

The Woman and the Physician Facing Abortion: The Role of Correct Science in the Formation of Conscience and the Moral Decision Making Process

by

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I. Introduction

One of the most urgent, yet least discussed, dilemmas concerning the woman, the physician, and a host of others facing abortion today is access to the correct basic scientific information regarding the human embryo – scientific information which demonstrates empirically that normally every human being begins at fertilization as a single-cell embryo, the zygote.[1] Without this correct scientific information we are *all* precluded from forming our consciences correctly[2] or making morally correct decisions[3] about abortion, human embryo research, human embryonic stem cell research, cloning, formation of interspecies chimeras, germ-line DNA recombinant gene research and therapy, and other related current medical and scientific issues.[4] The use of the correct science is indeed

the *starting point* for thinking about all of this, short of Divine Revelation.[5]

II. Science and Philosophical Anthropology

One philosopher's favorite dictum would seem quite appropriate here: "A small error in the beginning leads to a multitude of errors at the end" (paraphrased).[6] Nowhere is this more fundamental than here. Any error in the science will have a rippling effect on the philosophical anthropology[7], ethics[8], sociology, politics, law, and theology – degrading our knowledge and understanding of the real dignity and status of the human embryo. To complicate the matter further, also facing us is the fact that the human embryo is per se a multi-faceted creature, and thus must be studied from the perspective of several different academic disciplines simultaneously.[9] Even one's choice of philosophical schools to use (e.g., rationalist, empiricist, idealist, realist, existentialist, etc.) alone can be problematic, as each defines "being" differently (and therefore "human being" and "material being" differently)[10], and uses different starting points and criteria of truth – hence arriving at different conclusions about reality. This is not, however, to be taken as an excuse for claiming that we can never know "reality", that all philosophies are relative, or simply "different ways of looking at the *same* reality". Rather, it would be more to the point to say that some philosophies match reality and some don't; some philosophies are actually looking at quite *different* realities or cosmologies than others; and some philosophers are right and some philosophers are wrong – not a particularly "politically correct" statement, but true nonetheless.

A *realist* philosopher's starting point for doing philosophy at all is *a posteriori* (outside the mind), i.e., in our experiences of material things (or natural philosophy)[11], rather than starting with purely subjective ideas in the mind. Thus all concepts are originally derived *inductively*, and must *correspond* with or match the material *things* outside our minds which caused those concepts in order to be judged as true.

This is so as well for St. Thomas' philosophy (on whose holistic philosophical anthropology, among others, many of the Church's teachings and documents are philosophically based)[12], including his philosophical anthropology. For him a "human person" is defined as one single *whole* multi-faceted composite substance of three different principles or causes: immaterial form (the rational soul, *which always contains virtually the sensitive and vegetative powers*), "undesignated matter" (the human body), and *esse* (the act of existing of this one human substance).[13] The name

of “*person*”, St. Thomas states, does not refer to the rational soul alone, nor to the whole soul alone, but to the entire *subsistens* – that is, the soul (form), body (matter), and act of existing (*esse*) all together as one whole *existing* human substance.[14] Thus the whole existing human substance is one person for St. Thomas – no splits, either within the soul itself, or between the whole soul and the body. Further, every human person is simultaneously a human being, and vice versa, since it is through the whole rational soul that a human body is specifically human, and animated (i.e., alive, existing).

But because of its multi-faceted composition, in studying each one of these several facets of a human person it is necessary and essential to use the content of different academic “sciences” and therefore different epistemologies or methods, in the process. Thus the question as to when a human *person* begins is a *philosophical* (or using a different discipline, a theological) question – and a realist *philosopher* would begin by deriving his or her philosophical concept of “person” *inductively* from the correct natural philosophy, which in turn is derived from the correct basic sciences. The question as to when the physical material dimension of a human *being* begins is a strictly *scientific* question, and it is the basic science of human embryology which properly studies this question because it alone has the proper subject matter and epistemology to do so.

Today, however, the very content or *subject matter* of the basic sciences has been corrupted[15], in turn leading to the use of the wrong epistemologies or methods, in turn leading to the wrong “scientific” conclusions about whether or not the human embryo or fetus are in fact human beings, and when these human beings begin their lives as individual persons.

III. Science: The Formation of Conscience, and the Moral Decision Making Process.

To know that the human embryo *is indeed a personal human being*[16] is central to forming our consciences, and therefore to knowing what actions are right or wrong in a specific situation. While conscience is the subjective norm in philosophical natural law theory, it must be a *correctly formed* conscience – one in accord with objective reality and objective truth[17] – starting with and including this objective scientific truth. Thus any scientific error in this regard precludes us from forming our consciences correctly.

An erroneous conscience literally enslaves us and erodes our freedom.[18] Much of the error is usually referred to as “culpable”

ignorance – things we can do something about, and therefore for which we are responsible and accountable. But what I am pointing to is “*inculpable*” ignorance – things we really can’t do anything about – such as access to the correct basic scientific information about the human embryo in order to inform our consciences correctly

The moral decision making process itself is also therefore corrupted. Although the moral and theological virtues are critical in the moral decision making process[19], the *intellectual* virtues are the starting point for this process.[20] Yet they too seem to be frequently neglected in these discussions – especially the intellectual virtue of “science.”[21] Given that it is the intellectual virtues which in general help us attain correct information as to what the good (end) is that we should desire, the intellectual virtue of *scientia* also helps us to think well, e.g., to know our reality correctly – including at least what the physical material dimension of a human embryo is and when it begins. Thus knowing that correct scientific information is part of the very starting point of the moral decision making process facing the mother, the physician and a multitude of others. This right starting point, in turn, is essential for then rightly deliberating about the means to our good (end), choosing those means, willing them, and performing such actions as are necessary to reach our proper human end or goal. So any scientific error in the beginning of this moral decision making process also precludes us from making morally correct decisions in the end.

Even given the very *best* of scenarios, it is next to impossible these days for anyone to acquire the proper and correct basic scientific information about when the physical dimension of the human embryo or fetus begins – a situation due mostly to the inordinate influence of the scientific fraud so prominent in the *secular* bioethics[22] and related literatures – a real cacophony of chaos – which has been silently foisted upon the rest of us and now pervades our entire societies. And it is not just “the woman” who is a victim.

IV. The Dilemma: To Abort or Not to Abort

Consider the young teenagers or college students in today’s society – let’s say they are all basically good and decent people – male and female – and all come from loving, caring, practicing Catholic families. We’ll call one of them Margaret. For whatever reason, Margaret suspects that she might be pregnant, and being the honest and diligent person that she is, she sincerely begins to try to inform her conscience so that she can make a morally right decision about whether or not to seek an abortion.[23] She

starts this process by seeking the advice of others whose knowledge and work she respects.

Based on recent “scientific” articles and documentaries in the media[24], her parents are convinced that whatever is there is “just a bunch of loosely connected cells that don’t know how many people they will be yet”, so it is really “OK” and prudent to have an abortion. Her grandparents reluctantly concur, embarrassed that they are not up on the most recent, cutting edge scientific advancements which prove that it is just a “piece of the mother’s tissues”. Her boy friend is convinced that it is just simply a “neutral blob”. And her big sister teaches her that in terms of evolution it is probably still just a mouse, a fish, or a frog. Even her family lawyer assures her that it is just a piece of her own tissues, a part of her body, her own personal property that has “symbolic value” only[25] – and she reminds Margaret that abortion is legal now. The only viable issue left is “choice”.

The health clinic nurse in her high school instructs Margaret that pregnancy doesn’t even begin until “*conception*”, i.e., which takes place, she explains, when the “egg” *implants* into the uterus.[26] And if a condom was used she could not even get pregnant. Just to make sure, the nurse had slipped her a fresh supply of morning-after pills – for emergency use only, of course. Her local pharmacist assures her that morning-after pills are *only* contraceptive, and definitely *never* abortifacient – or so the pharmaceutical companies had assured him.[27] Even her sociology professor assures her that ridiculous claims that this could be a real human being are just remnants of a *passé* cultural or religious “belief system”.

In her high school library Margaret nervously scans the pages of the various medical textbooks, and the numerous pamphlets from Planned Parenthood – no sign anywhere that what she might be carrying now inside of her is a real human being yet. Same with the one medical textbook she grabbed from the shelf in the medical school library down the street.[28] She checks the internet and pulls up the web site for the National Institutes of Health (NIH), clicking into the page where information is provided to the researchers and the public about human embryonic stem cell research. There she finds the official testimony of the Director of NIH to the United States Senate: these early “entities” are only totipotent *stem cells*, not a human being; a human being doesn’t even exist until after birth and young adulthood.[29] The Senators and their staff race off to spread the good news to other Congressmen and their staffs, and even hold several press conferences to educate the public.

Further checking at the Kennedy Institute of Bioethics Library at Georgetown University in Washington, D.C. – the *only* source of “ethical”

information feeding into the National Library of Medicine and NIH for researchers and interested others from around the world – confirms that not only is there no human *being* there, there is no human *person* there yet either. It is just a “potential person” – so all the bioethics and philosophy articles seemed to say.[30] “Phew – where are those pills?” Margaret sighs. Oh, no – they are all mixed up in her pocket now with the ones for sexually transmitted diseases (which she also recently contracted).[31]

Margaret seeks the advice of her family physician, who quickly confirms to her all of the above.[32] “Not to worry,” he says to her, as he helps her sort out the pills. “That’s all absolutely correct scientific information – the very latest from our professional medical associations! Besides,” he smiles reassuringly, “these morning-after pills are essential for ‘emergency contraception’. After all,” he reminds her, “you do want to be able to go on to college next fall, don’t you? Trust me,” he winks, as he urges her to quickly take those morning-after pills, before it is too late – although she could still elect for an abortion if it is.

The most comforting of all, as always, is her pastor. He assures her that there is nothing there but a “*pre-embryo*”[33] – hardly a human *person* with an immortal soul! “Right now all that is there is just a sort of ‘vegetable,’” he explains to her. “The rational *part* of the soul can’t be infused by God until the matter is ‘appropriately organized’ – about 14 days after fertilization. After that, twinning cannot take place, so then God is sure, and finally agrees to slip the rational part of the soul right in there and create a real live human person. How else would theologians ever be certain about how many souls there were to baptize?” he quips. “Besides,” he advises her, getting serious, “*theologians* tell us that *only* the cells from the inner layer of this ‘pre-embryo-thing’ become the later fetus and adult human being, not the cells from the outer cell layer. The cells from the outer cell layer are the ones that are all discarded after birth. That’s why it is perfectly fine to use those morning-after pills,” he assures her. “They would only attack the outer cell layer, not the inner cell layer from which the real human *being* will *later* arise. No,” he concludes pensively, “a *real* person would not be so totally disconnected and confused. This ‘pre-embryo-thing’ must just be sort of like a ‘being-on-the-way’[34] – just a *potential* human person. So, Margaret, either the morning-after pills, or later even abortion, would be morally acceptable – given the *proportionate* circumstances and intentions, of course.[35] Thanks to modern science,” her spiritual advisor advises, “we pastors can be much more pastoral these days. When is the Church *ever* going to get with?” he mumbles. “No guilt, my child. Go in peace.”

Finally, assured by every kind of personal friend, family, and professional expert from whom she could possibly seek advice, Margaret is truly convinced that this “thing” inside of her is essentially insignificant and has no inherent or real value. The only “choice” left for her to make is whether she takes the morning-after pills now, or waits a while and gives her legal informed consent for an abortion. “How silly of me,” she reproaches herself. “And to think, I had actually almost decided to call him *Baby John!*” The deed is done. No guilt.[36]

V. Science and “Delayed Hominization”

This scenario would be funny if it were not repeated a million times a week around the world. Virtually all of the basic “scientific” facts of human embryology provided to all of these victims are false. Contrary to reports in the media, and contrary to such “scientific” claims in the literatures of Planned Parenthood, the pharmaceutical industry, medical and research professional organizations, governmental institutions, bioethics textbooks and journals, laws, regulations, international guidelines, and pastoral and theological “debates”, the early human embryo is not “just a bunch of loosely connected and confused cells that don’t know how many people they will be yet”, “a neutral blob”, “a piece of the mother’s tissues”, a “seed on the way”, a “fish on the way”[37] – or a “pre-embryo”. None of these claims have any basis in the objective scientific facts of human embryology. There is no such thing as a “pre-embryo”, and the term itself is specifically rejected by human embryologists.[38] Furthermore, if fertilization has already taken place, the “morning-after” pill, or “emergency contraception”, could possibly be abortifacient.[39]

Every individual human being produced *via* normal sexual reproduction begins as a human embryo at fertilization[40] – when normal pregnancy actually begins[41] – or in *in vitro* fertilization, with the initial fusion of the sperm and oocyte. This is not just a “faith position”, a “personal opinion”, or a “pro-life radical’s” misguided fantasy. *This is an objective scientific fact* – Biology 101 – agreed to by every human embryologist around the world. Like $2 + 2 = 4$.

