 June 1997, 19-22; Richard D. Land, “Statement on Human Cloning,” *Light* (The Ethics and Religious Liberty Commission of the Southern Baptist Convention), July-August 1997, <http://erlc.com/President/1997/LJ-AClone.htm> accessed 11 June 1998; Allen Verhey, “Theology after Dolly,” *Christian Century* 114 (10; 19-26 November 1997) 285-286;

Human Life Is More Than Physical

Over all human history, many philosophers have regarded human life as merely physical. Physicalists and most philosophers claim specifically that there is no autonomous or transcendent soul.⁹ The impact of modern science has been to buttress the philosophic arguments supporting the proposition. Ironically, such physicalism is well illustrated in the pro-life and usual Christian habit of arguing that each human being begins at conception.¹⁰ In the union of sperm and egg a full set of human chromosomes is brought together, which produces a new cell with the genomic potential to divide and eventually develop into a physically mature body.¹¹ Note how physical science influences thought here: the presence of a physical human cell capable of full development is taken as evidence of a complete human being.¹² The danger in stopping there in the analysis is reductionism — many people equate human life with its physical presence, and perhaps extrapolate hastily to other simplistic conclusions.

Christians and Jews respond that each human person is made in the image of God, according to Genesis 1:26-27, with rational and spiritual qualities. The human person *in toto* is held to have the components of body, soul, and spirit (trichotomous man, according to interpretations of Hebrews 4:12 and 1 Thessalonians 5:23), or body and soul/spirit (dichotomous man, from Genesis 2:7). The use of the word “components” is problematical, implying that the human being may be fragmented into body versus soul.¹³ Generally, the Bible does not allow easy fragmentation (and, interestingly, materialists here agree with the Bible), except at death or in other extreme

⁹ Thomas J. Bole, III, “Zygotes, Souls, Substances, and Persons,” *Journal of Medicine and Philosophy* 15 (1990) 636.

¹⁰ The failed Human Life Bill (S. 158, 1981-82) stated in Chapter 101, Section 1.(a), “The Congress finds that the life of each human being begins at conception,” and “‘person’ includes all human beings.” See U.S. Senate, Committee on the Judiciary, Subcommittee on Separation of Powers, “The Human Life Bill – S. 158: Report” (Washington, DC: USGPO, 1981), 1, 2. “Human life” in the Report generally refers to an individual member of the human species (see *ibid.*, 7-13; U.S. Senate, Comm. Judiciary, Subcomm. Separation of Powers, “The Human Life Bill: Hearings,” vol. I, 22), and conveys personhood (the first dictionary definition of “person” is “a human being”). Thus, “human being” means very specifically not only a member of *Homo sapiens* but also a “person” deserving protection. See “Report,” 14. George H. Ball, “What Happens at Conception?,” *Christianity and Crisis* (19 October 1981) 286, said, “mere biological membership in the species *homo sapiens* [sic] does not make one a human being.” Some use the term “genetic individuality” in arguing that such a status is insufficient to constitute “human life” as “person”; see “Prepared Statement of Daniel Callahan, in ‘Hearings,’ vol. I, 128. See also Stephen Schwarz, “Personhood Begins at Conception,” repr. in Louis P. Pojman and Francis J. Beckwith, eds., *The Abortion Controversy: 25 Years After Roe v. Wade* (Belmont, CA: Wadsworth, 1998), chapt. 14.

¹¹ Henry Gray, *Anatomy of the Human Body*, 27th ed., ed. Charles Mayo Goss (Philadelphia, PA: Lea and Febiger, 1961), s.v. “Embryology,” 21-58.

¹² See “Statements of Dr. Jerome Lejeune *et al.*,” “Hearings,” vol. I, 20. Dr. and Mrs. J. C. Wilkie, *Abortion: Questions and Answers* (Cincinnati, OH: Hayes Publ., rev. 1988) 35, say “[The fertilized ovum] is not a *potential* human being; it is a human being with vast potential.” Judie Brown, President and Director of the American Life League, and Publisher of the bi-monthly *Celebrate Life* (Stafford, VA), says “[T]he human being is totally present in every way at fertilization.” See “Living the Gospel of Life,” *Celebrate Life*, March-April 1997, 40. The Pontifical Academy for Life declared that “Judgment...on the personal nature of the human embryo springs necessarily from the evidence of the biological datum which implies the recognition of the presence of a human being with an intrinsic active capacity for development, and not a mere possibility of life”; see “Concluding Document: Status of the Human Embryo” (Vatican City: Third Plenary Assembly of the Pontifical Academy for Life, 14-16 February 1997), available <http://www.all.org> accessed 8 December 1997.

¹³ John Warwick Montgomery has reviewed the ontology of the soul, particularly the argument between monistic and dualistic views of man’s nature. See *Slaughter of the Innocents* (Westchester, IL: Crossway Books, 1981) 80-85.

circumstances.¹⁴ The ultimate proof for the Christian of separability of body and soul/spirit is the death and resurrection of Christ.¹⁵ From these considerations, personhood status is determined by the presence of both body and soul/spirit, and the question of when the latter first appears is critical.

The claim that each human possesses a spirit which is somehow differentiable from the human body does not, however, go unchallenged. It suffers the ongoing attack of intense philosophical pressure, amid accelerating discovery of neurological-electrochemical correlates to conscious thought.¹⁶ Many neuroscientists and their public are prone to believe that all manifestations of the claimed soul or spirit are emergent properties of the physical brain.¹⁷ From this perspective, neuroscientific evidence points to a partial solution of the notorious mind-brain problem along the lines of identity theory of modern materialism (mind and matter are the manifestations of a single reality that is material).¹⁸

Although dismissed by detractors, believers in a separable spirit are confirmed by the fact that the mind-brain relation has so far proven to be a conundrum. Consciousness continues to resist an ultimate surrender to physicalism.¹⁹ A persistent and reliable residue of occultic and mystical evidence points to some sort of hyperdimensional reality involving consciousness. Finally, large fractions of the human population report faith and near-death experiences compatible with the claim of a separable spiritual component of the human being.

From the distinction between body and soul/spirit, or between body, soul and spirit, then from either perspective, dichotomous or trichotomous, the view that a complete human being is present at conception implies that the spirit as well as the physical body is present at conception. The spirit may be impossible to discern directly, but it is regarded as present nonetheless. A simple (but logically vulnerable) argument for the spirit's presence is that after conception the zygote is obviously physically present, that spiritual realities are manifested in this world by physical signs,²⁰ and therefore that a complete spiritual component is present.

A Christian perspective further recognizes at the outset that bringing forth human life is an act of procreation. Human beings are created with the capacity to generate other human beings.²¹ Hence the appropriate term is

¹⁴ The apostle Paul was caught up to the "third heaven," presumably where God or His angels "dwell"; see 2 Corinthians 12:2. All Scripture quotes are from the NIV unless otherwise noted.

¹⁵ Though Christ's body lay in the grave for three days and nights, His soul "preached to the spirits in prison" (1 Peter 3:19), and in resurrection His body (now glorified) was rejoined to His soul.

¹⁶ Efforts toward a new science of human consciousness are producing various commentaries. For examples, see David L. Wheeler, "The Campaign for a Science of Consciousness," *Chronicle of Higher Education*, 30 November 1994, A12; Tom Wolfe, "Sorry, but Your Soul Just Died," *Forbes ASAP* (2 December 1966), repr. <http://www.forbes.com/asap/120296/wolfe.htm> (19 p.), accessed 21 November 1996; and Francis Crick, *The Astonishing Hypothesis: The Scientific Search for the Soul* (New York: Macmillan, 1994).

¹⁷ This view sees consciousness and thought as an epiphenomenon. Such a view is buttressed by various findings, e.g., behavior honoring ethical constraints has been linked to intact frontal lobe sectors; see Sandra Blakeslee, "Old Accident Points to Brain's Moral Center," *The New York Times, Science Times*, 24 May 1994, C1, 14.

¹⁸ See Jerome A. Shaffer, *Philosophy of Mind* (Englewood Cliffs, NJ: Prentice-Hall, 1968) 42-50; <https://www.britannica.com/topic/identity-theory>.

¹⁹ See James Gorman, "Consciousness Studies: From Stream to Flood," *The New York Times*, 29 April 1997, C1, 5; Steven Pinker, "Can a Computer Be Conscious?," *U.S. News & World Report*, 18-25 August 1997, 63-65; Pinker, *How the Mind Works* (New York: W. W. Norton, 1997); Malcolm Jeeves, *Mind Fields: Reflections on the Science of Mind and Brain* (Grand Rapids, MI: Baker, 1994).

²⁰ As well as by subjective experiences.

²¹ In the Trinity, the *only begotten Son* of the Father was not made nor created, like the Father the Son is regarded as eternally present.

procreation, not reproduction with its connotation that human beings are only physical commodities.²² The term procreation is used in what follows.

Introduction of the Human Spirit

Historically, the question of each human spirit's origin and when it is introduced to the body (which some people call "ensoulment" or "animation") has occupied theological attention.²³ A few theologians have asserted that the spirit (or soul) as well as the body is transmitted from the parents, a view termed traducianism.²⁴ An alternative view is infusionism, that a pre-existent spirit is infused at conception.²⁵ Another view is emanationism, that human beings flow from the divine substance.²⁶ This view has always been suspect because it borders on pantheism and on denial of *ex nihilo* creation of the human being.²⁷ The last view is creationism, that a spirit is created separately by God and imparted to the body of each individual.²⁸ Both infusionism and creationism (usually) involve "immediate animation" (as contrasted with "delayed animation," typically the long-common view preceding modern embryology of animation at the time of a woman's quickening). More than one of the above views have at times been considered heretical, even creationism.

Although creationism is the view of ensoulment held most widely in the Christian community,²⁹ Christians and others have differed on when the spirit is imparted. Aristotle and Augustine held to late impartation, Tertullian to the moment of conception,³⁰ and Plato to impartation at birth.³¹ The common Christian view for centuries past and today is that ensoulment occurs at conception. A recent addition to the literature is by John Saward, who focuses on the timing of ensoulment in the case of Jesus Christ. Discussing the ensoulment-at-conception view,

²² Donald DeMarco, *Biotechnology and the Assault on Parenthood* (San Francisco: Ignatius, 1991) 23-29. Kass, *Toward a More Natural Science*, 48, notes the factory metaphor in the term "re-production."

²³ See Rudolph J. Gerber, "When Is the Human Soul Infused?," *Laval Théologique et Philosophique* 22 (1966) 234, 236. For further discussion see Franz Delitzsch, "A System of Biblical Psychology (1885, Grand Rapids: Baker Book House, reprinted 1966).

