"Men go grey": Robert Kilwardby and the logic of natural contingency

Joshua Mendelsohn
Loyola University Chicago, Chicago, US
jmendelsohn@luc.edu
www.joshuamendelsohn.com

At *Prior Analytics* I.13, 32b4-23, Aristotle contrasts two kinds of contingency: Those in which the predicate "belongs by nature" (*Prior Analytics* I.13, 32b7-8) to the subject, as in the predication that "a man goes grey" and "indeterminate" (*Prior Analytics* I.13, 32b10) contingencies such as "an earthquake occurs while an animal walks." Aristotle says little about this distinction, and scholars disagree on such basic issues as whether Aristotle means to classify natural contingency as a type of contingency or necessity (Striker 1985; Smith 1989) or whether Aristotle is delineating a logical modality at all (Striker 1985).

In this paper, I reconstruct a logic of natural contingency on the basis of Robert Kilwardby's wide-ranging and original thirteenth-century commentary. Kilwardby's commentary has recently received a critical edition in Thom and Scott (2015) and a thorough interpretation in Thom (2019). Thom's interpretation brings out the novelty of Kilwardby's approach as well as its promise for furthering contemporary scholarly debates. I argue that Thom (2019) does not, however, take full account of the ingenuity of Kilwardby's interpretation of Aristotle on natural contingency, nor the highly creative theory of natural contingency he develops on its basis.

On Robert Kilwardby's interpretation, natural contingencies describe necessary causes that may be "obstructed" by the premature expiration of their subjects. A natural contingency thus holds, on Kilwardby's interpretation, if the predication describing the completion of a process holds of necessity when we abstract from the fact that individuals in which some natural process occurs may not exist for long enough to allow this process to come to completion. For instance, "goes grey" holds naturally of all men if, and only if, every man would necessarily go grey were they to exist for a sufficiently long time.

I provide a formalization of this idea by interpreting syllogistic propositions in models that associate each individual with a segment of the timeline representing those times at which that individual's existence is actual. Models interpret sentences relative to times, and allow individuals to

have terms truly predicated of them even when their existence is merely potential. This is enough to capture the idea that natural contingencies require processes to culminate in individuals given that they exist for a sufficiently long time, since we can quantify over possibly expired future individuals. I show that the formalization validates the results Kilwardby claims for natural contingency (Celarent LQX, and Q_{nat}-Q conversion) and explain how the formalism captures Kilwardby's pronouncements on the relationship between natural contingency and necessity. I argue that Kilwardby's solution both provides a striking early analysis of modal notions within a temporal logic, and displays great interpretive ingenuity, even if it does not ultimately point the way to a viable interpretation of Aristotle's text.