At fertilization the matter is “appropriately organized”[42], and this single-cell human zygote – *in vivo* or *in vitro* – is an already existing human being[43], with his or her own unique genetic composition (from both the mother *and* the father), genetically already a girl or a boy.[44] Immediately this tiny human being directs his or her own growth and development.[45] The embryo grows continuously from a single-cell zygote, to the 12-16 cell morula stage, to the 5-6 day blastocyst stage, and

on. The *whole* embryonic blastocyst is the human embryo (the human being), not just the cells from the inner cell layer.[46] Specifically *human* proteins and enzymes are produced[47], and later specifically *human* tissues and organs are formed – long before some isolated “pure rational soul” might be “infused” to try to direct such operations and functions. All biologists know empirically that function *does* follow being (or form).[48] Therefore these specifically *human* functions and activities could only be produced by a *human* agent, a *human* being (i.e.), who must possess a *human* rational form – which form itself cannot be divided, or exist separately from the body). We also know *empirically* that carrot and frog enzymes, proteins, tissues and organs are *not* produced, and that carrots and frogs do *not* produce specifically *human* enzymes and proteins, organs and tissues!

If there is a human *being* there, which the correct basic science surely demonstrates, we *can* reason directly from these correct objective scientific facts to the realist philosophical conclusion that there must be simultaneously a human *person* present as well – whole soul, body and esse in *ONE* single composite *human* being. There is no such thing as a pure “rational soul” alone; the rational soul must always contain virtually the sensitive and vegetative powers, and must always exist in *one* composite with the material body. If the vegetative powers are empirically observable, which they are, then the sensitive and rational powers must also be present as well.[49]

Probably the most influential argument for “delayed personhood” has been the “*individuality*” argument of McCormick and Grobstein that grounds their concept of a “*pre-embryo*”.[50] There may be a human being present at fertilization, they claim, but it is just a “*genetic*” individual, not a “*developmental*” individual, i.e., a person. Only a “*developmental*” individual can be a *person*, i.e., when the rational soul can then be infused. They base this “*developmental individuality*” claim on their following interpretation of “*human embryology*”: These early entities, they claim, are just a “*loose collection of cells*” which “*have not yet made up their minds as to how many individuals they will become*”. There are two essentially independent and *separate* layers in the blastocyst, they state, but only the inner cell layer (embryoblast) is the source of cells for the real future fetus and future adult human being. The cells of the outer cell layer (trophoblast) are the only ones discarded after birth as the placenta, etc., and none of these cells ever become part of the future embryo or fetus, etc. Also, twinning can still take place before 14 days, producing more than one individual. So *there is no developmental individual there yet* – which means that there is *no human person* there yet. At 14 days the primitive

streak begins to form and twinning cannot take place any more. It is only then that there is finally a “*developmental*” individual present, and therefore a person there. So for McCormick and Grobstein, the developing human embryo up to the 14-day biological marker is not a person yet, but instead is a “*pre-embryo*”.

In sum, the “*pre-embryo*” is “*human*”, and a *genetic* individual, so therefore it deserves “*respect*”. But the “*pre-embryo*” is not a *developmental* individual yet, and therefore not a human person yet – it is just a “*potential person*”. So it does not deserve the same respect as that due a real human person. Therefore it can be used in experimental human embryo research, cloning, some abortifacients are allowed, etc. – for “*proportionate reasons*”, of course.

However, this “*human embryology*” is erroneous and seriously misconstrued. No human embryologist would agree with such an interpretation. For example, the cells of the early human embryo are not so “*loosely connected*”, but in fact are biologically all part of one and the very same whole individual human organism. Nor are they so psychologically “*confused*” and “*undecided*”. And to cast the early blastocyst as essentially consisting of two separate, disconnected and isolated cell layers is empirically incorrect. There is constant and continuous interaction between and among the cells and tissues of the developing human being at any one time right from the beginning.[51] Nor is it true that only the cells from the outer cell layer of the blastocyst are discarded after birth. Many of the tissues discarded after birth are derived from the inner embryoblast cell layer.[52] And cells from the outer trophoblast cell layer do become part of the embryo (e.g., the blood cells derived from the chorion, which originates from the outer trophoblast layer of the blastocyst). Nor are the cells of these two layers necessarily *naturally* “*fated*” to be one kind of cell or another.[53] Furthermore, the dramatic experiments with Dolly the sheep, and those using adult stem cells in both medical research and therapy (including humans) have clearly demonstrated that the “*fate*” of any cell in the human body is capable of being *artificially* diverted, converted, and “*deprogrammed*” back to even the single-cell embryonic zygote stage. As reported in a recent article on *adult stem cell* research using mice:

In a bizarre experiment that demonstrates the surprising plasticity of the body’s cells, scientists have converted mice’s brain cells into blood cells...[U]ntil now, the stem cells were thought to be committed to their own organ type and unable to cross over...A team of Italian and Canadian scientists, led by Angelo L. Vescovi...in Milan, has now found that the neural stem cells can metamorphose into the blood-

making stem cells of the bone marrow...The conversion of neural stem cells into blood cells is particularly surprising because brain and blood come from different germ layers created in the early embryo...The brain develops from the ectoderm and blood from the mesoderm. Dr. Vescovi's work defies the widely held assumption that cells in the three lineages are permanently committed to their fate...Dr. McKay said the new result showed that differentiation, the commitment of a cell to a specific fate, is not irreversible.[54]

These startling current experiments continue to be rapidly reported, and surely cast profound doubt on any further claims such as McCormick's and Grobstein's that the two cell layers of the blastocyst are so "isolated" and so permanently "fated" [55] – either naturally or artificially.

Furthermore, *twinning can take place after 14 days* and the formation of the primitive streak, [56] as in Siamese twins and in fetus-in-fetu twins (which can form many weeks, indeed months, *after* the 14-day marker). And about one third of monozygotic twins are formed *before* the 14-day marker.[57] Would they not be persons – then, or now? No need to baptize them either? And what about twins who form *after* the 14-day marker – are they also not persons either?

Why the phenomenon of "twinning" has taken on such gargantuan proportions is surely an enigma – especially among scientists. The response in biological terms is rather simple. In monozygotic twinning, the first twin begins to exist at normal *sexual* fertilization – in vivo or in vitro. Since the twinning process itself is an *asexual* process of reproduction, the second twin begins to exist at fission, when the cells of the original embryo are split off – naturally or mechanically. Because the cells of this early embryo are "totipotent", the embryo has a built-in mechanism of repair and survival in the event of such injury. Thus under normal conditions, the first "twin" begins at fertilization as a human being (human person). It is really no more complicated than that.[58]

If McCormick and Grobstein (and all those who follow them) ground their "philosophical" (or theological) concept of "pre-embryo" on so much erroneous "human embryology", then the very concept of the "pre-embryo" itself is rendered completely and totally invalid – as well as their justification for using live human embryos in any experimental research.

I would seriously suggest that in these arguments of McCormick and Grobstein – as well as in all of the other arguments for "delayed personhood" – certain kinds of philosophical, theological or political concepts have simply been *imposed* on the empirical human embryological data, and if the data don't fit these preconceived concepts, then the empirical data are simply changed and manipulated accordingly.

Considering the evidence, it would seem that a lot of documents, regulations, laws, professional codes, pharmaceutical licenses, national and international guidelines, standard medical treatments, IVF procedures and patient information literatures, pastoral directives, and bioethics textbooks and journals need to be cleaned up! And it also looks like the Church *is* with it!

VI. Conclusion

If we, as individuals in our personal lives, and as experts in our various professional fields, are so *systematically* precluded from knowing correctly these basic human embryological facts, this surely renders us schizophrenic between our lived experiences and our abilities to think and act well. The basic objective scientific truth *is* that these tiny vulnerable helpless defenseless human embryos are indeed real live human beings, and therefore real live human persons.

Without knowledge of this objective truth, how can we possibly form our consciences correctly or make good moral decisions in the face of abortion or human embryo research? How are advisors to counsel and minister to us truthfully and objectively? How are we to make, or help others make, these very complex and difficult choices? How can societies come to grips with this simple objective reality, or legal systems interpret the “common good” correctly,[59] or vigorously protect *all* of its citizens? How are we to recognize this tiny human being as our neighbor – someone to love not just for his or her own sake, but also for the sake of God – Who Himself created this tiny child in His own image and likeness, *from which comes this child's true dignity and status?*[60] He has commanded us to “choose life”. But how are we to usher in the “culture of life”, when we cannot even define “*human* life” correctly ourselves, and therefore know how to think and act correctly towards this life? We have ample historical examples of the kinds of devastations that flow from the deconstructions and re-definitions of vulnerable “human beings” – deceiving us with an arbitrary and fabricated two-tier caste of humanity to be eagerly relished as “objectively true”. [61]

Nowhere is the need to evangelize greater in our contemporary *technological* society than in the basic sciences – not only for the personal conversions of these scientists, but also to appeal to them to at least remain *intellectually honest* in their chosen fields of science, regardless of outside political or economic pressures.[62]

Margaret, her parents and grandparents, her sister, her boy friend, media professionals of all types, physicians, nurses, all health care workers,

pharmacists – teachers and professors in the lower schools, high schools, colleges, graduate, medical, nursing and dental schools – social workers and sociologists, lawyers, judges, public policy makers, Congressmen, institution leaders, librarians, bioethicists, philosophers, parish priests, nuns, theologians, – and even other bench researchers in the same or different fields of science – all depend on their *intellectual honesty*. So does *Baby John*. A small error in the beginning has certainly led to a multitude of errors in the end.

References

1. See DIANNE NUTWELL IRVING, *Philosophical and Scientific Analysis of the Nature of the Early Human Embryo*, Washington, D.C.: Georgetown University Graduate School, Doctoral Dissertation, Department of Philosophy, 1991; C. WARD KISCHER and DIANNE N. IRVING (eds.), *The Human Development Hoax: Time to Tell the Truth!*, distributed by the American Life league, Stafford, VA, 1997 [this book is a collection of previously peer reviewed and published articles in academic journals written independently by both Dr. Kischer and Dr. Irving]; D. N. IRVING, "When do human beings begin? 'Scientific' myths and scientific facts", *International Journal of Sociology and Social Policy* 1999, 19:3/4:22-47; for direct quotations and references from human embryology textbooks respected worldwide, see notes 37-41, 44, 46-48, 51058, *infra*.
2. For a few readings on the correct formation of conscience, see ST. THOMAS AQUINAS, *Summa Theologica*, (Fathers of the English Dominican Province, trans.), Westminster, MD: Christian Classics, 1981, Ia, q.79, art.13, ans. p. 408; *ibid.*, Ia IIae, q.6, art.8, ans. p. 621-622; *ibid.*, Ia IIae, q.19, arts.5,6, pp. 674-676; AUGUST FAGOTHEY, *Right and Reason*, St. Louis, MO: The C.V. Mosby Company, 1963, p. 48-51 (note: later editions do not always follow the original text, and are not recommended); VERNON J. BOURKE, *Ethics*, New York: The Macmillan Company, 1953, pp. 197-208; JOSEPH CARDINAL RATZINGER, *Conscience and Truth*, Braintree, MA: Pope John XXIII Medical-Moral Research and Education Center, 1991, esp. pp. 4, 7-8, 11, 17-18.
3. For additional readings on the moral decision making process, see ARISTOTLE, *Ethica Nichomachea*, in Richard McKeon (trans.), *The Basic Works of Aristotle*, New York: Random House, 1941, pp. 1030-1036; FAGOTHEY (1963), pp. 23-30;

BOURKE (1953), pp. 212-213, 243-254. For the relationship between the virtues and the moral decision making process, see ST. THOMAS AQUINAS, *ST, Ia IIae*, q. 58, 59, pp. 833-841; ARISTOTLE, *Ehtica Nichomachea*, esp. 6.12.1144a, 34-37, p. 1035. As applied to science, see D.N. IRVING and ADIL E. SHAMOO, "Which ethics for science and public policy?" *Accountability in Research* 1993, 3:77-100; D.N. IRVING, "Quality assurance auditors: Between a rock and a hard place", *Quality Assurance: Good Practice, Regulation, and Law*, March 1994, 3:1:33-52.

