

The Status of the Human Embryo

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The theme of the human embryo is, without doubts, of a great interest, because any scientific consideration about the fruit of conception and any different evaluation made about its humane identity have further ethical connotations of enormous transcendence. The judgments given on the human embryo coming from the knowledge of the biological sciences, specially Genetics and Embryology, offer us a little more light upon the moment in which each one of us begins to exist, although it is inevitable that some shadows and doubts still remain.¹

These lines of Prof. Abrisqueta summarize well the importance of the theme we are going to deal with in the present chapter. The ethical judgments we give on the assisted human reproduction techniques described in the previous chapter, are conditional to the ethical value we give to the embryo itself. Therefore, we face now the problem of the so-called status of the human embryo, taking into consideration its three main aspects: first, the biological dimension, that is, the embryonary development; second, the anthropological-philosophical dimension, meaning, the different interpretations of the facts; and finally, the theological-moral aspect, which is mainly focused on the position of the Catholic Church.

¹ José A. Abrisqueta, *El Embrión Humano: Estatuto antropológico y ético*, in Marciano Vidal, ed., *Conceptos fundamentales de ética teológica*, Madrid: Trotta, 1992, p. 439.

1. The Facts: Fertilization and Early Development

Fertilization

Fertilization, the process by which the male and female gametes fuse,² occurs in the ampullary region of the fallopian tube. This is the widest part of the tube and is located close to the ovary. The spermatozoa pass from the vagina into the uterus and subsequently into the fallopian tubes; but because newly ejaculated sperm cannot fertilize the egg, it must undergo first a process of maturation, known as *capacitation*, and *acrosome reaction*, in order to penetrate the barriers protecting the female gamete: the *corona radiata* and the *zona pellucida*. As soon as the sperm has entered the oocyte³ the process continues with the fusion of pronuclei.⁴ Actually, fusion, or the arrangement of pronuclei, marks the conclusion of the process of fertilization—that takes as long as 11 or 12 hours—and the definitive formation of the zygote.⁵

Cleavage and Early Development

Cleavage is a series of divisions of the new fertilized egg, the zygote, in its way down to the uterus, resulting in an increase in daughter cells or blastomeres, which become smaller with each division.

² Thomas W. Sadler, *Langman's Medical Embryology*, Baltimore: Williams & Wilkins, 1990, p. 18: "In preparation for fertilization both male and female germ cells undergo a number of chromosomal and morphological changes, a process known as gametogenesis.... In the male the maturation process from primitive germ cell to mature gamete is known as *spermatogenesis*, in the female as *oogenesis*."

³ NB: Of the 200 to 500 million spermatozoa deposited in the female genital tract only 300 to 500 reach the site of fertilization. Only one of those is needed for fertilization. The contact with the zona pellucida takes 15-20 minutes in humans...

⁴ John McLachlan, *Medical Embryology*, Singapore: Addison-Wesley Publishing Company, 1994, p. 28

⁵ T.W. Sadler, *Langman's Medical Embryology*, Baltimore: Williams & Wilkins, 1990, p. 30: "The main results of fertilization are: (a) restoration of the diploid number of chromosomes, half from the father and half from the mother. Hence, the zygote contains a new combination of chromosomes, different from both parents; (b) determination of the sex of the new individual. An X-carrying sperm will produce a female (XX) embryo, and a Y-carrying sperm a male (XY) embryo. Hence, the chromosomal sex of the embryo is determined at fertilization; (c) initiation of cleavage. Without fertilization the oocyte usually degenerates 24 hours after ovulation."

The two-cell stage is reached approximately 24-36 hours after fertilization. After three to four divisions, the zygote, similar in appearance to a mulberry, is known as the morula. This stage is reached about 3 days after fertilization and the embryo is about to enter the uterus.⁶

Four days after fertilization, 32 cells are already present, and a space begins to form inside the morula. This cavity is known as the blastocoel or blastocoele, and this stage of development is known as the blastocyst. At about 6 days after fertilization, the blastocyst starts to adhere itself to the uterine wall. It is the beginning of implantation. At about 7 days after fertilization the amniotic cavity begins to form, and one or two days later the conceptus⁷ has almost sunk into the uterine wall, and continues its differentiation and development.⁸ Implantation is finished definitively about the 13th or 14th day. At the end of this second week after fertilization the main body axis begins to become apparent, though at first in rather subtle ways. This process is called gastrulation, and this stage is therefore referred to as the gastrula. Next, the existence of the main body axis is confirmed by the development of the neural tube (corresponding to the brain and spinal cord in the adult). This process is called neurulation: hence, this stage is known as the *neurula*.

During the 3rd to 8th week of development, each of the three germ layers, *embryonic mesoderm*, *ectoderm* and *endoderm*, gives rise

⁶ *Ibid.*, p. 30-31: "At this time (12 to 16-cell stage), the morula consists of a group of centrally located cells, the inner cell mass, and the surrounding layer, the outer cell mass. The inner cell mass will give rise to the tissues of the embryo proper, while the outer cell mass forms the trophoblast, which later contributes to the placenta."

