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'When did I begin?' Revisited

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In *When did I begin?* Fr. Norman Ford ('F.') argued that there is no human individual or soul present in the embryo until two or three weeks after fertilization. The book was triply significant. First, it re-presented an old opinion, 'delayed hominization', with more scientific documentation than ever before. Secondly, it had major implications for several contemporary moral dilemmas, such as the disposition of human embryos and early abortion. Thirdly, it has become the favorite source cited by proponents of human embryo experimentation, and thus has considerable political and legal significance.

In 1989 Nicholas Tonti-Filippini presented in this journal the fullest of the several critiques of F.'s book to appear so far. In 1990 F. replied, yet surprisingly he barely touched on the criticisms Tonti-Filippini had made; instead he restated in summary form the arguments used in his book. The present study re-examines that debate.

Fr. Ford's science

One of the clearest virtues of *When did I begin?* is the rich collection of biological information about early human development. F. claims or assumes that these are uncontroversial 'facts' which metaphysics then seeks to interpret: in this he is very much in the mainstream of Baconian-empiricist views of scientific method. Of course, even within this tradition F. must contend with the almost unanimous conclusion of scientists — despite being aware of all his biological data and more — that fertilization in mammals normally represents the beginning of life for a new individual member of that species.

But there is also a fundamental epistemological question begged here. Modern philosophers of science have exposed some of the assumptions behind naive inductivism and shown how illusory are the classical

distinctions between fact and interpretation, neutral objective science and committed subjective metaphysics. They have identified the “theory-dependence of observation” and shown that the presumed objectivity of the scientific observer actually reflects considerable personal involvement, commitment and, accordingly, interpretation.

Had F. been more aware of contemporary philosophy of science, he might have been more wary of the “expert tuition, advice and constant encouragement” he says he received from leading embryo experimenters [Axviii]. Honest embryo experimenters will have formed the view that the embryo is not a human person, and their perceptions of “the facts” are likely to be accordingly “value-laden”.

Thus when F. asserts that “*embryo* technically refers to the stage from the third to eighth week of development” and advocates the use of the term *pro- or pre-embryo* for the first two weeks [A210-2], he is adopting the linguistic engineering of the pro-experimentation lobby. His own advisers, Short and Trounson, testified before an Australian Senate Committee that they regard these terms as quite arbitrary.

Again, F. presents the zona pellucida, chorion and placental tissues as “extra-embryonic” membranes, rather than parts or organs of the “embryo proper” [A117-8,124,146,153,156-7,171,B64] — a claim which Tonti-Filippini rightly describes as “curious” (p. 41; cf. pp. 45-6). F.’s arguments for this position (such as that they have no nerves and are insentient, or are discarded after a time, or can be shared with a twin) would make most of the human body not part of “the body proper”. The biological evidence is clearly that these tissues are formed by the embryo, usually with its genetic constitution, and for its sole benefit and use, and are indeed its organs: they are clearly not the mother’s organs, nor a tumor, nor some alien third organism living symbiotically with mother and embryo. F. argues that “it would be a sufficient, but probably not a necessary, condition for an individual human being to exist that it be a living body with the primordium of at least one organ formed for the benefit of the whole organism” [A170]: the zona pellucida (and later the placental membranes) would seem to satisfy F.’s own sufficient condition for the existence of an organism —from conception.

F. asserts, again as a matter of biological fact, that despite their close contact and the appearance of a single organism or unity, the several cells of an embryo are really distinct organisms: the membranes of these cells “merely touch”, and in the early stages are held “loosely together” in “simple contact” by gluey junctions and the “cage” of the protective zona pellucida [A125,137-9,146,B62]. Once more, little evidence is offered for this interpretation, which runs quite contrary to the understanding of most biologists, or of any ordinary viewer of photographs of a multi-cellular embryo with the cells firmly pressed against each other, restricting each other’s shape and position.

Another example of “factual” information in F.’s book which is actually quite controversial is that on monozygotic twinning. It is far from clear, for

instance, that the trigger for identical twinning is environmental rather than genetic [A119,135]: presumably F. insists on this so as to exclude the view that in twinning there are really two individuals present from conception. Nor is it as clear as F. claims that in twinning the original "parent" organism ceases to exist in producing two new ones: it might instead be the case that the original organism continues to exist as well as its genetically identical "offspring". F. also claims that identical twinning can occur at any time during and up to the first two weeks after conception [A136,172-3,B63]. Some biologists, however, believe that "Siamese" twinning and the "foetus-in-foetu" occur well after the implantation and primitive streak stage, up to a month or so after fertilization; others suggest that it occurs much earlier than previously assumed, and that the veterinary evidence from embryogenesis in sheep and cattle, upon which F. and his sources rely, is not applicable to human embryos.

