

THOMAS AQUINAS, HYLOMORPHISM, AND IDENTITY OVER TIME

FABRIZIO AMERINI

If you approach the issue of Identity-Over-Time with in mind Aristotle's metaphysics, you will easily realize the interplay of this issue with hylomorphism. For an Aristotelian hylomorphist, the central question is indeed to know whether it is form or matter (or even both) that accounts for the transtemporal identity of our common-experience objects. For many reasons too long to explain here, Identity-Over-Time viewed from this angle has been a favourite subject in the literature concerning Thomas Aquinas. In Aquinas' writings scholars have found many occasions to deal with this issue. Only to cite two of the recent works on this matter, in his 2005 book *Aquinas and the Ship of Theseus* Christopher M. Brown paid attention to puzzles revolving around the identity of existent material things, the substitution of parts and its effect on the definition of the essential properties of things¹. Some years before Silas N. Langley dedicated a

¹ See BROWN 2005. On this topic in Aquinas, see also HUGHES 1997; EBERL 2000; VAN DYKE 2000; EBERL 2004; STUMP 2006; VAN DYKE 2007; MCDANIEL 2010; STUMP 2012; VANDEN BOUT 2013.

detailed dissertation to the identity of human soul after the corruption of body².

Aquinas addresses the issue of Identity-Over-Time in many discussions, including especially the identity of material things and artefacts, the identity of the human soul after the corruption of body, the identity of the body of Christ in the three days from his death to his resurrection and the identity of the resurrected human body at the end of time. All these discussions have a point in common: they lead Aquinas to raise the question of Identity-Over-Time with respect to things that fully exist in act, i.e., things that possess an identity of their own and change some of their parts or properties over time while continuing to be what they are. In this article I would like to investigate this topic from a different angle, considering a case that I already introduced in my book on *Aquinas on the Beginning and End of Human Life*, namely the transtemporal identity of things that do not yet have an identity of their own or fully exist in act. The case is that of the identity of the human embryo through the process of human generation³. This case is particularly noteworthy, for two reasons.

First, it permits the investigation of Identity-Over-Time for the case of ephemeral beings, that is, for things that, at a given time, exist but do not exist in act in a complete and perfect way. Before the advent of the human soul, embryos do not have indeed a stable species and

² See LANGLEY 2002.

³ See AMERINI 2013, ch. 5.

Aquinas underscores this fact by calling embryos «entities that are on the way towards the species» (*entia in via ad speciem*), entities that are incessantly changing form and continuously transforming their matter⁴. In this case, the task of defending the transtemporal identity of such entities seems to be much more compelling.

Second, the case of the human embryo permits proving that Aquinas provides no explanatory or reductive account of Identity-Over-Time. Persistence through time is a metaphysically primitive feature of our common-experience objects that Aquinas tries to capture and clarify but that he appears unable to explain in terms of the persistence of more basic item such as matter and/or form. I nevertheless resist concluding from this that Aquinas would have admitted a radical discontinuity between an embryo and a human being to the point that he might have excluded that the person I am today be the same person that my embryo was in my mother's womb⁵. As I shall try to show, Aquinas is of the opinion that, under given conditions, a material thing can change its matter and its form while continuing to be the same thing. But before to discussing closely the identity of the embryo in Aquinas, let me give a brief outline of Aquinas' views on human embryogenesis.

⁴ See AQUINAS 1961 *Sum. c. Gent.*, II, ch. 89, 255, n. 1744: «Nec est inconueniens si aliquid intermediorum generatur et statim postmodum interrumpitur: quia intermedia non habent speciem completam, sed sunt ut in via ad speciem; et ideo non generantur ut permaneant, sed ut per ea ad ultimum generatum perveniatur».

⁵ For emphasis on discontinuity, see PASNAU 2004, 120-125.

1. First Question: Is Human Embryogenesis A Formally Discontinuous Process?

Aquinas' explanation of human generation is based on the idea that generation – unlike other processes such as qualitative alteration, quantitative augmentation, and local motion – is a discontinuous process. This seems true, at least on the side of form, since the case of matter is more complex, as we shall see.

Aquinas' embryology is, as expected, largely borrowed from Aristotle. The formation of the embryo or fetus – Aquinas uses the two terms interchangeably – is the result of the action of the male (the father) on the female (the mother) by means of his semen. In terms of the four Aristotelian causes, the male is the efficient cause of the process, while the mother, through her menstrual blood, is the material cause. The semen, on the other hand, is the formal cause, and it is in the semen that there exists a vital «spirit» (*spiritus*), in which is found what in the wake of the tradition Aquinas calls the «formative power» (*virtus formativa*). The final cause is the generated human.

The purpose of the formative power is to modify the menstrual blood of the female in the appropriate ways in order to form the body of the embryo. Under the stimulus of the formative power, the degree of formation and organization of the embryonic matter becomes over time gradually more complex and such material development enables the embryo to pass from a state of vegetative ensoulment at a very

early stage to another state of ensoulment that is both vegetative and sensitive. Finally, the remaining action of the formative power advances the process further until the formation of the principal vital organs takes place, enabling the embryo to pass from a state of vegetative and sensitive ensoulment to a state of ensoulment that is at once vegetative, sensitive, and intellectual or rational. While Aquinas describes the vegetative and sensitive ensoulments as states that are drawn out from the potentiality of the female matter, in the sense that each reveals a state of actuality or a way of ensoulment that the female matter comes to acquire from the moment it is transformed into embryonic matter, he portrays the intellectual ensoulment as a state introduced from outside by a direct act of creation⁶.

What is worth noting in this explanation is that Aquinas describes the process from vegetative ensoulment to sensitive ensoulment and from this to intellectual ensoulment as an alternation of generations and corruptions, and this could imply that, for Aquinas, in the process of human generation there occurs a succession of embryos really and numerically distinct from each other. At the onset

⁶ See AQUINAS 1996 *Qu. de an.*, q. 11, ad 1, 102, 310-315: «Et ideo dicendum quod anima uegetabilis prius est in semine, set illa abicitur in processu generationis et succedit alia que non solum est uegetabilis set etiam sensibilis, qua abiecta iterum additur alia que est uegetabilis, sensibilis et rationalis»; see also *Quaestio disputata de spiritualibus creaturis*, a. 3, ad 13. There are many places where Aquinas illustrates such a process. For a clear survey, one may see *Summa contra Gentiles*, II, 89. For further details and a comprehensive reconstruction, see AMERINI 2013, ch. 1.

there is an embryo endowed only with vegetative ensoulment; this embryo then gets corrupted and a new embryo, endowed then with vegetative and sensitive ensoulment, is generated; the same happens in the final phase, when the embryo with sensitive ensoulments goes out of existence and an embryo endowed then with vegetative, sensitive, and intellectual ensoulment comes into being⁷.

