Devin Henry. *Aristotle on Matter, Form, and Moving Causes: The Hylomorphic Theory of Substantial Generation*. Cambridge: Cambridge University, 2019. Pp. 328. Hardback, $99.99.

Hylomorphism has been widely discussed as a mereological account which distinguishes the material from the formal parts of an entity. But for Aristotle, hylomorphism serves a second purpose, namely, to explain the generation of substances. In this book, Devin Henry offers a comprehensive study of Aristotle's hylomorphic account of substantial generation. In particular, he argues that, in *Generation of Animals*, Aristotle defends a view which Henry calls "reproductive hylomorphism": an application of the hylomorphic model of substantial generation to the central case of the generation of animals.

Henry's book has many virtues. For the integration of hylomorphism with Aristotle's treatment of the generation of animals illuminates both the general framework and its applications. Moreover, Henry clearly formulates bold exegetical claims which he defends in a similarly lucid fashion. Regardless, then, of whether one agrees with Henry on any given claim, this study will be a rich resource for further work on the relevance of hylomorphism for Aristotle's account of substantial generation.

According to Henry, the hylomorphic model of substantial generation, as developed in the *Physics* and *On Generation and Corruption*, involves three principles: matter, form, and the moving cause (103). Henry sets out that model in the first four chapters and then applies it to the *Generation of Animals*: Chapters 5-6 are dedicated to matter and form, whereas chapters 7-8 discuss the moving cause. (The final chapter 9 connects Aristotle's account of generation with his cosmology.) Roughly, then, reproductive hylomorphism is the view that the generation of animals is to be explained in terms of matter, form, and the moving cause.

At first sight, it may not seem controversial to attribute reproductive hylomorphism to Aristotle. After all, Aristotle holds that, in the generation of offspring, "the male provides the form and starting point (*arche*) of motion, while the female provides the body and the matter"

(*GA* I.20, 729a9-11, Henry's translation (118)). Hence, the generation of animals involves matter, which is contributed by the mother, and form, which is contributed by the father. Moreover, the form plays the role of the moving cause. Thus, it is hard to deny that Aristotle is committed to some version of reproductive hylomorphism.

However, as Henry understands it, reproductive hylomorphism is a more specific view. In chapters 5-6, he draws a distinction between two stages of generation which is not explicit in Aristotle: embryogenesis and morphogenesis. Embryogenesis begins from menstrual blood which is transformed into "an embryo endowed with a primitive heart and rudimentary nutritive capacities" (129). Morphogenesis proceeds from that embryo which is transformed into "an organism with the same shape and form as its generating parents" (129). Crucially, Henry argues that, at both stages, there is a process of what we might call 'hylomorphic composition', and at both stages, the mother contributes the matter, while the father contributes the form.

In embryogenesis, the form is imposed by the male semen onto the mother's menstrual blood. According to Henry, this is a mechanical process to be understood in terms of Aristotle's analogy with fig juice and milk (*GA* I.20, 729a9-11): Just as fig juice makes milk coagulate, menstrual blood coagulates upon contact with the semen. The early embryo produced in that way is like a curd, and its form is nothing "as sophisticated as capacities of soul" (120). By contrast, in morphogenesis, the mother contributes the body and nutritive soul, and the father contributes the substantial form which, according to Henry, is not the entire soul of the resulting organism, but only its sensory capacities (133).

A first query about two-stage reproductive hylomorphism concerns the product of embryogenesis: On the one hand, the embryo produced in embryogenesis is meant to be curd-like and not to have any soul capacities. On the other hand, the product of embryogenesis is an embryo with "rudimentary nutritive capacities." But nutritive capacities, however rudimentary, are capacities of (nutritive) soul. Hence, embryogenesis must outstrip the curd analogy because, as Henry himself notes, "curds do not acquire soul as a result of coagulation" (129). Thus, contrary to Henry's contention, it seems that embryogenesis cannot be a merely mechanical

process of "imposing a limit or boundary" on menstrual blood (129).

Furthermore, if the product of embryogenesis is an embryo with a heart and nutritive capacities, it is not clear whether there is any room for a second stage of hylomorphic composition. Recall that, according to reproductive hylomorphism, the female provides the matter, and the male provides the form. But the matter from which morphogenesis proceeds, namely, the embryo, is not solely the female contribution. Rather, it is the product of the female contribution (menstrual blood) and the male contribution (semen, which gives the form). Hence, it is not straightforward that morphogenesis can be a process of hylomorphic composition in the sense required by reproductive hylomorphism.

Indeed, in *GA* II.5, 741b8-9, Aristotle says that "when the principle of motion comes to be, one thing is stringed together after another, like in automatic wonders". Since that principle is present as soon as the heart is (741b16-17), the product of embryogenesis, that is, the embryo, already has an (inner) principle of motion. All that seems needed from that point onwards is the further development of the capacities of the embryo in accordance with its principle of motion, not a second stage of hylomorphic composition.

A related worry arises from Henry's discussion of wind eggs. In *GA* II.5, Aristotle says that wind eggs have nutritive soul (741a24-25). Since wind eggs are unfertilized, they are the sole contribution of the female, and hence Henry infers that the female provides not only the body but also nutritive soul. This view requires that the wind egg *actually* has nutritive soul. Yet, Aristotle says explicitly that the wind egg has nutritive soul potentially (*dunamei*) (741a23-24). According to Henry, this means that the wind egg (actually) has nutritive soul "to some degree" (137). But being F potentially does precisely not imply being F actually, whether to some degree or otherwise. It is not clear, then, whether the female can contribute nutritive soul in the sense required by Henry's view.

The more basic objection to this part of Henry's account is that it seems situated at the wrong level of the proposed two-stage model of generation. The contribution of nutritive and sensory soul is supposed to take place at the stage of morphogenesis, that is, once the early

embryo has already been formed. But the wind egg is unfertilized and thus analogous not to the embryo but to the menstrual blood from which embryogenesis proceeds. Therefore, it appears that whichever lesson one draws from the treatment of wind eggs in *GA* II.5, it ought to be a lesson concerning embryogenesis, not morphogenesis.

These concerns cast doubt on Henry's contention that Aristotle held a two-stage version of reproductive hylomorphism. For it is not clear that, for Aristotle, the later development of the embryo should be understood in terms of hylomorphic composition. But despite those queries as to the reach of reproductive hylomorphism, Henry's general hylomorphic approach is rewarding, and anyone interested in hylomorphism will profit greatly from working through this ambitious study.

SAMUEL MEISTER

University of Toronto