²⁴ Alan and Theresa von Altendorf, *ISMs* (Mustang, TN: Mustang Publ. Co., 1991), s.v. "Traducianism," 309; James M. Baldwin, ed., *Dictionary of Philosophy and Psychology*, vol. II (Gloucester, MA: Peter Smith, 1960), s.v. "Traducianism," 709. "Materialistic" traducianism sees the soul as derived from the physical material provided by the parents; "spiritual" traducianism sees it derived from the parents' souls; see Montgomery, 89 and refs. In the latter case, traducianism is sometimes called "generationism"; see Paul K. Meagher, Thomas C. O'Brien, and Consuelo M. Aherne, eds., *Encyclopedic Dictionary of Religion*, vol. O-Z (Washington, DC: Corpus Publ., 1979), s.v. "Traducianism," 3555.

²⁵ *Ibid.*, s.v. "Infusionism," 151-152. Related to "pre-existence"; see Baldwin, ed., vol. II, s.v. "Pre-existence," 330. One theologian termed this "a platonic concept of the soul"; see "Statement of Rosemary Radford Ruether," "Hearings," vol. I, 827.

²⁶ *Webster's Universal Dictionary* (Cleveland, OH: World Syndicate, 1937) 548-549.

²⁷ For general reference, see V. A. Harvey, *A Handbook of Theological Terms* (New York: Macmillan, 1964); Robert McAfee Brown, "Soul (Body)," in M. Halverson and A. A. Cohen, *Handbook of Christian Theology* (Cleveland, OH: World Publishing Co. (Meridian), 1958) 354-356; and Stanley Romaine Hoppes, "Spirit," in Halverson and Cohen, 356-358.

²⁸ Halverson and Cohen, 72; Baldwin, ed., vol. I, s.v. "Creationism," 242.

²⁹ Montgomery, 86. See also John Mahoney, *Bioethics and Belief* (London: Sheed and Ward, 1984).

³⁰ His view of conception would have been limited, given the discovery of ova, sperm, and fertilization more than a thousand years later. The sperm was discovered in 1677, the ovum in 1827; L. Arey, *Developmental Anatomy: A Textbook and Laboratory Manual of Embryology*, 6th ed. (Philadelphia: W. B. Saunders, 1954) 45.

³¹ Fletcher, 136. For Plato's view see the *Phaedo*, in Eric H. Warmington and Philip G. Rouse, eds., *Great Dialogues of Plato*, rev. ed., transl. W. H. D. Rouse (New York: New American Library (Plume), 1961) 531-597. Plato presented the soul as pre-existing the body, and focused on birth as the divide between pre-existence and this life; *ibid.*, 551-553.

Saward avers that it is a “defined doctrine of the Catholic faith.”³² He quotes from a “Formula of Union” from 433 A.D., which was “canonized by the General Council of Chalcedon in 451” A.D., as follows: “God the Word was made flesh and became man and from the very moment of conception united to himself the temple he had taken from [Mary].”³³ Various documents and liturgies originating in the early Church and confirmed repeatedly over the centuries are consistent with this doctrine. Immediate animation, according to St. Maximus the Confessor (c. 580-662), establishes the completeness and wholeness of man as a metaphysical priority; Christ’s instant hypostatic union is, as Saward interprets Maximus, “the key to understanding man.”³⁴ Saward closes his chapter by discussing the view of Aquinas, who held that animation required suitably organized matter, which for Christ was established from the moment of conception, even if other human bodies developed over time and received the created soul later.³⁵ For Saward, Aquinas utilized “out-of-date science” which is now replaced by modern biological understanding of the genome’s fixation at conception; this permits us to explain away Aquinas’ presumption of early physical and ensoulment differences between Christ and other human beings.³⁶

The appeal to Christ’s Incarnation is a very powerful argument for immediate animation, canonical for Roman Catholics and many other Christians. The issue, however, is not exactly settled with respect to humanity other than Christ, unless it be held as Saward did that ensoulment for Christ must be the same as for other human beings, because Christ was true man. Such reasoning ignores possible complexities in Christ’s uniqueness in Mary’s Annunciation and virginal conception by the Holy Spirit. There are Biblical indications of at least very early ensoulment for human beings generally, but not certainty about ensoulment at conception. Jeremiah reported that God said, “Before I formed you in the womb I knew you, before you were born I set you apart...”³⁷ David perceived that God knew him as a person before birth by acknowledging, “For you created my inmost being; you knit me together in my mother’s womb.... My frame was not hidden from you when I was made in the secret place. When I was woven together in the depths of the earth, your eyes saw my unformed body.”³⁸ David also acknowledged that he was “sinful from the time my mother conceived me”³⁹ (the Hebrew is not specific here to fertilization *per se*, which was not understood at the time). Isaiah declared “Before I was born the Lord called me; from my birth he has made mention of my name.... [The Lord] formed me in the womb to be his servant.”⁴⁰ Finally, Elizabeth’s unborn baby “leaped in her womb” upon hearing Mary’s voice.”⁴¹ With full coherence, Mosaic law upheld the personhood of the unborn by specifying *lex talionis* for fetal injury or death.⁴² Lack of

³² John Saward, “The Moment God Became Man,” chapter 1, in *The Redeemer in the Womb* (San Francisco: Ignatius Press, 1993), as quoted in the American Bioethics Advisory Commission Report, “Appendix: An Approach to a Key Theological Question,” p. 1 of 7, available at <http://www.all.org/clontx10.htm> (the American Life League homepage), accessed 29 September 1997.

³³ *Ibid.*

³⁴ *Ibid.*, 3-4.

³⁵ Aquinas held to ensoulment later than conception — 40 days for the male, and 80-90 days for the female; *Summa Theologica*, Pt. I, q. 75, art. I; cf. q. 76, art. iii ad 3; q. 118, art. ii ad 2.

³⁶ Saward, 5-7.

³⁷ Jeremiah 1:5a.

³⁸ Psalm 139:13-16a.

³⁹ Psalm 51:5.

⁴⁰ Isaiah 49:1,5.

⁴¹ Luke 1:41,44.

⁴² Exodus 21:22-25. Some Jewish commentators hold from this passage that the fetus has not an equal status to the post-natal child. Rabbi Spero claimed that the “serious injury” (NIV) refers to the woman, not the fetus, and that the Talmud held that personhood begins at birth. See Rabbi Aryeh Spero, “Therefore Choose Life: How the Great Faiths View Abortion,” *Policy Review*, Spring 1989, 39; see also “Prepared Statement of Rabbi Henry Siegman,” “Hearings,” vol. I, 808. Thus, causing premature birth imposes a fine on the assailant, while only maternal injury or death invokes *lex talionis*, as in the “Statement of Rev. Paul D. Simmons,” “Hearings,” vol. I, 846, 850. Rabbi Spero, 41, acknowledged, however, that the Septuagint translated the Hebrew *a’son* as “formed,” referring to the fetus, which led Augustine to find abortion the same as murder. Montgomery, 98-101, claims that proper interpretation demands “the same penalty for injuring the mother *or* the child,” citing Delitzsch

specificity about the time of ensoulment seems evident in Ecclesiastes 11:5. The NIV reads “As you do not know the path of the wind, or how the body is formed in a mother’s womb...,” while the RSV reads “As you do not know how the spirit comes to the bones in the womb of a woman with child....” Commentators acknowledge ambiguity in interpretation of this passage.⁴³

Ensoulement, Twinning and Zygote Fusion

From a physical perspective, the ensoulment-at-conception view cannot deal very easily with some pertinent embryological facts.⁴⁴ Although rare, identical (monozygotic) twins do occur, about once in 285 pregnancies.⁴⁵ Identical twins result from the splitting of a human organism (asexual fission) sometime between the zygote stage (a few cells, or 1 day old) and the blastocyst/trophoblast stages (up to a hundred cells) which extend from the time of implantation (five to ten days after conception) up to an age of 2.5 weeks.⁴⁶ Also, occasionally conjoined twins occur, about once every 50,000 to 100,000 births, consisting of a two-headed baby,⁴⁷ Siamese twins⁴⁸ or some other oddity.⁴⁹ In all these cases, some sort of “division” of any spirit entity presumed to be originally present at conception must be granted.⁵⁰ The severe conjoined twin malformations appear to necessitate two spirits in conjoined fractional bodies, or quasi-fractional spirits; either concept is bizarre.

The only credible avoidance of some “division” of spirit in twinning would be to allow creation or infusion of souls at a later stage than conception, such as at the time when twinning actually occurs. Perhaps God imparts one spirit at conception, and a second spirit at twinning. Such possibilities exhibit some artificiality, and appear to be an attempt to preserve the traditional view of ensoulment at conception. Twinning invites the *prima facie*

and Cassuto, thus upholding in law the full personhood of the fetus. Note that uncertainty could arise if the miscarried fruit was unformed, and therefore indiscernible as a human being from other discharge.

⁴³ See, e.g., Matthew Henry, *Commentary on the Whole Bible* (Grand Rapids, MI: Zondervan, 1960) 807-808.

⁴⁴ T. Shannon and A. Wolter, “Reflections on the Moral Status of the Preembryo,” *Theological Studies* 51 (1990) 603-626, esp. 608-614; K. Kelly, “Embryo Research: The Ethical Issues,” *The Month* (1990) 59-64, esp. 63; R. McCormick, “Who or What Is the Embryo?” *Kennedy Inst. of Ethics Journal* 1 (1991) 1-16, esp. 2-8; Jean Porter, “Individuality, Personal Identity, and the Moral Status of the Preembryo: A Response to Mark Johnson,” *Theological Studies* 56 (1995) 763-770; William Werpehowski, “Persons, Practices, and the Conception Argument,” *Journal of Medicine and Philosophy* 22 (5, October 1997) 479-494.

⁴⁵ Ronan O’Rahilly and Fabriola Müller, *Human Embryology and Teratology*, 2nd. ed. (New York: Wiley, 1996) 46; the ratio is 1:240 according to the *Encyclopedia Britannica*, 1970 ed., s.v. “Multiple Births.”

⁴⁶ *Ibid.*, 8.

⁴⁷ Termed “symmelia”; *ibid.*, 48. See, e.g., “2-Headed Girl Born to S. African Woman,” *Virginian-Pilot*, 18 January 1988, A7; the same news mentioned the birth in Tehran, Iran, of a two-headed boy on 23 December 1987; “S. African Baby Born with 2 Heads Dies,” *Virginian-Pilot*, 20 January 1988, A5.

⁴⁸ Termed “thoracopagy”; O’Rahilly and Müller. See, e.g., “Siamese Twins Separated,” *Virginian-Pilot*, 30 July 1984, 1.