This apparently counter-intuitive description of human generation is the logical consequence of the rebuttal of two theses: first, the admission of a plurality of really different souls in the human embryo and second, the postulation that there exists in the human embryo a form that, while remaining one and the same from the moment of conception, undergoes a process of perfecting its functions over time. If one rejects the doctrine of the plurality of souls and denies that generating amounts, for an embryo, to perfecting the

⁷ See e.g. AQUINAS 1961 *Sum. c. Gent.*, II, ch. 89, 254-255, nn. 1743 and 1745: «Licet enim generatio simplicium corporum non procedat secundum ordinem, eo quod quodlibet eorum habet formam immediatam materiae primae; in generatione tamen corporum aliorum, oportet esse generationum ordinem, propter multas formas intermedias, inter primam formam elementi et ultimam formam ad quam generatio ordinatur. Et ideo sunt multae generationes et corruptiones sese consequentes. (...) Quanto igitur aliqua forma est nobilior et magis distans a forma elementi, tanto oportet esse plures formas intermedias, quibus gradatim ad formam ultimam veniatur, et per consequens plures generationes medias. Et ideo in generatione animalis et hominis in quibus est forma perfectissima, sunt plurimae formae et generationes intermediae, et per consequens corruptiones, quia generatio unius est corruptio alterius. Anima igitur vegetabilis, quae primo inest, cum embryo vivit vita plantae, corrumpitur, et succedit anima perfectior, quae est nutritiva et sensitiva simul, et tunc embryo vivit vita animalis; hac autem corrupta, succedit anima rationalis ab extrinseco immissa, licet praecedentes fuerint virtute seminis».

human soul it would have received at conception, then one should not be surprised to find Aquinas to deny that there exists a formal continuant in the generative process, that is, a form that remains one and the same throughout the whole process. Since the species of the embryo changes repeatedly and no form, one in number, can belong to different species, the embryo cannot exhibit a form that remain numerically one and the same throughout the whole process⁸. But at this point, if the species and the form of the embryo change, the embryo itself must change as well. In the case of human embryos, the problem of the Identity-Over-Time precisely lies on this puzzle: on the one hand, generation works out to be a formally discontinuous process, and for this reason one cannot say that it is one and numerically the same embryo that becomes a human being; but on the other hand, if it were not one and numerically the same embryo that becomes a human being, one could not assert at all that a human being is generated from the very same embryo that has been conceived.

The solution that the interpreters of Aquinas commonly give to this puzzle is that the process of human generation, although formally discontinuous, is nonetheless materially continuous. This is a perfectly

⁸ See AQUINAS 1961 *Sum. c. Gent.*, II, ch. 89, 254-255, n. 1743: «Species tamen formati non manet eadem: nam primo habet forma seminis, postea sanguinis, et sic inde quosque veniat ad ultimum complementum» and AQUINAS 1988 *Sum. theol.*, I^a, q. 118, a. 2, ad 2, 548: «Non est autem possibile ut una et eadem forma numero sit diversarum specierum»; I^a-II^{ae}, q. 67, a. 3, 829: «Unum et idem numero manens non potest transferri de una specie in aliam».

reasonable answer and makes good sense of many of Aquinas' claims. But how are we to understand the continuity of matter? In order to answer this further question, we have first to clarify which matter could be responsible for the identity of the subject of human generation (whether individual matter or common matter) and second, to explain how matter could do this job given that every process of identification of things, whether on the metaphysical or on the cognitive level, requires a form. At first, someone could reject the continuity of the process also on the side of matter on the argument that since we are after all dealing with a process of generation, it is obvious that there can be nothing, either on the side of form or on that of matter, that remains exactly as it is from the start of the process to its end. Aquinas himself thinks that one should not be surprised that the process of generation is not continuous⁹. Otherwise, it would be indistinguishable from a process of nourishment or growth, for in this case there would be a subject that is already generated in act from the moment of conception. But the surprise all the same remains, for it is undeniable that the process of generation, even if one admits of differentiated sub-processes of generation and corruption, is on the whole a process that takes place without interruption (of the process

⁹ See AQUINAS 1961 *Sum. c. Gent.*, II, ch. 89, 255, n. 1744: «Nec est mirum si tota generationis transmutatio non est continua, sed sunt multae generationes intermediae: quia hoc etiam accidit in alteratione et augmento; non enim est tota alteratio continua, neque totum augmentum, sed solum motus localis est vere continuus, ut patet in VIII *Physicorum*».

itself as well as of the subject of the process), and therefore a certain continuity of the process and of the subject must be conceded¹⁰. Well, if form is unable to account for the continuity of human generation, it remains that only matter can fulfill this task. But how can matter do it?

2. Second Question: Is Human Embryogenesis A Materially Continuous Process?

When reconstructing Aquinas's solution to the "puzzle of the embryo", the first step is to investigate what criteria Aquinas himself has given for establishing the identity of a thing. As it turns out, this investigation is particularly arduous, since in his works Aquinas formulates quite diverse sets of criteria. In addition, such criteria are not always formulated uniformly and, moreover, they are applicable, strictly speaking, only to things that *already* exist in act. As said, Aquinas discusses the question of whether the human body is numerically the same after the human soul departed from it, or whether the human body remains numerically the same at the moment of the final resurrection at the end of time. These questions are meaningful since they are asking about the identity between two things – two bodies – that, at different times, exist in act. Similarly, Aquinas at times asks if Socrates and this white thing are the same entity, and again the question makes sense since 'Socrates' and 'this white thing' refer to things that, at the same time, exist in act. But in

¹⁰ Aquinas argues for the interconnection of continuity (unity) of a process and of its subject in his Commentary on book V of the *Physics* (lec. 6 and ff.).

the case of an embryo, any criterion of identity seems to fail. For example, when we ask if a given embryo and a given human being are numerically the same thing, the question does not seem germane, since Aquinas conceives of the embryo as something that does not exist in act in a perfect and complete way. As a result, if before the advent of the rational soul no embryo can be given once and for all, one could not even put the question whether the embryo is numerically the same or numerically different from the human being that follows from it.

In order to avoid this unfitting result, someone could propose a different criterion for stating the identity between an embryo and a human being: two things can be said to be the same thing if the second *comes* from the first. This characterization could apply well to the case of a human being: a human being could be called the same thing that a given embryo precisely because a human being *comes* from a given embryo. As is clear, a criterion of this sort is independent from the answer one gives to the question of the continuity of matter; it provides a general criterion for establishing the identity of an embryo. Because of this generality, however, this criterion seems to be of little help, for it gives us a necessary but not a sufficient condition for establishing the identity of an embryo. Indeed, it does not differentiate the case of an embryo from that of an artifact. Also an artifact such as a

table can be said to come from the wood of a tree, but the table and the tree cannot be called for this reason the same thing.

