

THE PRIMACY OF THE ORGANISM. A RESPONSE TO NICANOR AUSTRIACO

• Adrian J. Walker •

“Epigenetics, then, may be a (co)determinant of the one-celled embryo’s phenotypic profile, but it is not the primary determinant of its ontological status *tout court*.”

In his response to my argument that Altered Nuclear Transfer (ANT) is a form of human cloning, Father Nicanor Austriaco faults me for ignoring what he calls the “crucial biological fact” that “the nature of a particular cell is determined, not by the genetic state of the cell *per se*, but by its epigenetic state.”¹ Once this “fact” comes into view, he insists, it becomes obvious that ANT is both technically and morally distinct from human cloning.

Father Austriaco acknowledges that I have got half the story right: I am correct in saying that both ANT and cloning involve the insertion of a somatic cell nucleus containing a reasonably complete genome into an enucleated oocyte. But, given what Father Austriaco calls “the primacy of epigenetics over genetics in determining cellular identity” (164), the mere transfer of the donor cell genome into the enucleated egg is not by itself sufficient to produce a new human organism. Something else must happen, too: the egg cell

¹Nicanor Austriaco, “Altered Nuclear Transfer: A Critique of a Critique,” *Communio* 32, vol. 1 (Spring 2005): 164. Subsequent citations will be made within the text.

must reprogram the donor genome “into the epigenetic state associated with embryos.” “That,” continues Father Austriaco, “is the essential event that constitutes a new human organism” in the case of cloning. By contrast, ANT aims to prevent just this essential event from happening. The procedure deploys timely genetic manipulation to keep the egg from switching on the genes “associated with a single-cell human embryo.” By skillfully pre-programming the epigenetic determinants of the cellular identity of its product, then, ANT creates human cellular artifacts, but not cloned humans. Despite their apparent proximity, cloning and ANT are actually miles apart both technically and morally:

Given these biological facts, the difference between SCNT and ANT should be clear: with SCNT, the enucleated egg is allowed to reprogram the transferred genome so that an embryo is generated. In contrast, with ANT, the enucleated egg—because of genetic manipulations done either to the egg or to the donor cell or to both simultaneously—is prevented from reprogramming the transferred genome to an embryo-like epigenetic state. Thus, with ANT, the embryo-specific genes in the transferred genome are not turned on, and so no embryo—no organism—is generated. Instead, from the very beginning, a cellular artifact, with a subset of genes turned on that differs from the unique subset of genes turned on in a *bona fide* embryo, is created. Ideally, of course, this cellular artifact would be a source for pluripotent stem cells that, if necessary, could be licitly destroyed in the laboratory. In sum, contrary to Walker’s flawed proposal, ANT is technically, and therefore morally, distinguishable from cloning. (165)

The cogency of Father Austriaco’s response to my equation of ANT with human cloning hinges on the truth of two premises, of which he defends one at length and assumes the other without argument. The defended premise: epigenetics is the primary determinant of cellular identity. The undefended premise: epigenetics is the primary determinant of cellular identity, not only for ordinary somatic cells, but *for totipotent single-celled embryos as well*. I leave aside for a moment the first premise—I will return to it later—and concentrate instead on the second. Father Austriaco does not pay much attention to it, but it is a crucial link in the argumentative chain of his paper.

Father Austriaco casually moves from ordinary somatic cells to the one-celled embryo without pausing to notice how the

fundamental asymmetry between them might pose problems for his overall argument. What asymmetry do I mean? Well, the one that comes to light in this biological fact: the one-celled embryo is totipotent, whereas the somatic cells are differentiations from this totipotency—and not vice versa. Put another way: the one-celled embryo is not just “a” cell, but is the whole human organism, which, although in a unicellular phase, contains in (active) potency all its other cells. By the same token, the one-celled embryo is not just the substrate of its epigenetic determination, but is also the active source thereof—it being, from the moment of its conception, the living whole of which the very interplay between genetics and epigenetics is itself just a function. Thus, even if we agree with Father Austriaco provisorily that there is a certain epigenetic state typical of a one-celled embryo (a claim that, as I will show below, is partly true, but in need of serious qualification), we cannot agree with him that this state primarily determines the embryo’s identity. It can determine—but then the embryo is doing the determining through it as an instrumental efficient cause—where the embryo is on its developmental path. But it cannot determine what the embryo is ontologically. If anything, it is the other way around.