Space precludes an examination of several other far from uncontroversial "scientific facts" presented in F.'s work. The examples that are given here are offered simply as a warning to readers not to be intimidated into a philosophical position by F.'s embryology. Overall his scientific data do **not** support his denial of the organic individuality of the early embryo. We can now turn to the philosophical justification for his position.

Fr. Ford's philosophy of science

F. rightly observes that the present debate must be inter-disciplinary, involving philosophy, embryology and history. He describes his preferred method as "philosophical induction": the inference of metaphysical principles from an attentive analysis of the physical data known to experience and observation. While he does not directly address how he views the relationship between science and metaphysics, he insists that "science is quite relevant even if philosophy is more important", or that biological evidence leads to particular philosophical conclusions, or that philosophical conclusions should be guided by or drawn from scientific data.

Despite the accumulation of merely indicative biological data and the justly tentative nature of his argument, generally couched in terms of "seems" and "suggests", F. comes to a strong conclusion: the human individual clearly begins after implantation; and persuasive philosophical arguments, based on scientific evidence, show that there *could not be* an individual before that stage; indeed that to support individuality from conception would be "extremely difficult to maintain", "pointless", "quite unreal" and "impossible to say with any plausibility". The problem with this is that a multiplication of *ifs* can never produce such a strong and confident *must*. The certainty with which F. presents his conclusion is not supported by his argument. This may be due to a fundamental logical misunderstanding: for F. (wrongly) asserts that inductive reasoning can produce conclusive results and implies that the goal of science is to uncover

and articulate the purposive "laws" of capital-N "Nature" [A12,146, 155,176].

F. opposes disrespectful procedures involving the early embryo (except in the case of rape? B65) and supports Catholic teaching that the benefit of any reasonable doubt about the status of the embryo must be resolved by treating it as a person from conception. But his "certain" conclusion suggests that there is in fact no *reasonable* doubt upon which to base the Catholic Church's argument from prudence (that the presence of human soul in the embryo is sufficiently probable for prudence to require that it be treated as a person). It cannot be probable and impossible at the same time!

No end to "philosophical induction" can ever resolve which criteria are necessary and which sufficient for individuality. A fundamental weakness of *When did I begin?* is that the relationship between empirical science and metaphysics is never worked out. F. does, however, repeatedly have recourse to "what children know", "common-sense realism", "ordinary experience", "universal agreement" and what we "spontaneously recognize" to resolve philosophical problems. This part-empirical, part-intuitive source seems to form the bridge between science and metaphysics in his theory.

But "common sense" and "common usage" are not always as helpful as might first appear. At the edges of our understanding (such as the beginning and the end of life), these authorities are at their most strained and ambiguous. It is simply not the case that every ordinary person can identify a human individual, as it were, from fifty paces. That is why there have at various times been raging controversies over how we should treat Black, Jewish, embryonic, unborn, anencephalic, severely handicapped or persistently comatose people, as well as some animals and, perhaps in the future, sophisticated artificial intelligences. The "common-sense understanding of ordinary people" has yielded all sorts of regrettable conclusions in the past and is likely to do so in the present and the future. That is, in part, why we bother with philosophical clarification of concepts and terms.

The present writer happens to agree entirely with F. in his opposition to Dr. Peter Singer's position that the unborn, new-born, severely handicapped, and comatose are not persons. But pleading that Singerism does not accord with ordinary linguistic usage, or that "nobody" holds this position, or that "people the world over" support the alternative, is unlikely to convince its adherents. This is not, in the end, a philosophical argument at all: it is sociology. Common sense and common usage fail to provide the much-needed bridge between F.'s biological data and his metaphysics.

Fr. Ford's Aristotelianism

F. assumes the metaphysics, epistemology and anthropology of Aristotle, Boethius and Aquinas: the human person is a psychosomatic unity, a distinct living ontological individual with a truly human nature, and an example of a common human nature which is known by abstraction

from concrete examples.

