Spicy Food as Cause of Death

Coincidence and Necessity in *Metaphysics E* 2-3

Philosophers who venture an interpretation of *Metaphysics* E 3 typically do so with some trepidation. The twenty-two lines that make up Aristotle's analysis have been described as 'obscure', and it is hard to free oneself from the sense that the chapter has served as a kind of Rorschach blot on which readers have exercised their philosophical imaginations.[1]

This type of indeterminacy is not uncommon in the corpus – witness the dispute over *De Anima* III 5[2]. But E 3 is especially terse, even for Aristotle, and the first three lines, which set the stage for the ensuing analysis, seem particularly problematic. The text of the MSS is not in doubt.[3] The issue is one of interpretation. The indeterminacy is potentially assuaged by the availability of a parallel argument in *Metaphysics* K 8, which offers a promising elucidation of some of Aristotle's most obscure claims. But the authorship of K 8 is disputed, so rather than help us slice through the Gordian knot of E 3, K 8 arguably adds another layer of complexity to the interpretation of Aristotle's claims.[4] The same can be said for Pseudo-

[1] The wide array of available interpretations is an embarrassment of riches, for it seems to suggest that we can make what we want of Aristotle's words in E 3. No wonder, then, that the chapter has been the inspiration for some truly original and trailblazing work in Aristotle scholarship. On the face of it, E 3 reads like a blank cheque.

[2] I borrow the Rorschach image from Christopher Shields' description of *DA* III 5 in the appendix to his Stanford Encyclopedia of Philosophy entry 'Aristotle on the Soul'.

[3] Apelt's proposal of '*anô*' for ἄνευ at 1027a30 has not had much uptake. Ross deletes νόσῳ ἢ at 1027b2 in his edition of the text (W. D. Ross, Aristotle's *Metaphysics* (Oxford: Clarendon Press, 1924), as does Jaeger, *Aristotelis Metaphysica* (Oxford: Clarendon Press, 1967), but this is unnecessary.

[4] On the authenticity of *Metaphysics* K, see W. D. Ross, Introduction to Aristotle's *Metaphysics*, xxv-xxvi. Jaeger defends K's authenticity in *Aristotle: Fundamentals of the History of his Development* (Oxford: Clarendon Press, 1948), 209-12. More recently, Décarie argues for and Aubenque against its authenticity in Wiesner (ed.), 9th Symposium Aristotelicum, *Zweifelhaftes im Corpus Aristotelicum, Peripatoi* 14 (1983), 295-317 and 318-44 respectively. Earlier skeptics include Natorp, 'Über Aristoteles' Metaphysik K 1-8, 1065a26', *Archiv für Geschichte der Philosophie* 1 (1888), 178-93; A. Mansion, 'Philosophie première, philosophie seconde et métaphysique chez Aristote', *Revue philosophique de Louvain* 56 (1958), 165-221 at 209-21; and Düring, *Aristoteles: Darstellung und Interpretation seines Denkens* (Heidelberg: Carl Winter - Universitätsverlag, 1966), 278. Madigan offers a survey of grounds on which K's authenticity has been impugned in his Introduction to *Aristotle Metaphysics Books B and K 1-2* (Oxford: Clarendon Press, 1999), xxxviii. He follows Ross in dismissing stylistic evidence as inconclusive (on this, see further Rutten, 'La stylometrie et la question

Alexander's commentary on *Metaphysics Epsilon*.[5] Richard Sorabji draws freely on the commentary in the chapter that introduces his argument in *Necessity, Cause and Blame* ('Do Accidents Have Causes'), and uses it to reconstruct Aristotle's theory.[6] Curiously, however, Sorabji omits Pseudo-Alexander's work from the *Ancient Commentators on Aristotle* series on the grounds that it is spurious.[7] The lesson seems to be that one can learn something from

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de la *Métaphysique* K', *Revue Philosophique de Louvain* 88 (1992), 486-96)). Ross describes both the thought and the language of K as 'thoroughly Aristotelian'. What needs to be explained is rather the overlap with other parts of the corpus. The first part of K, up to 1065a26, contains a shorter version of *Metaph*. BGE, while the second part, starting at 1065a26, contains material that tracks *Physics* II, III, and V. However, the first part 'is no mechanical paraphrase of BGE', observes Ross, but rather an 'independent handling of the same topics, omitting much (e.g. 1002b32-1003a5, 1007a20-b18, 1008a7-b12), rearranging much, and inserting not a little of its own (e.g. 1059b14-21, 30, 38, 1061a20-b3, 1065a14-21)' (at xxvi). Ross maintains that 'so long as the contents of K are recognized as Aristotelian, it does not much matter whether the actual form is due to Aristotle or to a pupil who took down Aristotle's lectures' (at xxvi). If K represents a student's notes, it is not, however, of the identical course of lectures which we have in BGE – Ross thinks it is too independent for that – but rather of a corresponding course given on another occasion, most likely earlier than BGE (p. xxvi). In his postscript to the 2nd edition of *Aristotle* Metaphysics*: Books Gamma, Delta and Epsilon* [Gamma, Delta and Epsilon] (Oxford: Clarendon Press, 1993), C. Kirwan calls the author of K 8 'a floundering interpreter of E3 as a whole' (p. 223). But this falsely presumes that the author of K is aiming to interpret BGE. It may rather be a student's notes on an earlier lecture course by Aristotle, or may even be identical to that earlier lecture course, a possibility not excluded by the evidence. Either alternative would explain the 'Platonic' flavor of K 1-2, which Madigan lists as the only weighty reason for doubting K's authenticity in his introduction at xxxviii-xl.

[5] Alexandri Aphrodisiensis, *In Aristotelis Metaphysica Commentaria* (CAG), ed. M. Hayduck (Berlin: 1891). Hayduck (p. v) argues that the commentary on Epsilon is spurious.

[6] Sorabji, *Necessity, Cause, and Blame. Perspectives on Aristotle's Theory* [Necessity, Cause, and Blame] (Ithaca, NY: Cornell University Press, 1980). See e.g. his acceptance of Pseudo-Aristotle's elaboration of Aristotle's example (CAG 454.36) as one involving an accidental meeting between one Nicostratus and 'ruffians' at 9-10.