⁷ J. McLachlan, *Medical Embryology*, Singapore, Addison-Wesley Publishing Company, 1994, p. XV: "A useful distinction can be drawn between the tissues that will contribute to the baby that is born, and those, the extraembryonic membranes, which contribute to life support mechanisms but will not be part of the baby itself. Thus the terms embryo and fetus are sometimes used to refer to the tissues giving rise to the baby only. The products of fertilization as a whole — the embryo and its extraembryonic membranes, for instance — can conveniently be described as the conceptus."

⁸ *Ibid.*, p. 33: "The disc of tissue that lies between the amniotic cavity and the blastocoel can be described as the embryonic disc. From the disc the embryo itself will develop."

to a number of specific tissues and organs. As a result of organ formation, the shape of the embryo changes greatly and the major features of the external body form are recognizable by the end of the 2nd month. Finally, from the 9th week until birth, the rapid growth of the body and maturation of the organ systems takes place.

Lastly, we would like to add here that obviously the frontiers among these periods cannot be mathematically determined, and therefore the concepts we use are conventional ones. Actually, some of those terms, such as *pre-embryonic* and *embryonic period* or *pre-embryo* and *embryo*, might lead to confusion due to their use in fields out of embryology.⁹ Thus, in order to avoid confusion we prefer to name the three main stages in the early development of human life, under the following nomenclature: *preimplantatory embryonic period* and *preimplantatory embryo* (moment of fertilization up to the 14th day); *postimplantatory embryonic period* and *postimplantatory embryo* (2nd to 8th week), and finally *fetal period* (9th week until birth).

2. The Interpretation of The Facts: Philosophical Aspects

The biological data are the basis upon which different conceptions of the beginning of a truly human life lie. Consequently, this implies a 'before' and an 'after' that affects directly the embryo from an ontological point of view and therefore ethical and juridical as well.¹⁰

⁹ We will see later that some other authors, though accepting the humane character of the life of the embryo, say that the pre-embryo is not a person, unlike the embryo, and therefore its anthropological, legal, medical or ethical status has to be considered in a different way or not be considered at all.

¹⁰ If in the previous part we dealt with the 'biological status', meaning, the empirical scientific description ('the fact') of the origin, functioning and development of the human embryo as living organism, now we face the 'ontological aspect' that makes reference to the philosophical-theoretical definition ('the principle') that isolates the essential characteristic of the concepts 'man'/ 'human individual'/ 'person'. Such an ontological character ends inexorably in a moral dimension; that is, the axiologic attribution to a value to the embryo, and therefore, the affirmation of the must of 'respect' (not only in its negative sense of 'not to kill', but also in its positive sense of 'take care of'). Finally it implies also a juridical character that coincides in a 'weak' sense with the configuration of 'a certain guardianship and protection' and in a 'strong' sense with the attribution of the titularity of the human rights. These are the four main arms with which the different conceptions struggle in the battle for establishing the status of the human embryo they consider more

a. The Biological Life is Truly Human Since:

(1) The Moment of Fertilization

Human life begins with fertilization¹¹ (biological status) and therefore the fertilized egg or zygote is 'man-individual-person' (ontological status) as any other human life in whatever stage of its more advanced development (infancy, adulthood, old age...), has its own value and deserves absolute respect (ethical-moral status) and, therefore, is the owner of human rights among which is, of course, the right of guardianship and protection (juridical status). The principles that underlie this position can be summarized as follows:

There is a qualitative difference between the gametes and the zygote: It is true that life is continuous; that life has not begun with fertilization¹² (gametes are alive), but the point is not when life has begun but when a definite subject, which has life, has begun.¹³ The sperm by itself does not lead to a human being. Neither does the oocyte. Gametes are living human cells, but not human lives. The qualitative leap takes place when, in fertilization, from these two gametes, from these two cells in the terminal stage of their process of differentiation (at the edge of death), a *qualitatively new and different* reality begins; that new reality is the human pre-implantary embryo.

adequate to reality. Cfr. Laura Palazzani, "Por un "Estatuto Jurídico" del embrión humano: El debate más reciente de la bioética italiana," *Cuadernos de Bioética*, 6, 21 (1995) 23.

¹¹ Antonio Cabezon., "Contraception, Sterilization and Abortion," Fausto Gómez, ed., in *Bioethics, a Growing Concern*, Manila: University of Santo Tomás (UST), 1994, p. 35: "Every human being begins its life at conception, Genetic Biology now tells us."

¹² Robert G. Edwards, "The scientific basis of ethics," *Annals of the New York Academy of Sciences*, 442, (1985) 565: "Life has not begun with fertilisation. Life is a continuous. It is present in the oocyte of the fetal ovary and can be traced back through generations... Fertilisation is an essential step, but only one of a long series of essential stages in the establishment of the individual."

¹³ Angelo Serra, "The Human Embryo, Science and Medicine," in IFCU., *Human Life: Its Beginning and Development. Bioethical Reflections by Catholic Scholars*, Paris-Louvain-le-Neuve: L'Harmattan-CIACO editeur, 1988, p. 53; Vicente J. A. Rosales., "Human Life: A Beginning or a Continuum? A Biological Viewpoint," in F. Gómez., *o.c.*, pp. 138-141.

The human genetic load of the embryo: This is a second important point. At the very moment of fertilization the zygote has in itself the two pronuclei and owns the genetic information of the new being it already is. That information, that genetic program, is specifically human, belongs to an individual of the human species and not to a mouse or a dog.