F. describes well the erroneous classical biology upon which Aristotle and Thomas based their metaphysical reflections. Radically new biological data, such as we now have, might be expected to yield (or be met by) a radically new ontology. Thus Fr. Benedict Ashley, and others have argued cogently that had Thomas known that the sperm and ovum do bring about the epigenetic *primordium* of the personal body, he would have favored immediate animation, as he allowed in Christ's case. Bishop Conti has suggested that in a contemporary context talk of successions of souls and delayed hominization is a "threadbare scholastic argument conjured up to give sense to a misread biology, and ought to be as firmly rejected".

After encountering in F.'s book such contemporary embryology, one might be a little startled to find it joined to a metaphysic with such an antique pedigree, not that newer philosophies are necessarily better. The problem is that F. rarely, if ever, engages in the contemporary philosophical debates on identity theory, multiplicity and counting, parts and wholes, natural kinds, substance-kinds, essences and individuation criteria, organismic biology, and taxonomy — even though these have immediate bearing upon the matters he raises. One would have expected such a major work as this to evidence more acquaintance with these contemporary philosophical controversies and to offer some position regarding them. Instead, F. pours the new wine of Trounson and Short's embryology into the old wineskins of seminary Thomism.

Aristotle's and Thomas' principles are by no means unproblematical today. F.'s assumptions that forms are reliably abstracted from substances which instantiate natural kinds, that artificial and natural unity are easily distinguished, that "we all know" that a crowd, herd or hive are a class and that their members are individuals of that class, do need to be argued for today. Can hylomorphism easily account for phenomena such as the slime-mold, transplants and conjoined twins? Don't the contemporary debates have anything to offer classical metaphysics?

There are several problems even with F.'s use of the unmodified classical ontology. First, he seems to adopt an Enlightenment view of the soul which restricts its meaning to the "mind" [A78-9,130 etc.], and at no stage addresses what it is that informs the embryo (or each distinct organism of the "cluster of cells") before hominization at two to three weeks. This is an extraordinary gap for one so attached to an Aristotelian-Thomistic ontology. The theory of delayed hominization presumed a succession of souls, and did not allow for one human soul to unite and replace several vegetative or animal souls (each informing a distinct body), or no souls at all, as F.'s account assumes; rather, one higher soul replaced one lower soul.

This points to a further difficulty in F.'s application of hylomorphism in this situation. For Thomas the development of the embryo towards that stage at which it could fittingly receive a rational soul required that it have a single (non-rational) soul already present from fertilization directing its gradual development for that purpose. F. denies that there is any such

principle of unity and thus of coordinated development. Instead "a determinate, actual human individual gradually emerges and develops from what is potentially human and indeterminate in relation to its ultimate fate" [A162]. F. never gives a metaphysical (as opposed to a biological) account of why the cells gradually organize themselves in this way. For hylomorphism there can be no gradual emergence of unity (with things part-unity and part-multiplicity), nor of humanity (with things part-human, part-animal). Either a substance is a unity or not, a human being or not. And the soul is the cause of the organization of the being, not the after-effect as F. presumes [e.g. A130, B64]. The reader is left with the impression that the "soul" for F. is a spiritual component peculiar to human beings and infused subsequent to the production of a coherent human body: a thoroughly Cartesian view. F.'s position seems to the present writer to be irreconcilable both with the classical metaphysical tradition and modern adaptations of or alternatives to it.

What, then, is an individual?

Almost every page of *When did I begin?* refers to "ontological individuality". It is surprising, therefore, that F. does not clearly specify in any one place the criteria upon which this ontological individuality is to be assessed: instead several yardsticks are used, implicitly or explicitly, in different parts of the book. Why these criteria are the ones which are necessary for individuality is never explained by F., except for an assertion that there is "universal agreement" about them [A122]. One might instead have adopted criteria for an individual life such as the ability to reproduce itself: but this is a capacity a twinning embryo has even more clearly than a newborn infant!

What is the relevance of having *human genes*? F. establishes convincingly that genetic humanity is too weak a test for human individuality (gametes, live organs and tumor are genetically human); that genetic individuality is too strong a test (identical twins would fail); but (against Singer) that it is a necessary condition for personhood [A122]. A genetic definition of individuality is presumed when F. argues that the possibility chimeras, with parts derived from more than one genetic source, disproves the individuality of the *early embryo* [A144-5, 159-63, B63]. But chimeras are no more problematical for individuality than transplants and transfusions (where organs or blood derived from a genetically different source are incorporated into an organism) or nutrition (where the whole or part of even a living organism is taken into the substance of the recipient).