This is not to say, of course, that where the embryo is on its developmental path is unimportant. On the contrary, if the embryo doesn’t develop normally, it can’t continue to exist. But—as I argue at length in my first article—a failure to continue existing is not an infallible sign that what looked like an embryo until the moment of the failure actually never was one. Otherwise, we would have to say that no miscarried baby was ever really a baby. Clearly, then, Father Austriaco is not entitled to reason backwards from the ANT product’s epigenetic state to its non-embryonic status—unless he can show, on other grounds than just the absence of that state, that there never was an embryo there in the first place. Unfortunately, Father Austriaco does not do so. This failure, I submit, is due to his, and other ANT proponents’, tendency—despite anti-mechanistic professions of organismic holism to the contrary—to make an organism’s essential being consist in its *de facto* ability to be expressed according to that essence. We have just seen a variant of this confusion: Father Austriaco plays fast and loose with the notion of “identity,” effectively collapsing the one-celled embryo’s ontological identity into its epigenetically-colored phenotypic manifestation—and that without the slightest conceptual clarification or argument to back him up.

Father Austriaco might reply that it is not he who is reducing the ontology of human organism to its developmental facticity, but I who am failing to understand that and how ANT proposes to circumvent that ontology altogether. Isn't the whole point of ANT, Father Austriaco might ask me, to use preventive genetic manipulation in order to get completely around the generation of a human organism, and so go directly instead to a cellular artifact that does not need to begin in anything like anthropogenesis at all? In a word, Father Austriaco might well agree with my insistence that the human embryo is ontologically prior to its developmental facticity, while firmly denying that this fact is, or implies any, argument against ANT.

Much depends, then, on whether or not ANT truly does circumvent anthropogenesis as Father Austriaco claims. Now, as he describes the procedure in his article, it seems to do just that by preventing the egg cell from reprogramming the donor genome into an embryo-like epigenetic state. Unfortunately, this description leaves out a detail that may seem small, but actually calls into question the description's accuracy. It is this: the egg cell cannot reprogram the donor cell nucleus until the two have fused. Having fused, however, they are now one new entity, which means that, if anything can be said to reprogram the donor cell genome, it is no longer the (unfused) egg *per se*—which strictly speaking no longer exists—but precisely the new entity itself. What this suggests, and what Father Austriaco does not seem to see, is that ANT, like cloning, cannot help but leave its product at least some of the innate spontaneity that is characteristic of the ordinary human *conceptus*. I say “cannot help but,” because unless the enucleated egg and the donor cell nucleus fuse—and so become the new entity endowed with inner spontaneity I just alluded to—then they cannot initiate the process that will lead to pluripotent stem cells. ANT, thanks to its own conceptual parameters, remains parasitic on the very nature it is supposed to be rewiring, and the genetic engineering it deploys cannot work on that nature from inside out, but only from outside in—and for that very reason, not all the way in, either. It has to allow a fusion of human genetic materials to take place according to its own inner law, and so cannot change the kind of being that such a fusion brings about, but can only modify that being's phenotypical expression(s). Indeed, as we know, ANT begins, not just anywhere, but with a totipotent zygote, whose normal developmental path it

follows up to the blastocyst stage.² The ANT product may end up resembling a disorganized cell mass, but it starts as only a human embryo can start. And, as the venerable Aristotelian principle has it, “if it walks like a duck and it swims like a duck”

Note that my argument would still stand even if the time-gap between the new entity’s coming-into-being and its structural breakdown were reduced to the apparently instantaneous. What counts is not the interval of time between the two events, but the way in which the new entity comes into being in the first place. Similarly, my argument is not affected by the fact that, in Father Austriaco’s scenario, the new entity appears on the scene without the “right” epigenetic state. The fact that an induced (epi)genetic defect is present as soon as the new entity has come into being is not by itself sufficient to revoke the ontological implication of its coming-into-being.