⁴⁹ Other conjoined-twin malformations include instances of 2 legs plus a 3rd symmelic lower limb, or dipodia or monopodia, and diprosopy, *i.e.*, two faces formed from the right and left halves of different fetuses; *ibid.*, 48-49. See, e.g., Rosemary Goudreau, “Parents of Two-Faced Infant Wrestle with Ethics,” *Miami (Florida) Herald*, 26 January 1988 (see Newsbank 1988 HEA 17:G5); “Prognosis Doubtful on Baby with 2 Faces,” *Virginian-Pilot*, 27 January 1988, A5; “Newborn with 2 Faces Dies in Miami Hospital,” *Virginian-Pilot*, 31 January 1988, A9. For general references, see K. Nelson and L. Holmes, “Malformations due to Presumed Spontaneous Mutations in Newborn Infants,” *New England Journal of Medicine* 320 (1989) 19, and B. Duhamel, *Morphogenése Pathologique des Monstrosités aux Malformations* (Paris, France: Masson, 1966).

⁵⁰ Joseph Fletcher, *The Ethics of Genetic Control: Ending Reproductive Roulette* (Garden City, NY: Anchor Press/Doubleday, 1974) 136; Lester and Hefley, 42. Montgomery, 89, specifically raises the possibility of a divisible spirit, to resolve the twinning problem. Philip Devine, “The Scope of the Prohibition Against Killing, in Pojman and Beckwith, 245, phrases the problem as “split selves.”

conclusion that the conceptus may not immediately be a (complete) single human person, with troublesome implications for pro-lifers in the abortion controversy, as well as an opportunity for further theological reflection.

A less appealing alternative would be to regard the spirit, if in residence in the one-cell zygote, in the same way as we do the physical body which is not yet fully developed: some manner of spirit is present in the zygote, and truly possessed by the human life involved, but it is in the form of “potential” spirit. Later development involves the conversion of the “potential” spirit into actual spirit. Something like this view is evident in the abortion-related discussion of “potential” human beings.⁵¹ It is also evident in Aquinas’ view of pre-natal progression from a vegetative soul, to one additionally sensitive (as in an animal), and finally to the created human soul.⁵² This would be a spiritual analogue to physical systems which experience the exchange of potential and kinetic energy. Building upon this view, one could say that twinning involves a division of “potential” spirit into two pieces of actualized human spirit.

In such a case, it is again obvious that an indivisible unity of actual spirit at the moment of conception (the traditional perspective) must yield to a more diffuse and pleni-potential spiritual presence. Some would find in this view a basis for the legitimacy of early-acting abortifacients (because only “potential” human beings are present), while others would continue to argue against abortifacients on the ground that any disruption of development of the zygote or blastocyst is wrong.

Novel perspectives on twinning are provided by Dr. and Mrs. J. C. Wilkie, active in the organization National Right to Life. They say that the “original human zygote...can be considered, in effect, the parent of the new human being. This might be a form of parthenogenesis, or non-sexual reproduction.... The other possibility is that the existing human being, in splitting, dies, to give new life to two new identical human beings like himself (herself).”⁵³ In either case, ensoulment would occur at the time of twinning. Similarly, Scientists for Life considered that the offspring would be “grandchildren of the adult couple or the children of the zygote.”⁵⁴ These novel views introduce their own theological difficulties, not explored by either set of authors.

Another alternative for avoiding “division” of unitary spirit would be to return to materialistic traducianism. This view accommodates twinning in that the sperm and egg are seen as conveying appropriate spiritual components for combination into one or more human embryos. The problem with traducianism is its vagueness concerning individuality of the spirit for each human being.

A peculiar embryological complication that bears on the ensoulment question is the possibility of egg or zygote fusion (sometimes termed recombination). One instance reported in 1979 involved the natural fusion of two fertilized eggs to produce one person, an Austrian woman born in 1937. Investigators carefully excluded the possibility of double fertilization of one ovum, and the possibility of one zygote undergoing mutations.⁵⁵ Her

⁵¹ The “potentiality principle”; see Pojman and Beckwith, esp. chaps. 11 (John T. Noonan, Jr., “Abortion Is Morally Wrong,” 203-208), 12 (Michael Tooley, “In Defense of Abortion and Infanticide,” 209-233), and 13 (Devine, 234-256). The potentiality principle is here applied to the human spirit. See also Peter Singer and Karen Dawson, “IVF Technology and the Argument from Potential,” *Philosophy and Public Affairs* 17 (2; Spring 1988) 87-104.

⁵² See Saward, 5.

⁵³ Dr. and Mrs. J. C. Wilkie, 39.

⁵⁴ Scientists for Life, “The Position of Modern Science on the Beginning of Human Life” (Fredericksburg, VA: 1975), in “Hearings,” 25.

⁵⁵ W. R. Mayr, V. Pausch, and W. Schnedl, “Human Chimaera Detectable only by Investigation of Her Progeny,” *Nature* 277 (18 January 1979) 210-211. See also Kurt Benirschke, “Chimerism, Mosaicism and Hybrids,” in *Human Genetics*, Proc. 4th International Congress of Human Genetics, Paris, 6-11 September 1971, ref. in “Hearings,” vol. II, 28. Egg fusion might be a route to babies with two mothers and no father; see Robert H. Blank and Janna C. Merrick, *Human Reproduction, Emerging Technologies, and Conflicting Rights*

genome has been termed a “genetic mosaic.”⁵⁶ A new case in Scotland involves a fusion of male and female embryos after *in vitro* fertilization (IVF), producing a “chimeric hermaphrodite,” with both a testicle and an ovary.⁵⁷ In these cases belief in ensoulment-at-conception leads necessarily to merger of human spirits, which is more peculiar than division.⁵⁸

Some observers have rebutted ensoulment-at-conception on the basis that a zygote can implant but turn into a hydatidiform mole (HFM).⁵⁹ This rebuttal has been parried by noting that HFMs appear to arise from genome imperfections.⁶⁰

Clearly, the ensoulment timing question cannot be decided for certain on the basis of the physical evidence alone,⁶¹ nor can it be fixed from Scripture. Nevertheless, it is quite defensible to declare that “*fertilization is a critical landmark* because a new, genetically distinct human organism is thereby formed.”⁶² This fact is persuasive enough for many people of faith to continue to regard fertilization as the crucial event for ensoulment, and therefore the initiation of a new individual human person (by equating “human organism,” “soul” and “person”),⁶³ with monozygotic twinning and zygote fusion left as subsidiary complexities.⁶⁴ (Other views of

(Washington, DC: Congressional Quarterly Press, 1995) 92-93. Kass, *Toward a More Natural Science*, 50, stated that “fusion of human and nonhuman cells in tissue culture has already been achieved,” as of 1985.

⁵⁶ Lester and Hefley, 42.

⁵⁷ Lisa Strain, John C. S. Dean, Mark P. R. Hamilton and David T. Bonthron, “Brief Report: A True Hermaphrodite Chimera Resulting from Embryo Amalgamation after *in Vitro* Fertilization,” *New England Journal of Medicine* 338 (3; 15 January 1998) 169. Concern was raised that chimeras may be more likely with IVF. Note that chimeric mice can be produced by deliberate reassembly of up to three cells obtained from different split embryos; “Statements of Dr. Jerome Lejeune *et al.*,” “Hearings,” vol. I, 9; “Prepared Statement of Dr. Clifford Grobstein,” “Hearings,” vol. I, 95.

⁵⁸ Paul Ramsey, in “Abortion: A Review Article,” *Child and Family* (Reprint Booklet Series, 1978) 13-61, saw in fusion the refutation of the “genetic” argument for ensoulment at conception.

⁵⁹ Carlos A. Bedate and Robert C. Cefalo, “The Zygote: To Be or Not To Be a Person,” *Journal of Medicine and Philosophy* 14 (1989) 641-645; Bole.

⁶⁰ Antoine Suarez, “Hydatidiform Moles and Teratomas Confirm the Human Identity of the Preimplantation Embryo,” *Journal of Medicine and Philosophy* 15 (1990) 627-635.

⁶¹ Such a conclusion was extant more than 25 years ago; see Fletcher, 114-115, who cites B. Webb, *Catholic Medical Quarterly* 24 (October 1972) 69-75. The Roman Catholic Magisterium agreed that science cannot in itself “bring us to the recognition of a spiritual soul,” in Congregation for the Doctrine of the Faith, “Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation: Replies to Certain Questions of the Day” (Rome, Italy: Vatican City, 1987) 701.

⁶² O’Rahilly and Müller, 8 (emphasis added). Kass, *Toward a More Natural Science*, 103-104 (emphasis original), says that

...something new and alive *in a different sense* comes into being with fertilization.... For after fertilization is *complete*, there exists a new individual.... *After* fertilization, there is continuity of subsequent development.... [Consequently,] a human life begins at fertilization.

In a footnote (p. 104), Kass maintains that neither twinning nor embryo splitting (and reassembling) affects his assertion. Nevertheless, the blastocyst “is not...a person”; *ibid.*, 104. “It deserves our respect not because it has rights or claims or sentience..., but because of what it is, now *and* prospectively”; *ibid.*, 105 (emphasis original).

⁶³ Dr. Frederick Robbins, President of the Institute of Medicine of the National Academy of Sciences, asked “[A]t what point in the sequence of development *do we choose* to say that the organism is a person, and therefore, of special value?”; letter to the Subcommittee quoted in “Report,” 50 (emphasis added).

⁶⁴ See Mark Johnson, “Delayed Hominization,” *Theological Studies* 56 (1995) 743-763, esp. 753; Oliver O’Donovan, “The Christian and the Unborn Child,” rev. ed., *Grove Booklets on Ethics No. 1* (Nottingham, England: Grove Books, 1980); and O. O’Donovan, “Again: Who Is a Person?” in J. Channer, ed. *Abortion and the Sanctity of Human Life* (Exeter, NH: Paternoster Press) 125-137, esp. 136.

personhood are explored below.) Even if fertilization remains the landmark, it should be noted that fertilization does not occur in a moment of time, despite many opinions to the contrary.⁶⁵ Instead, it is a complex process taking two or more hours,⁶⁶ with implications for the timing and character of ensoulment.

Summarizing, the traditional Christian view is that fertilization demarcates a new individual being, despite complications with twinning and zygote fusion. If twinning occurs, then at least in its case, if not in all cases, “determinate individuality, [*i.e.*,] a stable (ontological) human identity,”⁶⁷ is not acquired until past the time of twinning. Some will hold that the status of personhood must be delayed at least until then. However, despite these difficulties, doctrinal history suggests that orthodox Christians will continue to hold to ensoulment at conception, and probably will conclude that a monozygotic twin is ensouled at the time of twinning. Similar *post facto* doctrinal verdicts will be entertained for conjoined twins and the very rare cases of natural zygote fusion. If natural parthenogenesis of human beings (virginal single-sex conception) does in fact occur on extremely rare occasions, as alleged by some biologists, such cases could also be doctrinally “fixed” *post facto*.