[7] In correspondence, Sorabji reveals that a full translation of Pseudo-Alexander's commentary for the Ancient Commentators on Aristotle series is in the works. In the original 'Guide to the ACA Volumes', the editor declares that only books 1-5 will be translated: '6-14 spurious, not being translated' (p. 1). (Retrieved from https://www.kcl.ac.uk/artshums/depts/philosophy/research/commentators/files/cag-guideApr08.pdf, Sept. 26, 2016). Sorabji's reassessment is influenced by Pantelis Golitsis's recent article 'Who Were the Real Authors of the Metaphysics Commentary Ascribed to Alexander and Ps.-Alexander? The Roles of Stephanus, Asclepius, Michael of Ephesus, and George Pachymeres' (in R. Sorabji (ed.), *Aristotle Re-Interpreted* (London: Bloomsbury, 2016), 565-88. Golitsis argues (at 583) that Pseudo-Alexander's commentary on book 6 (Epsilon), like that on books 1-5, should be attributed

reading spuria, but exactly what we can learn from reading Pseudo-Alexander on E 3 is not immediately clear. Because of these and related problems, readers preface their analyses of E 3 with apologetic notes. Bonitz complains in his commentary ad loc. that 'it is difficult to interpret matters which the philosopher himself has not explained with sufficient distinctness and thoroughness' (1849)[8]. In his 1973 commentary *Metaphysics: Books Gamma, Delta and Epsilon*, Christopher Kirwan opens his analysis by noting that 'This chapter has not yet received a satisfactory explanation'. He repeats the judgment in the revised and expanded edition of his Clarendon commentary some twenty years later, stating that 'Despite the appearance of many new studies since those words were written, I believe they are still true in 1992'.[9] And Ross remarks in his commentary that 'it cannot be maintained (…) that the chapter works out with any great clearness the thesis here put forward'.[10] Indeed, it isn't even clear what Aristotle's thesis is meant to be – and so there is disagreement not just over the detail of the argument, but also over its exact purpose.

At the risk of adding yet another unsatisfactory account to the list of interpretations, let me, then, offer an analysis of *Metaphysics* E 3. My reading draws its inspiration partially from the analysis of K 8, which I consider to be Aristotelian in substance, if not in form,[11] and partially from Thomas Aquinas' interpretation of E 3 in his commentary on the *Metaphysics*, though I shall not appeal to authority. There are sound textual and philosophical reasons for favoring the main thrust of their readings over the dominant modern interpretations, which, despite considerable disagreement over individual steps, converge on one point, namely that Aristotle

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to Stephanus of Alexandria (7th century AD). Michael of Ephesus only started his work with book 7 (Zeta). This has important ramifications, argues Golitsis,'For it is most likely that, as in the case for books 1-5 (Alpha-Delta), the anonymous professor [i.e. Stephanus] largely based his own commentary on book 6 (Epsilon) on the commentary by Alexander' (at 583, note 39). If Stephanus' commentary reflects Alexander's lost commentary on book 6, it may also reflect Alexander's tendency to interpret Aristotle as an indeterminist, and specifically, Alexander's attempt to read Aristotle's analysis of coincidence as an argument against Stoic determinism. See R. W. Sharples, Alexander of Aphrodisias *On Fate* (London: Duckworth, 1983), 171.18-174.28, which illustrates Alexander's anti-determinist take on Aristotle's analysis of coincidental causes, spontaneity, and luck. The material covered by this stretch of *On Fate* reflects *Physics* II 4-6.

[8] Bonitz, *Aristotelis* Metaphysica v. 2 (Hildesheim, 1960), at 292 (transl. Madigan).

[9] Kirwan, 'Gamma, Delta, Epsilon', at 222.

[10] Ross, *Aristotle's* Metaphysics, at 362.

[11] Thus accepting Ross's argument summarized in note 8 above without taking a stance on the hypothesis that K 8 may be a student's notes on an earlier lecture course (covering material similar to E 2-3), or the more radical proposal that it is identical to that earlier lecture course.

in the course of the argument 'meets causal determinism head on', to use Sorabji's memorable phrase.[12]

Whether Aristotle in E 3 'meets determinism head on' as most modern readers suppose,[13] depends, in part, on what we take determinism to be – the definitions of determinism are legion.[14] What Aristotle does *not* attack, I shall argue, is the view that whatever happens is necessitated by antecedent causes, such that given these antecedent causes, the effect will obtain. [15] Instead, he attacks a different thesis, namely the thesis that everything that happens

[12] Sorabji, *Necessity, Cause and Blame*, ch. 1 at 3. I do not here intend to give a systematic critique of Sorabji's argument. For discussion, see G. Fine 'Aristotle on Determinism: A Review of Richard Sorabji's *Necessity, Cause, and Blame*' [Review of Sorabji], *Philosophical Review* xc (1981), 561-79; C. Freeland 'Accidental Causes and Real Explanations' [Real Explanations] in L. Judson (ed.), *Aristotle's* Physics. *A Collection of Essays* (Oxford: Clarendon Press, 1991) 49-72; D. Frede, 'Accidental Causes in Aristotle' [Accidental Causes], *Synthese* vol. 92 (1992), 39-62 (esp. 52-5); and L. Judson, 'What Can Happen When You Eat Pungent Food' [What Can Happen], in N. Avgelis & F. Peonidis (eds.), *Aristotle on Logic, Language and Science* (Thessaloniki: Sakkoulas Publications, 1998), 185-203.

[13] Defenses of indeterminist readings can be found in Sorabji, *Necessity, Cause and Blame*; D. Frede, 'Aristotle on the Limits of Determinism: Accidental Causes in *Metaphysics* E3' [Limits of Determinism], in A. Gotthelf (ed.), *Aristotle on Nature and Living Things* (Pittsburgh: Mathesis Publications, 1985), 207-26; H. Weidemann, 'Aristoteles und das Problem des Kausalen Determinismus (*Met*. E3)' [Das Problem], *Phronesis* xxxi (1986), 27-50; C. J. F. Williams, 'Some Comments on Aristotle Metaphysics E2-3' [Some Comments], *Illinois Classical Studies* xi (1986), 27-50; C. Natali, 'Un argomento aristotelico contro il determinismo', *Antiquorum Philosophia* 6 (2012), 31-46; and, with important qualifications, Freeland, 'Real Explanations', and C. Panayides, 'Aristotle on Incidental Causes and Teleological Determinism: Resolving the Puzzles of Metaphysics E 3', [Resolving the Puzzles], *Journal of Philosophical Research*, vol. 37 (2012), 25-50. D. Frede defends a reading of E2-3 that is compatible with causal determinism in her 'Accidental Causes', as does H. Ide, 'Aristotle, Metaphysics 6.2-3 and Determinism' [Aristotle and Determinism], *Ancient Philosophy* 13 (1993), 341-54.

[14] Sorabji, 'Necessity, Cause, and Blame', defines determinism as the view that 'whatever happens has all along been necessary, that is, fixed or inevitable' (at ix). This entails that whatever happens is 'absolutely' or 'unconditionally' necessary (necessary *haplôs*). A standard definition of determinism makes a weaker claim, namely that everything that happens has a necessitating cause or causes (see Fine, 'Review of Sorabji', at 562). On Sorabji's definition of determinism, everything that happens is necessary, whereas on the standard definition, everything that happens is necessitated without being absolutely necessary (see Ide, 'Aristotle and Determinism', at 341). Sorabji's own definition of determinism appears to change in the course of his analysis, as Fine notes.

has a *per se* cause. For when conjoined with the premise that antecedent causes necessitate their effects, this view leads to the result that everything that happens, happens of necessity (*ex anankês*), a view that Aristotle eschews. Aristotle is not, then, aiming to reject the principle of sufficient antecedent conditions, nor does he deny that future events are conditionally necessary given what happened in the past. Instead he rejects the view that everything that happens has a *per se* (*kath'hauto*) cause; some causes are coincidental to their effects.