The autonomous character of the new being: The new being is an autonomous life, meaning to say, it takes from the environment in which he lives all the necessary elements for his subsistence, independently, in many cases, whether the mother is undernourished or sick.¹⁴ This relative autonomy is not essentially different from the one we adults have, because we depend also on the environment wherein we dwell: air, food, social relations, etc. Besides this, we have to take into account that the new being directs and has control over his own process, due to his genetic load that is the one displaying his activities.

The development of human life is a continuum: This is an essential point. The embryonic process is a continuous development, linear, without qualitative leaps, that is, gradually the genetic program, already marked in the zygote, is displayed and concretized. Therefore it is artificial to point out a cutting moment in which a truly human life begins. Between that moment and the previous and subsequent phases there is not any qualitative leap at all.¹⁵

The basis and principles of the so called *conceptionist, continuist or personalist* view¹⁶ are solid, and a considerable effort has been done

¹⁴ There is a position, however that holds the zygote does not possess sufficient genetic information to develop and needs essential information supplied by the mother to do so; see Thomas A. Shannon & Allan B. Wolter, "Reflections on the Moral Status of the Pre-Embryo," *Theological Studies*, 5 (1990) 603-626.

¹⁵ José Luis Velayos & Luis Vicente Santamaría, "El comienzo de la vida humana," *Cuadernos de Bioética*, 6, 21 (1995) 5-6: "The ontogenesis, the development, is a collection of phenomena that since the moment of fertilization, when they suddenly burst, until the moment of death will not be interrupted. Therefore the terms of zygote, morula, blastula, embryo, fetus, neonate, child, young, adult, old, are of little importance. The outstanding fact is that biological-biographical unity."

¹⁶ Sometimes it is also called *Catholic*, because although not exclusive of this Church, it coincides with many of her statements. Other arguments, out of the level strictly scientific, are also offered. For example, from the religious-theological level

in order to build upon scientific basis, especially from genetics and embryology. This has the advantage of being opened to dialogue with different opinions based also upon scientific knowledge.

We can therefore say that the proper status of the human embryo, according to the personalist view, springs up from the inseparable concatenation of these four dimensions: *biological-ontological-ethical-juridical*.

There is, nevertheless, an aspect that is an important challenge for the supporters of this position, namely, the problem of *individualization*. Although we will talk about it later, the question that is faced here is that the individualization of a new being calls for two properties: uniqueness, the quality of being the only one, a reality without a like or equal, and unity, the quality or state of not being multiple.¹⁷ It seems that these two characteristics are not definitively established in the new developing being before implantation is over. This fact can be observed because, regarding uniqueness, we can find *monocigotic twins*, meaning to say, two individuals born from a single embryo; and as for the property of unity, there are human chimeras, that is, a new being constituted by the fusion of two different zygotes. After the second week of development, coinciding with the end of implantation, these situations cannot occur any more. Besides these cases that seem to contradict the properties of unity and uniqueness proper to any individual being, it happens that some cells of the zygote will not be part of the embryo itself; rather, they will form the placenta, and also, that implantation seems to function as a natural barrier for anomalous embryos, which are spontaneously aborted.¹⁸

The question that arises from these problems is: Can we speak of a truly human biological reality when it is so "underdone" that it is not decided yet if it will be only one individual or several of them, and

we have the beliefs according to which every human life has been created by God, to him belongs and so it is 'sacred' from its beginning to its end, what implies that no human being has the right to decide when that life can be ended and when not; only God can.

¹⁷ Juan José Lacadena et al., *La fecundación artificial: ciencia y ética*, Madrid: PS, 1990², p. 16.

¹⁸ Javier Gafo, *10 palabras claves en bioética*, Estella: Editorial Verbo Divino, 1993, p. 57.

when from that reality "other things" that are not the embryo will arise?¹⁹

(2) The Moment of Implantation

This view defends that the complete implantation of the embryo in the uterus (about the 14th day after fertilization, when the apparition of the primitive streak in the embryonic disc happens) is an embryological milestone regarding the individualization of the new human being. According to this, individuation is necessary for the constitution of a human being and its recognition as person. Without individualization there is not personalization and, therefore, the consideration of the embryo, especially in the moral and juridical level, must be different if the embryo is a preimplantatory²⁰ or a post-implantatory one.²¹ The implantationist orientation recovers positively

¹⁹ For example, we have the problem raised by the cases of abnormalities known as *teratomas* (tissues that recapitulate the three layers of the developing embryo) and *hydatiform moles* (invasive mass of cells, which might be part of the normal placenta or might replace the conceptus completely). For some answers from different specialists see C. A. Bedate and R. C. Cefalo, "The Zygote: To Be or Not To Be a Person," *Journal of Medicine and Philosophy*, 14 (1989) 641-645; also William E. May, "The Moral Status of the Embryo," *Linacre Quarterly*, 59, 4 (1992) p. 77: "Bedate & Cefalo... had argued that prior to that interaction the developing organism is not internally ordered to become an adult human being and can equally give raise to a non human biological entity, namely, a hydatiform mole." Contrary to the opinion of Bedate and Cefalo is: Antoine Suarez, "Hydatiform Moles and Teratomas Confirm the Human Identity of the Preimplantatory Embryo," *Journal of Medicine and Philosophy*, 15 (1990) 627-635.