The case of the embryo is more complex. In this case, it is not enough to say that a human being comes from an embryo, but we should at the very least say that an embryo *becomes* a human being, while we cannot say of a tree that it becomes a table. In other words, a simple 'principle of traceability' - by which it would be possible to follow and establish the identity of a changing subject in whatever phase of the process of change once the rule of change is known - could be insufficient to establish the identity of an embryo within a process of generation. In the case of embryos we also have to require that the final form, which is the goal of generation, regulate all the preceding phases in such a way that each one of the preceding phases causally determines and orders the immediately following phase of the process toward the subsequent phases and the final form. This teleology is what significantly distinguishes the case of an embryo becoming a human being from that of a table coming from the wood of a tree. As we shall say later on, it gives us the sufficient condition for establishing the identity of an embryo throughout the process of generation.

Of course, one could still insist that a principle of traceability is all the same sufficient at least for *ascertaining* the identity of an embryo throughout the process of generation. But when we are to discuss the

identity of an embryo, we are supposed to look for something less extrinsic and less knowledge-dependent, that is, we are supposed to want to establish what, within the embryo, grants this traceability, and, in Aristotelian terms, if this is its form and/or its matter. Thus, someone could attempt to verify if, despite Aquinas' claims, there is room to a certain degree for defending the view that form is the factor responsible for the identity of the embryo over time. The argument could be the following.

As has been said, Aquinas adopts a model for the phenomenon of generation that describes the succession of forms as *replacement*. The embryo exercises at the beginning of the process only vegetative functions. But right from the start, such functions are oriented toward properly predisposing matter to support the exercise of the highest intellectual functions of soul. When the embryo's matter becomes much more organized, the embryo begins to exercise also sensitive functions. The principle of its sensitive ensoulment is the same as that of its vegetative ensoulment, such that the functions that the embryo was exercising when it had only a vegetative ensoulment are formally – and allegedly numerically – the same as those it exercises when it possesses a sensitive ensoulment. The sensitive soul not only replaces the vegetative soul, but also *reabsorbs* its functions, so that the sensitive soul exercises both the vegetative functions that the vegetative soul exercised and also sensitive functions. The same occurs

with the passing from sensitive to rational soul, even if in this case the rational soul is introduced from outside, as said.

Given this scheme, the passage from embryo to human being may be presented in such a way that it implies that there must be one and the same subject that undergoes a process of progressive enrichment of functions. No doubt that, for Aquinas, the embryo's vital functions depend on really distinct souls, but each soul that supervenes in the process of generation, replacing the preceding, incorporates into itself the functions exercised by the preceding soul, so that those functions seem to remain exactly as they were in the preceding ensoulment of the embryo. From this perspective, beyond an assumed material continuity (which still has to be proved), the continuity of the embryo could also be defended on the part of the form by invoking the continuity of certain primordial vital functions. The identity of such functions, combined with a certain identity of the matter, could be taken as what allows us to establish the identity of the embryo throughout the process of generation.

At first sight, this suggestion has its plausibility, but on closer look there are some problems with it. To bring these to light, we must seek a deeper understanding of how Aquinas characterizes the notion of identity.

2.1. Is Human Embryogenesis A Process Concerning A Thing That Is Materially One In Number?

There are many texts where Aquinas dwells on the identity between two things. For the sake of brevity, let me consider here only one of them, which is particularly significant for the present issue. Aristotle reserves chapter 9 of book V of the *Metaphysics* to clarifying the meaning of the terms “identical”, “diverse”, “similar” and “dissimilar”. Commenting on this chapter, Aquinas explains that, fundamentally, identity expresses a form of unity or union. Two things can be called “identical” in one sense if, though they each have their own being, they have some property in common or, in a second sense, if, sharing the same being, they can be considered as different terms of a relation of identity¹¹. An embryo and a human being cannot be said to be identical in this second sense, so, if one speaks of identity in their case, it must be in the first sense. If identity can be explained as a kind of unity, the ways in which two things are *per se* identical can be reduced to the ways in which two things are *per se* one. Aquinas lists four cases in which two things *x* and *y* can be said to be *per se* one:

- [i] if the matter of *x* is specifically identical to the matter of *y*;
- [ii] if the matter of *x* is numerically identical to the matter of *y*;
- [iii] if there is a substantial continuity between *x* and *y*;

¹¹ See AQUINAS 1964 *Exp. Met.*, V, lec. 11, 245, n. 912: «Ex hoc autem ulterius concludit, quod identitas est unitas vel unio; aut ex eo quod illa quae dicuntur idem, sunt plura secundum esse, et tamen dicuntur idem in quantum in aliquo uno conveniunt. Aut quia sunt unum secundum esse, sed intellectus utitur eo ut pluribus ad hoc quod relationem intelligat».

[iv] if x and y share a single and indivisible concept (*ratio*).¹²

Regarding this four-part division, an embryo and a human being cannot be identical in the fourth way [iv], for the concept of a human being cannot be extended to an embryo, at least until it has received the rational soul. A human embryo and a human being cannot be called *human* in the same sense, for Aquinas. There is no doubt that for Aquinas an embryo becomes a human being at about one month and half of gestation¹³. In any case, this way of union concerns the form and, as has been seen, Aquinas excludes that there is continuity of form in the process of generation.

Discarding this way, we might then say that an embryo and a human being are identical in the second sense [ii]: they are one because they have the same matter in number. But unfortunately this too cannot be said. An embryo and a human being do not have exactly the same pieces of matter or even the same quantity of matter, that is, the same individual matter with the very same extension. They do not

¹² See AQUINAS 1964 *Exp. Met.*, V, lec. 11, 245, n. 911: «Deinde cum dicit 'alia vero' ponit modos eiusdem per se; et dicit, quod aliqua dicuntur eadem secundum se eisdem modis, quibus dicitur unum per se. Omnes enim modi, quibus aliqua unum per se dicuntur, reducuntur ad duos: quorum [i] unus est secundum quod dicuntur unum illa, quorum materia est una; sive accipiamus materiam eandem secundum speciem, [ii] sive secundum numerum; ad quod pertinet secundus et tertius modus unius. [iii] Alio modo dicuntur unum, quorum substantia est una: vel ratione continuitatis, quod pertinet ad primum modum: [iv] vel propter unitatem et indivisibilitatem rationis, quod pertinet ad quartum et quintum. Unde et his modis dicuntur aliqua esse idem» (numbering in the texts is my own).

¹³ See e.g. *Scriptum super Sententiis*, III, d. 3, q. 5, a. 2.

have the same quantity of matter, because after the coming of vegetative soul, the process of generation becomes a process of bodily growth, of differentiation and formation of the vital organs. The argument Aquinas occasionally uses for proving the numerical difference between the father and the child – i.e. a human being does not generate a numerically identical human being since the generating and the generated do not share numerically the same matter¹⁴ – can also be applied to the case of an embryo and a generated human being. If the matter of an embryo and that of a human being are not numerically the same, not even are the embryo and the human being numerically the same.