The claim that everything that happens can be traced back to a *per se* cause differs from determinism is seeing every efficient cause as one that is tied to its effect by having it as an outcome that is 'aimed at'. That is, the cause is *for the sake of* the effect. If, by contrast, there are coincidental causes, then not every cause is for the sake of the effect that it produces, even if the causal chain that produces the effect fully determines the outcome. It is a further consequence of positing universal *per se* causation that no interference from external causal chains could avert or in any way influence the usual outcome, or even produce an unusual outcome.

Establishing that the thesis of E3 concerns the existence of coincidental causes will require careful argument. But looking ahead at K 8, its author explicitly treats the existence of coincidental causes as the thesis that needs to be proved, for he declares at the head of his argument that 'evidently there are not causes and principles of the coincidental (*tou kata sumbebêkos ontos*) *of the same kind* as there are of what is in its own right (*tou kath'hauto ontos*)'. 'For', he goes on to argue, 'if there were, everything would be of necessity (*ex anankês*)' (K 8 1065a9-11, my emphasis). But 'what is coincidental is not necessary, but rather indeterminate (*aoriston*)'. And of such things, says the author of K 8, 'the causes are unordered and indefinite (*atakta kai apeira ta aitia*)' (K 8, 1065a25-6).[16] Coincidences, then, have coincidental causes – causes that produce their effects neither always (*aei*) nor for the most part (*hôs epi to polu*), but that nevertheless suffice to bring them about.[17] Like the author

[16] I will use Ross's translation of Aristotle's *Metaphysics* in J. Barnes (ed.), *The Complete Works of Aristotle* (Princeton: Princeton University Press, 1983) throughout, with frequent modifications. The Greek is from Ross's 1953 corrected edition.

[17] In 'Aristotle, Teleology, and Reduction', *Philosophical Review* vol. 101, no 4 (1992), 791-825, S. Sauvé Meyer argues that the defense of teleology in *Physics* II 8 is compatible with what she calls the 'thesis of necessity', viz., the thesis that material and efficient causes completely determine natural phenomena. On the view I will defend in this paper, the defense of coincidental causes in E 3 is likewise compatible with a thesis of necessity, viz. the view that everything that happens is necessitated by antecedent efficient causes.

of K 8, Thomas Aquinas takes Aristotle's thesis in E 3 to be that there are coincidental causes. Some things happen by coincidence rather than through *per se* causes, for if not, everything would happen of necessity.[18] Though Aristotle does not highlight the contrast between *per se* and coincidental causes at the head of his argument in E 3, careful scrutiny of the argument and its context will reveal that this indeed the main purpose of the argument.

If this is correct, there is an interesting connection between Aristotle's objectives in *Metaphysics* E 3 and *Physics* II 8. While Aristotle in *Physics* II 8 defends natural teleology against an opponent who thinks that apparently teleological processes occur by coincidence, his opponent in E 3 thinks that apparent coincidences – whether they occur in nature or in the sphere of human action – in fact result from processes that are teleological insofar as they tend ineluctably toward a definite result. These positions are both eliminative – the first eliminates teleology in favor of universal coincidence, the second eliminates coincidence and coincidental causes in favor of a kind of universal teleology that makes all outcomes the result of ineluctable processes. Aristotle rejects both views in favor of a position that recognizes both *per se* and coincidental causes. In the final section of this paper, I will briefly examine some apparent implications of Aristotle's views for astrological fatalism and providence. It is views such as these, I shall suggest, rather than determinism, that are put under pressure in E 3, for they presuppose precisely the assumption that Aristotle is out to reject, namely that seeming coincidences have *per se* causes, and for that reason are not coincidences at all, since they were in the process of happening all along.[19]

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[18] He describes the purpose of E 3 as follows: 'Having drawn his conclusions concerning coincidental being (*ens per accidens*), the Philosopher now rejects an opinion that would completely abolish this kind of being. For some men held that whatever comes to pass in the world has some proper cause (*causa per se*), and again that given any cause its effect necessarily follows. Hence, as a result of the connection between causes it would follow that everything in the world happens of necessity (*ex necessitate*) and nothing by coincidence (*per accidens*). Therefore the Philosopher's aim is to destroy this position' (Lesson 3, 'Refutation of Those Who Wished to Abolish the Coincidental', 1191; transl. modified from J. P. Rowan (Chicago, 1961)).

[19] It is not clear who the targets of Aristotle's argument in E 3 were. Alexander accuses the Stoics of eliminating coincidence, but Aristotle's target in E 3 cannot have been Stoic determinism as such, but rather some (earlier) version of teleological determinism. In her 'Accidental Causes', D. Frede thinks that Aristotle in E 3 aims to reject Democritean mechanical necessity in favor of a theory of causality that distinguishes between what happens as a result of teleology and what happens due to accidental interruptions, a distinction Democritus cannot uphold since he denies natural teleology ('Accidental Causes', at 60). While I am sympathetic to the main thrust of Frede's argument, which, in a shift from her 'Limits of Determinism', interprets Aristotle's position as compatible with *some* form of

The Argument

Before we are in a position to assess the implications of the argument of E 3, we need a better sense of its structure. I shall divide the argument of E 3 into five stages, following Madigan. Since his divisions are uncontroversial, I will take them over as stated (The Greek I print below is from Ross's Clarendon edition of the *Metaphysics* (1925), corrected in 1953). The argument runs as follows:

A. Initial statement of the thesis (1027a29-30)
B. Assertion that the denial of this thesis would imply universal necessity (1027a30-32)
C. A section of argument having to do with examples of cause-effect chains (1027a32-1027b11)
D. Conclusion from the preceding argument (1027b 11-14)
E. Closing remark, indicating uncertainty about the nature of the principle in question and calling for further investigation (1027b 14-16)[20]

(A) Ὅτι δ' εἰσὶν ἀρχαὶ καὶ αἴτια γενητὰ καὶ φθαρτὰ ἄνευ τοῦ γίγνεσθαι καὶ φθείρεσθαι, φανερόν.

(B) εἰ γὰρ μὴ τοῦτ', ἐξ ἀνάγκης πάντ' ἔσται, εἰ τοῦ γιγνομένου καὶ φθειρομένου μὴ κατὰ συμβεβηκὸς αἴτιόν τι ἀνάγκη εἶναι.