²⁰ Thomas A. Shannon., "Cloning, Uniqueness, and Individuality," *Louvain Studies* 19 (1994) 304-305: "With respect to the object, the pre-embryo, these entities have a pre-moral value in that they are living, bear the human genome, and have a biological teleology directed to the moral category of personhood. However, since there is no individual subject of whom a claim can be made, there can be no violation of individuality or personhood.... I conclude.... that research, including division of cells of the pre-embryo and experiments to discover the mechanisms to turn unexpressed genes on, can be done on the human pre-embryo."

²¹ The inspirational document in several countries regarding legislation on the status of the embryo is the famous Warnock Report, submitted to the British Parliament in 1984 and written by a Committee of expertise headed by Mary Warnock. In this document it is recognized that the embryo has right to a certain grade of superadded respect, superior to the one reserved to other animal subject, but shows clearly that this respect is not absolute and has to be balanced with the benefits that come from investigating with them. Cfr. Department of Health & Social Security.,

the problem of the biological indetermination of the embryo before its implantation, giving their own solution to it. Nevertheless, the principle of continuity, is something the followers of the implantationist criteria have to take into account, especially because an important question arises: Are the modifications that came up in the embryonic development—let us call them individualization or implantation—of such relevance that only from those events can we speak of an authentic human life that deserves to be respected?²²

(3) Other Positions

There are some other positions regarding the point of when biological life can be considered truly human. We bring here two of them. In the first place we mention the one that considers the beginning of the cerebral activity,²³ or brain electric activity of the embryo, as the starting point of a real human life. This position is based in the presence or not of brain electric activity registered through an electroencephalogram (EEG), and so situates about 43 to 45 days after fecundation the true beginning of human life. The second one is the position of those who believe that the important moment is that of the parental and/or social acceptance of the new life: without that acceptance there is not truly human life. This orientation disqualifies the biological criteria in order to establish the beginning of a fully human being, saying that human beings are not a biological structure only. Interpersonal relations are fundamental for the development of the person and for the process of a true humanization. The moment when

Report of the Committee of Inquiry into Human Fertilisation and Embryology, London: Her Majesty's Stationery Office, 1984, p. 63, no. 11. 17.

²² J.A. Abrisqueta, a.c., in M. Vidal, ed., *Conceptos... o.c.*, p. 454.

²³ J.M. Goldening, "The Brain-Life Theory: Towards a Consistent Biological Definition of Humanness," *Journal of Medical Ethics*, 11, (1985) 204: "Human life can be seen as a continuous spectrum from the beginning of cerebral life in the uterus (eighth week of gestation) to cerebral death. At each point, tissues and organ systems can be present, but without the presence of a functional human brain, they cannot constitute a human being, at least in a medical sense." (NB: But perhaps we might ask: Is it not erroneous the comparison between the situation of 'death' with the one of an embryo carrying out a process of development? In the first case (death) the brain stops functioning irreversibly, but in the second case (embryo) the brain has not started to work simply because its genetic program of development has not yet sent the necessary information to do so).

the new being is biologically human has no interest; the point here is if he is really humanized. The arguments are, therefore, relational ones.²⁴ Although these views offer some interesting considerations, the continuist and implantationist are the ones with solid, and more reasonable explanations, trying to argue and to dialogue, since they present a biological basis that open the perspective to other dimensions. In these two positions, the points of individuation of the embryo and its characterization as person, seem to be the causes of divergence, as we will see now.

b. To Be an Individual. To Be a Person

(1) Some Problems

Individual: As we said already, it is common to speak about two inherent properties to individualization of a new being: *uniqueness*, the quality of being the only one, a reality without a like or equal, and *unity*, the quality or state of not being multiple. The case of the monocigotic twins and the human chimeras, where it seems these requisites are not fulfilled, would lead to the conclusion, as mentioned above, that neither uniqueness nor unity, and, therefore, the individuality of the new being, are fixed during the first stages of the embryonic development, before the end of implantation. The lack of this individualization would impede us to talk about an individual applied to the zygote during the first two weeks (14-15 days) of his existence.

Person: To deal with the theme of the person implies that one has to enter the domains of philosophy and its history, because that history has shaped in different ways the concept of person.

According to the Greeks, based in their conception of *physis*, man is a *nature*, like any other, composed of a *substance* and its *accidents*.

²⁴ Julio P. López., "Cuándo se es persona?" Diario *El País*, diciembre 19, 1981, p. 28: "A personal 'I' does not exist but in relation to a 'you' and a 'we' social and comunitarian.... The responsible human reason, the couple, and the responsible community, are the ones who have to humanize the mere biological processes and intervene upon them when a sufficient reason or motive exists." (NB: This orientation stresses positively the relational dimension of the person, but it seems easy to object however, that though circumstances are fundamental, they are not constitutive of a human being; a young chim never will be a human being even if he lives in a very humanizing environment, and the 'I' and 'we' surrounding him are very humane).

This nature was defined by Aristotle as *zoon logon éjon*,²⁵ animal doted with reason and speech, *animale rationale*. Boecius says that the person is *rationalis naturæ individua substantia*, individual substance of rational nature.²⁶ With Kant the person is no more a *thing*, a type of nature, but *the liberty and independence of the mechanism of every nature*.²⁷ The world of the person is not the one of nature, but the one of the spirit. The animal has psyche but does not have spirit. Only the personal beings have spirit.²⁸ Max Scheler calls the person the active center in which the spirit manifests itself, unlike other functional centers of life, that, considered within themselves, are called also animic centers.²⁹ The animic order is the one of life; the spiritual order is the one of the person.