Physical Cloning

New spiritual complications loom as a consequence of the recent success in cloning embryos of domestic animals. The first cloning of any animals involved short-lived frog embryos made from tadpole cells by nuclear transfer in 1952, followed by short-lived frogs cloned from older tadpoles in 1962. Mammalian embryo splitting and blastomere culturing (ultimately to lead to cloning in animal breeding) was achieved in the 1970s. Later, both sheep (1984) and cattle (1986) were cloned from embryonic cells by nuclear transfer. The procedures involved removing nuclei from 16-cell or 32-cell embryos and transferring each of the nuclei into a denucleated unfertilized oocyte. The resulting new embryos were transferred to surrogate mothers and successfully brought to term. The lambs and calves so produced were identical.⁶⁸ By 1994, nuclei from 120-cell embryos yielded cloned cattle.

The early success in cloning of animals required, as sources of nuclei, relatively undifferentiated embryonic cells. Differentiated cells did not appear to have totipotency. Cloning of mouse embryos was less successful than cloning of sheep and cattle embryos because mouse cells begin differentiating earlier in development, at the two-cell stage.⁶⁹

The news on February 23, 1997, about sheep cloning was significant because for the first time a higher mammal was cloned from an adult cell.⁷⁰ The technique involved using sheep udder cells starved into a quiescent

⁶⁵ The Opinion of the Court in *Davis v. Davis*, No. E-14496 (Tenn. Cir. Ct. 1989) included this statement: “[T]he Court finds and concludes that human life begins at the *moment* of conception...” (emphasis added). See “The Custody Dispute over Seven Human Embryos: The Testimony of Professor Jerome Lejeune, M.D., Ph.D.” (Annandale, VA: Center for Law & Religious Freedom, [no date]), 22. From components of the Opinion, it is clear that the Court further held that the fertilized egg constituted a living human being; *ibid.*, 16, 18-22.

⁶⁶ Robert Edwards, *Life Before Birth: Reflections on the Embryo Debate* (New York: Basic Books, 1989) 50-54; Fletcher, 143.

⁶⁷ O’Rahilly and Müller, 8.

⁶⁸ J. L. Marx, “Cloning Sheep and Cattle Embryos” (Research News), *Science* 239 (1988) 463-464; “Cloning Technique Bears Success: Transfer of Cell Nuclei Creates New Embryos,” *Virginian-Pilot*, 18 February 1988, A8; Michael Specter with Gina Kolata, “After Decades and Many Missteps, Cloning Success,” *The New York Times*, 3 March 1997, A1, 20, 21.

⁶⁹ Marx.

⁷⁰ See I. Wilmut, A. E. Schnieke, J. McWhir, A. J. Kind, and K. H. S. Campbell, “Viable Offspring Derived from Fetal and Adult Mammalian Cells,” *Nature* 385 (27 February 1997) 810-813; Sharon Begley, “Little Lamb, Who Made Thee?,” *Newsweek*, 10 March 1997, 52-59. There is a slight possibility that the cloned cell was an undifferentiated stem cell, not yet matured, as mammary glands are rich in such cells. Other concerns over the fundamental claim are addressed by Vittorio Sgaramella and Norton D. Zinder, letter, *Science* 279 (30 January

state in which all genes can be activated for embryonic growth. Apparently the problem of differentiation is overcome by this method; it appears that reprogramming factors for totipotency are available in the oocyte cytoplasm. In later months, additional developments included cloning a lamb from genetically altered fetal skin cells, a calf from cells replicating in a 30-day-old fetus,⁷¹ almost the equivalent of cloning from tissue culture, and calves from dividing fetal fibroblasts.⁷² Cell lifespans are being extended by nuclear transfer,⁷³ which will permit genetic modifications to be made and then expressed in clones.

These developments of course heighten society's unrelenting (and some would say perverse) interest in the possibility of human cloning.⁷⁴ Is human cloning possible? Based on the physical potential of human embryos, the answer is a not-very-hesitant yes.⁷⁵ Whether human embryonic cells differentiate too early for ultimate cloning success is not yet known, but there are currently no recognized barriers to the necessary manipulations. Already in 1993, cells from human embryos were separated and grown to the 32-cell size, sufficient for implantation.⁷⁶

Whether the new technique first used with adult sheep cells can be applied to human adult cells is uncertain, but no experts in the field are claiming it would fail in humans.

Cloning of the Spirit?

The spiritual question in cloning involves a different kind of uncertainty, whether the resulting clone will have a normal human spirit.⁷⁷ A pertinent fact is that ordinary twinning produces two human persons, each with a normal human spirit; on this basis, one could expect a normal human spirit in all cloned human beings.

The possibility of human cloning also raises again the question about the timing of ensoulment. If multiple copies are made, when does each get a spirit? It might be decided that the spirit is introduced when the source nucleus is inserted into the denucleated host oocyte. Then, of course, it would have to be characterized as death (and for many Christian adherents to the traditional view of ensoulment at conception, also characterized as murder) if an experimenter subsequently removed the nucleus. The latter manipulation is not so far-fetched: experiments are already underway in which a nucleus from the immature egg of an older woman is transferred to a denucleated egg of a younger woman so that the latter's cytoplasm can direct maturation (making such cytoplasm

1998) 635-637, with a response from Keith H. S. Campbell, Alan Colman and Ian Wilmut, letter, *Science* 279 (30 January 1998) 637-638.

⁷¹ "Calf Cloned from Bovine Cell Line," *Science* 277 (15 August 1997) 903.

⁷² Jose B. Cibelli *et al.*, "Cloned Transgenic Calves Produced from Nonquiescent Fetal Fibroblasts," *Science* 280 (22 May 1998) 1256-1258.

⁷³ *Ibid.*

⁷⁴ Modern interest has been strong from the earliest days of genetic engineering. See James D. Watson, "Moving Toward the Cloning of Man: Is This What We Want," *The Atlantic Monthly*, May 1971, 50-53; at this early date, Watson, 53, hoped for wide-reaching discussion of cloning and its potential impact, before the "possibility of...a free choice" over human cloning would be rendered moot by experiments. Science fiction interest arose much earlier; see A. E. Van Vogt, *The World of Null-A* (London: Dobson, 1969 (1st ed. 1948, *The World of A*)).

⁷⁵ In 1978, David M. Rorvik, a well-known non-fiction writer on human reproduction, published *In His Image: The Cloning of a Man* (Philadelphia: Lippincott, 1978), which purported to be a factual story of a cloning which had recently occurred. A more accurate term than cloning in such a case would be "biological carbon copy," because clone properly refers to a group.

⁷⁶ Rebecca Kolberg, "Human Embryo Cloning Reported," *Science* 262 (29 October 1993) 652-653. In October, 1993, at the George Washington Medical Center in Washington, DC, Robert J. Stillman and Jerry Hall cloned (by embryo splitting) 17 human embryos (that were flawed via duo-sperm fertilization).

⁷⁷ Robert Wright, "Can Souls Be Xeroxed?," *Time* 149 (10; 10 March 1997): 73.

the “Fountain of Youth”). In experiments such as these it is likely that some investigator is tinkering with already-fertilized ova. Various other manipulations are under study.⁷⁸

Human cloning would, if it were fully successful, argue rather persuasively against one alternative concerning spirit introduction. This alternative is that God creates or infuses one or more spirits at conception based on His foreknowledge of whether twinning or cloning will occur later. Actual human cloning would necessitate the view that God, knowing what human experimenters will in future do, creates or infuses to each embryo exactly the correct number of spirits to be eventually required. Based on the already reported animal cloning, the number could range up to 16 spirits. This alternative exhibits mere contrivance.

Further pursuit of these considerations would oscillate between academic frivolousness and heavy apprehension over man’s future before God. For the question of ensoulment, however, the implication of twinning and cloning taken together is clear: the claim that a unique singular (indivisible) person with spirit is present at conception is clearly headed toward insurmountable difficulty as reproductive technology advances. Many would say that the claim of personal uniqueness at conception is already falsified. This bears on the abortion question as discussed later.

Illegitimacy of Cloning

Thus far the cloning question has been explored here only for clarifying our understanding of human physical and spiritual nature and of ensoulment. The pressing public policy question remains, whether human cloning is morally legitimate and whether it should be prohibited by law. The answer for public policy emerges quickly for most Christians, who will consider the dignity of individual persons, the sanctity of human marriage, and the importance for society of preservation of the traditional family.⁷⁹ The fundamental principle is that marriage is created by God⁸⁰ for man’s happiness and for procreation.⁸¹ The Bible as a whole argues for procreation only within the marriage bond.⁸² It also advances strongly the unique intrinsic value of each human life before God. He has, by His choice, not human choice, invested each individual with free moral agency. Individuals therefore do not have authority to manipulate other human beings and duplicate them asexually, treating them as property.⁸³

These considerations rule out except in restricted circumstances various reproductive activities already widely practiced. The list is growing, but in general includes embryo transfer, artificial insemination by donor, the use of sperm and oocyte banks, and surrogate motherhood.⁸⁴ Further, one should oppose the use of drugs and other measures when they intrude on conjugal relations between husband and wife. Because conjugal relations are sacred, and involve “one flesh,” they should not suffer outside intrusions. Thus, third party involvement in the acts which directly cause conception violates the sanctity of marriage.⁸⁵ The few exceptions involve the husband

⁷⁸ Gina Kolata, “Scientists Face New Ethical Quandaries in Baby-Making,” *The New York Times, Science Times* (Section C), 19 August 1997, 1, 8.

⁷⁹ *Catechism of the Catholic Church* (New Hope, KY: Urbi et Orbi Communications, 1994) 531-534.

⁸⁰ Matthew 19:1-9; see Genesis 2:18-24.

⁸¹ Genesis 2:18, 1:28.

⁸² See *Catechism*, 560-576.

⁸³ R. Geoffrey Brown, “Clones, Chimeras, and the Image of God: Lessons from Barthian Bioethics,” in Kilner *et al.*, *Bioethics*, 244-245.

⁸⁴ For background, see Charles Rice, *50 Questions on the Natural Law* (San Francisco, CA: Ignatius Press, 1993) 301-310; Amy S. Davis, “Collaborative Reproductive Donors and the Law: In Search of a Legal Basis,” Master’s thesis, Regent University, Virginia Beach, VA, 1995.