(C) Πότερον γὰρ ἔσται τοδὶ ἢ οὔ; ἐάν γε τοδὶ γένηται· εἰ δὲ μή, οὔ. τοῦτο δὲ ἐὰν ἄλλο. καὶ οὕτω δῆλον ὅτι ἀεὶ χρόνου ἀφαιρουμένου ἀπὸ πεπερασμένου χρόνου ἥξει ἐπὶ τὸ νῦν, ὥστε ὁδὶ ἀποθανεῖται [νόσῳ ἢ] βίᾳ, ἐάν γε ἐξέλθῃ· τοῦτο δὲ ἐὰν διψήσῃ·τοῦτο δὲ ἐὰν ἄλλο· καὶ οὕτως ἥξει εἰς ὃ νῦν ὑπάρχει, ἢ εἰς τῶν γεγονότων τι. οἷον ἐὰν διψήσῃ· τοῦτο δὲ εἰ ἐσθίει δριμέα·τοῦτο δ' ἤτοι ὑπάρχει ἢ οὔ· ὥστ' ἐξ ἀνάγκης ἀποθανεῖται ἢ οὐκ ἀποθανεῖται. ὁμοίως δὲ κἂν ὑπερπηδήσῃ τις εἰς τὰ γενόμενα, ὁ αὐτὸς λόγος· ἤδη γὰρ ὑπάρχει τοῦτο ἔν τινι, λέγω δὲ τὸ γεγονός· ἐξ ἀνάγκης ἄρα πάντα ἔσται τὰ ἐσόμενα, οἷον τὸ ἀποθανεῖν τὸν ζῶντα· ἤδη γάρ τι γέγονεν, οἷον τὰ ἐναντία ἐν τῷ αὐτῷ. ἀλλ' εἰ νόσῳ ἢ βίᾳ, οὔπω, ἀλλ' ἐὰν τοδὶ γένηται.

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determinism, I don't see any reason to suppose that Democritus or other mechanists are Aristotle's targets in E 3.

[20] I quote the description of the stages in Madigan, 'A Modest Proposal', at 124-5.

(D) δῆλον ἄρα ὅτι μέχρι τινὸς βαδίζει ἀρχῆς, αὕτη δ’ οὐκέτι εἰς ἄλλο. ἔσται οὖν ἡ τοῦ ὁπότερ’ ἔτυχεν αὕτη, καὶ αἴτιον τῆς γενέσεως αὐτῆς ἄλλο οὐθέν.

(E) ἀλλ’ εἰς ἀρχὴν ποίαν καὶ αἴτιον ποῖον ἡ ἀναγωγὴ ἡ τοιαύτη, πότερον ὡς εἰς ὕλην ἢ ὡς εἰς τὸ οὗ ἕνεκα ἢ ὡς εἰς τὸ κινῆσαν, μάλιστα σκεπτέον.

A provisional translation (to be defended) runs as follows:

(A) That there are principles and causes capable of coming into being and perishing without <going through a process of> coming into being and perishing is evident.

(B) For otherwise, everything will be of necessity, if whatever comes to be and perishes must have some non-coincidental cause.

(C) Will this be or not? It will, if this happens, and if not, not. And this will happen if something else does. And in this way, if time is constantly subtracted from a limited extent of time, it is clear that we will arrive at the present, so that this man will die [by illness or] by violence, if he goes out; and he will do this if he thirsty; and he will be thirsty if something else happens. And in this way we come to what is now the case, or to something that happened in the past. For instance, he will go out if he is thirsty; and he will be thirsty if he eats spicy food. And this is either the case or not; so that he will of necessity die or <of necessity> not die. And likewise it’s the same account if one jumps over to the past. For this – I mean the past condition – is already present in something. Everything, therefore, that will be, will be of necessity, just as it is necessary that the man who lives will die. For something has already come to pass, i.e. the presence of contraries in him. But whether he will die by disease or by violence is not already determined, but only if this comes to pass.

(D) It is evident, then, that it [the *anagôgê*] will go [back] to some principle, but this principle not to another. And this will be the principle of what happens as the case may be, and there is no other cause of its coming to be.

(E) But to what kind of principle and what kind of cause an *anagogê* of this sort leads, whether to matter or to that for the sake of which, or to an efficient cause, must be investigated especially.

I shall not insist on the accuracy of the translation at this point, as that would prejudge a number of critical issues. I believe it is a defensible rendition of the argument, however. The translation is meant to be as open as the Greek will allow, even where I think we have reason to take Aristotle in a quite specific sense.

Before I proceed to examine individual steps in the argument, let us consider the context in which the argument appears. The argument follows hard on the heels of Aristotle's discussion of coincidence in *Metaphysics* E2. In E2, Aristotle argues that there is no demonstration of what exists or comes to be by coincidence (*kata sumbebêkos*).[21] The builder does not study the coincidental properties of the house – that it will please some but offend others. Nor does the geometer study the coincidental properties of a triangle. Instead, they study what belongs to their subject matter in its own right – *kath' hauto* – in virtue of what it is. The failure to distinguish between coincidental properties and properties that belong to a subject in virtue of what it is leads to paralogisms, says Aristotle. Sophists exploit confusion over the status of coincidental unities when they play their eristic games. Alluding to an example the details of which remain opaque, Aristotle notes that, unlike subjects that exist in their own right, coincidental unities are not generated or destroyed (τῶν μὲν γὰρ ἄλλον τρόπον ὄντων ἔστι γένεσις καὶ φθορά, τῶν δὲ κατὰ συμβεβηκὸς οὐκ ἔστιν, E2 1026b22-4). Failure to note this point gives rise to sophistical puzzles.[22] Had there not been the coincidental, Aristotle argues in E2, causes that produce their effects for the most part would do so of necessity (*ex anankês*). Thus, the existence of 'for the most part' relations presupposes that coincidences are real, and *vice versa*.[23]

The claim linking the denial of coincidence to necessity plays a pivotal part in the refutation of E3; for it helps support Aristotle's claim in E 2 that the cause (*aition*) of what exists or comes to be *kata sumbebêkos* itself exists or comes to be *kata sumbebêkos* (E 2 1027a7-8; for

[21] And consequently no theoretical science of it. But neither can it be the subject matter of practical or productive science, since these involve knowledge of principles that hold for the most part (E 2 1026b3-5).

[22] Namely those that arise when we treat 'musical man' or 'grammatical man' as rigid designators while allowing that 'musical' and 'grammatical' are properties that subjects acquire at particular points in time. See Williams, 'Some Comments' for a cogent analysis. Less plausibly, Ross in note ad loc.

[23] 'Since, among things which are, some are always in the same state and are of necessity (not necessity in the sense of compulsion, but that which means the impossibility of being otherwise), and some are not of necessity nor always, but for the most part, this is the principle and the cause of the existence of the coincidental: for that which is neither always nor for the most part, we call coincidental' (E 2 1026b27-32; see also E 2 1027a7-9 and E 2 1027a15-18).

similar claims, see also *Physics* II 3, 195a33-b6; II 5, esp. 197a17-24; 8, II 8, 199b22-24). Indeed, if coincidences had not had coincidental causes, they would not be coincidences at all, but rather things that happen always (*aei*) or for the most part (*hôs epi to polu*), and therefore be the subject matter of science. The two claims of E 2 are therefore related; E3 defends the existence of coincidental causes posited in E 2 by refuting the contrary view through an argument that appeals to the necessitarian consequences[24] of denying the existence of causes that are not generated or destroyed (i.e. of denying that there are coincidental causes), another point introduced in E 2. Any interpretation that loses this connection from sight has limited plausibility.[25]

In *Physics* II 5, Aristotle explains that just as there is *per se* (*kath'hauto*) being and coincidental (*kata sumbebêkos*) being, so too there can be a *per se* cause and a coincidental cause (196b24-25). He recognizes two kinds of coincidental causation:

A produces B in virtue of some coincidental property C that A possesses, or
A produces B in virtue of what it is to be A, and B is coincidentally C (see e.g. *Physics* II 5 196b24-7).