We could present from hereon a list of the different definitions of person as given in the history of philosophy, but we think that the ones written above, although isolated of the whole system they come from, are enough to delineate the different meanings the category *person* can receive. The problem seems deeper if we try to apply those definitions to the biologic reality of the zygote: Is this application possible? Does the zygote fulfill the conditions postulated by the philosophers? If this is not so, can we consider the zygote as person? Can we say instead that the zygote is a *potential person*?³⁰ If this is so, does it imply that his ethical value is then the value of a *simply potential person*?

(2) Some Solutions

A primary individuality: As a starting point it can be said that the zygote has already a *first individuality*: the one of belonging to the

²⁵ Aristotle, *Politica*, I, 2.

²⁶ Boethius, *Liber de persona et duabus naturis*. cc. 2, 3.

²⁷ Emmanuel Kant, *Crítica de la razón práctica*, Madrid: Espasa-Calpe, 19843, p. 126-127.

²⁸ Juan J. Lacadena et al., *a.c.*, p. 38.

²⁹ Max Scheler, *El puesto del hombre en el cosmos*, Buenos Aires, 1970³, p. 55.

³⁰ John Gallagher, *Is the Human Embryo a Person?* Toronto: Human Life Research, 1985.

human species; to be zygote of the human species and not zygote of any other species.³¹

No individual before implantation: The solution of accepting the zygote as human individual from the second week on has been already established. Once implantation and the apparition of the primitive streak has been achieved the embryo can only be *one and unique*, namely, *individual*.

Fertilization is the answer: This is the position of the continuist view we already know: every human being is a human individual from the moment the zygote has been constituted; it is a continuum from the very beginning, that is, the moment of fertilization, to its very end, namely, the moment of death.

But what about the challenge of the individuation, the so-called totipotenciality and the biological instability of the zygote during the first 14 days? Well, in the first place the quality of totipotenciality must be properly understood. According to the supporters of this view, it is not that each individual cell within the preimplantatory embryo has an active potential to develop into an adult human being, as some claim;³² rather, it is the embryo as a whole, the one that owns the character of totipotent proper,³³ because only when separated from its original embryo does the individual cell develop itself as another individual.³⁴

³¹ Some authors establish a difference between genetic and developmental individuality; see Clifford Grobstein, "The Status and Uses of Early Human Development Stages," in Darwin Cheney, ed., *Ethical Issues in Research*, Maryland: The University Publishing Group, Inc., 1993: "Genetic individuality, therefore, is not the same as developmental individuality; instead, the one precedes the other."

³² Norman M. Ford, *When Did I Begin? Conception of the Human Individual in History, Philosophy, and Science*, Cambridge: Cambridge University Press, 1988; Michael Coughlan, *The Vatican, the Embryo and the Law*, Iowa City: University of Iowa Press, 1990.

³³ Joachim Huarte, "Concepts fondamentaux d'embryologie," in Vv. Aa., *L'Embryon: Un Homme: Actes du Congrès de Lausanne 1986. Premier Congrès de la Société suisse de bioéthique 8 et 9 novembre 1986*, Lausanne: Centre de documentation civique, 1987.

³⁴ W. E. May, "The Moral Status of the Embryo," *Linacre Quarterly*, 59, 4 (1992) p. 80: "In other words, individual cells of the developing preimplantation embryo are not actually totipotent; they are *actually* totipotent and capable of developing as

Therefore it will be erroneous to say that the zygote has the ethical value of a born person potentially only. The zygote is already *actualized potentiality of a continuous development* since the first moment to the last.³⁵ It is not something isolated, but related to a term, and so the specific ethical value of the zygote springs up from its relation with the end, to be born as an individual or person; its moral value comes up because of its character of being the initiatory cell of an embryological process,³⁶ and this obligates us to an absolute respect for it. Hence the being who is developing himself has the right to be protected and respected from the very beginning of his development.

The phenomena of twinning and chimeras cannot be presented by themselves as the proof that shows there is a substantial change at the primitive streak stage that affects the preimplantatory embryo ontologically. The primitive streak is neither the beginning nor the end of the functional unity of the organism. It is but one of the many stages of the continuous teleologically oriented development of the embryo.³⁷ As G. Grisez writes in his polemic with Ford:

If all zygotes had an active potentiality to become twins [as Ford asserts], they would do so unless some accident prevented it. Thus, contrary to what Ford asserts (without argument), in those zygotes which develop continuously as individuals, the facts do not evidence an active potentiality to develop otherwise. Rather, at most the facts show that early embryos could *passively* undergo division or recombination.³⁸

We still have no scientific explanation of the phenomenon of monozygotic twinning, but two theories can be postulated, namely,

new human individuals *only* after they have been separated, either naturally or artificially, from the embryo of which they are part. As long as they are integrated within that individual embryo, they must be regarded as their parts."

³⁵ Thomas F. Torrance, *Test-Tube Babies*, Edinburgh, 1984, p. 11: "If... we want to think of the human embryo as *potentially person*, that must be taken to mean, not that the embryo is in the process of becoming something else, but rather that the embryo continues to become what he or she already is..."