Nevertheless, one could note that the view that an embryo increases its matter in the process of generation could not be incompatible with the view that an embryo possesses an original nucleus of matter that endures as it is through generation. If not the quantity of matter, some portion of unchanged matter could be what provides the material continuant of the embryo. This is reasonable, but as we shall see shortly, Aquinas rejects this second view also. What is more, Aquinas distinguishes between “identity of subject” and “identity of matter”, admitting that a thing can change all its material parts without ceasing to be the same thing in number. We

¹⁴ See e.g. *Scriptum super Sententiis*, II, d. 20, q. 2, a. 3; *De principiis naturae*, ch. 4; AQUINAS 1964 *Exp. Met.*, VII, lec. 6, 343, nn. 1391-1392.

continuously change our matter from the beginning to the end of our life, just like a river or a fire – taking Aquinas’ examples –change continuously its water or its wood while continuing to be the same river and the same fire. In the case of river and fire, it is their form that, remaining one and the same in number, provides river and fire with numerical identity¹⁵.

While discussing a different example, i.e. that of a city (*civitas*), Aquinas makes the difference between “identity of subject” and “identity of matter” clearer. He observes that the material parts of a thing can be substituted freely, but two conditions must however be respected to safeguard the numerical identity of the thing. First, the substitution of material parts must preserve the functions that were carried out by the parts that have been substituted, and for this reason a genuine substitution of parts can take place only using matter that is functionally homogeneous¹⁶. Second, the substitution of material parts

¹⁵ See AQUINAS 1952, *Exp. Meteor.*, II, lec. 6, 469-470, n. 170: «Secundum est, quod movet dubitationem, de qua oportet primo videre veritatem, antequam propositum manifestet. Et est ista quaestio: utrum partes maris semper maneant eadem numero; aut permutentur secundum numerum, et maneant eadem secundum quantitatem, sicut accidit in aere et in aqua potabili fluminum et in igne. In his enim omnibus partes fiunt aliae et aliae numero, sed species vel multitudinis harum partium manet eadem: et hoc apparet maxime in aquis fluentibus et in fluxu flammae, quae per successionem fumi semper innovatur, ut supra dictum est, et tamen flamma semper manet eadem in numero».

¹⁶ See e.g. AQUINAS 2013 *Sup. Sent.*, IV, d. 44, q. 1, a. 2, q. la 4: «Tertia autem opinio (...) ponit omnes partes quae non sunt praeter intentionem naturae aggeneratae pertinere ad veritatem humanae naturae quantum ad id quod habent de specie, quia sic manent, non autem quantum ad id quod habent de materia, quia sic flu-

must take place in succession, part after part, and not simultaneously, all at once¹⁷.

Normally, in the case of human beings, the substitution of complex vital parts, such as organs or the proper parts of the human body (like hands, legs, and so on), can come about only artificially by means of medical interventions, while the substitution of non-complex and homogeneous material parts, such as flesh and bones, comes about naturally, by nutrition. For our argument, the first kind of substitution is less important, for it concerns parts that are already ensouled and therefore functionally defined on form; so we may set it aside. The second kind is instead important for it brings to light Aquinas' conviction that the constitutive matter of a human being can

unt et refluunt indifferenter. Ut ita etiam intelligamus contingere in partibus hominis unius sicut contingit in tota multitudine civitatis, quia singuli subtrahuntur a multitudine per mortem, aliis in locum eorum succedentibus; unde partes multitudinis fluunt et refluunt materialiter, sed formaliter manent, quia ad eadem officia et ordines substituuntur alii, a quibus priores subtrahebantur; unde respublica una numero manere dicitur. Et similiter etiam dum quibusdam partibus fluentibus aliae reparantur in eadem figura et in eodem situ, omnes partes fluunt et refluunt secundum materiam, sed manent secundum speciem; manet nihilominus unus homo numero».

¹⁷ See e.g. AQUINAS 1988 *Sum. theol.*, I^a, q. 119, a. 1, ad 5, 552: «Ad quintum dicendum quod, sicut Philosophus dicit in I *de Generat.*, quando aliqua materia per se convertitur in ignem, tunc dicitur ignis de novo generari: quando vero aliqua materia convertitur in ignem praeexistentem, dicitur ignis nutriri. Unde si tota materia simul amittat speciem ignis, et alia materia convertatur in ignem, erit alius ignis numero. Si vero, paulatim combusto uno ligno, aliud substituatur, et sic deinceps quousque omnia prima consumantur, semper remanet idem ignis numero: quia semper quod additur, transit in praeexistens. Et similiter est intelligendum in corporibus viventibus, in quibus ex nutrimento restauratur id quod per calorem naturalem consumitur».

be continuously destroyed by the vital heat and substituted with other matter introduced by food. There are many places where Aquinas introduces this point, but the clearest one is when he discusses the question «whether food truly converts itself into human nature»¹⁸.

In the part of his *Sentences Commentary* where he discusses this question (II, d. 30), Aquinas recalls that in his day there were two positions concerning the material continuity of a human being. The first advocated the view that all the matter of a human being is already contained in the very first embryonic matter (just as all the matter of the human genus was contained in the embryonic matter of the first human being), and this to such an extent that what rises at the final judgment has exactly that amount of matter and no other. This position assumed that the matter introduced through food only serves to maintain, by counterbalancing the vital heat, the amount of primordial matter, but does not add any new matter to the organism¹⁹.

¹⁸ See e.g. *Scriptum super Sententiis*, II, d. 30, q. 2; IV, d. 44, q. 1, a. 2, q.1a 4; *Summa theologiae*, I^a, q. 119, a. 1. For a detailed reconstruction of Aquinas's solution to this question, see AMERINI 2013, ch. 5, esp. 137-146.

¹⁹ See AQUINAS 1929 *Sup. Sent.*, II, d. 30, q. 2, a. 1, vol. 2, 778: «Quidam posuerunt, ut in *Littera Magister* sentire videtur, quod illud quod ex parentibus decisum est, est illud in quo veritas hujus nati consistit. Hoc autem in majorem quantitatem excrescit omnino salvatum, ita quod nihil sibi additur, ut majorem quantitatem recipiat; sed tota quantitas hominis completi per multiplicationem illius materiae efficitur: et hoc tantum esse dicunt quod in resurrectione resurget; reliquum autem quasi superfluum deponetur. Ponunt etiam alimenti sumptionem necessariam esse, non quidem ad augmentum ut nutritiva augmentativae deserviat, neque iterum ad restaurationem deperditi, sed solum in fomentum caloris naturalis».

The second position, while sharing with the first the view that the matter of a human being is already entirely contained in the embryonic primordial matter, differed from the first in that it held that such an amount of matter can be increased thanks to the matter that is introduced through food, although the “added” matter does not remain exactly as it is throughout the whole life of a human being²⁰. Both positions shared the belief that there is a primitive nucleus of matter that remains numerically stable for the whole duration of a human being’s life and guarantees one’s bodily continuity at the final resurrection. In his reply, Aquinas attacks precisely this belief.