⁸⁵ Hints at permissible use of fertility methods by a couple are presented in Congregation for the Doctrine of the Faith, “Instruction.” Detailed discussion on a variety of assisted reproduction technologies is found in DeMarco, 205-238. It must be noted that concern continues over possible negative impacts of medical reproductive technology. For example, intracytoplasmic sperm injection, a popular method of IVF, may cause impaired mental development. See M. Bonduelle, H. Joris, K. Hofmans, I. Liebaers and A. Van Steirteghem, “Mental

and wife participating together, without involvement by others, to enhance their procreative union so as to increase the likelihood of their receiving a child as a gift from God.

Cloning, however, is in essence a manipulation of human beings. Already since Dolly the trafficking in humans as commodities is rapidly becoming acceptable.⁸⁶ As one doctor put it, “[I]f any of my relatives got cancer, I would clone them” to obtain bone marrow.⁸⁷ However, Shafer finds it is a deliberate repudiation of the *imago Dei* in favor of *imago Homini*, a transfer of fidelity from *YHWH* to *AGCT*.⁸⁸ For Kass, it constitutes a multi-pronged assault on all dimensions of the traditional family,⁸⁹ obvious when opposition to it is disparaged as lending “credence to strikingly similar objections to surrogate motherhood or gay marriage and gay adoption.”⁹⁰ The repugnance expressed against it by Kass derives from its fundamental illegitimacy, sensed deeply and automatically by many people.⁹¹ Notice that its illegitimacy is not because a “twin” is produced, for twinning occurs naturally; it is illicit because of its asexual and manipulative character, which undermines the very appreciation of human dignity, sexuality and individuality before God; hence, it must be vigorously opposed. The first major step is therefore to permanently outlaw it. Bills against it have been introduced in Congress, in some state legislatures, and in Canada.⁹² Human cloning is already illegal in California and in Britain and Norway. In Europe, 19 nations have signed a treaty agreeing to enact cloning prohibitions. French President Chirac urged an international ban.⁹³ Even if declared illegal, it may be impossible to prevent altogether, given society’s pursuit of reproductive technology and sexual pleasure without moral restraints.⁹⁴ Strong opposition to prohibition of

Development of 201 ICSI Children at 2 Years of Age,” *Lancet* 351 (9115; 23 May 1998) 1553-1554; Jennifer Bowen, Francis L. Gibson, Garth I. Leslie and Douglas M. Saunders, “Medical Developmental Outcome at 1 Year for Children Conceived by Intracytoplasmic Sperm Injection,” *Lancet* 351 (9115; 23 May 1998), 1529-1534.

⁸⁶ Commodification of human beings is especially noxious in the trafficking of tissues from aborted fetuses.

⁸⁷ Gina Kolata, “Accepting Human Cloning,” (*The New York Times*) *The Virginian-Pilot*, 24 December 1997, A4.

⁸⁸ Ingrid Shafer (University of Science and Arts of Oklahoma), “The Moral Challenge of Human Cloning,” <http://mercur.usao.edu/www/faculty/shaferi/shafer1.html>, accessed 29 August 29 1997. *YHWH* is the transliterated Hebrew Tetragrammaton, four consonants standing for the name of God; *AGCT* is the set of English letters standing for the four nucleic acids comprising DNA’s genetic code and conveying its information content: adenine, guanine, cytosine, and thymine.

⁸⁹ Kass, “The Wisdom of Repugnance,” covers the main points. See also George Gilder, “The Bioengineering Womb,” *American Spectator*, May 1986, 22-23.

⁹⁰ Laurence H. Tribe, “Thoughts on Cloning,” *The New York Times*, 5 December 1977, A39.

⁹¹ Tauer, 434, reports that some *Report* “panel members shared [a] repugnance” to cloning. Paul Ramsey, nearly 30 years ago in *Fabricated Man: The Ethics of Genetic Control* (New Haven, CT: Yale Univ. Press, 1970) 86-87, said that cloning and donor artificial insemination “throw into bold relief *the nature of human parenthood* which both place under assault” (emphasis original). See p. 86-90.

⁹² In the 105th Congress, the following bills were active in 1997 and early 1998: H.R.923: -- “A Bill to Prohibit the Cloning of Humans,” sponsor: Rep Ehlers; H.R.922: -- “A Bill to Prohibit the Expenditure of Federal Funds to Conduct or Support Research on the Cloning of Humans,” sponsor: Rep Ehlers (as of 1 August 1997, reported to House from the Committee on Science with amendment, H. Rept. 105-239 (Part I)); and S.368: -- “A Bill to Prohibit the Use of Federal Funds for Human Cloning Research,” sponsor: Sen Bond and Sen Frist. The Bond-Frist bill bans application of cloning technology to humans; it was rejected in mid-February 1998. A Kennedy-Feinstein bill bans only the insertion of a cloned embryo into a woman’s uterus. This bill in effect finds the early embryo to be only a “potential” person. In state legislatures, bills to prohibit cloning have been introduced in AL, AZ, CA, FL, MI and NY. One example is “Battin’s Anti-Cloning Bill Passed Out of the State Assembly,” News Release, Jim Battin, Assemblyman, 80th District, Sacramento, CA, 2 June 1997. In Canada, Bill C-47, “Human Reproductive and Genetic Technologies Act,” has been introduced in Parliament; see *The Gene Letter* 1 (4, January 1997).

⁹³ “Reacting to Physicist, 19 Nations Sign Anti-Cloning Pact,” *Virginian-Pilot*, 13 January 1998, A6.

⁹⁴ Charles E. Rice, “Cloning: Right or Wrong?,” *Celebrate Life*, September-October 1997, 28-29. Rice holds that the prevailing contraceptive ethic, by divorcing the unitive and procreative components of sexual relations,

cloning has developed in the medical research community, aimed at preserving opportunities for scientific research. The *New England Journal of Medicine* and the American Medical Association have joined the rising support for human cloning research.⁹⁵ Its proponents see it as only an incremental step beyond already widely accepted reproductive techniques.

The reaction by secular humanists, to Christian and other faith-based opposition to both human cloning and other new reproductive technologies such as embryo transfer, has amounted to a sharp denunciation. The secular reaction springs from its rejection of Biblical authority and from its concomitant assertion of the superiority of secular ethics. The secularists defend their attack on several grounds. These include the disunity of religious communities, their dissonance on ethical positions, the submission of the faithful to what is claimed as a liberty-robbing religious authority, the origin of theistic religions in ancient and non-modern cultures, and a claim that religions historically presume against technological advances which have routinely brought significant social benefits.⁹⁶ The clash of the secularist position with the Christian one is another episode in America's war of religious ideologies concerning sexual behavior. The Christian community has not yet responded univocally to the secularist position.

Tissue Culture

Tissue culture poses similar problems for the concerns over procreation. In human tissue culture, human cells are treated so as to be capable of reproduction *in vitro* by ordinary cell division. The first notable work in human tissue culture occurred early in the twentieth century. The modern era began with culture of cancer cells in 1952.⁹⁷ Cancer cultures come from differentiated cells which have dedifferentiated irreversibly into malignancy. They proliferate continuously. More than half a dozen were already in research use a generation ago.⁹⁸ Cultures can also be developed from recently isolated normal tissues. Such isolates generally produce finite cell lines. By 2000 at least eight (differentiated) normal tissues had been cultured, including skeletal muscle, cardiac myoblasts, and pancreatic β -islet cells.⁹⁹ It is possible to coax recent isolates into laboratory immortality, but such lines usually develop abnormal genotypes (aneuploidy) — they either lose genetic material or they over-replicate it, even going so far as tetraploidy (double the normal diploid genome).¹⁰⁰

encourages pursuit of human reproduction outside of its proper boundaries and thus is permissive of cloning. Some people in the homosexual community are excited about cloning because to them it offers asexual reproduction of their own persons, and thus not only offspring *per se* but also propagation of the homosexual identity; for a review of the homosexual culture in this regard, see Christopher Rapp, "Gay Clones: 'Heterosexual Reproduction is Now Obsolete,'" *Heterodoxy* 5 (4&5; April/May 1997) 4-5.

⁹⁵ "Anti-Cloning Measure Draws New Opponents," *Washington Post*, 26 March 1998, A18.

⁹⁶ See various articles in R. Joseph Hoffmann and Gerald A. Larue, *Biblical v. Secular Ethics: The Conflict* (Buffalo, NY: Prometheus Books, 1988); "Declaration in Defense of Cloning and the Integrity of Scientific Research," *Free Inquiry* 17 (3; Summer 1997) 11(2); Ronald A. Lindsay, "Taboos Without a Clue," *Free Inquiry* 17 (3; Summer 1997) 15(3). The American Humanist Association called for dialogue aimed at "wise and humane public policy"; see "Preliminary Statement on Human Cloning," American Humanist Association, Amherst, NY, 18 April 1997, <http://humanist.net/news/cloning.html> accessed 11 June 1998.

⁹⁷ G. O. Gey, W. D. Coffman and M. T. Kubicek, "Tissue Culture Studies of the Proliferative Capacity of Cervical Carcinoma and Normal Epithelium," *Cancer Research* 12 (1952) 364-365.

⁹⁸ R. Ian Freshney, *Culture of Animal Cells*, 3rd ed. (New York: Wiley-Liss, 1994) 15 (Table 2.2).

⁹⁹ *Ibid.* A small possibility exists that such cultures are not of fully differentiated cells, but of immature pluripotent (tissue-specific) stem cells. If so, the cultures would likely be easier to coax toward the totipotency necessary for cloning to adulthood.

¹⁰⁰ Sara J. Morgan and David C. Darling, *Animal Cell Culture* (Oxford, England: Bios Science Publ., 1993) 64.

Tissue culture thus perpetuates a genome independently of the normal human body. A complete genome is (usually) present. If one argues that at conception a person is present because the complete genome is present, then a person must be present in a tissue culture, or even in a single human cell. But such a notion is surely fantastic. Either a naturally generated pluripotential fertilized cell, or multiple tissues with significant tissue organization, are required at a minimum.

Then what exactly pertains concerning the conceptus? A modification is forced upon the pro-life argument, along the lines that while a cell in tissue culture has no potential to develop into an adult body (or could it, on further manipulations?), a conceptus does have that potential, and is therefore a potential (at least) or an actual human person, and so it deserves protection. This argument turns on the question of which genetic switches inside a single cell are turned on, and which are turned off, a hardly satisfying basis for defining human personhood.

It must certainly be anticipated that experiments will proceed on human cells in tissue culture, to investigate whether they can be prodded to become embryos. Lambs have already been produced by nuclear transfer from embryonic cell lines in long-term culture¹⁰¹; recently bovine fetal cell cultures have been used.¹⁰² The primary animal cell types used for cloning from culture lines also include mammary, fetal muscle, and fetal skin cells.¹⁰³ Experiments toward human clones from tissue culture will likely first involve the transfer of a cultured-cell nucleus into a denucleated ovum from a young female, on the grounds that such an ovum will contain the appropriate cytoplasmic cofactors necessary for embryological development. If there is any success at all, the personhood question will jump to new levels of murkiness for those who believe human spirits exist, and fresh attack will mount on this belief by materialists.