The closest Father Austriaco comes to taking up the challenge of this argument is his response to a possible objection which he deals with near the end of his paper. The objection, which he (rightly) attributes to me (and also to unnamed others), runs thus: “A cellular artifact generated by ANT containing a reversible genetic defect is not essentially different from an embryo. Both have the potential to develop to maturity, since reversing the defect would allow the artifact to develop normally” (166). In order to defuse this argument, Father Austriaco points out that, while the ANT “artifact’s” genetic defect may be reversible, the ANT product cannot itself do the reversing. Rather, it is as dependent on the intervention of the scientist for that as, say, an acorn is dependent on the intervention of a carpenter to be fashioned into a crucifix. But, just as its dependence on the carpenter places the acorn in a state of passive potency with respect to becoming a crucifix, ANT’s dependence on the scientist places it in a state of passive potency with respect to organismic maturity. Lacking an active potency for human organismic maturity, however, the ANT product cannot qualify as a human embryo, for human embryos are by definition beings having precisely that active potency. Conclusion: the ANT

²This suggests that what proponents of ANT ambiguously call its product’s “partial developmental trajectory” is “partial” only in the sense that it is prevented from reaching its destined end, but not in the sense that it doesn’t naturally have that destiny.

product's reversible genetic defect, depriving it of its active potency for organismic maturity, also *ipso facto* deprives it of its inner ontological status as a human organism:

An embryo has an active potential to become a mature human organism. It has the epigenetic state that gives it the intrinsic capacity to develop to maturity. Thus, it is essentially that organism. In contrast, a cellular artifact with a reversible genetic defect only has a passive potential for mature development, a passive potential that can only be realized if a scientist alters its epigenetic states from without. Thus, it is essentially not an organism. It is unlike the embryo. (166)

This argument tacitly appeals to the above-cited Aristotelian principle that "if it walks like a duck and swims like a duck, then it is a duck." But no Aristotelian would follow Father Austriaco in fallaciously drawing from this principle the inference that the only way for the duck to prove that it is a duck is by actually swimming or walking. After all, a duck may have lost its legs and be allergic to water and still be a duck. Or, to put it more technically, there is a world of difference between the *de facto* inhibition of an active potency (the lame duck cannot walk or swim here and now because of the oil spill) and its total ontological absence (what we thought was a live duck was actually a wooden decoy). But it is just this fundamental difference that Father Austriaco has blurred. As he himself seems to admit, or at least not to dispute, if the ANT product's reversible genetic defect were reversed in time, then it would develop spontaneously towards human adulthood. By the same token, it is exactly like the acorn, not with respect to the crucifix, but with respect to the oak; indeed, it is exactly like the normal embryo with respect to human organismic maturity. Admittedly, the ANT product cannot reverse its genetic defect without the scientist's intervention, but then neither can the acorn that I keep on my desk grow into an oak unless I intervene and bury it in a suitable location. Unless we want to admit the absurd proposition that the acorn loses its active potency to become an oak, and so ceases to be an acorn, so long as it sits on my desk, then we have to acknowledge that the ANT product, while perhaps unable *de facto* to reach organismic maturity, nonetheless retains an innate active potency for such maturity that

only an embryonic human being could have and that, for this reason, points back to, and underscores, its original human status.³

Father Austriaco's failure to prove that the ANT product lacks the active potency—and so the ontological status—typical of a human embryo means that he has not yet shown that the procedure bypasses the generation of a human organism. He has not yet shown that ANT tidily disposes of, or neutralizes, the ontological implications of the fusion of the egg cell and the donor cell nucleus. Can he get himself out of this difficulty, which threatens to undermine the cogency of his argument against me, by appealing to the supposed fact that epigenetics determines cellular identity? He cannot, because this alleged fact is really just an expression of his above-mentioned confusion between ontology and development, and, therefore, is not so much an argumentative escape hatch that would help him out of his trouble as it is a question-begging restatement of the reason why he fails to see that ANT is a form of human cloning in the first place. This is not to deny, of course, that epigenetic states plays some role in determining the identity of the cell. It is merely to underscore that Father Austriaco cannot claim epigenetics as the primary determinant of cellular identity without collapsing ontology into developmental facticity—and so to insist

³It is important to make clear that, if the term “active potency” means anything, it means a power rooted in an already existing actuality. By the same token, such a power can never constitute the very nature of a thing, but is, at best, a sign that such a thing exists in act according to that nature. Now, a nature is something that, so to say, you are either born into—or will not ever have. By the same token, in order to determine whether X is a human organism or not, all we need to do is determine whether or not X came into being as other individual human organisms typically do. Of course, once X comes into being, it may be severely defective. And this severe defect may manifest itself so quickly that, for all the world, it looks as though it had never been a human organism at all. ANT's plausibility depends, it seems to me, entirely on this possibility, which the procedure seeks to realize artificially through pre-transfer genetic engineering. The trouble with this strategy, however, is that it identifies what is in fact deformed, or interrupted, development with the underlying nature of the thing that suffers this deformity or interruption. It is precisely in order to avoid this collapse of nature into development that I propose the constitution of a new genome as a sufficient sign of the constitution of a new human organism. This sign, it should be noted, also enables us to distinguish between the product of ANT and the teratomas to which ANT's proponents often analogize it.