4. D.N. IRVING, "Post abortion syndrome: Getting the facts straight", *Linacre Quarterly* 1994, 61:1:3-6.; *ibid.*, "Academic fraud and conceptual transfer in bioethics: Abortion, human embryo research and psychiatric research", in Joseph W. Koterski (ed.), *Life and Learning IV* 1995, Washington, D.C.: University Faculty For Life, pp. 193-215; *ibid.*, "Individual testimony before the NIH Human Embryo Research Panel – March 14, 1994", *Linacre Quarterly*, May 1994, 61:2:42-62; *ibid.*, "Testimony on Cloning: House of Representatives – Feb. 12, 1998" *Linacre Quarterly*, May/June 1999, 66:2:26-40; *ibid.*, "The impact of scientific 'misinformation' on other fields: Philosophy, theology, biomedical ethics and public policy", *Accountability in Research* 1993, 2:4:243:272; *ibid.*, (my *amicus curiae* briefs on "fetal personhood" to the U.S. Supreme Court) *Alexander Loce v. The State of New Jersey*, and *Krail v. The State of New Jersey* cert denied_U.S._(1994)(No. 93-1149) – and *J.M. v. V.C.* July 3, 1993; *ibid.*, "Stem cell research: Some pros and cons", *UFL, PRO VITA: Newsletter of the University Faculty for Life*, Oct. 1999, 10:1:1-2.

5. E.g., St. Thomas, following Aristotle, makes a distinction between the subject matters and epistemologies of philosophy and theology. These are two different (but related) "sciences". The subject matter of philosophy is "being in general" or *ens commune*, known through the light of reason alone, and the method is *separatio* (the negative judgment); God is not the subject matter of philosophy, but rather the object of it. The subject matter of theology is God and the epistemology or method is faith, Divine Revelation and the teachings of the Magisterium: see ST. THOMAS AQUINAS, *The Division and Method of the Sciences*, Armand Maurer (trans.), Toronto: The Pontifical Institute of Mediaeval Studies, 1986, ftnt. 21, p. xxii. Relevant to this distinction, and to further discussions below, the Moral Law is composed of both natural law (philosophy) and Divine Revelation (theology). As *Humanae Vitae* explains: "It is, in fact, indisputable, as our predecessors have many times declared, that Jesus Christ, when communicating to Peter and to the apostles His divine authority and sending them to teach all nations His commandments, constituted them as guardians and authentic interpreters of all the moral law, not only, that is, of the law of the Gospel, but also of the natural law, which is also an expression of the will of God [i.e., participates in the Eternal Law], the faithful fulfillment of which is equally necessary for salvation." (*Humanae Vitae*, Boston: Pauline Books and Media, 1968, p. 2).

6. ST. THOMAS AQUINAS, *ST* (1981), Ia IIae q. 19, art. 7, ans.3, p. 676; *ibid.*, *De Ente et Essentia*, Armand Mauer (trans.), Toronto: Pontifical Institute of Mediaeval Studies, 1983, p. 28; ARISTOTLE, *De Coelo*, in *The Basic Works of Aristotle* (McKeon, 1941), 1.5.271b, 9-10, p. 404.

7. E.g., the subject of this conference.

8. Not only can the use of incorrect science as our starting point negatively impact our understanding of philosophical anthropology (i.e., the study of human nature), but using different ethical principles from different philosophical schools of ethics can also lead to contradictory conclusions about which actions are right or wrong. There seems to be a general sense that secular "bioethics" is equivalent to "medical ethics in general", but this is not accurate. Secular bioethics is actually a very recent phenomenon – a *specific academic theory of ethics which was originated by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, and articulated in their 1979 Belmont Report*. The bioethical principles they defined (which are their starting points for determining which actions are ethical or unethical) are "autonomy", "justice" and "beneficence". On the other hand, the ethical principles used by the Roman Catholic Church are philosophical natural law, Divine Revelation, and the teachings of the Magisterium (or, the Moral Law). Obviously this explains why these two different ethical systems come to often contradictory ethical conclusions. For a very short history of academic secular bioethics, its theoretical and practical deficiencies, and its comparison with Roman Catholic medical ethics, see DIANNE N. IRVING, "*Which ethics for the 21st century?: A comparison of secular bioethics and Roman Catholic medical ethics*", paper presented at the John Carroll Society Rose Mass, Washington, D.C., Mar. 14, 1999 (available upon request); *ibid.*, D. IRVING, "*Which ethics for science and public policy?*", *Accountability in Research* 1993, 3:2-2:77-99; *ibid.*, "*Quality assurance auditors: Between a rock and a hard place*", *Quality Assurance: Good Practice, Regulation, and Law* 1994, 3:1:33-52; *ibid.*, "*Maryland State proposed statute for research using 'decisionally incapacitated' human subjects: The legalization of a defunct normative bioethics theory*", *Accountability in Research* (in press).

For other short histories and concerns "pro" and "con" about secular bioethics as a viable academic field, see, e.g.: H. TRISTAM ENGELHARDT, JR., "*Bioethics in the Third Millennium: Some critical anticipations*", *Kennedy Institute of Ethics Journal* 1999, 9:3:225-244; EDWIN DUBOSE, RONALD HAMEL, and LAWRENCE O'CONNELL (eds.), *A Matter of Principles? Ferment in U.S. Bioethics*, Valley Forge, PA: Trinity Press International, 1994; ALBERT JONSEN, "*Preface*", in DuBose et al 1994; DANIEL CALLAHAN, "*Bioethics: Private choice and common good*", *Hastings Center report* 1994, 28-31; GILBERT C. MEILANDER, *Body, Soul, and Bioethics*, Notre Dame, IN: University of Notre Dame Press, 1995.

9. See, e.g., H.E. Mons. ELIO SGRECCIA, "*Introduction to the work of the task-force*", in Juan de Dios Vial Correa and Elio Sgreccia (eds.), *Pontificia Academia*

Pro vita: *The Identity and Status of the Human Embryo*", Vatican City: Libreria Editrice Vaticana, 1999, pp. 25-27.

10. E.g., see ETIENNE GILSON, *Being And Some Philosophers*, Toronto: The Pontifical Institute of Mediaeval Studies, 1963; for a general history of philosophy, see, Frederick Copleston, *A History of Philosophy*, New York: Image Books, Vols. 1-9.

11. ST. THOMAS AQUINAS, *The Division and Method of the Sciences* (Fathers of the English Dominican Province, 1981), q. 6, art.1, ans.1, pp. 65-66; *ibid.*, q.6, ans.3, pp. 71-72; *ibid.*, q.6, art.2, pp. 176-178; *ibid.*, q.6, art.4, p. 90; *ibid.*, q.5, art. 3, p. 35, and note 21 *In I Post. Anal. Lect.* 1-3, and in *De Veritate* 1.1; ARISTOTLE, *Categories*, in Sir David Ross, New York: Random House, 1985, 20-21; *ibid.*, *Analytica Posteriora* 2.19, 100a 3-9, (McKeon, 1941); see also GEORGE KLUBERTANZ, *Introduction to the Philosophy of Being*, New York: Appleton-Century-Crofts, 1963, pp. 293-298.

12. E.g., see PAUL VI, enc. *Humanae Vitae* (July 25, 1968), 1.10 ftnt. 9; CONGREGATION OF THE DOCTRINE OF THE FAITH, Instruction of Respect for Human Life in its Origin and on the Dignity of Procreation *Donum Vitae* (February 22, 1987),3; JOHN PAUL II, enc. *Veritatis Splendor* (August 6, 1993), Intro. 4; 1.48 49, 50;3.67; JOHN PAUL II enc. *Evangelium Vitae* (march 25, 1995), 3.10; PONTIFICAL COUNCIL FOR PASTORAL ASSISTANCE, *Charter For Health Care Workers* (1994), 1.18, 2.35, 38, 39, 40, 41.

13. The major philosophical issue here is whether or not there is a "mind/body" split (as found, e.g., in Platonic, neoplatonic, many scholastic – and even some empiricist and existentialist philosophies). A "mind/body" split is both theoretically and practically indefensible, but it seems to have been recycled lately, especially within secular bioethics. A "mind/body split" is, by the way, a *theoretical requirement* for any argument for "delayed personhood". For realist philosophers, e.g., St. Thomas, Aristotle, etc., there is no mind/body split. A human being comes into existence spontaneously and simultaneously, and dies spontaneously and simultaneously. For a more in depth treatment of this issue, see D.N. IRVING, "Scientific and philosophical expertise: An evaluation of the arguments on 'personhood' ", *Linacre Quarterly*, 1993, 60:18-47, also in KISCHER and IRVING (eds.), *The Human Development Hoax: Time To Tell The Truth!* (1997), pp. 129-184.

For St. Thomas, as well as for Aristotle, the "rational soul" is a *form*, and therefore cannot be divided or separated. *Thus the rational soul always includes virtually the sensitive and vegetative powers* – no splits. Thus there can be no pure "rational" power alone, waiting to belatedly join its proper vegetative and sensitive powers – i.e., no "delayed personhood". And it must exist together with the body (*matter*). So the whole soul exists simultaneously as *one single whole composite* with the body – no splits. For references that the "rational soul" must include virtually the sensitive and vegetative powers: ST. THOMAS AQUINAS, *ST*, Ia,

q.45, art.4, ans.2, p. 235; ARISTOTLE, *De Anima*, 1.5.411b, 14-18 and 24-28, p. 554. That the soul (form) must exist with the body (matter) as one composite substance: ST. THOMAS AQUINAS, *Summa Theologica* (Fathers of the English Dominican Province, 1981) (Vol. 1) Ia q.29, art.1, ans., ad. 2,3,5, p. 156; *ibid.*, art.2, ans. p. 157; *ibid.*, q.45, art.4, ans.2, p. 235; *ibid.*, q.75, art.4, ans., p. 366; see also KEVIN DORAN, "Person - a key concept for ethics", *Linacre Quarterly* (1989), 56:4:39; for ARISTOTLE: *Physica* 2.1.193ab, 3-5, p. 238, in McKeon (1941); *ibid.*, 2.2.194b, 12-14, p. 240; *ibid.*, 2.2.193b, 33-37, p.239; *Categories* 5.2a, 11-13, p. 9; *Metaphysica* 7.11.1036b, 3-7, p. 800; *ibid.*, 8.1.1042a, 30-31, p. 812; *De Anima* 1.5.411b, 14-18 and 24-28, p. 554; *ibid.*, 2.1.412b, 6-10, p. 555; *ibid.*, 2.1413a, 3-4, p. 556, in McKeon (1941); also in Ross (1985), p. 24. That "undesignated matter" included in St. Thomas' formal definition of a "human being" (which should hold serious significance in medical and bioethics considerations): ST. THOMAS AQUINAS, *ST*, Ia q.29, art.1, ans. ad. 2,3,5, p. 156; *ibid.*, art.2, ans. p. 157; *ibid.*, IIIa q.19, art.1, ans.4, p. 2127; see also KEVIN DORAN, "Person - a key concept for ethics", *LINACRE QUARTERLY* 1989, 56:4:39.