The reason to reject the first position is quickly explained. That something increases in matter implies that it modifies its dimensions. There are then only two possible cases: either the quantity of matter with modified dimensions is the same or greater. If it is the same (putting aside whether the extension of matter comes about naturally or through divine intervention), the process of increase becomes a process of rarefaction, and this evidently cannot be stated for the case in question. If instead the quantity of matter is greater, then either the

²⁰ *Ibid.*, 782: «Et ideo aliorum positio est, concedentium quidem cum primis quod aliquid est in humano corpore, et similiter in aliis corporibus quae nutriuntur, quod quidem semper manet fixum toto tempore vitae, secundum determinatam partem materiae, in quo principaliter veritatem humanae naturae consistere dicunt; aliquid autem est aliud quod superfluit et refluit, id est advenit et consumitur: hoc autem est quod ex cibo generatum est. Differunt tamen a primis in hoc quod dicunt sumptionem alimenti non solum in fomentum caloris naturalis necessariam esse, sed etiam in augmentum quantitatis».

added matter is created from nothing or there is a different matter that is added. The first possibility is excluded, because what can be accounted for naturally should not be explained by recourse to God's intervention, and also because God has created the matter of all things all at once. From here the conclusion: there is a matter that has been added and this matter comes from the introduction of food²¹.

What Aquinas sees wrong in the opponent's position is the claim that prime matter can become a substance by being appropriately extended – a claim based on the belief that prime matter, being deprived of any form, is in potency to all possible forms. Aquinas gives two reasons to reject this claim. First, prime matter cannot give rise to a substance thanks to extension, but, rather, thanks to quantity, on which extension ultimately depends. Thus, if prime matter changes extension, it must also change quantity to a certain degree, and this entail that it must change matter as well, since quantity is related to a certain amount of matter. Second, prime matter can in principle acquire all forms, but when it begins to acquire a form in particular, then that form requires a sequence of accidental determinations such that each member in the series determines the next in order for the form to be realized. This implies that prime matter cannot receive any extension whatsoever. From all that Aquinas concludes that it is

²¹ *Ibid.*, 778–779.

impossible to postulate a portion of primordial matter that remains exactly as it is for the whole lifetime of a human being²².

To be sure, these arguments against the first position do not completely exclude the possibility that some primordial matter, albeit modified, could remain for the entire duration of the human's life. The reply given to the second position, however, excludes this possibility. Aquinas argues that the activity of nutrition consists not only in the increase of matter and counterbalance of the vital heat, but also in the replacement of material parts destroyed by the vital heat associated with digestive activity. It would be inconsistent to think that some matter is corrupted and that no matter is added, given that the quantity of matter does not decrease. It is therefore impossible that there could remain unaltered a primitive nucleus of matter endowed with what the medical doctors in the age of Aquinas called «radical moisture» (*humidum radicale*). By this latter notion, doctors designated a special organic state, the one that enables matter to counterbalancing the destructive activity of vital heat. Aquinas is of the opinion that the organic state associated with the radical moisture cannot remain exactly as it is in the human being, but only as appropriately modified and combined with more complex forms of moisture. Hence, again, it

²² *Ibid.*, 780–782.

is untenable that there could remain unaltered a primitive nucleus of matter endowed with radical moisture²³.

Aquinas' conclusion does not leave room for doubt: there is nothing of the individual matter of a thing, as taken under some quantitative dimensions, that remains exactly as it is throughout the entire process of human generation²⁴. As a result, if one makes the numerical identity of a thing depend on its individual matter²⁵, one must conclude that no numerical identity can hold between an embryo and a human being.

2.2. Is Human Embryogenesis A Process Concerning A Thing That Is Materially One In Species?

The persistence of the same matter in number is difficult to be defended in the case of human embryo, nevertheless there is a short passage from an early work, the *Quaestiones de veritate* (belonging to

²³ *Ibid.*, 782–784.

²⁴ *Ibid.*, 784–785: «Tertia positio est quam ponit Averroes, in I *De gener.*, comment. 35, dicens quod nihil materiae potest accipi in corpore signatum, quod sit fixum et permanens; sed totum quidquid est in corpore potest dupliciter considerari: vel ex parte materiae, et sic non est permanens; vel ex parte formae et speciei, et sic est permanens. Comparat enim Aristoteles, in I *De gener.*, text. 35, transmutationem cibi in carnem adustioni lignorum. Videmus enim quod si ignis accendatur, et continue ligna addantur, secundum quod alia consumuntur, forma ignis semper manebit in lignis, sed tamen materia quaelibet consumitur, alia materia sibi succedente, in qua species ignis salvabitur; et secundum hoc, etiam illud quod pertinet ad speciem et formam carnis semper manebit, quamvis illud quod recipit hanc formam, continue consumatur et restauretur. (...) Et huic positioni inter omnes magis consentio sine praeiudicio aliarum».

²⁵ In support of this thesis, see for example AQUINAS 1992, *Sup. De Trin.*, q. 4, a. 2, 125, 231–242.

the first Parisian stay of Thomas in 1256-1259), where Aquinas explicitly states that a formed embryo and the unensouled embryo are not numerically different²⁶. From this one may infer that since only matter is responsible for numerical differentiation in Aquinas' metaphysics, then if a formed embryo and the unensouled embryo are not numerically different, they must have the same matter. With respect to the four-part division mentioned above, this text from the *Quaestiones de veritate* could redirect us to the first way [i], i.e., that a human embryo and a human being are one because they have the same matter in species. But this response seems also not to succeed. There are at least two reasons that lead us to rule it out.

First, the persistence of the type of matter is a necessary and possibly sufficient condition for asserting the identity of the type of a material thing, but such persistence seems to be insufficient to prove the persistence of any individual token of that type. If an embryo is constituted of flesh and bones and it does not lose this type of matter, this fact permits saying that such an embryo continues to be an embryo of the same type, i.e. human, until it is made of flesh and bones. But it does not permit saying that it is precisely the same

²⁶ Cf. AQUINAS 1972 *Qu. de ver.*, q. 14, a. 7, ad 6, 457-458, 139-145: «Ad sextum dicendum quod fides informis et formata non dicuntur diversa in genere quasi in diversis generibus existentia, sed sicut perfectum quod attingit ad rationem generis et imperfectum quod nondum attingit; unde non oportet quod numero differant, sicut nec embryo et animal».

embryo in number, with precisely this flesh and these bones, as that which is the subject of the process of generation.