The imminence of such experimentation is indicated by activity in the field of human tissue engineering, which is now producing spare body tissues, including skin, bone, cartilage and ligaments. Practitioners use an incubator containing a framework of biodegradable threads in order to shape the tissue as desired. Large masses of liver and heart tissue may be the next product.¹⁰⁴ Three-D printing is being woven into the mix of current manipulations. With animals, the genetic engineering and cloning of headless frogs already occurred a quarter-century ago, implying the possibility of headless human organisms produced as organ factories, raising unique ethical issues beyond those associated with cloning.¹⁰⁵

The personhood question for a cultured cell transformed to totipotency is not resolved in the negative by arguing from the artificiality of human intervention. If that were so, personhood for a clone by any other method would have to be rejected as well. The crucial point is that if a viable embryo is produced by any method, artificial or not, yielding an adult, the issue over whether a person is present will be settled. In the case of coaxing a cultured cell into an embryo, there is obviously no conception over which to argue the timing of ensoulment. Impartation of spirit will have to be attributed, rather arbitrarily, to some phase of the cell's biophysical manipulation or of the embryological development which follows. This case like twinning or zygote fusion tends to divorce ensoulment from conception.

Biblical and Non-Biblical Influences

¹⁰¹ K. H. S. Campbell, J. McWhir, W. A. Ritchie and I. Wilmut, "Sheep Cloned by Nuclear Transfer from a Cultured Cell Line," letter, *Nature* 380 (7 March 1996) 64.

¹⁰² Cibelli *et al.*

¹⁰³ Gary B. Anderson and George E. Seidel, "Cloning for Profit," *Science* 280 (29 May 1998) 1400-1401.

¹⁰⁴ "Scientists Use Cells to Grow Body Parts," *Times (London)*, as quoted in http://www.yahoo.com/headlines/971008/news/stories/bodyparts_1.html accessed 8 October 1997.

¹⁰⁵ "Scientists Grow Headless Frog; Human Clones Could Be Next," *Virginian-Pilot*, 19 October 1997, A5; "Cloning of Headless Tadpoles Stirs Questions," *Virginian-Pilot*, 22 October 1997, A17. See also Rick Weiss, "Patent Sought on Making of Part-Human Creatures," *Washington Post*, 2 April 1988, A12.

As we engage in additional social discourse over cloning and tissue culture, and ponder other policy questions involving human procreation, let us note that perplexity over spiritual details concerning human procreation is influenced in part by Greek dualism regarding human nature. Plato and many other Greeks believed in a distinctly separable body and soul.¹⁰⁶ This dualism has been impressed on word usage in Western culture, and obviously has influenced the discussion above.

The Greek view is in contrast to many Hebrew Old Testament indications that spirit, soul, and body are aspects (or components) of a unitary human nature. The commentator D. R. G. Owen has written that “none of these [Biblical] terms refers to a part of man; they all refer to the whole.”¹⁰⁷ However, some Old Testament passages point to separability of spirit and body (e.g., Ecclesiastes 3:18-21, Job 19:26-27, and 1 Samuel 28:3-20). The New Testament reveals further that man may be “in the body,” or “away from the body and at home with the Lord” (2 Corinthians 5:6-9), and that we live in an earthly tent (2 Corinthians 5:1, 4; 2 Peter 1:13), implying spirit/body separability in extreme circumstances such as at death.¹⁰⁸

The Biblical view of man’s nature, in sum, is that man is known in the mind of God before conception,¹⁰⁹ comes into being as a result of conjugal union,¹¹⁰ and is made in the image of God. Man’s body and soul/spirit are tightly linked, and are normally unitary, although divisible in extreme conditions. Consequently, Biblical judgments on different types of human procreation will not founder on the extreme dualist assertion that body and spirit are loosely tied and easily separated, with no moral impact if the body is attacked with abortifacients or common abortion. For the Christian, the tight Biblical linkage between body and soul/spirit necessitates a special care of the body from its earliest existence.

It is also important to recognize that the now available scientific detail pushes well beyond the Biblical terminology. Biblical language did not originally encompass the questions now being raised. The Biblical lack of detail has consequences. One is that resolution of issues necessitates arguments that are Biblically-informed but which go beyond explicit Biblical prescriptions. Second, as has already been obvious above, recent physical discoveries are markedly influencing our conclusions about spiritual things. This is a tendency which spiritually sensitive Biblical Christians have tried to avoid if possible — it verges on physicalism or epiphenomenalism. However, it is not possible to avoid completely the influence of physical evidence on our spiritual understanding¹¹¹; the fact is, we live in a unitary world with both physical and spiritual features.

Research and Natural Birth Control Methods

Scientific research of the past two decades has additional significance for moral and religious questions involving procreation. First, two findings with particular relevance to birth control need to be examined. This will lead us to within a step or two of closure on norms for procreation policy.

It has long been known that nursing mothers conceive less frequently than non-nursing mothers, for up to 9 months *post partum*.¹¹² It appears this natural tendency can be enhanced — nursing mothers appear to conceive

¹⁰⁶ R. M. Brown, “Soul (Body),” 354; Gordon H. Clark, *Thales to Dewey: A History of Philosophy* (Boston: Houghton Mifflin, 1957) 70-85; see Plato’s *Phaedo*, *op. cit.* Aristotle and Epicurus did not believe in separable body and soul; however, Plotinus offered a refutation of materialism and a correction to Aristotle’s view; see Plotinus, “Immortality of the Soul,” disc. in Clark, 149, 154, 171-175.

¹⁰⁷ D. R. G. Owen, *Body and Spirit*, quoted in R. M. Brown, “Soul (Body),” in Halverson and Cohen, 356.

¹⁰⁸ See also 1 Samuel 28:3-16; Luke 23:43; and Revelation 6:9-11.

¹⁰⁹ See Psalm 139:15-16.

¹¹⁰ Except for Adam and Eve, and Jesus Christ; see Luke 1:26-38.

¹¹¹ See William H. Austin, *The Relevance of Natural Science to Theology* (London: Macmillan, 1976).

¹¹² I. C. Udesky, “Ovulation in Lactating Women,” *American Journal of Obstetrics and Gynecology* 59 (1950) 843-851, observed almost complete suppression of ovulation during lactation amenorrhea. R. Gioiosa,

even less frequently the more frequently they nurse. Studies have contrasted nursing women in America with those among the !Kung San, a Bushman population of the Kalahari desert of South Africa. The !Kung women nurse for just a minute perhaps every fifteen minutes at times during both day and night.¹¹³ The consequence is a relatively high blood level of prolactin, which in sufficient concentration acts to suppress ovulation. In contrast, American women nurse twenty or more minutes at a time, at intervals of several hours. The American consequence is a lower average blood level of prolactin and a higher post-partum conception rate. The contrast suggests that an alteration of nursing habits in America would enhance a natural, endogenous contraceptive method — nursing women could attempt to nurse frequently and regularly around the clock.

The second item of interest is that !Kung women experience luteal phase defects and a suppression of ovulation during winter, when the strenuous food search involves high activity and low body weight, even malnutrition. The winter's anovulation and amenorrhea lead to stretched-out fertility cycles. It appears that hunger, exercise and stressful work activity depress the level of progesterone,¹¹⁴ the hormone that is crucial in preparing the uterus for successful implantation of the blastocyst. Depression of the progesterone level will reduce the implantation frequency, occasioning the discard of the blastocyst. Obviously a birth control method based entirely on the body's natural systems (other than the rhythm method) is available: women may stress their bodies physically, as in extreme privation or Olympic training.

These two birth control methods, entirely natural, will hardly receive an enthusiastic reception anywhere. Put rather blandly, with tongue in cheek, they are: (1) malnutrition and nursing around the clock (to suppress ovulation), and (2) hard, stressful, physical labor accompanied by hunger (to suppress implantation). Neither of these seems to be very attractive except to stay-at-home mothers with few children, and to prisoners in Siberia. Further, the physical stress method, *i.e.*, deliberately behaving so as to impair implantation, is hardly much different from use of an abortifacient, because in both cases the action is intended to, and causes, the demise of the blastocyst.

Implantation Failure and Abortion

However, natural implantation failure reflects on the earlier discussion about ensoulment, and has significance for public policy, particularly abortion.

It is accepted by the medical profession that implantation failure (pre-implantation loss) in women who have conceived is normally high, at least 25% and perhaps 50%.¹¹⁵ In extreme circumstances such as rape, victims less

“Incidence of Pregnancy During Lactation in 500 Cases,” *American Journal of Obstetrics and Gynecology* 70 (1955) 162-174, observed 95% absence of pregnancy. See also Frank A. Oski *et al.*, eds., *Principles and Practice of Pediatrics*, 2nd ed. (Philadelphia, PA: J. B. Lippincott, 1994) 277-279.

¹¹³ S. Ackerman, “American Scientist Interviews,” *American Scientist* 75 (1987) 622-627; Samuel S. C. Yen and Robert B. Jaffe, *Reproductive Endocrinology* (Philadelphia, PA: W. B. Saunders, 1991) 670-671; L. A. Van der Walt, E. N. Wilonsen, and T. Jenkins, “Unusual Sex Hormone Patterns among Desert-Dwelling Hunter-Gatherers,” *J. Clinical Endocrinology* 46 (1978) 658-663; R. B. Lee, *!Kung San: Men, Women and Work in a Foraging Society* (New York: Cambridge Univ. Press, 1978).

¹¹⁴ Ackerman.