Oddly, St. Thomas, blushing following Aristotle in his own self-contradictory claims, argued for "delayed personhood" (thus contradicting himself!). However, scholars have resolved this contradiction for centuries, explaining that: systematically, they both would have been required to argue for "immediate personhood" (as evidenced above); they still considered that there were only four basic material elements (air, earth, fire and water); and, had they access to contemporary biology they would have had to argue for "immediate personhood". For a more in-depth investigation of St. Thomas, see: STEPHEN HEANEY, "Aquinas and the presence of the human rational soul in the early human embryo", *The Tomist*, Jan. 1992, 56:1:19-48; MARK JOHNSON, "*Quaestio Disputata: Delayed hominization; Reflections on some recent Catholic claims for delayed hominization*", *Theological Studies* 1995, 56:743-763; BENEDICT ASHLEY, "Delayed hominization: Catholic theological perspectives", in R.E. Smith (ed.), *The Interaction of Catholic Bioethics and Secular Society*, Braintree, MA: The Pope John Center, 1992, esp. pp. 165, 176; A. REGAN, "The human conceptus and personhood", *Studia Moralis* 1992, 30:97-127; Jean de Siebenthal, "L'animation selon Thomas d'Aquin: Peut-on affirmer que l'embryon est d'abord autre chose qu'un homme en s'appuyant sur Thomas d'Aquin?", in *L'Embryon: Un Homme. Actes du Congrès de Lausanne 1986*, Lausanne: Societe Suisse de bioethique, 1986, 91-98. For discussions on Aristotle's self-contradictions, see: my dissertation (note 1, *supra*) Appendix B, "Aristotle: A question of substance", pp. 296-381. For some contemporary philosophers' studies, see: MARY LOUISE GILL, *Aristotle on Substance*, Princeton: Princeton University Press, 1989; also, CHARLOTTE WITT, *Substance and Essence in Aristotle*, New York: Cornell University Press, 1989; MARJORIE GRENE, *A Portrait of Aristotle*, Chicago: The University of Chicago Press, 1963.

14. SAINT THOMAS AQUINAS, *ST*, Ia q.29, art.1, ans. ad. 2,3,5, p. 156; *ibid.*, art.2, ans. p. 157; *ibid.*, IIIa q.19, art.1, ans.4, p. 2127; see also KEVIN DORAN, "Person – a key concept for ethics", *Linacre Quarterly* 1989, 56:4:39.

15. Specifically, in human embryology, see: D. IRVING, doctoral dissertation, and book (note 1, *supra*); *ibid.*, "Human embryonic stem cell research: Are official positions based on scientific fraud?", *Communique* (American Life League) July 27, 1999, *ibid.*, "Testimony against the use of human biological materials in experimental research", in National Bioethics Advisory Commission Report, *The Use of Human Biological Materials in Research: Ethical Issues and Policy Guidance*, Appendix, Government Printing Office, 1999; *ibid.*, "The immediate product of human cloning is a human being: Claims to the contrary are scientifically wrong", Scientific Panel on "Cloning: Legal Medical, Ethical, and Social Issues", Hearing before the Subcommittee on Health and Environment of the Committee on Commerce, U.S. House of Representatives, Washington, D.C., February 12, 1998; *ibid.*, "Academic Fraud and Conceptual Transfer in Bioethics: Abortion, Human Embryo Research and Psychiatric Research", in Joseph W. Koterski (ed.), *Life and Learning IV*, Washington, D.C.: University Faculty for Life, 1995, pp. 193-215; *ibid.*, "Individual testimony before the NIH Human Embryo Research Panel", *Linacre Quarterly* Nov. 1994, 61:4:82-89; *ibid.*, "Embryo research: A call for closer scrutiny", *Linacre Quarterly*, July 17, 1994; *ibid.*, "'New age' embryology text books: 'Pre-embryo', 'pregnancy' and abortion counseling: Implications for fetal research", *Linacre Quarterly* May 1994, 61:2:42-62; *ibid.*, "The impact of scientific 'misinformation' on other fields: Philosophy, theology, biomedical ethics and public policy", *Accountability in Research* April 1993, 2:4:243-272; C.WARD KISCHER, "In defense of human development", *Linacre Quarterly* 1992, 59:68-75; *ibid.*, "Human development and reconsideration of ensoulment", *Linacre Quarterly* 1993, 60:57-63; *ibid.*, "A new wave dialectic: The reinvention of human embryology", *Linacre Quarterly* 1994, 61:66-81; *ibid.*, "The big lie in human embryology: The case of the preembryo", *Linacre Quarterly* 1997, 64:53-61.

16. See CONGREGATION OF THE DOCTRINE OF THE FAITH, *Instruction of Respect for Human Life in its Origin and on the Dignity of Procreation Donum Vitae*, (February 22, 1987), Intro. 5, 1.1; JOHN PAUL II, enc. *Evangelium Vitae* (March 25, 1995), 3.59, 60; PONTIFICAL COUNCIL FOR PASTORAL ASSISTANCE, *Charter For Health Care Workers* (1994), 2.35, 38, 39, 40, 41, 42, 46.

17. See notes 2, 3, 5, 11 *supra.*, and notes 18 and 36, *infra.*

18. See, e.g., JOSEPH CARDINAL RATZINGER, *Conscience and Truth*, Braintree, MA: Pope John XXIII Medical-Moral Research and Education Center, 1991, esp. pp. 4, 7-8, 11, 17-18; JOHN PAUL II, enc., *Evangelium Vitae* (March 25, 1995), 1.19-24; 3.58-60.

19. SAINT THOMAS AQUINAS, *ST*, Ia IIae, q.58-62, pp. 833-853, in *Fathers of the English Dominican Province* 1981; ROMANUS CESSARIO, *The Moral Virtues and Theological Ethics*, Notre Dame, IN: University of Notre Dame Press, 1991; FAGOTHEY (1963), pp. 200-205; BOURKE (1953), pp. 256-289.

20. SAINT THOMAS AQUINAS, *ST*, Ia IIae, q. 57, pp. 827-833. For understanding the reciprocal influence between the possession of virtuous habits and acting, see: ST. THOMAS AQUINAS, *ST*, Ia IIae, q.58, 59, pp. 833-841; ARISTOTLE, *Ethica Nicomachea*, esp. 6.12.1144a, 34-37, p. 1035.

21. FAGOTHEY (1963): "*Science: the habit of conclusions drawn by demonstrations from first principles, the habitual knowledge of the particular sciences.*", p. 198.

22. I analyzed 28 of the most representative and influential current arguments for "delayed personhood" (and therefore "pro" human embryo research, abortion, etc.) by secular bioethicists which they use to justify human embryo research in my doctoral dissertation (see note 1, *supra*). Although there are many excellent works arguing *against* "delayed personhood", space considerations here allow only for referencing mostly the arguments "*pro*". For more in-depth referencing of arguments *against* "delayed personhood", see note 1, *supra*; see also Juan de Dios Vial Correa and Elio Sgreccia (eds.), Pontificia Academia Pro Vita: "*The Identity and Status of the Human Embryo*", Vatican City: Libreria Editrice Vaticana, 1999.

The arguments for "delayed personhood" addressed in my dissertation included: RICHARD MCCORMICK, "*Who or what is the 'preembryo'?*", Kennedy Institute of Ethics Journal 1991, 1:1:3-15; CLIFFORD GROBSTEIN, "*The early development of human embryos*", Journal of Medicine and Philosophy 1985, 10:213-236; H. TRISTRAM ENGLEHARDT, *The Foundations of Bioethics*, New York : Oxford University Press, 1985, 111; WILLIAM A. WALLACE, "*Nature and human nature as the norm in medical ethics*", in Edmund D. Pellegrino, John P. Langan and John Collins Harvey (eds.), *Catholic Perspectives on Medical Morals*, Dordrecht: Kluwer Academic Publishing, 1989, pp. 23-53; NORMAN FORD, *When Did I Begin?*, New York: Cambridge University Press, 1988, p. 298; JOHN A. ROBERTSON, "*Extracorporeal embryos and the abortion debate*", Journal of Contemporary Health Law and Policy 1986, 2:53:53-70; ANTOINE SUAREZ, "*Hydatidiform moles and teratomas confirm the human identity of the preimplantation embryo*", Journal of Medicine and Philosophy 1990, 15:627-635; CARLOS BEDATE AND ROBERT CEFALO, "*The zygote: to be or not be a person*", Journal of Medicine and Philosophy 1989, 14:6:641; THOMAS J. BOLE, III, "*Metaphysical accounts of the zygote as a person and the veto power of facts*", Journal of Medicine and Philosophy 1989, 14:647-653; *ibid.*, "*Zygotes, souls, substances and persons*", Journal of Medicine and Philosophy 1990, 15:637-652; HANS-MARTIN SASS, "*Brain life and brain death: A proposal for normative agreement*", Journal of Medicine and Philosophy 1989, 14 (same article also in *Bioethics News* 1990, 9:3:9-20); PETER SINGER AND D. WELLS, in D. GARETH JONES, "*Brain birth and personal identity*" Journal of Medical Ethics

1989, 15:175; MICHAEL LOCKWOOD, "When does life begin?", in Michael Lockwood (ed.), *Moral dilemmas in Modern Medicine*, New York: Oxford University Press, 1985, p. 10; *ibid.*, "Warnock versus Powell (and Harradine): When does potentiality count?", *Bioethics* 1988, 2:3:187-213; MICHAEL C. SHEA, "Embryonic life and human life", *Journal of Medical Ethics* 1985, 11:205-209; R.M. HARE, "When does potentiality count? A comment on Lockwood", *Bioethics* 1988, 2:3:214; KAREN DAWSON, "Segmentation and moral status", in Peter Singer, Helga Kuhse, Stephen Buckle, Karen Dawson, Pascal Kasimba, *Embryo Experimentation*, New York: Cambridge University Press, 1990, p. 58; STEPHEN BUCKLE, KAREN DAWSON AND PETER SINGER, "The syngamy debate: When precisely does an embryo begin?", in Singer et al, *Embryo Experimentation*, New York: Cambridge University Press 1990, pp. 213-226; STEPHEN BUCKLE, "Biological processes and moral events", *Journal of Medical Ethics* 1988, 14:3:144-147.

For additional arguments for "delayed personhood" not addressed in my dissertation see, e.g., CLIFFORD GROBSTEIN, "The status and uses of early human developmental stages", in Darwin Cheney (ed.), *Ethical Issues in Research*, Frederick, MD: The University Publishing Group, Inc.; *ibid.*, "The early development of human embryos", *Journal of Medicine and Philosophy* 1985, 10:213-236; *ibid.*, *Science and the Unborn*, New York: Basic Books, 1988, p. 61; *ibid.*, "When does life begin?", *Psychology Today* 1989, pp. 43-46; *ibid.*, "External human fertilization", *Scientific American* 1979, 240:57-67; ANNE MCLAREN, "Why study early human development?", *New Scientist* 1986, 24:49; *ibid.*, "Where to draw the line?", *Proceedings of the Royal Institute of Great Britain* 1984, 56:101-120; PAUL RAMSEY, "Reference points in deciding about abortion", in J.T. Noonan (ed.), *The Morality of Abortion*, Cambridge, MA: Harvard University Press, 1970, pp. 60-100; CHARLES E. CURRAN, "Abortion: Contemporary debate in philosophical and religious ethics", in W.T. Reich (ed.) *Encyclopedia of Bioethics 1*, London: The Free Press, 1978. Pp. 17-26; CAROL TAUER, *The Moral Status of the Prenatal Human* 1981, Dissertation in Philosophy, Washington, D.C.: Georgetown University (Sister Tauer later went on to become the ethics co-chair of the NIH Human Embryo Research Panel 1994); *ibid.*, "The tradition of probabilism and the moral status of the early embryo", in Patricia B. Jung and Thomas A. Shannon, *Abortion and Catholicism* 1988, New York: Crossroad, pp. 54-84; LISA S. CAHILL, "Abortion, autonomy, and community", in Jung and Shannon, *Abortion and Catholicism* 1988, pp. 85-98; JOSEPH F. DONCEEL, "A liberal Catholic's view", in Jung and Shannon, *Abortion and Catholicism* 1988, pp. 48-53; JAMES F. CHILDRESS, "Human fetal tissue transplantation", *Kennedy Institute of Ethics Journal* 1991, 1:2:93-122; RICHARD MCCORMICK, "The preembryo as potential: A Reply to John A. Robertson", *Kennedy Institute of Ethics Journal*, 1991, 1:4:303-306; *ibid.*, "Health and Medicine in the Catholic Tradition", New York: Crossroad, 1984 (the "Catholic tradition" is defined here mostly in terms of "proportionalism"; contains references to other Catholic theologians arguing for "delayed personhood"); ANDRE E. HELLEGERS, "Fetal development", *Theological Studies* 1970, 31:3-9; KEVIN WILDES, "Book Review: *Human Life: Its beginning and development*", L'Harmattan, Paris: International