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[24] Aristotle's explanation of what he means by 'necessity' in E 2 1026b27-32, and his illustrations of for the most part relations and coincidences, indicate that these are not distinguished by temporal means: '*aei*' does not quantify over moments in time, but rather over the conjunction of and relation between cause and effect. Necessary causes are those that invariably produce their effects, and where the relevant effects are explained with reference to their causes. They share the latter, but not the former, feature with for the most part causes, which are defeasible. On the view I will defend, coincidental causes neither invariably produce their effects, nor do they explain them teleologically as for the most part causes do. Instead, they explain them non-teleologically, since in each case, the relevant kind of cause is not for the sake of producing the kind of effect that ensues. Elsewhere, Aristotle explicates the 'for the sake of' relation in terms of the end being *the good of* the subject or *the good for* the subject (where the subject can be a craft or craftsman, a natural substance, or an agent).

[25] Judson, 'What can Happen', at 186, remarks that though 'E2 and E3 do not look like parts of a single, well-organised discussion', we should 'expect enough continuity and /or community of interest to make their juxtaposition reasonable'. I believe the connection is tighter than the rather tentative connection Judson posits. Scholars who treat the two as disconnected fail to see the point of E3, and must disregard the central contention of E2. Panayides, 'Resolving the Puzzles', at 45, claims that 'the entire chapter [E 3] seems to be out of place in the wider context of book E', and conjectures that it was written before the Metaphysics and Physics, but inserted at the end of E 2 by a later editor. Panayides' reasons for this conjecture seem slim, and he furthermore ignores to explore the relevant evidence for continuity.

An example of the latter kind of coincidental cause is the pastry cook who produces something wholesome – the pastry cook's art is not for the sake of making wholesome food, since the pastry cook's art aims at pleasure. But in making something pleasant, for instance carrot cake, a pastry cook may coincidentally produce a wholesome meal (E2 1027a2). An example of the first kind of accidental causation is the builder who produces health because he also happens to be a doctor. It is not *qua* builder that he produces health, but *qua* doctor, and so the builder is coincidentally the cause of health (E 2 1026b37). Most fundamentally, this means that the causal ancestry of a coincidence does not lead back to a *per se* cause. If A produces B by coincidence, B is not ultimately explicable in virtue of what it is to be A, whether A is a natural substance, an artifact or an artisan, or a decision to undertake some action with an objective (or a foreseeable result) other than B.[26] As we shall see, Aristotle adds a potentially important rider to his observation about coincidence and explanation at the end of E2, but we will have to return to that important passage in due course. Let this suffice by way of context.

On the interpretation of E3 that I favor, Aristotle here defends the existence of coincidence and coincidental causes by refuting the negation of this thesis, viz., the view that everything that happens, happens on account of a *per se* cause, and so as a result of a teleological process

[26] S. Kelsey argues on the basis of the distinction between *per se* and coincidental causes in the *Physics* that 'Aristotle's conception of efficient causality is broadly speaking teleological in structure', since he 'tends to conceive of all genuine causal processes on the model of house-building, so that, for him, part of what it is to be the cause of something is to be engaged in a kind of activity that is supposed to eventuate in things of that kind'. For Aristotle, 'efficient causes do not cause so to speak everything that they cause (as we would say), but only those specific things they are 'of a kind' or 'nature' (*pephukê*) to cause; that is, it is only these things that they cause 'unqualifiedly' and '*per se*' and 'as such''. See Kelsey, 'The Argument of *Metaphysics* vi 3' [*Metaphysics* vi 3], *Ancient Philosophy* 24 (2004), 119-134 at 121. Kelsey's equation of unqualified and *per se* causes with 'genuine' efficient causes is unhelpful, however, for Aristotle treats coincidental causes as just as 'real' or 'genuine' efficient causes as *per se* causes in both the *Physics* and the *Metaphysics*. His point, rather, is that unlike coincidental causes, a *per se* cause is 'of a kind' to produce the relevant effect, so that we can say not just that this particular A caused this particular B, but also that A's cause B's – in other words, there is a true generic teleological statement associated with *per se* causes and their effects (e.g. it is true that 'pastry cooks produce sweets' since that is what their art is for) which is missing in the case of coincidental causes and their effects (it is false that 'pastry cooks produce healthy food' – or even sticky fingers, since that isn't what their art is for). Similarly for coincidental results of human decisions: a decision to dig a hole for a plant isn't for the sake of finding a treasure (this holds even if finding a treasure often results from gardening in particular parts of the world, e.g. at Delphi or Herculaneum).

leading up to it. For if all causes were always for the sake of the end that actually results, nothing could prevent any process from reaching its end, and nothing could bring about an outcome other than what the cause was for. The outcome would therefore obtain by necessity (*ex anankês*), as in the super-lunary sphere. In the sub-lunary sphere, *per se* causes can fail to manifest their normal effects due to *impediments* of different kinds. They can also produce unexpected outcomes due to the *intersection* of separate teleological processes, whether natural or agential. If there had been no coincidental causes, the distinction between *per se* causes that manifest their effects in each and every case and those that do so only normally ('for the most part') would collapse, and everything would happen of necessity. However, coincidences are real. As Aristotle proceeds to argue in the '*anagôgê*' or backtracking argument of (C), not every future event can be traced back to the power of some *per se* cause. Indeed, the same is true of past and present events. For the purposes of Aristotle's argument, it does not matter whether the coincidental causes are future or past, that is, whether we reason in future perfect or past perfect. For contrary to what Sorabji (1980), Weidemann (1986) and Kelsey (2004) maintain, the argument does not rely on an unstated premise about the necessity of the past – or the present. Instead, it exposes the absurdity of supposing that we can reconstruct a teleological chain of causes leading up to every outcome and a teleological explanation of every property of every substance.[27]

Aristotle's Gambit

Let us now turn to steps (A) and (B) of Aristotle's argument, where he presents his thesis (A), followed by a counterfactual explanation of what would be the case, had that thesis been false

[27] In Judson's reconstruction ('What Can Happen', at 189), Sorabji (ch.1) claims that Aristotle in E3 rejects the following argument by rejecting the truth of the second premise:

(i) The past and present are irrevocable, and so absolutely necessary
(ii) For any future event, there is a continuous chain of causes, each of which necessitates the next, which leads from some present or past event to that future event.
(iii) If X is absolutely necessary, and X necessitates Y, then Y is absolutely necessary
(iv) Every future event is absolutely necessary.