¹¹⁵ *Ibid.*; C. J. Roberts and C. R. Lowe, “Where Have All the Conceptions Gone?,” *Lancet* 1 (1 March 1975) 498-499, estimated a total (pre- and post-implantation) loss rate of 78%. J. F. Miller *et al.*, “Fetal Loss After Implantation,” *Lancet* 2 (13 September 1980) 554-556, measured a post-implantation loss rate of 43%. J. G. Grudzinskas and A. M. Nysenbaum, “Failure of Human Pregnancy After Implantation,” *Annals of the New York Academy of Science* 442 (1985) 38-44, listed 10 studies in Table 5 on 41 involving a subclinical pregnancy (measured via human chorionic gonadotropin (hCG) test or ultrasound) in which the average loss rate was 37%, and the estimated chance of a normal outcome in Table 6 on 42 was 25-30%, *i.e.*, a total failure rate of 70-75%.

frequently conceive or produce a viable fetus, probably due to implantation failure. It is also well-known that stress can bring on miscarriage. Even if the 50% figure is too high, perhaps by a factor of two, the implications are very interesting. A 25% implantation failure indicates that in God's economy a zygote does not result in a fetus one-fourth (or more) of the time.¹¹⁶

Such implantation failure renders problematical the view that at conception a new individual comes into being, deserving protection, with all the dignity and status in God's sight of post-natal human life. God must be populating heaven with as many as 25% of its inhabitants being persons who survived less than two weeks of pre-natal life. High-rate implantation failure also provides a rejoinder to the right-to-life argument against using abortifacient drugs when it is premised on wrongful destruction of innocent human beings. Pro-abortion advocates can say, if God is already permitting such high rates of embryo loss, can such embryos really be persons,¹¹⁷ and what is wrong with facilitating such loss with abortifacients? Pro-abortion advocates use such an argument to justify the use of abortifacient drugs and parry the impact of pro-life opposition.¹¹⁸

Personhood

Personhood thus is the nub of many concerns, which leads Christians back to the question of ensoulment, where we began. The above exploration of questions concerning the spirit and the physical body has resulted in blurring the usual view of ensoulment at conception. In particular, if conception includes impartation of spirit, the spirit must be seen as a pleni-potential spirit, to allow for twinning and cloning (and other strange outcomes), or else other spirits must be imparted later, at the time when twinning or cloning occurs. For tissue culture, we might suppose that certainly God knows that impartation of a human spirit is not appropriate until the cultured cell is manipulated for embryological development, and therefore He would not create and impart the soul until an appropriate time. To be more specific or to be certain about ensoulment in all these circumstances would seem to be impossible at present. Cloning policy may turn out to be the most easily resolved issue, compared to determining ensoulment and its implications for embryo research, abortion, assisted reproduction, and implantation issues.

Even those who reject the idea of a soul/spirit have explored deeply the question of personhood. The question is whether the conceptus or blastocyst is a full human person. The answer has important ramifications for public policy on abortion, embryo research, *in vitro* fertilization, and cloning. Although the U.S. Supreme Court in *Roe v. Wade* responded that "We need not resolve the difficult question of when life begins,"¹¹⁹ the SCOTUS decision both in fact and in impact was to declare the conceptus a non-person. Opposition to *Roe* notwithstanding, the main impact of considering twinning, zygote fusion, cloning, and tissue culture and tissue engineering is that the concept of personhood has been partially loosed from the "moment" of conception. The traditional pro-life argument linking the conceptus with human personhood is therefore, because of science, in trouble.

The secular views on personhood run the gamut. Categorically there are two senses of personhood, the moral or normative sense, and the descriptive or self-conscious sense. Embryos obviously do not display the latter sense, but they have the potential to become conscious (the deontological approach) or to produce (the consequentialist approach). The deontological potentiality argument further divides into stages of sentience and

¹¹⁶ It would be extreme to argue as alternatives that all implantation failure is caused either by personal sin or exogenously by stress in a fallen world.

¹¹⁷ R. F. R. Gardner, *Abortion: The Personal Dilemma* (London: Paternoster Press, 1972) 124. He termed the view that such lost embryos are persons a "trivialization." Note, however, that embryo loss in no way compels the view that the embryo is not a person.

¹¹⁸ Such an argument is an application of consequentialist and utilitarian ethics, as contrasted with deontological arguments from Scripture and nature. A well-known advocate of consequentialist ethics concerning human procreation is Joseph Fletcher, *op. cit.*, known primarily as an advocate of "situation ethics."

¹¹⁹ 410 U.S. 113 (1973) at 159.

viability.¹²⁰ Either sense of personhood can be critiqued philosophically as a form of reductionism.¹²¹ Of a similar nature is the argument that personhood appears when the embryo experiences stabilization to an individual (a phase termed restriction). Some authors use the phrase “delayed hominization” instead of individuation.¹²²

That the conceptus is only a “potential” human person has been prominent in discussions concerning the morality of abortion¹²³ and *in vitro* fertilization (IVF) activities. The IVF-conceptus is seen by some as having a contingent ontological status, strongly dependent on what the human manipulators do with it, because its potential to become an adult is not determined inherently but requires successful implantation.¹²⁴ Others respond that the conceptus or zygote is certainly human, and must be at least a separate human organism and not merely an organ of the mother, because “Its development is explained by reference to its own needs; and its emerging parts are assigned functions within *it* rather than within its parent.”¹²⁵ As to whether the organism is a person, believers in “stage theory” say that the human organism becomes a human being “only when [it has] reached a certain developmental completeness.” The “genome is not...activated until 4-8 cells are present, at about 2-3 days,”¹²⁶ when cellular differentiation begins, suggesting to some observers a non-uniqueness of function for a time after fertilization has been completed, and hence a lack of functional individuality. Similarly, the possibilities of twinning and zygote fusion lead those not concerned about the spirit to conclude that “in early stages the embryo is not yet stabilized as an individual but is simply a collection of cells.”¹²⁷ Until restriction, many believe a person is not present. This view does not, however, moot the genetic individuality already present.

Further, it is of interest that not all cells which subsequently appear will ultimately contribute directly to the fetus — after genome activation, there occurs a segregation of embryonic from extra-embryonic cells which go on to produce the placenta. Finally, even later, the development of the nervous system is initiated with the appearance of the primitive streak¹²⁸ and bilateral symmetry, followed by the cerebral cortex with synapses, all of which must occur to permit the development of rational powers. Many people argue that only then, with some level of higher brain activity, is there a person present.¹²⁹ A few go to the extreme, holding to conferral of

¹²⁰ Carson Strong, “The Moral Status of Preembryos, Embryos, Fetuses, and Infants,” *Journal of Medicine and Philosophy* 22 (5; October 1997) 457-478.

¹²¹ See John F. Crosby, “The Personhood of the Human Embryo,” *Journal of Medicine and Philosophy* 18 (1993) 399-417.

¹²² See M. Johnson.

¹²³ See note 50.

¹²⁴ Singer and Dawson. Their argument fails because its logical extension to post-natal babies, prisoners, slaves, the comatose, and others leads *reductio ad absurdum* to a gross denial of the right to life.

¹²⁵ Warren Quin, “Abortion: Identity and Loss,” *Philosophy and Public Affairs* 13 (1; Winter, 1984) 27. See also Richard Warner, “Abortion: The Ontological and Moral Status of the Unborn,” *Social Theory and Practice* 3 (1974) 201-222. Thomas Shannon, “Fetal Status: Sources and Implications,” *Journal of Medicine and Philosophy* 22 (5; October 1997) 415-422, recognizes that the preimplantation embryo is “a living entity” with the human genome and a “development program” but still holds that it “cannot be called a person,” 420-421.

¹²⁶ Quin.

¹²⁷ “Prepared Statement of Professor Clifford Grobstein,” “Hearings,” vol. I, 95. See also Carol A. Tauer, “Embryo Research and Public Policy: A Philosopher’s Appraisal,” *Journal of Medicine and Philosophy* 22 (5; October 1997) 423-439, esp. 429f, and *Report of the Human Embryo Research Panel* (Bethesda, MD: National Institutes of Health, 1994).

¹²⁸ Tauer, 429, saw the “primitive streak as a marker event.”

¹²⁹ Dr. Lewis Thomas, Chancellor, Memorial Sloan-Kettering Cancer Center, said “[S]tart-up of spontaneous integrated electrical activity in the brain...might be interpreted as the beginning of human life, just as we take the cessation of such activity [brain death] to indicate the end of human life”; “Hearings,” vol. I, 74. This borders on the adoption of a functional definition of personhood. It is not fully functionalist, because it focuses on physical attributes not behaviors, the same as creationism which focuses on a totipotent cell with a full genome. Montgomery, 91-94, rightly points to the flaws of a functionalist perspective on theological grounds: “Man is not man because of what he does or accomplishes. He is man because God made him”; 93.

personhood at birth,¹³⁰ or even later with language development. Holding to pluralistic criteria for personhood can avoid simple end-point decisions (either conception or birth), but yields shifting conclusions depending on the observer, typically, that the preimplantation embryo “does not have the same moral status as an infant or child.”¹³¹ Others hold to “process theory,” a gradualist perspective in which personhood status is achieved or lost according to observable processes exhibited at the time in question.¹³² They believe that while some moral status does apply to the fetus, it is not deserving of the respect normally accorded a human being.¹³³

Deciding when personhood is present according to a potentiality argument is difficult and varies with the observer, threatening any deontological character of personhood. Pluralistic criteria worsen this problem. Therefore, is the embryo a person solely from the moral sense? The response focusing on personhood’s moral or normative sense is attractive for its simplicity and avoidance of most physical criteria, but as discussed at the outset depends ultimately on a physical presence (usually the conceptus) for the application of the moral criterion. That criterion itself can be explicated in various ways, leading perhaps to different outcomes.

One retort to both moral and descriptive senses is that personhood must be understood in the entire human context, that we must perceive as persons all those beings who have begun the developmental journey of life, and who will come to have the “human countenance,” and respond with commitment and personal engagement.¹³⁴ This leads to valuing as persons every stage from conception onward.

Abortion

Thus several problematic issues are linked — uncertainty over ensoulment timing, uncertainty over personhood, and the high rate of implantation failure, which interrupts the continuum of human life. These will at least impair or force the revision of the quite common pro-life argument against the use of abortifacients in the first ten or twenty days after conception.¹³⁵ The argument is that from conception onward an innocent person is present, and therefore the use of abortifacients such as RU 486¹³⁶ to destroy an embryo at this (or any) stage is murder.¹³⁷ While opposition to abortion in general is well-grounded in the Biblical view of human beings, the legitimacy of very early abortion including abortifacient use will depend on whether personhood does apply to the earliest stages of human life.

If personhood cannot be unambiguously and tightly tied to physical conception, then opposition to early use of abortifacients must be grounded, at least in some sense or to some degree, on some other principle than the wrongful destruction of an innocent human person. Only by insisting that the human person clearly begins at

¹³⁰ Fletcher, 139, joining what he called the “sensible opinion” of Plato. Fletcher does not affirm an independent soul, but maintains that “[h]umans without some minimum of intelligence or mental capacity are not persons” (ibid., 137, also 171), which contradicts his view only 2 pages later that birth initiates personhood.

¹³¹ *Report*, quoted in Tauer, 427.

¹³² Quin, 30.

¹³³ Ibid., 51.

¹³⁴ Werpehowski, 489-490.

¹³⁵ Twinning’s impact on the ethics of abortifacients was mentioned in “Proper Study of Mankind,” *The Economist*, 14 July 1984, 11-12.