Federation of Catholic Universities 1988; JOHN A. ROBERTSON, "What we may do with preembryos: A response to Richard A. McCormick", *Kennedy Institute of Ethics Journal* 1991, 1:4:293-302; *ibid.*, "The case of the switched embryos", *The Hastings Center Report* 1995, 25:6:13-24; *ibid.*, "Symbolic issues in embryo research", *The Hastings Center Report* 1995, Jan./Feb. 37-38; RUTH MACKLIN, "Personhood in the bioethics literature", *Milbank Memorial Fund Quarterly Health and Society* 1983, 61:1:37; R.M. HARE, "Embryo experimentation: Public policy in a pluralistic society", in *Proceedings of the IVF Conference*, Australia: Center for Human Bioethics, Monash University, 1987, pp. 106-123; ROBERT C. CEFALO, "Book Review: *Embryo Experimentation*, Peter Singer et al (eds.); 'Eggs, embryos and ethics'," *Hastings Center Reports* 1991, 21:5:41; MARIO MOUSSA and THOMAS A. SHANNON, "The search for the new pineal gland: Brain life and personhood", *The Hastings Center Report* 1992, 22:3:30-37; MICHAEL SHEA, "Embryonic life and human life", *Journal of Medical Ethics* 1985, 11:205-209; JOHN M. GOLDENRING, "The brain-life theory: Towards a consistent biological definition of humanness" *Journal of Medical Ethics* 1985, 11:198-204; TOMASINE KUSHNER, "Having a life versus being alive", *Journal of Medical Ethics*, 1984, 10:5-8; MICHAEL V.L. BENNETT, "Personhood from a neuroscientific perspective", in Edd Doerr and James Prescott (eds.), *Abortion Rights and Fetal "Personhood"*, Long Beach: Crestline Press, 1989, pp. 83-85.

See also these additional arguments for "delayed personhood": KAREN DAWSON, "Introduction: An outline of scientific aspects of embryo research", in Singer et al, *Embryo Experimentation* 1990, p. 3; *ibid.*, "A scientific examination of some speculations about continuing human pre-embryo research", in Singer et al, *Embryo Experimentation* 1990, p. 26; *ibid.*, "Fertilization and moral status: A scientific perspective", *Journal of Medical Ethics* 1987, 13:173-177; PETER SINGER, "Technology and procreation: How far should we go?", *Technology Review*, 1985; PETER SINGER and KAREN DAWSON, "IVF technology and the argument from potential", *Philosophy and Public Affairs* 1988, 17:87-104; PETER SINGER and HELGA KUHSE, "The ethics of embryo research", *Law, Medicine and Health Care* 1986, 14:3-4:133-138; HELGA KUHSE and PETER SINGER, "Individuals, humans and persons: The issue of moral status", in Peter Singer et al, *Embryo Experimentation* 1990; MICHAEL TOOLEY, "Abortion and infanticide", in Marshall Cohen et al (eds.), *The Rights and Wrongs of Abortions*, New Jersey: Princeton University Press, 1974, pp. 59, 64; Helga Kuhse, "Thinking about destructive embryo experimentation", in *Proceedings of the IVF Conference*, Australia: Center for Human Bioethics, Monash University, 1987, pp. 96-105; Dame Mary. Warnock, "Do human cells have rights?", *Bioethics* 1987, 1:10-12; MICHAEL LOCKWOOD, "Human identity and the primitive streak", *The Hastings Center Report* 1995 Jan./Feb., p. 45; ALAN TROUNSON, "Why do research on human pre-embryos?", in Singer et al, *Embryo Experimentation* 1990, pp. 14-25; STEPHEN BUCKLE, "Arguing from potential", in Singer et al, *Embryo Experimentation* 1990, pp. 90-108.

23. See CONGREGATION FOR THE DOCTRINE OF THE FAITH, *Declaration on Procured Abortion* (November 18, 1974).

24. See e.g., C. WARD KISCHER, "The big lie in human embryology: The case of the preembryo", "The media and human embryology", and "Quid sit veritas? The reodyssey of one human embryologist as a modern Diogenes", in Kischer and Irving (eds.), *The Human Development Hoax: Time to Tell The Truth*, distributed by the American Life League 1997, pp. 71-81, 89-98, and 99-124.

25. Bioethics pervades most academic fields by now, including the law, where legal arguments, based essentially on "delayed personhood" premises, have been constructed and successfully set legal precedents. See, e.g., the "pre-embryo" arguments by JOHN A. ROBERTSON (found in note 22, *supra*), which have been used in a number of frozen embryo legal cases. See also: JOHN A. ROBERTSON, "What we may do with preembryos: A response to Richard A. McCormick", *Kennedy Institute of Ethics Journal* 1991, 1:4:293-302; *ibid.*, "The case of the switched embryos", *The Hastings Center Report* 1995, 25:6:13-24; *ibid.*, "Symbolic issues in embryo research", *The Hastings Center Report* 1995, Jan./Feb. 37-38. Robertson represented the father in the Tennessee frozen embryo case, and referred to these human embryos as "pre-embryos", quoting extensively from Clifford Grobstein's "human embryology". The lower court found with internationally renowned Dr. Jerome Lejeune's scientific testimony, and concluded that there was no such thing as a "pre-embryo" [see lower court testimony of Lejeune in *Davis v. Davis*, Tennessee Court of Appeals at Knoxville, No. 190, slip op. at 5-6 (Sept. 13, 1990)]. However, on appeal to the Tennessee Supreme Court, the judge held that Lejeune's testimony "revealed a profound confusion between science and religion" [Sec. 34, ftnt. 12], accepted the "pre-embryo" arguments of Robertson, and reversed the lower court ruling [842 S.W.2d 588 (Tenn. 1992)]. Interestingly, the judge also stated: "Left undisturbed, the trial court's ruling would have afforded preembryos the legal status of 'persons' and vested them with legally cognizable interests separate from those of their progenitors. Such a decision would doubtless have had the effect of outlawing IVF programs in the state of Tennessee" (emphasis mine).

For other court cases in which the "pre-embryo" argument has succeeded, see, e.g., *Kass v. Kass*, 673 N.Y.S.2d 350, 91 N.Y.2d 554 (1998), in which the embryos were actually referred to as "pre-zygotes"; *A.Z. v. B.Z.*, a Massachusetts frozen embryo case on appeal now to the Supreme Judicial Court of Massachusetts; *J.B. v. M.B.* on appeal now to the Superior Court of New Jersey Appellate Division (Docket No. A-1544-98 T3). Of course, *Roe v. Wade* [410 U.S. 113 (1973)] referred several times to the fetus as a "potential human being" and as a "potential human person" - another form of a "delayed personhood" argument. In *Webster v. Reproductive Health Services*, 492 U.S. 490 (1989), Justice O'Connor argued that viability was "far removed, both qualitatively and quantitatively, from that of the four-to eight-cell preembryos in this case." [ftnt. 17].

See also similar reasoning for "delayed personhood" in the work of: PASCAL KASIMBA, "Regulating IVF human embryo experimentation: The search for a legal basis", *Australian Law Journal* 1988, 62:128-138; B. GAZE and KAREN DAWSON, "Who is the subject of IVF research?", *Bioethics* 1989, vol 3; MAX

CHARLESWORTH, "Community control of IVF and embryo experimentation", in Peter Singer et al, *Embryo Experimentation*, New York: Cambridge University Press, 1990, pp. 147-152; BETH GAZE and PASCAL KASIMBA, "Embryo experimentation: The path and problems of legislation in Victoria", in Peter Singer et al, *Embryo Experimentation* 1990, pp. 202-212; R.M. HARE, "Public policy in a pluralist society", in Peter Singer et al, *Embryo Experimentation* 1990, pp. 183-194. For arguments counter to these legal precedents, see, e.g., my two *amicus curiae* briefs on "fetal personhood" submitted to the U.S. Supreme Court, note 4, *supra*.

26. These are claims stated by many proponents of "emergency contraception", e.g., by Janet Benshoof, President, The Center for Reproductive Law and Public Policy (New York), when I debated her on T.V. (Cable Network New York, "News Talk Television", July 2, 1996; also CBS News, "Up to the Minute", July 1, 1996). Several groups and organizations are defining "pregnancy" as beginning at implantation (6-7 days after fertilization), and hence now even defining "conception" at implantation as well, e.g., The American Fertility Society, The American College of Obstetricians and Gynecologists. Even the federal regulations for the use of human subjects in research define "pregnancy" as beginning at implantation (1991 OPRR Reports, *U.S. Code of Federal Regulations: Protection of Human Subjects 45 CFR 46*, pp. 11-12). These federal regulations also erroneously define "fetus" as beginning at implantation; however the fetal stage does not even begin until the end of the 8th week post fertilization.

27. According to the web site for "Preven", "They [the 'emergency contraception' pills] may also act by altering tubal transport of sperm and/or ova (thereby inhibiting fertilization), and/or possibly altering the endometrium, (thereby inhibiting implantation) [<http://www.preven.com/product/02-06.html>]. Again, "...they may produce changes in the lining of the uterus that could prevent implantation of a fertilized egg" [<http://www.preven.com/product/02-01.html>]. Searle pharmaceutical company communicated to me *via* their "senior scientist" that they, like all the American pharmaceutical companies, claim that the "morning-after pill" could not possibly be abortifacient since there is only a "pre-embryo" there - and they base this "science" on the book by Australian theologian, Fr. Norman Ford, *When Did I Begin?*, (which I addressed in my dissertation, note 1, *supra*; also see note 22, *supra*) (Personal communication, April 30, 1996 and August 30, 1996). Ford explicitly bases his own argument on the "human embryology" of McCormick and Grobstein.

28. Medical texts are not necessarily as accurate as the basic science texts. It is the basic scientists' confirmed and detailed scientific work which is in turn used in medical texts by physicians, etc., often with watered-down and thus inaccurate definitions and unfounded claims. All basic human embryology textbooks state clearly that the human being or embryo begins at fertilization (or fission, etc., using different processes). However, one exception is the 5th edition of Keith Moore's popular human embryology textbook, *The Developing Human: Clinically Oriented*

Embryology (Philadelphia: W.B. Saunders Company, 1993). In this edition Moore used the scientifically invalid term "pre-embryo" for the first time (and there were other very extensive scientific contradictions and irregularities in this edition as well). When confronted independently and vigorously by both Kischer and by myself with the fact that scientifically there is no such thing as a "pre-embryo", Moore finally agreed, and removed the term from his 6th edition (1998). It is important that the proper edition of his text be used. At this time only the corrected 6th edition of his textbook is accurate enough. For my comparative analysis of Moore's 3rd and 5th editions, see: D. IRVING, " 'New Age' human embryology text books: 'Pre-embryo', 'pregnancy', and abortion counseling: Implications for fetal research", *Linacre Quarterly* 1994, 61:42-62.

29. HAROLD VARMUS, "*The Director's Congressional testimony on Stem Cell Research*" (found at <http://www.nih.gov/news/stemcell/statement.htm>); see also, "*A Primer for Stem Cell Research*" [<http://www.nih.gov/news/stemcell/primer.htm>]. For a response to these official statements of the National Institutes of Health (NIH), see D. IRVING, "*Human embryonic stem cell research: Are official positions based on scientific fraud?*", *Communique* (American Life League), July 24, 1999.

The issue here is how "scientific" terms referring to the early human embryo are misused – what do they signify, what policy agendas do they advance? Often these terms are used to mean that the early human embryo is not a human being or not a human person yet – and therefore they may ethically be used in destructive experimental research. NIH has adopted this type of erroneous definition of the early human embryo since at least 1979, when the term "pre-implantation embryo" was used by RICHARD MCCORMICK and CLIFFORD GROBSTEIN in the then-HEW Ethics Advisory Board meetings [*Report and Conclusions: HEW Support of Research Involving Human In Vitro Fertilization and Embryo Transfer*, Washington, D.C.: United States Department of Health Education and Welfare, p. 101]. The similar term "pre-embryo" was possibly coined about the same time by CLIFFORD GROBSTEIN [*External human fertilization*] *Scientific American* 1979, 240:57-67].