that he can get no traction from that claim against my argument that ANT is a form of human cloning.⁴

Admittedly, the one-celled embryo is not only the human organism, as I have been insisting, but also represents a developmental stage that the human organism will leave behind. From this point of view, Father Austriaco is perfectly correct that the one-celled embryo is in a certain “epigenetic state,” and even that this epigenetic state determines its identity—provided, of course, that by “identity” we mean a certain *phenotype* characteristic of the earliest stage of human life.⁵ All that “epigenetics determines cellular identity” really means, then, is that it is an instrumental efficient cause of the phenotype “one-celled embryo,” but not of the ontological identity of the organism that manifests itself in that phenotype. Having said this, we implicitly introduce a distinction between, let us call them, embryo¹, the unicellular phenotype that differs from all other later phenotypes in part on account of its epigenetic state, and embryo², which is the substantial whole that, entirely present from the first moment of conception, is one and the same throughout all its developmental phases. Although epigenetics plays an important role in bringing about embryo¹, it does so only as the internal, efficient instrument of embryo². Epigenetics, then, may be a (co)determinant of the one-celled embryo’s phenotypic profile, but it is not the primary determinant of its ontological status *tout court*—or even, for that matter, of the phenotype. Only the one-celled embryo is.⁶

⁴Father Austriaco, it seems to me, is guilty of a certain simplification. The primary cause of cellular identity is . . . the organism itself, which exercises this causal primacy both in the order of form/finality *and* in the order of efficiency. By the same token, the cell’s epigenetic states are best understood as internal, instrumental efficient causes of this organismic prime causality. But they are not the only such instruments. They themselves, after all, arise on account of the interplay between the genome and extra-genomic factors. This is not to say, of course, that the identity of the cell does not depend somehow on its epigenetic states, but only that they are neither the primary formal constituents or even the primary moving agents of cell differentiation.

⁵I owe this point to Dr. Sara Deola.

⁶What does it mean to say that the embryo is the primary cause of its own development? It means, I would like to suggest, that the embryo alone is the bearer of the actuality of all that is within it, an actuality that therefore cannot be explained by any of its parts, or even, for that matter, by all of its parts in their coordinated interplay. To be sure, without the coordinated interplay of its parts, the embryo

With that I come to the answer to the question that I put in Father Austriaco's mouth: even granting the ontological primacy of the embryo over its development, what relevance does this fact have to ANT, which appears to bypass embryogenesis altogether? Its relevance, we now see, is this: the ontological primacy of the embryo over its development is just another way of saying that epigenetics does not furnish a sufficient criterion for deciding whether or not ANT has produced a new human organism. By the same token, we are obliged to look for this criterion precisely in that fusion of enucleated egg and donor cell nucleus whose importance, Father Austriaco insisted, epigenetics relativized. If epigenetics is not the primary determinant of cellular identity, then the event that constitutes a new human genome is also the event that constitutes a new human individual after all. This is not to say, of course, that this new individual's identity is reducible to its genome. The genome, like its epigenetic states, is the instrument of an individual identity, not its chief constituent. At the same time, one of the ways the genome exercises this instrumentality is by being a basis on which epigenetics can occur in the first place. If epigenetics is a sufficient sign that human development is occurring, genetics is a sign that human development is possible in the first place, and so a sign that the being that is intrinsically capable—by active, and not by passive potency—of such development is now present. The coming-into-being of a new genome is a sufficient token of, if not a sufficient explanation for, the coming-into-being of a new individual organism.⁷ Father Austriaco's only ground for denying this, as far as I can

cannot keep hold of this holistic actuality. Nevertheless, the embryo's actuality as such is not constituted by that coordinated interplay. If anything, it is the other way around. For the same reason, we have to say that the embryo must come into being all at once, with a wholeness of actuality that is already complete before any development can occur on its part. It is this priority of the actuality-bearing whole, it seems to me, that Father Austriaco, and the proponents of ANT generally, fail to see in their collapse of ontology into developmental facticity. Nor, it should be noted, can what Father Austriaco calls "active potency" be taken as a substitute for the actuality which I am talking about here. The former is rooted in, and dependent on, the latter, but not vice versa. "Active potency" is, if anything, just a power to act rooted in an already existing, ontologically prior actuality of the sort I am describing.