By contrast, I find no evidence to support Aristotle's alleged endorsement of the conditional in (i). Nor do I discern any appeal to the supposed absolute necessity – or for that matter irrevocability – of the present and past in any where in *Metaphysics* E. Aristotle's claim in *EN* VI 2 1139b7-9 and *Rhet* III 17, 1418a4-5 that the past is irrevocable does not entail that the past is absolutely necessary, for there are many things that aren't up to us without thereby being absolutely necessary (e.g., things that are up to others; things that happen for the most part due to the nature of the subject; coincidences).

(B). Understanding the connection between the thesis in (A) and the counterfactual implication in (B) is crucial for understanding the overall arc of the argument. The backtracking argument in (C) has been the focus of most defenders of the standard anti-determinist reading of Aristotle's argument, but it is only when we understand the connection between the claims in (A) and (B) that we can properly appreciate Aristotle's objective in (C), and so his conclusion in (D).

Aristotle launches his argument by making an observation that has puzzled some critics, but which appears to hold the key to the ensuing reductio: Ὅτι δ' εἰσὶν ἀρχαὶ καὶ αἴτια γενητὰ καὶ φθαρτὰ ἄνευ τοῦ γίγνεσθαι καὶ φθείρεσθαι, φανερόν (1027a29-30). On the most naive reading, this first line of E3 involves a contradiction – an inauspicious start, if Aristotle ever made one.[28]

Assuming that Aristotle does not mean to posit the existence of principles and causes that 'both come to be and perish without coming to be and perishing', exactly what is his gambit meant to be? Kirwan, following a proposal of Ross's, sees a contrast between causes and principles that go through a *process* of coming to be and perishing, and causes and principles that are *instantaneous*. This division, he argues, aligns with the division between *per se* and coincidental causes – only *per se* causes go though a process of generation and destruction, whereas coincidental causes do not. Instead they arise 'instantaneously'. To support this temporal reading, Kirwan expands the present infinitives in the first line, adding 'going through a process' in square brackets to bring out the point.[29] This yields: 'it is obvious that there are origins and causes that are able to come to be and be destroyed without [going through a process of] coming to be and being destroyed' ('Gamma, Delta, and Epsilon', at 71). Kirwan's introduction of the word 'able' is meant to highlight that such origins and causes are possible. In principle, one could translate the verbal adjectives γενητὰ and φθαρτὰ as factive, stating that there are principles and causes that come to be and are destroyed … etc'. But since the point on the 'process' reading is to establish that we *cannot exclude* the existence of such causes and principles, i.e., that they are *possible*, Kirwan maintains that the modal

[28] Madigan, 'A Modest Proposal', at 125.

[29] Ross adds 'process' in his translation without indicating that this is his gloss on the text. See also J. Warrington, *Aristotle's* Metaphysics (London: 1956). Kirwan places 'process' and 'going through a process' in square brackets at E 2 1026b22-4 and E3 1027a29-30. The process-reading can be traced back to Pseudo-Alexander.

operator governs the entire ensuing clause from the verbal adjectives.[30] On Kirwan's temporal reading of (A), Aristotle rejects determinism in E3 by asserting that some principles and causes arise instantaneously, without a chain of causes preceding them. These are the principles and causes of coincidences.[31]

C. J. F. Williams defends an indeterminist reading by a different route. Instead of a temporal contrast, he takes Aristotle to draw a modal contrast between *potential* and *actual* principles and causes in the opening line. Williams highlights the alleged contrast by inserting 'actually' in square brackets at the critical point in his translation of passage (A): 'That there are principles and causes which are capable of coming to be and perishing without <actually> coming to be and perishing is clear'. On Williams' reading, Aristotle seeks to establish the existence of *unrealized possibilities* – principles and causes that are capable of coming to be and perishing without actually coming to be and perishing.[32] Williams proceeds to argue that E3 restricts the necessity of having a cause to non-coincidental comings to be and ceasings to be: 'The way is therefore open for the backward-stretching chain of causality to come to an

[30] Ide, 'Aristotle and Determinism', objects that this is an awkward rendition of the verbal adjectives, for, he claims, it is hard to see how the potentiality that they connote could have the without-clause within its scope. This is no doubt right, but as Judson observes, even if we can't make sense of a construal on which the modality of γενητὰ governs ἄνευ τοῦ γίγνεσθαι, the standard process reading isn't committed to it 'since it is easy to understand 'when they come to be' with *'aneu tou gignesthai''* ('What Can Happen', at 189).

[31] Also Sorabji, 'Necessity, Cause, and Blame', at 8, who takes Aristotle's point to be that 'certain kinds of accidental conjunction can enter as causes into a causal chain, and can stop that chain stretching back any further, because they lack (non-accidental) causes of their own'. However, since Sorabji (at xi) thinks Aristotle's causes are kinds of explanation, he argues that to be without a cause is not the same as to be 'random' – Aristotle's point is that the explanatory buck stops with coincidental conjunctions, and this, he puzzlingly holds, commits Aristotle to indeterminism. For a critique of Sorabji's account of Aristotelian causes, see Freeland, 'Accidental Causes'. As it is, I don't share Sorabji's view of Aristotelian causes as belonging in the *ordo cognoscendi*. Some causes in the *ordo essendi* are also explanatory, though not every real cause is a good explanation; A can be a cause of B without being the best or even a good explanation of it, as in efficient-causal chains trailing off into the distant past. I take Aristotle's view to be that coincidences are both caused, capable of being explained, and necessitated, without therefore being necessary. The point in E3 is that coincidences have *coincidental* causes which explain *and* necessitate them. This is another way of saying that they aren't caused, explained, or necessitated *by a teleological process which leads up to them.*

[32] Williams' modal reading is defended by Ide, 'Aristotle and Determinism', though unlike Williams, Ide thinks Aristotle's position in E3 is compatible with determinism and not a refutation of it, and so (B) thus read is not the starting point of an argument against determinism.

end with an accidental coming to be' (p. 183). This is the import of Aristotle's claim in (D) says Williams.

We don't have reason to accept Williams' reading of (A), however. For as Judson observes, his arguments against the process-reading relies on a 'virtually impossible construal' of γενητὰ καὶ φθαρτὰ ἄνευ τοῦ γίγνεσθαι καὶ φθείρεσθαι, and it ignores the parallels between this construal in E3 and the earlier occurrence in E2 1026b 21-4, as well as claims of the same sort elsewhere in the *Metaphysics* (Judson discusses Z 15 1039b23-7; H 3 1043b14-18; H 5 1044b 21-2, as well as discussions in L 3 and Z8 1069b35-6). Does this recommend the temporal reading by default? It does not, for we may accept Kirwan's process-gloss without thereby being forced to attribute to Aristotle the contrast between causes and principles that *go through a process* of coming into being and perishing and those that come into being and perish *in an instant.* Some causes and principles don't go through a process of coming into being, but that does not mean that they appear instantaneously, without any preceding causal chain. Instead, causes and principles that don't go through a process of coming into being are coincidental causes. Such causes are not the completion of a process. As such, they lack *per se* causes, which importantly is not the same as being uncaused. Just as there is no explicit contrast between potential and actual causes and principles in (A), there is no mention of 'instantaneous' causes in the relevant passage, and Aristotle's argument needs neither.[33] However, both the immediate context (E2) and the details of Aristotle examples recommend reading (A) to assert the existence of non-teleological causes and principles; causes and principles that do not represent the objective of what brought them about.