³⁶ M. Vidal, ed., *Conceptos... o.c.*, p. 454.

³⁷ Agneta Sutton, "Arguments for Abortion of Abnormal Fetuses and the Moral Status of the Developing Embryo," *Ethics and Medicine*, 6, 1 (1990) 6.

³⁸ Germain Grisez, "When Do People Begin?" *Proceedings of the American Catholic Philosophical Association*, 63 (1990) 37.

spontaneous monocytotic twinning is genetically determined, or spontaneous monozygotic twinning is not genetically determined. If twinning is genetically determined, it follows that in the case of an embryo destined to twin there are two individual presences from the start, in the sense that two different final ends, two different life-paths, are programmed from the very beginning.³⁹ Thus we cannot unequivocally describe a zygote which is destined to twin as *a single individual being*; rather, we may speak of two individual presences in such a zygote. If twinning is not genetically determined, it follows that not all human lives start at conception, but that sometimes human beings begin a little later as the result of an asexual process of generation.⁴⁰ However, even in this case the original embryo, the zygote, is one single individual being throughout its existence, whether the process of generation be understood as a shedding of a part⁴¹ or as a splitting into two.⁴²

Regarding the other possible *spatio-temporal discontinuity*, namely, that many embryonic cells never form part of the *embryo proper*, it can be said that the cells destined to be part of the placenta

³⁹ A. Sutton, "Arguments for Abortion of Abnormal Fetuses and the Moral Status of the Developing Embryo," *Ethics and Medicine*, 6, 1 (1990), p. 7: "And this holds true even though the original zygote is not composed of two individual physical beings in the sense, say, of housing two sets of paired gametal chromosomes instead of one set. For its genetic blueprint contains a program which governs two lives and two destinies."

⁴⁰ W. May, *a.c.*, p. 80: "As Grisez, Jerome Lejeune, Benedict Ashley, Edgardo Giovanni, and others have shown many times, the phenomenon of twinning can be accounted for in terms of an asexual mode of reproduction, similar to cloning."

⁴¹ A. Sutton, *a.c.*, p. 7: "On this understanding there is no problem about the continuous individuality of the original embryo from conception onwards. It is and remains the same single individual embryo after losing a part as it was before losing it. However on this account the twin embryo who originates as a part of its sibling only starts life as a living individual organism at the time of separation.... The lives of both twins are individual and continuous from beginning to end."

⁴² *Ibid.*, p. 7: "Another hypothesis, although a rather counter-intuitive one, is that at the time of division the original embryo ceases to exist and the lives of two new individuals begin. Interestingly enough, however, even on this hypothesis there is no problem regarding the continuous individuality either of the original embryo or of either of the two twins. Admittedly, the life-span of the original embryo would be a short one. But it would be the continuous life-span of a single individual while it lasted. The lives of the two twins would begin only at time of separation but would from then on be two separate continuous individual lives."

are, in fact, part of the embryo proper. There is a progressive specialization of the cells of the embryo. Like milk teeth, and indeed, all cells which are discarded during our lifetime, the placenta is a collection of cells which is dispensed with when of no further use: this does not deny its spatio-temporal continuity with the organism of which it is an organ from the beginning until it is discarded.⁴³

Therefore, *continuity* (or active/actualized potentiality of a continuous development), *totipotenciality* (understood as passive potentiality of undergoing division or recombination), *genetic determination of twinning*, *possibility of asexual reproduction*, and *specialization-discarding* of embryonic cells seem to be the characteristics that serve as the pillars of the personalist answer to the problem of individualization.

As can be noticed, this problem is very complex and its solution is not easy. We have presented some of the main attempts in the search of possible solutions regarding the question of the so-called status of the human embryo and the implication of different sciences on it. But there are also some contributions coming from a field we have not mentioned yet; namely, the field of the theological sciences. Indeed, theology works from its own particular level, but offers some important considerations we cannot overlook.

3. The Evaluation of the Facts: Moral Aspect⁴⁴

Obviously, the anthropological condition of the embryo is a question not directly related with religion and, concretely, with the Christian faith; and, therefore, does not belong strictly to the realm of theology. If theology has made reference to the status of the embryo, and still does so, it is because of the connection the anthropological data have with convictions at the religious level.⁴⁵

⁴³ Anthony Fisher, "When did I begin? Revisited," *The Linacre Quarterly*, 58, 3 (1991) 65; Nicholas Tonti-Filippini, "A Critical Note," *The Linacre Quarterly*, 56, 3 (1989) 36-50.

⁴⁴ The evaluation here is made only from the Catholic Church point of view.

⁴⁵ J.J. Lacadena et al., *o.c.*, p. 63: "Although in the history of Christianity there have been other implications between the anthropological data and the reli-

The Catholic Church has shown also her own opinions when the theme of the status of the human embryo has been discussed. In this third part we present that point of view and its development through history and in the actual Magisterium.

a. Historical Overview

As the *Catechism of the Catholic Church* has recalled recently, the Church has always affirmed the moral evil of abortion, that is, the so called procured abortion⁴⁶ This is clearly expressed in texts like this one: "You shall not kill the embryo by abortion and shall not cause the newborn to perish."⁴⁷

However, the scarce scientific knowledge about the embryo during long periods of history helps us to understand that even the present theological reflection considers inadequate some expositions that the same theology has presented on the beginning of human life in other historic moments of a pre-scientific stage of human thinking. Theological discussions were centered upon the problem of the *origin of the human soul* and above all upon the question of *when* that soul was present, *animating* the new being.