Subsequently the term "pre-embryo" has been used specifically – or by implication, by using the same erroneous "human embryology" used originally to justify that term – as normative in decades of bioethics articles and books (see note 22, *supra*), population control, public policy, philosophical and theological literatures, and many national and international medical and research documents, e.g.: the American Fertility Society, "*Ethical considerations of the new reproductive technologies*", *Fertility and Sterility* (Supplement 1) 1986, 46:27S; British Royal College of Obstetricians and Gynaecologists (RCOG), *Report of the RCOG Ethics Committee on in Vitro Fertilization and Embryo Replacement or Transfer* 1983, London: RCOG; *Canadian Royal Commission on New Reproductive Technologies* 1993, Canada; DAME MARY WARNOCK, *Report of the Committee of Inquiry into Human Fertilization and Embryology*, 1984, London: Her Majesty's Stationery Office, pp. 27, 63; *National Institutes of Health: Report*

of the Human Embryo Research Panel 1994, Washington D.C.: Government Printing Office, esp. pp. 48-51.

It is interesting that the only major references given in the NIH Human Embryo Research Panel Report (1994) to ground their conclusion that the early human embryo has only a "reduced moral status" were those citing the works of McCormick and Grobstein (Sister Carol Tauer, co-chair of the Panel's ethics committee, did her dissertation on fetal personhood under McCormick), and of Australians Norman Ford, Peter Singer, Karen Dawson, Stephen Buckle, and D. Wells (Report, p. 49) (see note 22, *supra*). Also, the NIH Panel's Report included an appendix with a *scientific* chart of human embryological terms, referenced *only* by one *bioethics* book written by these *Australian* bioethicists [PETER SINGER, HELGA KUHSE, STEPHEN BUCKLE, KAREN DAWSON, PASCAL KASIMBA, *Embryo Experimentation*, New York: Cambridge University Press, 1990]. For an analysis of this NIH Panel and its report, see D. IRVING, "*NIH and human embryo research revisited: What is wrong with this picture?*", in KISCHER AND IRVING (eds.), *The Human Development Hoax: Time To Tell The Truth!*, 1997, pp. 267-282.

30. See, e.g., note 22, *supra*.

31. Scar tissue formed from abortions and sexually transmitted diseases is one of the major causes of infertility in young women today, and therefore one of the major reasons for the need for in vitro fertilization (IVF). See: "*The 1998 Guidelines for the Treatment of Sexually Transmitted Diseases*", The Centers for Disease Control and Prevention, Division of STD Prevention, National Center For HIV, STD, and TB Prevention, Atlanta, GA.

32. Note the use of the term "pre-embryo", and the redefinition of "pregnancy" as beginning at implantation (6-7 days) by the major medical professional societies, e.g., The American Fertility Society, The American College of Obstetricians and Gynecologists, etc. See also notes 26 and 29, *supra*.

33. See specifically, RICHARD MCCORMICK, "*Who or what is the 'preembryo'?*", Kennedy Institute of Ethics Journal 1991, 1:1:3-15; CLIFFORD GROBSTEIN, "*The early development of human embryos*", Journal of Medicine and Philosophy 1985, 10:213-236; see also other Catholic secular bioethics writers, note 22, *supra*.

34. See, e.g., WILLIAM A. WALLACE, "*Nature and human nature as the norm in medical ethics*", in EDMUND D. PELLEGRINO, JOHN P. LANGAN and JOHN COLLINS HARVEY (eds.), *Catholic Perspectives on Medical Morals*, Dordrecht: Kluwer Academic Publishing, 1989, pp. 23-53.

35. For discussions about applying "proportionality" to some of these issues, see: EDWARD COLLINS VACIK, "*Catholic 'natural law' and reproductive ethics*", Journal of Medicine and Philosophy 1992, 17:329-346; JAMES L. WALSH and

MOIRA M. MCQUEEN, "The morality of induced delivery of the anencephalic fetus prior to viability", Kennedy Institute of Ethics Journal 1993, 3:4:357-369. But see JOHN PAUL II, enc. *Veritatis Splendor*, 3.65-68; 4.73-78; JOHN PAUL II, encl *Evangelium Vitae*, 1.20.

36. See JOSEPH CARDINAL RATZINGER, *Conscience and Truth*, Braintree, MA: The Pope John Paul XXIII Medical-Moral Research and Education Center, 1991, esp. pp. 4-5.

37. To quote from Ronan O'Rahilly and Muller: "The theory that successive stages of individual development (ontogeny) correspond with ("recapitulate") successive adult ancestors in the line of evolutionary descent (phylogeny) became popular in the 19th century as the so-called biogenetic law. This theory of recapitulation, however, has had a 'regrettable influence on the progress of embryology' [citing de Beer]...Furthermore, during its development an animal departs more and more from the form of other animals. Indeed, the early stages in the development of an animal are not like the adult stages of other forms, but resemble only the early stages of those animals." [See O'RAHILLY AND MULLER, *Human Embryology & Teratology*, New York: Wiley-Liss, 1994, pp. 8-9.]

38. See, RONAN O'RAHILLY AND FABIOLA MULLER, 1994: "The *ill-defined and inaccurate term pre-embryo*, which includes the embryonic disc, is said either to end with the appearance of the primitive streak or ... to include neurulation. *The term is not used in this book.*" (p. 55). (emphases mine).

39. KEITH MOORE and T.V.N. PERSAUD, *The Developing Human: Clinically Oriented Embryology* (6th eds.), Philadelphia: W.B. Saunders Company, 1998:

"Inhibition of Implantation: The administration of relatively large doses of estrogens ("*morning-after pills*") for several days, beginning shortly after unprotected sexual intercourse, usually does not prevent fertilization but *often prevents implantation of the blastocyst*. Diethylstilbestrol, given daily in high dosage for 5 to 6 days, may also accelerate passage of the dividing zygote along the uterine tube (Kalant, et al., 1990). Normally, the endometrium progresses to the secretory phase of the menstrual cycle as the zygote forms, undergoes cleavage, and enters the uterus. The large amount of estrogen disturbs the normal balance between estrogen and progesterone that is necessary for preparation of the endometrium for implantation of the blastocyst. Postconception administration of hormones to prevent implantation of the blastocyst is sometimes used in cases of sexual assault or leakage of a condom, *but this treatment is contraindicated for routine contraceptive use*. The 'abortion pill' RU-486 *also destroys the conceptus by interrupting implantation* because of interference with the hormonal environment of the implanting embryo.

"An intrauterine device (IUD) inserted into the uterus through the vagina and cervix usually *interferes with implantation* by causing a local inflammatory reaction. Some IUDs contain progesterone that is slowly released and interferes

with the development of the *endometrium* so that implantation does not usually occur." (p. 58)

"...[Question 2-5 for students]: A young woman who feared that she might be pregnant asked you about the so-called '*morning after pills*' (postcoital birth control pills). What would you tell her? *Would termination of such an early pregnancy be considered an abortion?*" (p. 45) ...[Answer #5 for students]: "#5. Postcoital birth control pills ('morning after pills') may be prescribed in an emergency (e.g., following sexual abuse). Ovarian hormones (estrogen) taken in large doses within 72 hours after sexual intercourse *usually prevent implantation of the blastocyst*, probably by altering tubal motility, interfering with corpus luteum function, or causing abnormal changes in the endometrium. *These hormones prevent implantation, not fertilization. Consequently, they should not be called contraceptive pills. Conception occurs but the blastocyst does not implant. It would be more appropriate to call them 'contraimplantation pills'. Because the term 'abortion' refers to a premature stoppage of a pregnancy, the term 'abortion' could be applied to such an early termination of pregnancy.*" (p. 532)

"[Question 3-2 for students]: A woman who was sexually assaulted during her fertile period was given *large doses of estrogen* [i.e., as in the *morning-after pill*] twice daily for five days to interrupt a possible pregnancy. If fertilization had occurred, what do you think would be the mechanism of action of this hormone? What do lay people call this type of medical treatment? Is this what the media refer to as the 'abortion pill'? If not, explain the method of action of the hormonal treatment. How early can a pregnancy be detected?" (p. 59) ...[Answer 3-2 for students]: "*Diethylstilbestrol (DES) appears to affect the endometrium by rendering it unprepared for implantation, a process that is regulated by a delicate balance between estrogen and progesterone. The large doses of estrogen upset this balance. Progesterone makes the endometrium grow thick and succulent so that the blastocyst may become embedded and nourished adequately. DES pills are referred to as 'morning after pills' by lay people. When the media refer to the 'abortion pill', they are usually referring to RU-486. This drug, developed in France, interferes with implantation of the blastocyst by blocking the production of progesterone by the corpus luteum. A pregnancy can be detected at the end of the second week after fertilization using highly sensitive pregnancy tests. Most tests depend on the presence of an early pregnancy factor (EPF) in the maternal serum. Early pregnancy can also be detected by ultrasonography.*" (p. 532)

40. KEITH MOORE AND T.V.N. PERSAUD, *The Developing Human: Clinically Oriented Embryology* (6th ed.), Philadelphia: W.B. Saunders Company, 1998: "*Human development is a continuous process that begins when an oocyte (ovum) from a female is fertilized by a sperm (or spermatozoon) from a male.* (p. 2); *ibid.*:...but the *embryo* begins to develop as soon as the oocyte is *fertilized*. (p. 2); *ibid.*: *Zygote*: this cell results from the union of an oocyte and a sperm. *A zygote is the beginning of a new human being (i.e., an embryo).* (p. 2) [Note the use of the term "being" here. Thus, this term is *not* restricted to philosophical or religious discussions only as some have argued, but is also used commonly in scientific discussions as well – as demonstrated here in this human embryology textbook];

ibid.: *Human development begins at fertilization, the process during which a male gamete or sperm...unites with a female gamete or oocyte...to form a single cell called a zygote. This highly specialized, totipotent cell marks the beginning of each of us as a unique individual.*" (p. 18). (emphases mine); BRUCE M. CARLSON, *Human Embryology and Developmental Biology*, St. Louis, MO: Mosby 1994: "...finally, the fertilized egg, now properly called an embryo, must make its way into the uterus..." (p.3). (emphases mine); WILLIAM J. LARSEN, *Human Embryology*, 1997: "In this text, we begin our description of the developing human with the formation and differentiation of the male and female sex cells or gametes, which will unite at fertilization to initiate the embryonic development of a new individual ... Fertilization takes place in the oviduct ... resulting in the formation of a zygote containing a single diploid nucleus. Embryonic development is considered to begin at this point. (p.1); ibid.: This moment of zygote formation may be taken as the beginning or zero time point of embryonic development." (p. 17). (emphases mine); RONAN O'RAHILLY AND FABIOLA MULLER, *Human Embryology & Teratology*, New York: Wiley-Liss, 1994: "Fertilization is an important landmark because, under ordinary circumstances, a new, genetically distinct human organism is thereby formed. (p. 5); ibid.: Fertilization is the procession of events that begins when a spermatozoon makes contact with a secondary oocyte or its investments...(p. 19); ibid.: The zygote ... is a unicellular embryo." (p. 19) (emphases mine).

41. CARLSON 1994: "Human pregnancy begins with the fusion of an egg and a sperm." (p. 3). (emphasis mine).

42. As Klubertanz has expressed it, the human soul being a form, cannot be divided. The ovum and sperm unite, "thus giving rise to a single cell with the material disposition required for the presence of a soul"; (GEORGE KLUBERTANZ, *The Philosophy of Nature*, New York: Appleton-Century-Crofts, Inc., 1953, p. 312); see also, D. IRVING, "Scientific and philosophical expertise: An evaluation of the argument on 'personhood' ", *Linacre Quarterly* 1993, 60:18-47, in C. WARD KISCHER and DIANNE N. IRVING (eds.), *The Human Development Hoax: Time To Tell The Truth!*, 1997, p. 140, distributed by American Life League.

43. The realist philosophical concepts which best match this very dramatic physical change at fertilization, and the subsequent growth and development of the embryo and fetus, are "substantial change" and "accidental change". That is, one would say that before fertilization there are two gametes (the sperm and the oocyte), each of which have only 23 chromosomes, neither of which are human beings *per se*, but are only "parts" of human beings, and neither of which would grow if implanted singly in the womb. However, when these two gametes come together at fertilization and fuse, a totally different kind of thing comes into existence - i.e., a new unique individual human being, with 46 chromosomes (the normal number required for any individual of the human species). This would be an example of "substantial change" - i.e., a change in natures, or kinds of things. On the other hand, once this human being is formed, no further change in natures takes place.