We can preserve Kirwan's gloss on the present infinitives, then, and accept his insertion of 'process' in square brackets, while rejecting the temporal contrast between things that are caused by processes and things that are caused instantaneously, or spontaneously as it were. And this means that the reason for seeing an indeterminist argument in the making in (A) disappears. The contrast Aristotle has in mind is between *per se* causes on the one hand, which are the causes of processes for the sake of some end, and coincidental causes on the other, which are not for the sake of what results. In particular, such causes do not initiate teleologically ordered sequences of events, where earlier events are explicable with reference to the future states of affairs to which the process naturally leads. But this does not mean that they don't necessitate their effects. Nor does it mean that these causes are instantaneous. The point of Aristotle's gambit is not that some causes and principles are unrealized or 'dead ends' causally speaking, but rather that not all causes produce their effects in a teleologically

[33] On this point, see also Panayides, 'Resolving the Puzzles', at 28.

ordered way. Some effects come into being independently of any one goal-directed process. And theirs are kinds of causes and principles that Aristotle exemplifies in the backtracking argument in passage (C). Kirwan is right, then, about the grammar and one half of Aristotle's claim, but he does not get the contrast right, and so draws the wrong lesson from Aristotle's argument.

Implications of Denying the Thesis

In the next section (B), Aristotle draws out the consequence of the negation of the thesis he has just stated: εἰ γὰρ μὴ *(30)* τοῦτ', ἐξ ἀνάγκης πάντ' ἔσται, εἰ τοῦ γιγνομένου καὶ φθειρομένου μὴ κατὰ συμβεβηκὸς αἴτιόν τι ἀνάγκη εἶναι. The major question is how this consequence follows from the negation of the claim contained in (A), and what, precisely the consequence is supposed to be. The first part of the counterfactual claim is straightforward: here Aristotle says that if such principles and causes don't exist, then everything will be of necessity. The necessity in question is absolute – Aristotle says that everything will be necessary, just like movements in the super-lunary sphere. He does not argue that that everything will be *necessitated* in the sense required for determinism. Exactly how the subordinate conditional clause should be parsed is less clear. Assuming that the second conditional clause provides a clarification of Aristotle's original thesis by stating what would be the case if it weren't true, Kirwan plausibly renders Aristotle's claim as follows: 'For otherwise everything will be of necessity, if whatever is [in process of] coming to be and being destroyed necessarily has some cause non-coincidentally'. That is, if what is [in the process of] coming to be and being destroyed must be traced back to the power of some non-coincidental cause, then everything that comes to be and perishes does so of necessity, and everything will be of necessity.

Kirwan assumes that the subordinate conditional clause states a view Aristotle accepts, namely that what is generated and destroyed by a process has a non-coincidental cause – exactly as E 2 leads us to expect. Williams maintains that Aristotle's point is stronger, however, for he observes that we may take '*kata sumbebêkos*' not with '*aition ti*' but rather with *tou gignomenou kai phtheiromenou'*, such that the sentence reads, 'if there must be some cause of what comes to be and perishes non-accidentally'. Williams takes this to support a view according to which accidents don't have causes *at all*; on his reading, the purpose of the sentence is to state that determinism is false.

The problem with Williams' reading is that Aristotle is *not* arguing in E 3 that coincidences lack causes. He is arguing, rather, that coincidences have *coincidental* causes. And that is as we should expect, since Aristotle refers to the causes of coincidences multiple times in the course of E, and pinpoints the causes of particular coincidences when expounding his examples. If, then, Aristotle had meant to defend some kind of indeterminism in E3, he would have had to do it by way of showing that *coincidental causes* themselves lack causes. We may think that (D) establishes precisely this point. But as I will show, we can make sense of Aristotle's summary in (D) without holding, as Aristotle has been said to hold, that coincidental causes lack causes altogether. Instead, he is arguing that they lack a particular kind of cause, viz., a *per se* cause. As in the case of (A), we may thus retain the sense of Kirwan's translation of (B) without inferring that such causes are 'instantaneous'. Aristotle's point is not that unless there are instantaneous causes, everything that happens, happens of necessity. Instead he argues that unless there are causes that don't have their effects as an objective, i.e., unless there are non-teleological causes, everything that happens, happens of necessity.

There can be *gignomena* without a *per se* cause in at least two different ways: the failure of a *per se* cause to achieve its *hôs epi to polu* effect (e.g., the doctor not achieving a cure), and the intersection between two or more independent lines of *per se* causation that combine to produce a result that is coincidental to the *per se* causes of both (or all) the *per se* casual processes.[34] In the first instance, something – recalcitrant matter, the weather, a fink – prevents the *per se* cause from producing its usual effect – in the words of the *Physics*, the effect of the *per se* cause will occur *unless something prevents it*, and this 'something' is a coincidental cause relative to the *per se* causal process. The existence of coincidental causes thus explains how *per se* causes can fail to manifest their normal effects. If this had not been possible, the distinction between what happens for the most part and what happens always would collapse: the causes of *per se* processes in the sub-lunary sphere would have the same modality as in the super-lunary sphere. It also explains why the intersection of two (or more) teleological processes may produce coincidental results *in addition to* or *instead of* the results aimed at in any of the processes taken separately. In the case of intersections, coincidences occur if the intersections themselves lack a *per se* cause, as when a man who comes to the market chances upon his debtor and collects the debt. The fact that there is no over-arching teleology involved in the chance encounter does not mean that it lacks sufficient antecedent conditions for coming to be, for the simultaneity of the debtor's and the creditor's trip to the market is sufficient to ensure that they meet. It does, however, entail that the encounter lacks

[34] I am grateful to an anonymous reader for this way of stating the point.

a *per se* cause, which it would have had, had they decided to meet at the market or had they normally shopped at the same time (for instance if they were both in the habit of shopping during lunch break). The cause of their encounter is therefore what happens as the case may be (*to hopoter etuchen*), a type of cause that Aristotle contrasts with what happens on account of nature (*phusis*), necessity (*anankê*) or mind (*nous*, more specifically through the agent's deliberation and decision) (EN III 3 1112a31-33).[35]

Aristotle is not, then, in E 3 aiming to reject the view that whatever happens, has sufficient antecedent causes, nor is he attempting to prove that there are 'fresh starts' in the universe. If Aristotle had intended to establish the existence of coincidental causes *by means of* a proof that causal determinism is false, he would have failed. For first, his account of coincidences and their causes in the *Metaphysics* is compatible with causal determinism, as Harry Ide has shown. Second, Aristotle identifies causes for coincidences in most of his examples. Furthermore, most – if not all – of these have causes that may themselves be captured by some law covering what happens always of for the most part, even if it's a covering law that cites material or efficient causes rather than teleological ones. Either Aristotle gave wildly inept illustrations of his own claims, or his theory of coincidences is more complex than is typically recognized. These points should make us suspicious of indeterminist interpretation of sections (C) and (D). But if 'meeting determinism head on' (Sorabji) is not the purpose of (C) and (D), we need to find an alternative reading of these sections.