A second implied test is *spatial oneness*: that the thing be spatially distinct from other things and not itself split into several parts separated by other things or by space [A87-8, 122, 125, 161]. Accepting the importance of this (not unproblematical) criterion, we find that the embryo is in fact a (relatively) continuous unity at all stages of its development. The cells touch and adhere to each other; until "hatching" the zona pellucida surrounds and

helps to hold them together. Apart from twinning they do not behave independently in the sense of wandering off, grouping and regrouping. Thus embryologists regard the embryo as a single multicellular organism, not a colony of unicellular organisms. F., however — while counting twins apparently on the basis of spatial contiguity and discontiguity — treats the unity of other embryos as only apparent, like adults living in close proximity to each other.

F. regards as decisive against individuality two supposed spatio-temporal discontinuities: that many embryonic cells never form part of the “embryo proper”; and that in twinning one body becomes two so that neither body can trace its existence back prior to twinning [e.g. A121-5, B64]. But, as we have seen, the cells destined to be part of the placenta are, in fact, always part of the embryo proper. Like milk teeth, and indeed all cells which are discarded during our life-time, 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.

As Tonti-Filippini establishes clearly (p. 42), the supposed discontinuity in twinning provides no argument against the individuality of the greater majority of embryos which do not twin. Most people by far can trace their spatio-temporal chain of being back to fertilization: only before then are there two other individuals (the gametes). How then do we account for the admittedly rare monozygotic twins? Even if we accept F.’s assertion that in twinning one embryo ceases to exist in the production of two “offspring”, all it means is that monozygotic twins trace their spatio-temporal identity back to the moment of twinning; their “parent” embryo was a distinct human organism until twinning, when it “died”. In answer to F.’s objection that this “parent” embryo lacks spatio-temporal continuity with an adult, it might be pointed out that not only zygotes, but many fetuses, infants and children lack this also: they die on the way. we do not conclude therefrom that they are not individuals. Why we should draw the line at twinning, requiring that a zygote “survive” this stage undivided, is far from clear.

A third individuality criterion introduced by F. is that the organism be *multicellular* [thereby excluding the zygote by *ad hoc* definition] and be *differentiated* and determinate in organization of parts [A122]. F. again pleads his distinction between embryonic and placental cells, this time pointing out that in the early embryo it is indeterminate which will be which; but it is already determined that all these cells will in fact form part of the embryo, even if the particular organ that each will contribute to is yet to be differentiated. The regularities of the shapes, relationships between various constituents of the cells and between the cells, and stages of development indicate that in the embryo we have from the beginning a high degree of differentiation and coordination of parts. And well before F.’s two to three week mark the cells have differentiated into inner and outer cell masses and lost their pluripotentiality.

Organization and soul from conception

Another test of individuality used by F. is *organization* of essential parts “for the benefit, well-being, self-development and self-maintenance of the whole individual being” [A122-3; cf. 72,93-4,125]. A leading embryo experimenter apparently persuaded him that in the IVF embryo “each cell behaves as if it is significantly independent of the other cells” and that at most the cells are only “loosely organized” [Axi-xii; cf.148-9,175]. The problem is, of course, how loose is “loose” and how independent is “significantly independent”?

Some light can be cast on these questions by “organismic”, “organization” or “systems” analysis of life, common now among philosophers of biology. According to this approach, a living organism is not just an accidental aggregate of cooperating parts, but a functionally interdependent, self-constructing, self-directing, self-maintaining and self-reproducing entity with a real internal unity of organization; it is interdependently related to its environment in fulfilling these capacities. The human zygote qualifies according to this standard, as F. sometimes seems willing to admit [e.g. A103,108,123] and Tonti-Filippini demonstrates convincingly (pp. 38-9,47).

If the cells of the early embryo are each “doing their own thing” and “going it alone”, it is remarkable that they do not each set about building their own amnion, chorion, placenta, etc. On the contrary, unless there is monozygotic twinning, the “group” acts throughout in the interests of the group, not the individual cells, each cell interacting and “communicating” in various ways with the others. The whole embryo dynamically adjusts the balance between its parts, being programmed by what F. calls a “genetic clock”, set in its DNA from the time of fertilization, so as to develop synchronically and grow in a coordinated way. Radical changes in internal arrangement, and various external disturbances — even ones as drastic as the removal of a cell in biopsy — do not break this chain of development. The “purposive, goal-directed or teleological” character of the activities of the embryo — its characteristics which F. recognizes as “a group or system of coordinatec cells” [A159] — suggest an organizational integrity sufficient for individual life according to an organization-teleology criterion.