All that happens is simply that the already existing human being grows and develops bigger and bigger. This would be an example of "accidental change" – i.e., simply a change in *secondary properties* of the *very same* individual human being. In fact, this is substantiated by empirical evidence. The same number (46) and quality of chromosomes exist in each and every cell of the new human being, regardless of which growth and developmental stage he or she is in. For explanations of these philosophical concepts of "substantial and accidental change", see: GEORGE KLUBERTANZ, *The Philosophy of Human Nature*, New York: Appleton-Century-Crofts, 1953, pp. 124ff; also KLUBERTANZ, *The Philosophy of Being*, *ibid.*, pp. 98-100 (and THOMAS AQUINAS, *Commentary on Aristotle's Metaphysics*, Bk. VIII, lect. 1 (ed.) Cathala, Nos. 1688-1689, as quoted p. 118); ARISTOTLE, *Physica*, 1.7.191a, 15-18, pp. 232-233; *ibid.*, 2.3.194b, 23-35, pp. 240-241. See also HENRY VEATCH, *Aristotle: A Contemporary Approach*, Indiana: Indiana University Press, 1974, Chaps 2 and 3; D. IRVING, "Philosophical and scientific expertise...", *Linacre Quarterly* 1993, 60:18-47, in KISCHER AND IRVING (eds.), *The Human Development Hoax ...* 1997, p. 136.

44. MOORE AND PERSAUD 1998: "The zygote is genetically unique because half of its chromosomes come from the mother and half from the father. The zygote contains a new combination of chromosomes that is different from that in the cells of either of the parents. This mechanism forms the basis of biparental inheritance and variation of the human species. Meiosis allows independent assortment of maternal and paternal chromosomes among the germ cells ... *The embryo's chromosomes sex is determined at fertilization by the kind of sperm (X or Y) that fertilizes the ovum: hence it is the father rather than the mother whose gamete determines the sex of the embryo.* (p. 37)." (emphases mine); CARLSON 1994: "The sex of the future embryo is determined by the chromosomal complement of the spermatozoon ... Through the mingling of maternal and paternal chromosomes, the zygote is a genetically unique product of chromosomal reassortment ..." (p. 31) (emphases mine). O'RAHILLY AND MULLER (1994): "Fertilization is an important landmark because, under ordinary circumstances, a new, genetically distinct human organism is thereby formed." (p.5) (emphases mine).

45. The philosophical concept which matches this empirical reality is "potency". This is precisely the term which has been so misused and corrupted in many of the bioethics arguments for "delayed personhood", probably due to a lack of understanding of the correct historical origin and use of this very technical philosophical term. In these bioethics articles, the terms "potential human being" or "potential human person" are used to indicate a human being or human person *who is not there yet*, but who will begin to exist at some particular (arbitrary) biological or psychological marker later. (Sometimes the term "possible" human being is also used in the same sense). However, the term "potency" actually refers to a human being *who already exists*, e.g., the single-cell zygote at fertilization. By virtue of the kind of nature this *already existing* embryo possess (i.e., "human"), this embryo has the capacity or power or potency to express that human nature. The embryo also has the *potential* to grow bigger and bigger, to become an adult human

being, to play the violin, or to discover new scientific theories. Thus in this proper sense, the term "potential" also refers to an *already existing* human being. (See same references for substantial and accidental change, note 43, *supra*; D. IRVING, "Philosophical and scientific expertise..." in KISCHER and IRVING (eds.), *The Human Development Hoax* ..., p. 137).

46. Some try to argue that *only* the inner cell mass of the early 6-7 day blastocyst is the human embryo or human being, while the outer cell layer is not. (See, e.g., EDWARD J. FURTON and MICHELINE M. MATHEWS-ROTH, "Stem cell research and the human embryo", *Ethics and Medics* 1999, 24:8, also posted on their web site: <http://www.ethicsandmedics.com/specials/stemcell1.html>. My analysis of their article is available upon request.) Many confuse the terms "embryo" and "embryo proper", or are unaware of current research which refutes the dictum that cells are permanently "fated" (see notes 52-55, *infra*). Unfortunately, this erroneous "human embryology" has led others to then argue that the use of some abortifacients would therefore not constitute a *direct* abortion, because the chemical would only act on this outer cell layer, and not *directly* on the "real" human embryo (human being) which is constituted, they claim, only by the inner cell layer. (See these implications, e.g., in ALBERT MORCZEWSKI, "Managing tubal pregnancies, Parts I and II", *Ethics and Medics*, June and August 1996, 21:6 and 21:8. The correct human embryology is that the *whole* blastocyst is the human being, the human embryo, not just the inner cell layer of the blastocyst: CARLSON 1994: "About 4 days after fertilization, a fluid-filled space begins to form inside the *embryo*. The space is known as the blastocoele *and the embryo as a whole is called a blastocyst.*" (p. 34) (emphases mine). O'RAHILLY AND MULLER: "During the first week *the embryo* becomes a solid mass of cells and then acquires a cavity, *at which time it is known as a blastocyst.*" (p. 23) (emphases mine).

47. This has been demonstrated by recent experiments using transgenic animals, e.g., G. KOLLIAS et al, "The human beta-globulin gene contains a downstream developmental specific enhancer", *Nucleic Acids Research* 1987, 15:14:5739-47; R.K. HUMPHRIES et al, "Transfer of human and murine globin-gene sequences into transgenic mice", *American Journal of Human Genetics* 1985, 37:2:295-310; A. SCHNIEKE et al, "Introduction of the human pro alpha 1 (I) collagen gene into pro alpha 1(I)-deficient Mov-13 mouse cells leads to formation of functional mouse-human hybrid type I collagen", *Proceedings of the National Academy of Science - USA* 1987, 84:3:764-768.

48. BENJAMIN LEWIN (ed.), *Genes III*, New York: John Wiley and Sons, 1987, pp. 11-13, 17-19, 30, 32, 33, 35, 79, 91, 93-93; ALAN E.H. EMERY, *Elements of Medical Genetics*, New York: Churchill Livingstone, 1983, pp. 25, 34, 65, 101-103. Indeed, there are usually sections on "form and function" at the end of each chapter in biology textbooks. One sometimes hears today the erroneous reversal of this phrase, i.e., "form follows function"; however even in "evolution" theory *the changed form is the cause of the changed function*.

49. See notes 13, 14, 42, 43 and 45, 47-48, *supra*.

50. RICHARD MCCORMICK, "Who or what is the 'preembryo'?", Kennedy Institute of Ethics Journal 1991, 1:1:3-15; CLIFFORD GROBSTEIN, "The early development of human embryos", Journal of Medicine and Philosophy 1985, 10:213-236.

51. CARLSON (1994): "The transition from morula to blastocyst and the formation of a fluid-filled blastocoel depends first on the maintenance of intercommunications between superficial blastomeres via gap junctions. In the absence of gap junctions, embryos fail to cavitate (form a blastocoel). Cavitation involves the buildup of fluid within the blastocoel. Fluid accumulation is a function of a sodium transport system based on Na⁺, K⁺ -ATPase that develops in the outer blastomeres. The net effect of this enzyme is the movement of Na⁺ and H₂O across the blastomeres and the buildup of fluid in the spaces forming among the inner blastomeres." (p. 34) (emphases mine); O'RAHILLY AND MULLER (1994): "Although the germ layers are no longer regarded as rigidly specific, each layer normally makes definite contributions to the different tissues and organs ... Most organs, however, are formed from more than one germ layer, and, indeed, interactions between germ layers are necessary for successful morphogenesis." (p. 79); *ibid.*: "The first overt indication of cellular differentiation in the embryo is the appearance of a polarized epithelium, namely the trophoblast. Reorganization of the cellular surface, cytocortex, and cytoplasm are thought to depend on the expression of proteins that mediate cell-cell and cell-substratum contact. Cell-cell interactions depend on cell adhesion molecules." (p. 80); *ibid.*: "The skin consists of epidermis and dermis ... As is common in many organs, epithelio-mesenchymal interaction is important." (p. 99) (emphases mine); LARSEN (1997): "During the second week, the extraembryonic mesoderm, cytotrophoblast, and syncytiotrophoblast begin to collaborate with the uterus to form the placenta." (p. 33) (emphases mine); MOORE AND PERSAUD (1998): "This broad developmental potential becomes progressively restricted as tissues acquire the specialized features necessary for increasing their sophistication of structure and function. Such restriction presumes that choices must be made in order to achieve tissue diversification. At present, most evidence indicates that these choices are determined, not as a consequence of cell lineage, but rather, in response to cues from the immediate surroundings, including the adjacent tissues. As a result, the architectural precision and coordination that are often required for the normal function of an organ appear to be achieved by the interaction of its constituent parts during development... The interaction of tissues during development is a recurring theme in embryology (Guthrie, 1991). The interactions that lead to a change in the course of development of at least one of the interactants are termed inductions ... The fact that one tissue can influence the developmental pathway adopted by another tissue presumes that a signal passes between the two interactants." (p. 89) (emphases mine).

52. MOORE AND PERSAUD (1998): "The *chorion, amnion, yolk sac, and allantois* constitute the *fetal membranes*. They develop from the zygote but do not participate in the formation of the embryo or fetus, *except* for parts of the *yolk sac and allantois*. Part of the yolk sac is incorporated into the embryo as the primordium of the gut. The allantois forms a fibrous cord that is known as the urachus in the fetus and the median umbilical ligament in the adult. It extends from the apex of the urinary bladder to the umbilicus." (p. 131) (emphases mine); CARLSON (1994): "The tissues that make up the fetal/maternal interface (*placenta and chorion*) are derivatives of the *trophoblast*, which separates from the inner cell mass and surrounds the cellular precursors of the embryo proper even as the cleaving zygote travels down the uterine tube on its way to implanting into the uterine wall. *Other extraembryonic tissues are derived from the inner cell mass*. These include the *amnion* (an ectodermal derivative), which forms a protective fluid-filled capsule around the embryo; the *yolk sac* (an endodermal derivative), which in mammalian embryos no longer serves a primary nutritive function; the *allantois* (an endometrial derivative), which is associated with the removal of embryonic wastes; and the *extraembryonic mesoderm*, which forms the bulk of the umbilical cord, the connective tissue backing of the extraembryonic membranes, and the blood vessels that supply them." (p. 87) (emphases are mine)

53. This claim by McCormick and Grobstein is essentially stating that past a certain point in early human embryonic development, the cells of the developing embryo are permanently "fated" to be *only* involved in the development of the placental tissues *or* of the embryo proper. It is essentially a statement about final, irreversible differentiation – here, specifically in the early blastocyst. It would seem that this leads them to argue for such total isolation and separation between the two cell layers – and thus a claim that the blastocyst is still just a "genetic individual", a "pre-embryo", and not a "developmental individual", a person.

However, this is in fact a false distinction. The human embryo, from fertilization on, is *both* a genetic individual *and* a developmental individual. Current alternative theories in human embryology would not see these blastocyst cells so permanently "fated" and their eventual locations so irreversibly determined and "isolated". Nor is it so certain that the *extraembryonic mesoderm* derives from the embryo proper, but rather it derives partially from the cytotrophoblast, which itself originates from the outer trophoblast cell layer of the blastocyst.