⁷The genome is in this respect analogous to what the Scholastics would have called a proper accident, which necessarily accompanies a given essence, even as it does not account for the whole of the essence, but only a "part" of it. Risibility,

see, is the confusion between ontology and developmental facticity that dogs his argument and, indeed, every argument for ANT that I have seen so far.

Father Austriaco accuses me of ignoring the crucial fact that epigenetics determines cellular identity, including the cellular identity of the one-celled embryo. It now appears that this accusation itself presupposes a systematic, although unintentional, confusion between phenotype and ontological identity, between substantial being and factual development—a confusion that vitiates Father Austriaco’s entire argument. Once we have clarified this confusion, however, we realize that what Father Austriaco claims is ANT’s ability to reprogram its product’s epigenetics from embryonic to non-embryonic is in truth really just a tinkering with the developmental course, and phenotypic manifestation of, an embryo, albeit one severely crippled on account of that tinkering. ANT, contrary to its architects’ claim, does not bypass the natural beginning of the human being, but simply prevents it from reaching its destined fruition. ANT, as I noted above, cannot work without the fusion of the enucleated egg with the donor cell nucleus and its genome. If epigenetics is not the primary determinant of cellular identity, then the claim that ANT’s genetic engineering will prevent that fusion from yielding a human being collapses. And if it collapses, then the conclusion of my original argument still stands: ANT is not the creation of cellular artifacts, but “cloning with a twist.”

Far from introducing some new fact that calls my original argument radically into question, Father Austriaco has simply restated the concept of ANT, with new terminology, to be sure, but with the same logic that I deal with in my first article. By the same token, our disagreement is not a clash between empirical sensitivity on his part and empirical obtuseness on my part, but between two different philosophical approaches to judging the facts. Father Austriaco thinks that ANT neutralizes any uncomfortable ontological

the ability to laugh, is a classic example of such a proper accident of the essence man. Now, risibility is analogous to the genome in this one sense: because man is born with the innate ability to laugh, and because he alone can laugh, if X laughs, then X’s laughter is a sufficient token of his humanity, even if it is not a sufficient constituent thereof. Similarly, a new genome necessarily accompanies a new individual, and belongs uniquely to him, so that, once formed, we can be sure that the individual has come into being, even if it is not by itself sufficient to account for the whole of this individual’s ontological identity.

implications that the residue of natural generation the procedure leaves in place might raise. I do not. But the reason I do not, I beg to repeat, is not my ignorance of the “facts,” but my adherence to a distinction between ontology and factual development that Father Austriaco does not observe in his account and defense of ANT—with fatal consequences for his argument, as I have shown. I am not suggesting, of course, that Father Austriaco intends to deny the distinction between ontology and factual development. My point is rather that he does not seem to see its relevance to the question of ANT. Why not? A clue to the answer lies, I suspect, in Father Austriaco’s faulty analogy between the carpenter fashioning oak wood into a crucifix and the scientist removing—and restoring—the ANT product’s active potency for organismic maturity. Father Austriaco’s use of this analogy, and his failure to see its fallacious character, is telling, for it suggests that at the back of his mind is the idea that, for all intents and purposes, whatever mystery there might be in the fusion of egg and sperm, of enucleated egg and donor cell genome, is totally available and transparent to the scientist. This could be true, however, only if there were no natures, or substantial wholes, or forms that transcended the physicality of body parts—only if something like materialistic reductionism, of mechanism were true. Once again, I am not suggesting that Father Austriaco is an intentional materialist, but only pointing out, as I do in my original article, that ANT breathes the same intellectual atmosphere as the embryocidal methods of stem cell research it wishes to replace. If we Christians want to offer a helpful contribution to the debate about those methods, we do well to avoid wobbly compromises like ANT, and begin to engage instead with the mentality that gives rise to them: the mentality, that is, that sees in the *conceptus* no trans-empirical nature, form, or intrinsic quality that might be beyond the direct reach of, and so norm, the physical manipulation of it. □

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