Thus we find that the early human embryo does in fact satisfy all the individuation criteria so far isolated from F.’s work — genetic constitution, spatial oneness, spatio-temporal continuity, differentiation of parts, self-directing organization. F.’s response is sometimes to deny this, but more often simply to deny the sufficiency of each criterion, demanding that the individuality of the organism must be established *before* admitting this evidence. But this circular requirement can itself be admitted only at the cost of denying individuality to those more mature humans which he holds are self-evidently ontological individuals.

The organizational integrity and developmental direction of the embryo fit in well with the view that there is a soul (the “spiritual” principle of

organization and individuality) from conception. This approach seems to be in the background of the Catholic Church's declarations on abortion (1974) and artificial reproduction (1987) and its increasing insistence on respecting the embryo as a human person from fertilization. Hence the recent Roman decision that the serious crime of "abortion" in Canon Law includes any deliberate terminative action against the unborn *from the moment of conception*.

Fr. Ford's ultimate tests: untwinnability and unchimerability

The twinnability (capacity to replicate) of the early embryo is the most crucial evidence which F. brings forward for its non-individuality. The twinnable zygote presents the "absurd" prospect of an organism which is both one, and more than one, human individual at the same time [Axvi, 120, 122-5, 135-6]. The problem with this "straw man" argument, however, is that no one professes it. Those who claim the twinnable embryo is an individual usually argue that it is one individual until twinning; there are thereafter two individuals; but at no stage is there "both one and more than one human individual" at the same time. Like any asexually reproducing creature, the twinnable embryo is one individual with a potential to become two. Just as many plant and animal organisms reproduce both sexually and asexually — and yet no one denies their individuality — so, we now know, do human beings. Tonti-Filippini's fundamental complaint remains unanswered: untwinnability is not a criterion of individuality for other objects or other living species, and so why should it be for human beings? As that critic demonstrates, F. ultimately demands of the embryo a standard of individuality which even adult humans could not satisfy.

Related to the untwinnability standard is F.'s requirement that an individual not be able to fuse with another: because the early embryo can accept cells from (or be aggregated with) another organism (= a chimera), it is not an individual [Axvii, 139-46, 159-63, B63]. Such a criterion would disqualify from individuality much older embryos and fetuses because the most common form of chimera in humans is the "blood chimera" where blood cells from one fetal twin colonize another; indeed it would exclude any organism which accepts a transplant, transfusion, foreign bacteria, or possibly even nutrition. And today there are several experiments involving the introduction of genetically foreign (brain, pancreas and other) stem cells into adult patients in the hope that these cells will colonize that patient's diseased organ, thereby creating a chimera. The capacity of patients to receive such a colony is surely no proof that they are not individuals.

From the artificial induction of chimeras in laboratory mice F. concludes that in natural human development embryonic cells from one or more genetic colonies amalgamate at a later stage to form the definitive individual human body [Axvii, 139-46, B63-4]. The leap from the bizarre to the normal here is imprudent. One might better suggest that human chimeras, if they

do occur, are extremely rare, the result of abnormal, diseased development, and thus tell us little about the nature of the normal embryo.

Conclusions

F.'s work raises a number of important questions and provides some useful answers. His collection of biological and historical information is helpful, if needing some qualification. He provides some useful challenges to the "Catholic" position of personhood-from-conception, by establishing that reliance upon biological argument alone is insufficient; that genetic uniqueness is not essential to human individuality and genetic humanness not a sufficient proof; and that any "homunculus" theories still lurking in our imaginations must be purged. He also convincingly refutes some common "non-Catholic" arguments in this debate, such as the restriction of personhood to the viable, the brainy, or the actively reflective, and the drawing or inferences about the nature of or proper regard for the embryo from "the prodigality of nature" ("natural wastage").

But F.'s case against the individuality of the early human embryo fails at several crucial points. This is not to question either the well-publicized honesty of his efforts, nor the possibility that a more plausible case could yet be made for delayed hominization. But a close examination of his evidence and argument suggests to this reader "the commonly held view" that the human individual begins at fertilization stands unshaken.

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It is expected that the present writer will, in the near future, publish a monograph-length critique of Fr. Ford's book.