The fathers of the Church were divided into two opinions: those followers of the immediate animation (from the beginning of conception) and those defending the *retarded* or *delayed animation*⁴⁸ (after some time). The thesis of the delayed animation prevailed during the Middle Ages because of the victory of *creationism*⁴⁹ over *traducianism*

gious convictions, nowadays it is outstanding the connection with the ethical convictions on the morality of abortion, the licitness of interception as a method of population control, and about the morality of the human reproduction techniques (artificial fertilization, freezing and manipulation of embryos, etc.)."

⁴⁶ *Catechism of the Catholic Church* (CCC), Manila: ECCE, Word & Life Publications, 1994, no. 2271.

⁴⁷ *Didache*, 2. 2; *Ep. Barnabae*, 19, 5: PG 2, 777; *Ad Diognetum*, 5, 6: PG 2, 1173; Tertullian, *Apol.* 9: PL 1, 319-320.

⁴⁸ Joseph F. Donceel, "Immediate Animation and Delayed Hominization," *Theological Studies*, 31 (1970) 76-105.

⁴⁹ P.B.T. Bilaniuk, "Creationism," in Vv. Aa., *New Catholic Encyclopedia*, Washington: The Catholic University of America, vol. IV, 1967-1995, pp. 428-429.

or *generationism*,⁵⁰ namely, that the soul is immediately created by God and it is not a derivation of the parents' soul. Therefore, it was necessary to delay its presence until the sufficient formation of the fetus, in order to receive the infusion of the soul.⁵¹ In the second place we have the incorporation of the Aristotelian anthropology to the Christian thought; according to its hylemorphic conception, the matter needed some capacitation to be able to receive the human soul that is intellectual, spiritual. It is from the moment of the infusion of the rational soul in the human body⁵² when the new life is considered properly human.⁵³

After the council of Trent some signs of change appeared, but it was from the 19th century on, when the opinion of the immediate animation became stronger, and has become the one preferred nowadays. Yet the official Magisterium of the Church has not committed itself to any definitive position favoring any of these two theses and, even now, it seems that she prefers the term *hominization*⁵⁴ to the previous ones.

⁵⁰ *Ibid.*, "Traducianism," vol. XIV, p. 230.

⁵¹ Marciano Vidal et al., *El don de la vida. Ética de la Procreación Humana*, Madrid: PS, 1987, p. 104: "There was neither security nor unanimity in the way of concretizing the factors and the period of time demanded for the formation of the human fetus. Nevertheless what prevailed was the distinction, already introduced by the LXX in the translation to Greek of Ex 21: 22-23, between formed (animated) fetus and not formed (not animated) fetus.... This distinction, with its canonical consequences, disappeared with the Constitution Apostolicae Sedis by Pius IX in 1869."

⁵² Thomas Aquinas, *Summa Theologiae*, 1, q. 118, a. 3; 3, q. 6, a. 4, ad 1; 3, q. 2, a. 5; 1, q. 76, a. 4, a. 6, ad 1.

⁵³ J.J. Lacadena et al., *o.c.*, p. 66: "Qualified witnesses of this way of thinking are: the Penitential Books (in the High Middle Ages), the Scholastic (Peter Lombardo, St. Albert the Great, St. Thomas Aquinas), and the Law (Gratian's canonical collection). Following the anthropological comprehension of hylemorphic sense (man: composed of soul and body) and accepting the facts (few critical and very prejudged) of the Aristotelian embryology, during the Middle Ages prevails the thesis of the retarded animation explained like this: the rational soul appears after forty days in the male and after eighty days in the female."

⁵⁴ Benedict Ashley, "A Critique of the Theory of Delayed Hominization," in D. McCarthy & A. Moraczewski, eds., *An Ethical Evolution of Fetal Experimentation: An Interdisciplinary Study*, St. Louis: John XXIII Medical Moral Research Center, 1976, p. 113-133. (NB: Example of an opposite Catholic opinion to this is: John

b. Magisterium

For the Catholic Magisterium there is no doubt, as it is affirmed strongly, that human life must be respected with all the ethical demands of a personal being from the first moment, namely, fertilization.

The celebration of the Second Vatican Council implies a change in the relation of the Church with the world and an openness to the positive efforts as well as the questions that this world presents. Thus, the positive advances of the sciences are welcomed while, at the same time, remembering clearly that life must be guarded with the greatest care from the moment of its conception.⁵⁵ This is the doctrine repeated several times by the last Popes.

The Vatican's 1974 *Declaration on Procured Abortion* states that from the time the ovum is fertilized, a life begins which is neither that of the father nor of the mother; it is rather the life of a new human being with his/her own growth (12).⁵⁶ This *Declaration*, however, deliberately leaves untouched the question of the moment when the spiritual soul is infused.⁵⁷

Specially important is the Vatican's 1987 *Instruction on Respect for Human Life in its Origin and on the Dignity of Procreation*, known as *Donum Vitae*.⁵⁸ The theme and the nature and identity of the human embryo is clearly expressed in this paragraph:

Mahoney, *Bioethics and Beliefs*, Sheed & Ward, 1984, p. 69: "...it may be possible to have a human being which has not yet received a human soul infused by God and is therefore not yet a human person"; p. 89: "...the possibility of twinning and recombination in every conceptus (whether it occurs spontaneously or not) argues against a biologically stable subject for such immediate animation"; other authors: J. Donceel, *a.c.*; James Diamond, "Abortion, Animation and Biological Hominization," *Theological Studies*, 36 (1975) 305-324; Mark Johnson & Jean Porter, "Delayed Homini- zation," *Theological Studies*, 56, 4 (1995) 743-770.