Second, the matter of a human being is (perfectly) organic matter, while the embryo has a matter that is non-organic (or, at least, not yet perfectly organic), and hence the two matters cannot be *specifically* one and the same. At a later stage in the process, when the flesh and bones are fully formed, this criterion might work, but at the start of the generative process it cannot give an account of the identity between a not-yet-formed embryo and a human being. The problem here is that flesh and bones are formed only with the coming of the rational soul, when the embryo is no longer an embryo but has become by then a human being. Before the advent of human soul in the body, Aquinas says that the matter of the embryo is only a *disposition* to human matter²⁷. This claim has an important implication. Since Aquinas often relates the numerical identity of a thing to the identity of the essential principles of that thing²⁸, the fact that the essential

²⁷ See AQUINAS 1988, *Sum. theol.*, III^a, q. 5, a. 3, 1896: «Caro enim et ceterae partes hominis per animam speciem sortiuntur. Unde, recedente anima, non est os aut caro nisi aequivoce, ut patet per Philosophum, II *de Anima*, et VII *Metaphys.*»; a. 4, 1897: «Cum enim corpus proportionetur animae sicut materia propriae formae, non est vera caro humana quae non est perfecta anima humana, scilicet rationali»; q. 6, a. 4, ad 1, 1900: «Caro humana sortitur esse per animam. Et ideo ante adventum animae non est caro humana: sed potest esse dispositio ad carnem humanam».

²⁸ See e.g. AQUINAS 1996 *Quodl.*, XI, q. 6, vol. 1, 160–161, 34–44: «Dicendum quod, ad hoc quod aliquid sit idem numero, requiritur ydemptitas principiorum essentialium; unde, quodcunque principiorum essentialium etiam in ipso indiuiduo uariatur, necesse est etiam ydemptitatem uariari. Illud autem est

principles of a human being are not yet present in the embryo – given that the embryo, properly speaking, has neither a *human* soul nor a *human* body – lead one to say that, for Aquinas, no numerical identity can hold between an unensouled embryo and a human being. At the end of our investigation about the identity of embryo’s matter, the conclusion is rather discouraging: neither individual matter nor specific matter can account for the transtemporal identity of a human embryo. What therefore about the identity of an embryo and a human being?

2.3. Is Human Embryogenesis A Process Concerning A Thing That Is One In Being?

There seems to remain only the third way [iii] of accounting for the supposed identity of an embryo, and the substantial continuity between an embryo and a human being could restore the sense of identity that we are seeking. As a first approximation, two things x and y could be said to be substantially continuous if there is a continuity of a subject that from x becomes y . We have already examined this characterization and seen that it is not sufficient. One however could try to refine the concept of substantial continuity holding that in the case of an embryo and a human being substantial

essenciale cuiuslibet indiuidui quod est de ratione ipsius indiuidui, sicut cuiuslibet rei sunt essentialia materia et forma; unde, si accidentia uariantur et mutantur, remanentibus principiis essentialibus indiuidui, ipsum indiuiduum remanet idem».

continuity is given by the fact that x and y share one and the same being. To share one and the same being can be understood synchronically or diachronically, and it is evident that an embryo and a human being could only be said to share one and the same being in the second way. Sharing one and the same being could guarantee that beyond the formal and material modifications of a subject, one has always to do with one and the same subject.

Unfortunately, even this refinement of the condition for substantial continuity seems unable to resolve completely the question of the identity of the embryo, and this for two reasons. First, for Aquinas the being of a thing depends on the form, and so if a thing changes its form, it then also changes its being. Second, the simple appeal to the continuity and existential story of a thing seems to not be an appropriately explanatory condition for it fails to explain *why* a thing remains one and the same throughout its existential story: a thing could be modified so radically as to be no longer recognizable, to the point that no one would say that it is the same thing, even though that thing never ceased to exist and the process of modification were uninterrupted. Sharing one and the same being, therefore, appears to be a condition that is still too extrinsic to x and y . Identity must be proved in some other way. Certainly, existential continuity can be taken as a sign of the continuity of a thing over time, but from that one cannot derive anything about the material or formal continuity of that

thing. One senses that even the criterion of substantial continuity is inadequate to account for the identity of an embryo within a generative process. So, where do we go from here?

3. Discontinuity of Embryogenesis vs. Continuity of the Embryo

We have little leeway at this point. As it seems, we have only two possibilities: either we admit the radical discontinuity of the process of generation, the impossibility of finding in Aquinas a link between a human being and the embryo from which s/he derives, or we attempt to find out in Aquinas a different argument for the identity of the embryo. In order to exclude the first option, let me explore the feasibility of the second one. Until now we have established that, for Aquinas, neither matter (individual or specific) nor form is able to explain the identity over time of an embryo, so the identity of the subject of human generation can be proved independently of whether the identity of its matter or form is proved. Aquinas himself seems willing to keep “identity of matter” and “identity of subject” distinct. In the case of the relics of saints, for example, Aquinas concedes the former but not the latter:

the dead body of a saint is not numerically identical with what it was before when it was living on account of the diversity of form, which is the soul; nevertheless it is identical by an identity of matter, which is once again to be united to its form²⁹.

²⁹ See AQUINAS 1988 *Sum. theol.*, III^a, q. 25, a. 6, ad 3, 1992: «Ad tertium dicendum quod corpus mortuum alicuius sancti non est idem numero quod primo fuerit

This text induces us to think that, for Aquinas, a given matter can be one and the same even if it is no longer the matter of one and the same subject in number and that a subject can be one and the same even if it no longer has anything of its matter. Applying this distinction to the case of the embryo, one could hold that there is identity of subject but not identity of matter. Establishing the identity of subject without referring to the identity of matter seems possible, but proving the converse looks difficult. How can we fix the identity of matter prescindng from the identity of subject?

A first solution could be that of relating the identity of matter to the identity of the apparent accidents, such as extension, three-dimensionality and so on. But this answer tends to complicate rather to solve the problem, for, as is known, Aquinas refuses to admit the pre-existence of accidental features or dispositions of matter before the coming of the substantial form, namely the coming of the human soul into the body. For our purposes we can avoid to linger here on the role played by the determinate/ indeterminate dimensions in Aquinas' theory of substantial individuation³⁰. What is worth noting here is that, even conceding the pre-existence of accidental dispositions of

dum viveret, propter diversitatem formae, quae est anima: est tamen idem identitate materiae, quae est iterum suae formae unienda». The phrase "identity of matter" (*identitas materiae*) recurs only twice in Aquinas's writings: for the second occurrence, see *Summa theologiae*, I^a, q. 119, a. 1, arg. 5 and ad 5, in the context of the discussion of the material identity of man across his life.