¹³⁶ J. Cosco, “Drug to End Unwanted Pregnancies Stirs Issues,” *Virginian-Pilot*, 25 March 1988, D1.

¹³⁷ Steven Pinker, “Why They Kill Their Newborns,” *The New York Times Magazine*, 2 November 1997, 54, declares that “Anti-abortionists draw the line at conception, but that implies we should shed tears every time an invisible conceptus fails to implant in the uterus — and, to carry the argument to its logical conclusion, that we should prosecute for murder anyone who uses an IUD.”

conception, which is not sustained by all evidence, can the pro-life advocate still maintain that abortifacient use constitutes murder.

The Christian response is two-fold. One is that personhood and ensoulment are from God, not conferred by man upon himself. The other is the authority of man versus that of God. The Bible clearly teaches that it is not in man's authority to deliberately destroy innocent human beings, whether born or in the womb.¹³⁸ Man may only take human life legitimately in self-defense (including defensive war) or for capital crimes (Genesis 9:6); only civil government has the authority to be God's agent in execution (Romans 13:1-7). No matter that the question of personhood and ensoulment may be blurry, a human life is a continuum from conception onward. On these bases we conclude that the Bible clearly offers no warrant that the human organism in the womb (even if it is not a human person, but only human life) may be deliberately destroyed. Further, we may turn an earlier argument around and say that, lacking full clarity that personhood is definitely not present before implantation, no person may legitimately use an abortifacient to prevent implantation.¹³⁹ One can always say that, because of doubt on these embryo-spirit matters, there remains at least the possibility that early abortifacient use causes the death of a human person, and consequently such use should still be opposed.¹⁴⁰

The question of personhood at conception, however, does not invalidate the broader claim made by the pro-life community, that a unique human life, *i.e.*, a human organism (in contrast to a human person, if such a distinction is valid) is destroyed in embryo research, embryo transfer wastage, cloning experiments, and early abortion. So far as can be determined physically and theologically, a new human life remains a continuum from conception onward.¹⁴¹ "One need not attribute personhood to such early life to claim that it demands respect and attention."¹⁴² By itself, "human life has an intrinsic, innate value; human life is sacred just in itself."¹⁴³ Multiplication either by twinning after conception, or by (the potential of) cloning, only confirms that the fertilized egg has all the needed physical potential to develop on its own into the fully mature adult stage. The fertilized egg contains its own individualized blueprint for development.

On this background, Christians opposed to abortion should claim, therefore, not necessarily singular (indivisible) personhood at conception, but the continuum of each new human life from conception onward. It may be a long time (or never) before we learn enough about the question of ensoulment to help resolve the issues further. Leaving such mysteries to God may well be the only satisfactory and appropriate Christian viewpoint.

Implantation Failure and Childbearing

The fact that throughout a woman's lifetime many fertilized ova never implant has additional consequences. The frequency of implantation failure, and its normal invisibility in natural circumstances, might make some people hesitant to describe it using terminology which invokes the notion of ordinary human death. For some, implantation failure might be included under the category of miscarriage. Traditionally, miscarriage is a time of

¹³⁸ See Exodus 21:22.

¹³⁹ McCormick so argued, 1149.

¹⁴⁰ The Congregation, 1974, 389, stated that "even if a doubt existed whether the fruit of conception is already a human person, it is objectively a grave sin to dare to risk murder," quoted in Werpehowski, 480-481.

¹⁴¹ Pontifical Academy: "From a biological standpoint, the formation and the development of the human embryo appears as a continuous, coordinated and gradual process from the time of fertilization, at which time a new human organism is constituted, endowed with the intrinsic capacity to develop by himself into a human adult." Human life in general, as contrasted with an individual human life, is continuous from generation to generation, in that both ovum and sperm are living before fertilization.

¹⁴² McCormick, 1148.

¹⁴³ Ronald Dworkin, *Life's Dominion: An Argument About Abortion, Euthanasia, and Individual Freedom* (New York: Knopf, 1993), quoted in Patricia A. King, "Embryo Research: The Challenge for Public Policy," *Journal of Medicine and Philosophy* 22 (5; October 1997) 448.

sorrow and mourning over loss of life. Baptism may routinely be performed.¹⁴⁴ However, only when miscarriage occurs well into pregnancy is there ever an ordinary funeral.

In the Bible, the subject of miscarriage is discussed in many places. Miscarriage is discussed in Ecclesiastes 6:3-5 where it is described as an untimely birth; in Exodus 21:22 where the penalty for causing a miscarriage during injury is prescribed¹⁴⁵; and in Exodus 23:26 where God promises to prevent miscarriage in the promised land. It is also discussed in Hosea 9:14; Malachi 3:11; Genesis 31:38; Psalms 58:8; and Job 3:16.

The thrust of all the passages taken together is this: The Bible regards miscarriage as a loss of fruit and regards the fruit of the womb as a blessing. Therefore, no matter what may be God's wisdom in permitting a high percentage of implantation failure, we may hold that God's intention overall is to bless woman with the fruit of the womb. Also, marriage is sacred (accorded high and distinctive honor by God as revealed in His word), and because husband and wife are one flesh,¹⁴⁶ conjugal relations are sacred.

Birth Control Perspective

Any act deliberately destroying innocent human life must be opposed.¹⁴⁷ However, regulating conception is a different matter. God did command man and wife to be fruitful and multiply,¹⁴⁸ but He did not order man and wife to elevate that command above all other duties of human life — duties of dominion, stewardship, loving God, and loving one's neighbor. There is room in the Scripture under the stewardship mandate (Genesis 2:15; Ephesians 5:23-33) for husband and wife to regulate their childbearing. Stewardship and the natural body function permit regulation of childbearing using a variety of natural means.¹⁴⁹ Conjugal relations and childbearing remain within the authority of the husband and wife. These are inalienable rights not to be trespassed by civil government.

For a married couple to completely frustrate childbearing, given the obvious procreative element of conjugal relations, is normally wrong unless medical issues intrude. Also, continual chemical and physical contraception may be morally questionable when it unduly interferes with the normal function of healthy bodies, deliberately separating conjugal acts from their obviously intended procreative function during fertile periods, thus denying the couple the long-term fulfillment of bodily potential and family life in marriage. Also, the evidence from nature (such an appeal is used in 1 Corinthians 11:14) reveals that there may be negative side-effects of contraceptive methods, on physiological,¹⁵⁰ psychological and spiritual levels.

¹⁴⁴ Miscarriage and loss owing to ectopic pregnancy elicit similar responses. For personal testimonies, see *Celebrate Life*, March-April 1997, 9, 20, 31, and 39.

¹⁴⁵ See earlier discussion and note.

¹⁴⁶ Genesis 2:23; Matthew 19:4-6.

¹⁴⁷ The complication encountered in separating severely malformed conjoined twins must be considered separately.

¹⁴⁸ Genesis 1:28; 9:1, 7.

¹⁴⁹ *Catechism*, 569-570.

¹⁵⁰ Lynn Rosenberg, Julie R. Palmer, Marti I. Sands, David Grimes, Ulf Bergman, Janet Daling, and Angela Mills, "Modern Oral Contraceptives and Cardiovascular Disease," *American Journal of Obstetrics and Gynecology* 177 (3; September 1997) 707-715, found the risk of cardiovascular disease attributable to use of combined second- and third-generation oral contraceptives is low and smaller than that for first-generation formulations, but not zero. See also I. F. Godsland, D. Crook, M. Devenport and V. Wynn, "Relationships Between Blood Pressure, Oral Contraceptive Use and Metabolic Risk Markers for Cardiovascular Disease," *Contraception* 52 (3; September 1995) 143-149; L. A. Brinton, M. D. Gammon, K. E. Malone, J. B. Schoenberg, J. R. Daling, and R. J. Coates, "Modification of Oral Contraceptive Relationships on Breast Cancer Risk by Selected Factors Among Younger Women," *Contraception* 55 (4; April 1997) 197-203; and B. R. Carr and H. Ory, "Estrogen and Progestin Components of Oral Contraceptives: Relationship to Vascular Disease," *Contraception* 55 (5; May 1997) 267-272.

Fertility and Peace

Knowing about implantation failure and the other matters above, we must express an additional caution. One thing society must not do is impose on women any fear at causing implantation failure.¹⁵¹ This would put guilt on the fertile woman in her everyday life. How can this be avoided now that we have detailed information about procreation and those environmental factors which affect it?

One simple answer is that God has not provided the woman any inherent way to reliably detect conception or implantation (other than by uncommon spiritual revelation). Therefore, she is not accountable specifically for embryo protection at the very early stages.

One can further draw a lesson from Scripture for this situation. We may focus on Mary, the mother of Jesus. The angel told Mary of her role in God's plan of salvation.¹⁵² Even though Mary faced pregnancy while unmarried (although committed to Joseph), she was in perfect repose in her obedience. Her peace helped insure a pregnancy lasting to term.

In all seasons, but especially at Christmas, a time of contemplation about Mary and Jesus, we may let nature and the Word teach us. Our duty is to be obedient to God's Word in Scripture and to His quiet voice. If we act according to His direction, then there will be no anxiety, whether we are hard at work or at rest, whether hungry or satisfied with food, whether married or single. More obedience to Him in all these circumstances would more perfectly regulate childbearing to the level that is appropriate for each family.

Summary

The imminence of human cloning and persistent conflict over abortion challenges the Christian community to revisit procreation policy. From a Biblical perspective, human dignity (from the *imago Dei*) and the sacredness of marriage lead to a consistent position on numerous inter-related issues. First, cloning reduces the human being to a commodity and must be resisted. On similar grounds, various other reproductive technologies are illicit, except where the sanctity of marital sexual relations in both procreative and unitive aspects is preserved. In this context, regulation of fertility is a matter of marital stewardship. All procreation issues are intensified by the implications of cloning, which interjects the biophysics of early human life into procreation debates in sharply new dimensions. In particular, cloning techniques, along with details of natural twinning, zygote fusion, implantation failure, and possible manipulations involving tissue culture, raise new problems concerning ensoulment, complicating the traditional formula that personhood begins at conception. This outcome imposes on abortion opponents a revised understanding, that abortifacient use, while it may destroy a human organism on the continuum of life, is not indisputably the destruction of a human person. Although preventing implantation may be morally wrong, frequent natural implantation failure is the present human condition and confers no culpability. Human cloning operations and similar manipulations such as denucleation of fertilized ova are illicit, involving non-therapeutic tampering, most often mortal, of individual human life.

¹⁵¹ Legally restricting activity to prevent this and other fetal harms was feared by abortion proponents testifying against S.158 in 1981; see, e.g., "Prepared Statement of Sarah Weddington," "Hearings," vol. I, 957.

¹⁵² Luke 1:26-38.