In support of these statements, I quote from the following human embryology text books: CARLSON (1994): "According to the *inside-outside hypothesis*, the *position* of a blastomere determines its developmental fate (i.e., whether it will become part of the inner cell mass or trophoblast)." (p. 49); *ibid.*: "The relationship between the position of the blastomeres and their ultimate developmental fate was incorporated into the *inside-outside hypothesis*. The outer blastomeres ultimately differentiate into the trophoblast, whereas the inner blastomeres form the inner cell mass, from which the body of the embryo arises ... *If* marked blastomeres from disaggregated embryos are placed on the outside of another early embryo, they typically contribute to the formation of the trophoblast. *Conversely*, if the same marked cells are introduced into the interior of the host embryo, they participate in

formation of the inner cell mass." (pp. 40-41) (emphases mine); O'RAHILLY AND MULLER (1994): "The developmental adnexa, commonly but inaccurately referred to as the '*fetal membranes*', include the *trophoblast*, *amnion*, *chorion*, *umbilical vesicle* (*yolk sac*), *allantoic diverticulum*, *placenta* and *umbilical cord*. These temporary structures are interposed between the embryo/fetus and the maternal tissues ... The *adnexa* are programmed to mature fast, to age more rapidly, and to die sooner than the embryonic/fetal body. *Nevertheless they are genetically a part of the individual and are composed of the same germ layers.*" (p.51) (emphases mine); LARSEN (1997): "In the middle of the second week, the inner surface of the cytotrophoblast and the outer surface of the yolk sac and amnion become lined by a new tissue, the *extraembryonic mesoderm*. *The source of this tissue is debated.*" (p. 33); *ibid.*: "The formation of the yolk sac and chorionic cavity is not fully understood ... *The mechanism of formation of the chorionic cavity and definitive yolk sac are topics of controversy in human embryological research.*" (pp. 39-40); *ibid.*: "*Other theories propose different origins for the extraembryonic mesoderm. Some investigators contend that the extraembryonic mesoderm arises not from the embryonic germ disc but rather by delaminations from either Heuser's membrane or the cytotrophoblast [which originates from the trophoblast, or outer cell layer of the blastocyst]. According to some models, the chorionic cavity is held to arise by a process of vacuolization of the extraembryonic mesoderm itself dividing it into an inner and an outer layer.*" (pp. 39-40); *ibid.*, "...The *extraembryonic mesoderm* forming the outer layer of the yolk sac wall is a major site of *hematopoiesis* (blood formation) [i.e., which then circulates within the embryo proper]. Cells giving rise to these first endothelial cells and hematopoietic stem cells migrate into the yolk sac from the primary ectoderm." (p. 40); *ibid.*: "These centrally placed blastomeres are now called the inner cell mass, while the blastomeres at the periphery constitute the outer cell mass. *Some exchange occurs between these groups. However, in general, the inner cell mass gives rise to most of the embryo proper and is therefore called the embryoblast. The outer cell mass is the primary source for the membranes of the placenta and is therefore called the trophoblast.*" (p. 19). (emphases mine)

54. Nicholas Wade, "Cell experiment offers hope for tissue repair", The New York Times, Jan. 22, 1999, A21. See Christopher R.R. Bjornson, et al, "Turning brain into blood: A hematopoietic fate adopted by adult neural stem cells in vivo", Science 1999, 283:534-537.

55. For adult human stem cells studies describing their change to a different organ system, see, e.g.: (adult human cancerous gonadal cells become nerve cells in adult human patients) Daniel Q. Haney, "Scientists try to grow brain parts", AP News, May 1, 1999; (fetal human neural stem cells put into mice become neural family cells) "Human neural stem cells advance distant prospect of reseeded damaged brain", Science Daily Magazine, Jan. 26, 1999 (Source: Harvard Medical School). For adult animal stem cells studies describing their change to a different organ system, see e.g.: (adult mice neural stem cells become mouse blood family cells) Christopher R. Bjornson et al, "Turning brain into blood: A hematopoietic fate

adopted by adult neural stem cells in vivo", *Science* 1999, 283:534-537; Deborah Josefson, "Adult stem cells may be redefinable", *British Medical Journal* 1999, 318:282; "Adult cells undergo identity switch reported in *Science*", *Science Daily Magazine* (Source: American Association For The Advancement Of Science); (adult rat bone marrow stem cells become rat liver cells and pancreatic cells) B.E. Petersen et al, "Bone marrow as a potential source of hepatic oval cells", *Science* 1999, 284:1168-1170 [bone marrow to liver cells only]; Paul Recer, "Cell used to make new liver tissue", *The Washington Post*, May 13, 1999 [bone marrow to liver cells and pancreatic cells]; (adult vertebrate neural stem cells become neural family cells and other family cells, e.g., skin melanocytes and mesenchymal cells in the head and neck) M. Murphy et al, "Neural stem cells", *Journal of Investigative Dermatology Symposium Proceedings* 1997 (Aug.), 2:1:8-13.

For studies demonstrating adult human stem cells which differentiate to the same family of cells, see, e.g.: (adult human mesenchymal stem cells in bone marrow change to multilineage family cell line cells in vitro) Mark F. Pittenger, et al, "Multilineage potential of adult human mesenchymal stem cells", *Science* 1999, 284:143-146; Nicholas Wade, "Discovery bolsters a hope for regeneration: Biotechnology firm converts basic cells into bone and cartilage", *New York Times*, April 2, 1999, A17; August Gribbin, "Stem-cell breakthrough offers hope; Baltimore team hailed for efforts", *The Washington Times*, April 2, 1996, A1.

For studies demonstrating adult stems that have been identified in humans and animals, see, e.g.: (adult brain stem cells identified in monkeys and humans) "Rodent brain stem cells regenerate after stroke", *UniSciScience and Research News*, Feb. 8, 1999; (adult mouse brain stem cells identified) A. Gritti et al, "Multipotential stem cells from the adult mouse brain proliferate and self-renew in response to basic fibroblast growth factor", *Journal of Neuroscience* 1996, 16:3:1091-1100; (ADULT MAMMALIAN STEM CELL IDENTIFIED) class B. Johansson et al, "Identification of a neural stem cell in the adult mammalian central nervous system", *Cell* 1999, 96:25-34; (adult mammalian forebrain neural stem cell identified) S. Weiss et al, "Is there a neural stem cell in the mammalian forebrain?", *Trends in Neuroscience* 1996, 19:9:387-93; (adult mammalian brain stem cells identified) O. Brustle and R.D. McKay, "Neuronal progenitors as tools for cell replacement in the nervous system", *Current Opinions in Neurobiology* 1996, 6:5:688-695.

For studies demonstrating the use of adult human stem cells in human patients, see, e.g.: Mark Moran, "For cell transplants, is one brain better than two?", *American Medical News*, May 3, 1999, p. 29; "Stem cells move closer to treating patients", *UniSci*, April 2, 1999; Laura Johannes, "Adult stem cells have advantage battling disease", *The Wall Street Journal*, April 13, 1999, B1; "The future of placental-blood transplantation", Editorials, *The New England Journal of Medicine* 1998, 339:22:1628-1629; Alan W. Flake and Esmail D. Zanjani, "In utero hematopoietic stem cell transplantation", *JAMA* 1997, 278:11:932-937.

56. DAWSON [re: fetus-in-fetu twins]: "One case recorded and studied in detail showed that the engulfed twin had developed to the equivalent of four months gestation ... Microscopic study showed that engulfment had occurred at about four

weeks after fertilization, in terms of the argument for segmentation long after the time when it is claimed that *individuality* is resolved." (Karen Dawson, "Segmentation and moral status: A scientific perspective", in Peter Singer, Helga Kuhse, Stephen Buckle, Karen Dawson and Pascal Kasimba (eds.), *Embryo Experimentation* (New York: Cambridge University Press, 1990, pp. 58-59) [Her references are: Yasuda, Y., Mitomori, T., Maturra, A. and Tanimura, T., "Fetus-in-fetu: report of a case", *Teratology* 31 (1985), 337-41; Sada, I., Shiratori, H. and Nakamura, Y., "Antenatal diagnosis of fetus in fetu", *Asian-Oceania Journal of Obstetrics and Gynaecology* 12 (1986), 353-356]. (emphases are mine).

MOORE AND PERSAUD (1998) (6th ed.): "If the embryonic disc does not divide completely, or adjacent embryonic discs fuse, various types of conjoined MZ twins may form." (p. 161) (emphases mine); CARLSON (1994): "The mechanism of conjoined twinning has not been directly demonstrated experimentally, but a likely theoretical explanation is the partial secondary fusion of originally separated portions of the inner cell mass." (p. 42) (emphases mine); O'RAHILLY AND MULLER (1994): "Partial duplication at an early stage and attempted duplication from 2 weeks onward (when bilateral symmetry has become manifest) would result in conjoined twins." (p. 30); *ibid.*: "Once the primitive streak has appeared at about 13 days, splitting that involves the longitudinal axis of the embryo would be incomplete and would result in conjoined twins." (p. 54) (emphases are mine).

57. O'RAHILLY 1994, p. 30-32.

58. For more extensive analyses of the "twinning" process, see KISCHER and IRVING (eds.), *The Human Development Hoax: Time to Tell The Truth!*, (distributed by American Life League, 1997).

59. For a discussion of the critical difference in definitions of "the common good" between natural law philosophical ethics and utilitarian ethics (e.g., in secular bioethics), see D. IRVING, "Which ethics for the 21st century?", paper delivered at the Eighth Annual Rose Mass, sponsored by the John Carroll Society, Washington, D.C., March 14, 1999; see also JACQUES MARITAIN, *The Person and the Common Good*, Notre Dame, IN: University of Notre Dame Press, 1972, pp. 50-58; AUSTIN FAGOTHEY, *Rights and Reason*, (3rd ed. only) St. Louis, MO: The C.V. Mosby Company, 1963, pp. 116, 290, 325, 338.

60. See JOHN PAUL II, enc., *Veritatis Splendor* (August 6, 1993), 1.14; PONTIFICAL COUNCIL FOR PASTORAL ASSISTANCE, *Charter For Health Care Workers*, (1994), 2.38; JOHN PAUL II, enc. *Evangelium Vitae* (March 25, 1995), Intro. 2; 2.34, 38, 40.

61. For an extraordinary historical study of how certain vulnerable human beings have been "redefined" by others as merely an inferior sub-class of human beings, see WILLIAM BRENNAN, *Dehumanizing the Vulnerable: When Word Games Take Lives*, Chicago: Loyola University Press, 1995. The early human embryo,

fetus and young child would now seem to fit into his list of such vulnerable human beings.

62. See ADIL SHAMOO and D. IRVING, "A review of patient outcome in pharmacologic studies from the psychiatric literature, 1966-1993", *Journal of Science and Engineering Ethics* 1997, 3:4:395-405; *ibid.*, "Accountability in research with persons with mental illness", *Accountability in Research* 1993, 3:1:1-17 (also in Adil E. Shamoo, ed., *Ethics in Neurological Research with Human Subjects: The Baltimore Conference on Ethics, 1997*, Amsterdam: Gordon and Breach Publishers, pp. 27-43); see esp. D. IRVING, "The impact of scientific misinformation on other fields: Philosophy, theology, biomedical ethics and public policy", *Accountability in Research* 1993, 2:4:243-272; *ibid.*, "Which ethics for science and public policy?" 1993, 3:2-3:77-99; "Quality assurance auditors: Between a rock and a hard place", *Quality Assurance: Good Practice, Regulation, and Law* 1994, 3:1:33-52; *ibid.*, "'New Age' embryology textbooks: 'Pre-embryo', 'pregnancy' and abortion counseling: Implications for fetal research", *Linacre Quarterly* 1994, 61:2:42-62; *ibid.*, "Individual testimony before the NIH Human Embryo Research Panel - March 14, 1994", *Linacre Quarterly* 1994, 61:4:82-89; *ibid.*, "Academic fraud and conceptual transfer in bioethics: abortion, human embryo research and psychiatric research", in Joseph W. Koterski (ed.), *Life and Learning IV*, Washington, D.C.: University Faculty For Life, 1995, pp. 193-215; *ibid.*, "Scientific and philosophical expertise: An evaluation of the argument of 'personhood' ", *Linacre Quarterly* 1993, 60:18-47, in Kischer and Irving (eds.), *The Human Development Hoax: Time To Tell The Truth!*, (distributed by American Life League, 1997), pp. 129-184; *ibid.*, "Affidavit on 'fetal personhood': Submission to the Constitutional Court of South Africa", affidavit submitted to the Constitutional Court of South Africa, June 24, 1996; *ibid.*, "Testimony against the use of human biological materials in experimental research", in *National Bioethics Advisory Commission Report, The Use of Human Biological Materials in Research: Ethical Issues and Policy Guidance, Appendix*, Washington, D.C.: Government Printing Office, 1999; *ibid.*, "Testimony against the State of Maryland's proposed statute for the use of 'decisionally incapacitated human subjects' in biomedical research", submitted to the State of Maryland General Assembly, March 1999.