³⁰ On this, see DONATI 1988; OWENS 1988; HUGHES 1996.

matter before the coming of substantial form, there is at least a text where Aquinas casts serious doubts on the possibility of establishing the identity of matter – by appealing to the identity of the accidental dispositions of matter – independently of the identity of subject. In *Quodlibet* I, a text dating, according to René-Antoine Gauthier, to the Advent of 1269, when discussing the question «once the soul is united to the body, are all the forms that once inhered in it, both substantial and accidental, corrupted?», Aquinas seems to revise his earlier position and to reject the hypothesis that some accidental forms can be conceptually presupposed (*praeintellectae*) to the substantial form and survive after the separation of the substantial form from the body. As he argues, the indeterminate dimensions that a body has when the human soul has been infused into it remain specifically and not numerically identical to those the body had or will have when it was or will be, respectively, not yet or no longer ensouled³¹. Maybe Aquinas came to realize here the difficulty of reconciling the radical primacy of substantial form with the possibility of defining the

³¹ See AQUINAS 1996 *Quodl.*, I, q. 4, a. 1, vol. 2, 183–184, 47–94: «Responsio. Dicendum quod impossibile est in uno et eodem esse plures formas substantiales. (...) Manifestum est autem quod semper, adueniente forma perfecta, tollitur forma imperfecta, sicut et adueniente figura pentagoni, tollitur figura quadrati. Vnde dico quod, adueniente anima humana, tollitur forma substantialis que prius inerat, alioquin generatio esset sine corruptione alterius, quod est impossibile. Forme uero accidentales que prius inerant disponentes ad animam, corrumpuntur quidem non per se, set per accidens ad corruptionem subiecti, unde manent eedem specie, set non eedem numero, sicut etiam contingit circa dispositiones formarum elementarium, que primitus materie aduenire apparent».

numerical identity of matter's dimensions independently of the subject of which they are the dimensions. In this case, Aquinas acknowledges that one cannot define the numerical identity of a thing and of any material part and aspect of it independently of the substantial form. This entails that one may infer that the dimensions of a body can be said to be numerically identical only insofar as they are the dimensions of a numerically identical subject. Since once the form ceases to be, the numerical identity of the subject also ceases, it follows that, once the form ceases to be, the numerical identity of the dimensions ceases also.

The same argument could be reformulated with respect to the case of the functions exerted by the embryonic matter. At the beginning of this article we observed that the identity of some primordial functions, combined with a certain identity of matter, could be taken as what allows us to state the identity of the subject of the process of generation. The hypothesis of the identity of certain generic functions that gradually become more specific when the embryonic matter gradually becomes more organized seems to account rather well for the numerical identity between an embryo and a human being, like Aquinas himself suggested in *Quaestiones de veritate*. Unfortunately, Aquinas devotes little space to explaining concretely the working of the mechanism of replacement of forms and of reabsorption of functions that a successive form carries out on the

preceding form. But if we take into account how Aquinas treats the reverse process of the separation of the substantial form from the body and the gradual ceasing of vital functions, it turns out to be very arduous to preserve the numerical identity of the subject within the process of generation. In fact, once the property “being rational” is lost – Aquinas argues –, the human body that still lives cannot be said to be the same body in number, but *only in genus*³².

Again, if we apply this analysis to the case of the embryo, the hope of preserving the numerical identity of some primordial embryonic functions and of understanding that as an expression of the numerical identity of the embryo vanishes. The vegetative and sensitive functions carried out by an embryo before the advent of the rational soul and the same functions carried out by a human being after the coming of the rational soul are not numerically the same, but they are the same only in genus, which is to say very little, for neither do there exist such things as generic vital functions that can be set apart from the specific vital functions, nor does the type of functioning and the degree of perfecting of such functions turn out to be exactly the same in number before and after the advent of the rational soul³³.

³² See e.g. AQUINAS 1988 *Sum. theol.*, I^a-II^{ae}, q. 67, a. 5, ad 1, 831: «Ad primum ergo dicendum quod, remoto rationali, non remanet vivum idem numero, sed idem genere». For other references and further discussion, see AMERINI 2013, ch. 5, esp. 146–163; AMERINI 2015.

³³ See e.g. AQUINAS 1929 *Sup. Sent.*, II, d. 18, q. 2, a. 3, ad 4, vol. 2, 471–472: «Sed quia, ut Avicenna dicit, *De natura animal.*, cap. IX, et *De anima*, part. V, cap. VII, in

Working from what Aquinas offers us in his texts, no solid biological basis seems therefore available for defining the generic identity between a yet-not-formed embryo and a human being. As a matter of fact, the only tool to which Aquinas resorts to account for the identity of the subject of human generation is metaphysical rather than biological, and rests on the notions of *potency* and *act*. The fact that the embryo is that which, once the process of generation is set in motion, naturally and necessarily becomes a human being and that the human-form is what, as the goal or end to which the process tends, retrospectively drives the entire process of generation, permits one to look upon the embryo as what is a human being in potency and upon a human being as what embryo is, but in act. As a consequence, the identity of the subject of human generation can simply be stated from the stipulation that what is in potency and what is in act must be one and the same subject (in number)³⁴. Potency and act entail one and the

hoc processu sunt plurimae generationes et corruptiones, sicut quod semen convertitur in sanguinem, et sic deinceps: quando venitur ad secundam perfectionem, prima perfectio non manet eadem numero, sed acquiritur simul cum acquisitione secundae; et sic patet quod in infusione animae rationalis homo simul consequitur in una essentia animae animam sensitivam et vegetativam; et priores perfectiones non manent eadem numero»; AQUINAS 1988 *Sum. theol.*, I^a, q. 118, a. 2, ad 2, 548: «Sic igitur dicendum est quod anima intellectiva creatur a Deo in fine generationis humanae, quae simul est et sensitiva et nutritiva, corruptis formis praesistentibus».

³⁴ See AQUINAS 1964 *Exp. Met.*, VIII, lec. 5, 421, n. 1767: «Ultima materia, quae scilicet est appropriata ad formam, et ipsa forma sunt idem. Aliud enim eorum est sicut potentia, aliud sicut actus. Unde simile est quaerere quae est causa alicuius

same subject simply because it is presupposed that what is in potency is the same as what is in act. Such seems to be, in the end, the only identity that can be acknowledged between an embryo and a human being³⁵.

4. Identity Between What Is In Potency And What Is In Act

The embryo's metaphysical feature of being in potency to a human being gives us some important information. If the embryo is just from the beginning oriented to become a human being, the embryonic matter – and every substitution of its parts and modification of its quantity – must be made in such a way to undergo a progressive and suitable process of organization that makes it able to support the functions finally performed by the human soul. This teleology also regulates the embryo's passing from one form to another. One may say that it is one and the same embryo in number that is being perfected because each of its forms is oriented toward a subsequent form that, while replacing the preceding form, perfects it and reabsorbs into itself the vital functions carried out by it. This gradually

rei, et quae est causa quod illa res sit una; quia unumquodque in quantum est, unum est, et potentia et actus quodammodo unum sunt».

³⁵ See AQUINAS 1964 *Exp. Met.*, IX, lec. 7, 444, nn. 1847–1848: «Dicit ergo primo, quod actus est prior tempore potentia; ita tamen quod idem specie, est prius agens, vel ens actu quam ens in potentia; sed idem numero est prius tempore in potentia quam in actu. Quod sic manifestatur. Si enim accipiamus hunc hominem qui est iam actu homo, fuit prius secundum tempus materia, quae erat potentia homo. (...) Sed tamen quaedam existentia in actu fuerunt priora secundum tempus in his existentibus in potentia, scilicet agentia, a quibus reducta sunt in actum».

perfected and human-form-oriented potentiality of the embryo to be a human being makes good sense of Aquinas' presupposition that what is in potency and what is in act amount to one and numerically the same thing.