⁵⁵ GS, 51.

⁵⁶ *Declaration on Procured Abortion*, *L'Osservatore Romano*, English Weekly Edition, 5 Dec. 1974, 6.

⁵⁷ *Ibid.*, n. 19.

⁵⁸ *Instruction on Respect for Human Life in its Origin and on the Dignity of Procreation (Donum Vitae)*, 22 February, 1987.

...the fruit of human generation, from the first moment of its existence, that is to say, from the moment the zygote has formed, demands the unconditional respect that is morally due to the human being in his/her bodily and spiritual totality. The human being is to be respected and treated as a person from the moment of conception; and therefore from the same moment his/her rights as a person must be recognized, among which in the first place is the inviolable right of every innocent human being to life.⁵⁹

It considers licit the interventions upon the human embryo if they respect its life and integrity, do not expose it to risks, and their goal is exclusively therapeutic.⁶⁰ Therefore the production of human embryos destined to be exploited as disposable biologic material is immoral.⁶¹ The *Catechism of the Catholic Church* quotes those numbers of *Donum Vitae* and remembers again that the embryo must be treated as a person from conception; the embryo must be defended in its integrity, cared for, and healed, as far as possible, like any other human being.⁶²

The most recent document, and perhaps the most important so far on our topic, is John Paul II's encyclical letter *Evangelium Vitae*⁶³ on the value and inviolability of human life. The whole document is a cry in defense of human life from its beginning until its end,⁶⁴ and its sacredness as the image of God that it is (n. 2). It remembers the former teachings of the Church and reiterates its condemnation with regards to abortion, because the one eliminated is a human being from

⁵⁹ DV, I, 1.

⁶⁰ *Ibid.*, I, 3.

⁶¹ *Ibid.*, I, 5.

⁶² CCC, n. 2274; 2375.

⁶³ John Paul II, *Encyclical Letter Evangelium Vitae on the value and inviolability of human life*, 25, March, 1995.

⁶⁴ Fausto B. Gómez., "The Gospel of Life According to John Paul II," in F. B. Gómez & H. F. Bustamante, *Relevant Ethical Issues in Healthcare*, Manila: University of Santo Tomas, 1996, p. 104: "*Evangelium Vitae* appears as a clear, powerful, dynamic and hopeful statement in favor of human life. It represents a dramatic and compassionate invitation to all men and women of goodwill (*EV* is addressed also to non-Christians) to respect, protect, love, and serve life, every human life."

the very beginning of life (n. 58). In reply to the implantationist theory, the document quotes what was already said in the *Declaration on procured abortion* and in *Donum Vitae* (n. 60), and declares unacceptable the use of embryos for experimentation, because they are innocent human creatures (n. 63).

c. Some More Contributions

The official position of the Magisterium is followed by most of the Catholic theologians, but there is also a group of qualified theologians who differ in some points, specially when they assign fully human status to the biological life once it has finished its implantation into the uterus.⁶⁵

This is the case, for instance, of Charles Curran, R. A. McCormick,⁶⁶ E. Chiavacci, F. Bockle, J. Fuchs among others.⁶⁷ Nevertheless, some of them acknowledge the respect the new being deserves from the moment of conception (although it is not yet individuated) and the opposition to concrete experiments with preimplantatory embryos.⁶⁸ □

⁶⁵ Carol A. Tauer, "The Tradition of Probabilism and the Moral Status of the Early Embryo," *Theological Studies*, 45 (1984) 3-33.

⁶⁶ McCormick argues that the genetically unique preembryo is not itself a person prior to implantation because it is not yet developmentally individual, therefore it cannot be the subject of human rights; nevertheless because of the preembryo's "intrinsic potential" and uncertainties about the ability to cabin technologies once they are loosed, he proposes a *prima facie* obligation the preembryo should be treated as a person; see: Richard A. McCormick, "Who or What is the Preembryo?" *KIEJ*, I (1991) 1-15; "The preembryo as potential: A Reply to John A. Robertson," *KIEJ*, I (1991) 304: "I argue that the potential of the preembryo for personhood makes powerful demands on us not to interfere with that potential....I did understand the *prima facie* obligation to treat the preembryo as a person as a moral obligation, albeit one with possible exceptions."

⁶⁷ J.J. Lacadena et al., *o.c.*, p. 74.

⁶⁸ Norman Ford, "When Did I Begin? - A Reply to Nicholas Tonti-Filipini," *Linacre Quarterly*, (November 1990) 65: "...even if it were certain that the early human embryo was not a person, I would morally disapprove of interrupting the generative process by aborting preimplanted human embryos and destructive experiments on human embryos.... the benefit of any reasonable doubt about the personal status of the early human embryo must be resolved by treating the human embryo as a person from conception."