

Richard Cross, *The Physics of Duns Scotus: The Scientific Context of a Theological Vision* (Oxford: Clarendon, 1998), xv + 303 pp.

Richard Cross, fellow of Oriel College, is a man born out of time, a scholastic theologian fated to live 700 years after the heyday of scholasticism. In the last decade he has burst forth into the world of medieval scholarship, seemingly out of nowhere, with a series of impressive studies on natural theology. According to his CV, he completed a doctoral thesis at Oxford in 1991 on Scotus's theory of the hypostatic union. Be that as it may, he gives every impression of having traveled to us by time machine.

Within the last few years Cross has published two books on Scotus: an introduction to his theology (*Duns Scotus* [OUP 1999]) and the book presently under review, a dense and demanding study of various themes in Scotus's physics. Here 'physics' is used in the medieval sense, to cover those topics included in Aristotle's *Physics*. To a contemporary philosopher, the contents of this book, as well as the methods, will look almost wholly metaphysical. The principal topics explored are matter, form, unity, quantity, quality, space, motion, and time.

In saying that Cross belongs to a different era, I have in mind his utterly distinctive and refreshing approach to medieval philosophy and theology. He has about him nothing of the historian who approaches the material from a distance, carefully cataloguing works and arguments without concern for who had the best of the debate. But he is equally unlike so many philosophically-trained historians today who seem to care about an historical figure only once they are able to locate his views in the context of contemporary discussions. Cross is never anachronistic, but also never antiquarian. He simply leaps into this material as it is, immersing himself in thirteenth-century debates as

if they were his own, without worrying about either historical objectivity or contemporary relevance.

For this reason, *The Physics of Duns Scotus* is not for everyone. Readers who need to be persuaded that these topics matter should look elsewhere for such encouragement before coming here. Readers uncomfortable with an historian who constantly announces his own views should likewise stay away. In my judgment, however, Cross has written the most impressive and interesting study in recent years on natural philosophy in the later Middle Ages. To convey something of the flavor of this work, I will consider in some detail just one topic. Given Cross's single-minded focus on the soundness of Scotus's arguments, there seems no way to discuss this book other than to engage with it, premise by premise.

The very first argument that Cross considers (pp. 14-16) goes from

(1) Generation exists

to

(2) There exists a subject remaining constant over the process of generation

to

(3) Matter exists.

The argument is distinctively Aristotelian, but can it be defended by something more than the Philosopher's authority? Cross endorses the inference from (1) to (2), but he doubts that the move from (2) to (3) has been adequately defended. He remarks,

In terms of empirical fact, it seems clear that a change from one substance to another requires some feature to remain constant. It might even be an empirical fact that there is some most basic kind of stuff, or some most basic physical constituents of things, which remain constant over all sorts of substantial change. But I do not see that Scotus's arguments, as they stand, successfully demonstrate

this second claim. What they do show is that *some* features remain in common over substantial changes if these changes take place by generation – rather than by, say, creation or transubstantiation (p. 16).

This surely mistakes empirical facts for metaphysical conclusions. Consider the generation of a cake from flour, eggs, etc., and count the cake as a substance. Cross seems to think we can *see* that the transition from ingredients to cake involves something's remaining constant. I see no way in which we can see or otherwise empirically establish any such thing. We see that *qualitatively* similar characteristics are present before and after baking. But what entitles us to be confident that anything has remained *numerically* the same through that process? That is a metaphysical question that cannot be settled by observation.

The metaphysical thesis in question – that the generation of a substance requires something that endures through the change – is what Cross usefully calls *the substrate condition* (p. 258). For Christian theologians, there were two important cases – creation and transubstantiation – where a new substance comes into existence without an enduring substrate. In the case of creation, of course, there is nothing at all from which the new substance is produced, whereas in the case of transubstantiation the new substance entirely replaces the old one. Cross's reason for thinking that Scotus establishes the inference from (1) to (2) is not the empirical evidence mentioned above – even if that had some probative value, it would still not be *demonstrative*. Instead, Cross lets Scotus build the substrate condition into his definition of 'generation.' If substantial change occurred without a material substrate, then we would have transubstantiation rather than generation, and the seemingly indubitable premise (1) would turn out false.

Of course, we do not want to deny (1). Yet, leaving aside the verbal question of how best to define ‘generation,’ why couldn’t the natural production of new substances occur through transubstantiation? Cross takes this issue up in an appendix, where he represents Scotus as arguing that (a) it would be easier for a natural agent to create than to transubstantiate; (b) natural agents cannot create; therefore (c) they cannot transubstantiate either (pp. 258-59). Cross concentrates on Scotus’s arguments for the intuitively plausible premise (b). But why should we accept (a)? In a footnote (p. 258 n. 6), he reports Scotus as holding that in transubstantiation the corrupted substance simply poses an additional burden on the natural agent: the agent must not only make something new, but *also* get rid of the old thing. But this seems an absurd mischaracterization of the situation. Return to the cake, and treat it as a case of transubstantiation. It is not as if I have to create the cake from nothing and at the same time dispose of the ingredients. That *would* be harder than simply creating a cake ex nihilo. But on the transubstantiation account, we will say instead that I *use* the ingredients to make the cake. What makes this a case of transubstantiation is our insistence that those ingredients entirely go out of existence. Nothing remains over change – not the flour, not the eggs, not any sort of material substrate. Still, I could not have made the cake without availing myself of some ingredients. Transubstantiation, therefore, looks vastly easier than creation.

Did Scotus really suppose otherwise? Cross offers nothing more here, but a look at one of the cited passages turns up this intriguing argument:

That which is to be corrupted is not naturally prior to the occurrence of what is generated. Therefore if nothing of what is corrupted remains at the moment at which the agent generates, it generates ex nihilo and does not act on anything (*Questions on the Metaphysics* VII.5 par. 9).

Consider the moment at which the new substance comes into existence. This is also the moment at which the thing to be corrupted goes completely out of existence. The agent must therefore generate ex nihilo, because there is nothing available at that moment with which to build the new substance. To transubstantiate, therefore, just is to create one thing while destroying another.

Whether or not this argument is successful, it illustrates my principal criticism of Cross's book. Though he provides copious references to primary and secondary works, he very rarely supplies the texts themselves, in English or Latin. Readers that wish to evaluate his conclusions will of course want to have a look at what Scotus actually said, and this book would be much more useful if the footnotes supplied that material.

Robert Pasnau

University of Colorado