Numerous texts of Aquinas may be quoted in support of this reading. For example, in the *Quaestiones de virtutibus*, which dates from the final years of his life (1271–1272), Aquinas describes the passage from an imperfect to a perfect form as the gradual actualization of one and the same subject (in number, we may suppose)³⁶. The degrees of actualization of a subject are defined according to the way in which each degree is in potency to the immediately subsequent degree. To say of an act that it is in potency to another act is to say that such an act is not perfect. In his works, Aquinas often equates an imperfect act to motion, that is, to an act that is, by definition, incomplete, intermediate between pure potency and pure act. He argues in this way especially when discussing local motion in his Commentary on the *Physics*. While tackling a quite different question (namely, the conversion of bread into the body of Christ in the Eucharist), already in his Commentary on the *Sentences* Aquinas noted that the subject

³⁶ See AQUINAS 1965 *Qu. de virt.*, q. 1, a. 11, 740: «Moveri autem de forma imperfecta ad perfectam, nihil est aliud quam subiectum magis reduci in actum: nam forma actus est; unde subiectum magis percipere [*maybe for* recipere] formam, nihil aliud est quam ipsum reduci magis in actum illius formae. Et sicut ab agente reducitur aliquid de pura potentia in actum formae; ita etiam per actionem agentis reducitur de actu imperfecto in actum perfectum».

involved in an imperfect act and in a perfect act must be one and the same (in number, we may suppose again)³⁷. Aquinas takes the property of “being in perfect act” as coextensive with “being in act” and the property of “being in imperfect act” as coextensive with “being in potency”. On the basis of such identifications, the unity of what is in potency and what is act implies the unity between what is in imperfect act and what is in perfect act. Such an implication could be enough to extend to the embryo from the moment of conception the numerical identity with the generated human being that the embryo has in its final stage, when it is in proximate potency to receive rational ensoulment. This extension could well account for the identity of the embryo from conception up to the advent of the human soul.

If we consider things from this point of view, the condition of sharing one and the same being (introduced above) may be after all a good condition from which the identity through time of the embryo could be inferred. In particular, in the case of an embryo A and a human being B, substantial continuity tells us that A does not have its own being but is something in potency to being B, which expresses the authentic being of A. Aquinas regularly explains the relation between

³⁷ See AQUINAS 1947 *Sup. Sent.*, IV, d. 11, q. 1, a. 3, q.la 1, ad 3, 446: «Ad tertium dicendum quod transmutatio naturalis panis ponit actum imperfectum, ut patet in V *Physicorum*, et quia idem est subiectum actus perfecti et imperfecti, ideo oportet quod subiectum transmutationis naturalis sit id quod est subiectum postmodum actus perfecti, scilicet formae, ad quem tendit motus, et non ipsum iam perfectum».

A and B by using the contrasting notions of imperfect/perfect, incomplete/complete. That A has an imperfect or incomplete form means that the form that can be attributed to A when A is not yet B is not the genuine form of A. More explicitly, to be an embryo does not express the complete or perfect form of an embryo, but only expresses an incomplete or imperfect form of being a human being, which is the genuine form of the embryo. Thus, the being of A is exhausted in its being in potency to B, and being B expresses the perfect and complete being of A, a being that A does not yet possess insofar as it is A, except in an imperfect and incomplete way. In my view, in the case of the embryo, substantial continuity between A and B can be restored precisely by the metaphysical feature of a human embryo's being in potency a human being.

5. Conclusion

It is time to conclude. The identity of the human embryo through generation is a puzzle that Aquinas seems to have some difficulties to solving. On the one hand, Aquinas describes human embryogenesis as a process formally and materially discontinuous, alternating incessantly generations and corruptions of the subject; on the other hand, however, he thinks of it as a continuous process to the extent to which it is supposed to be a numerically one process concerning one and the same subject in number. The identity of the subject of generation, however, is not proved but presupposed by Aquinas. This

must not surprise us, though. The postulation of the identity of subject of the embryo is quite expected given the way in which Aquinas sets up the problem of the identity of a thing. Identity seems to be for Aquinas a primitive notion, not explainable by more fundamental notions. The identity of some thing must be presupposed in explaining the identity of some other thing. Specifically, in the case of human embryo, it is not the identity of matter and/or form that explains the identity of the embryo, but the vice versa holds. On Aquinas' account of human embryogenesis, therefore, the problem of the identity of the embryo can be solved independently of the solution we may give to the problem of the identity of its matter and/or form. If the identity of the embryo is metaphysically unexplainable, for it can be guaranteed neither by the matter nor by the form, it is unavoidable that such an identity be assumed by Aquinas as a basic given. It can only be inferred from extrinsic (and especially cognitive or even causal) data such as the possibility of proving the existential continuity of the subject of generation or the non-interruption of the whole process, or even the possibility of following step-by-step the development of the embryo and of reconstructing it in any phase.³⁸

³⁸ See e.g. *Scriptum super Sententiis*, III, d. 21, q. 2, a. 4, q.la 1 and ad 1. See also *Scriptum super Sententiis*, IV, d. 44, q. 1, a. 1, q.la 2 and ad 2, for the connection between numerical identity of a subject and continuity and/or lack of interruption of its being. For an explanation of the numerical identity of a subject in terms of the identity of its properties of origin, see AQUINAS 1996 *Quodl.*, V, q. 5, a. 1, vol. 2, 373, 42-55: «Responsio. Dicendum quod, cum in generatione hominis sicut et

More particularly, as has been seen, the identity of the embryo is justified by the identity entailed by the metaphysical notions of potency and act. Since Aquinas regularly describes generation as a process of perfecting, i.e., as the motion of a subject from an imperfect state to a perfect one, from incompleteness to completeness in being, necessarily one and the same thing in number has to be the subject that undergoes such a process.

In conclusion, if our analysis is correct, we may state that what Aquinas would have been really looking for was only a metaphysical condition that could enable us to establish the identity of the embryo and, on the cognitive level, to infer and ascertain it.

FABRIZIO AMERINI

DIPARTIMENTO ANTICITÀ, LINGUE, EDUCAZIONE,

FILOSOFIA

UNIVERSITÀ DEGLI STUDI DI PARMA

aliorum animalium semen patris sit agens, materia uero a matre ministrata sit sicut paciens ex quo corpus humanum formatur, impossibile est eundem filium nasci siue sit alius pater siue sit alia mater; sicut etiam non est idem numero sigillum siue sit alia cera siue sit aliud corpus sigilli ex cuius impressione cera sigillatur».

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