Coincidence in Delta 30

[35] Aristotle's discussion of chance (*tuchê*) and spontaneity (*to automaton*) in *Physics* II 4-6 concerns a subset of things that come to be due to coincidental causes, namely those that happen in the sphere of things for the sake of something without resulting from a teleological process, whether natural or caused by human decision: 'It is clear that events which belong to the general class of things that may come to pass for the sake of something, when they come to pass not for the sake of what actually results, and have an external cause, may be described as 'from spontaneity'. These spontaneous events are said to be from chance if they have the further characteristics of being the objects of decision and happening to agents capable of decision' (II 6 197b18-23). About the latter, Aristotle says, 'Things of this kind, when they come to pass coincidentally, are said to be by chance. For just as a thing is something either in virtue of itself or coincidentally, so may it be a cause' (II 5 196b23-25). And later: 'Both are then, as I have said, coincidental causes – both chance and spontaneity – in the sphere of things which are capable of coming to pass not simply, nor for the most part and with reference to such as might come to pass for the sake of something' (II 5 197a33-35). The example Aristotle gives in E3 concerns a chance event, since the outcome (the man's death) is not an object of choice for him.

That being a coincidental cause is not the same as being an uncaused cause or an instantaneous cause can be seen from Aristotle's account of coincidences in Delta 30, the concluding chapter of his philosophical lexicon. Though I find Harry Ide's overall interpretation of E3 unpersuasive (since he accepts Williams' claim that Aristotle here seeks to prove the possibility of unrealized possibilities, and thereby the existence of coincidental causes and principles), I nevertheless agree with Ide that the existence of coincidental causes is compatible with determinism and the view that everything is necessitated by prior causes.

To see why, consider his analysis in Delta 30, which immediately precedes the discussion of coincidence in E. I shall assume that its account of coincidence, rather than the slightly different account of coincidence in *Posterior Analytics* I 4, is presupposed in Aristotle's discussion in E3.

Aristotle in D 30 notes that there are two types of coincidence. 'Coincidence' can refer either to:

(I) what belongs to a thing, but neither of necessity nor for the most part (ὃ ὑπάρχει μέν τινι καὶ ἀληθὲς εἰπεῖν, οὐ μέντοι οὔτ' ἐξ ἀνάγκης οὔτε <ὡς> ἐπὶ τὸ πολύ; D 30, 1025a14-15)) or

(II) what belongs to a thing *per se*, though it is not present in its essence (οἷον ὅσα ὑπάρχει ἑκάστῳ καθ' αὐτὸ μὴ ἐν τῇ οὐσίᾳ ὄντα; D 30 1025a30-2).

The latter kind of necessity is illustrated with the familiar example of a triangle's interior angles summing to two right angles: having interior angles summing to two right angles is a necessary concomitant of what it is to be a triangle, such that anything that is a three-sided plane figure will necessarily have the equivalent of two right angles, though this is not the nature of triangle.

Necessary concomitants drop out of the discussion in E. Here, when Aristotle speaks of 'coincidence', he has the first kind in mind. However, Aristotle's mention of *per se* coincidences in D 30 highlights an important point: for it explains the import of his definition of coincidence in the first sense. Coincidences of the first type do not belong to their subject by necessity or for the most part, because they are not caused by what it is to be those subjects. Aristotle associates this with their belonging to the subject only in a particular place or at a particular time, which is a potentially misleading observation, if we take it to yield a purely quantitative sense of 'neither by necessity nor for the most part'. Though I will not

here rehearse the debate between defenders of the 'absolute' and 'relative frequency' accounts of what happens for the most part – '*hôs epi to polu'* – I take it that the decisive issue is not, in the final analysis, one of numbers of occurrences, whether absolute or relative, but rather whether some property-type belongs to a subject-type due what it is to be this kind of subject.[36] What matters then, is not whether the property belongs to the subject always or for the most part in the quantitative sense, but whether there is a *per se* connection between the being of the subject, and the property, such that the property belongs to the subject *in virtue of what the subject is* (in the case of substances, it does not matter whether the property belongs to the subject by being part of its essence or as a necessary concomitant of it). Aristotle puts the point as follows: 'a property which belongs to a subject (*ho ti an huparchê men*), but not because the subject was just this subject (*alla mê dioti todi ên*), or the time this time (*ê nun*), or the place this place (*ê entautha),* will be a coincidence' (D 30 1025a21-24). This means that even if some events in the super-lunary sphere, such as solar eclipses, only take place at particular times and particular places, they are still necessary, since the positions of the sun and the moon relative to earth necessitate the eclipse. The moon's being in this position relative to the sun and the earth is what makes the eclipse an eclipse.

A coincidence, then, is something that belongs to a subject not in virtue of what the subject is. Thus, in the case of future events, as long as a causal chain is not traceable back to a *per se* cause, the event in question will be coincidental.

Aristotle's examples of coincidences in D 30 are familiar. It is a coincidence that a man finds a treasure while digging a hole for a plant in his garden, for he did not dig for this purpose, nor do people usually find treasure when they dig holes for plants in their garden.[37] Digging

[36] D. Frede ('Accidental Causes', at 57) distinguishes between the coincidental features of subjects (and substances) on the one hand, and coincidental features of causal processes on the other; Aristotle's analysis in Delta 30 sometimes elides this distinction and treats the former as a model for understanding the latter. For discussion of what it means to happen 'for the most part', see Ide, 'Aristotle and Determinism'; also Judson, 'Chance and 'Always or For the Most Part' in Aristotle', in Judson (ed.), *Aristotle's* Physics. *A Collection of Essays* (Oxford: Clarendon Press, 1991), 73-100; D. Frede, 'Accidental Causes'; Irwin, 'Ethics as an Inexact Science: Aristotle's Ambitions for Ethical Theory' in M. Little and B. Hooker (eds.), *Moral Particularism* (Oxford: Oxford University Press, 2000), 100-29; K. M. Nielsen, 'The Private Parts of Animals: Aristotle on the Teleology of Sexual Difference' *Phronesis* (2008), 373-405 and the reply in J. Karbowski, 'Slaves, Women and Aristotle's Natural Teleology', *Ancient Philosophy* (2012), 323-50.

[37] Except, perhaps, in exceptional circumstances – viz., they live in the village perched on top of the old holy site in Delphi prior to excavations.

holes for plants is not a *per se* cause of finding treasure. In this case, the finding of the treasure is due to the man's intention to dig (*prohairesis*), but not as a *per se* cause, for he dug for the sake of making a hole for his plant, not for the sake of finding treasure. Thus, the example conforms to the pattern 'A produces B in virtue of some accidental property C, that A possesses', where A is digging a hole for a plant, B is finding the treasure, and C is digging where the treasure happens to be buried. It is a coincidence if a man goes to Aegina, not in order to get there, but because he was carried this way by a storm or captured by pirates. Thus, he arrives in Aegina by coincidence rather than by choice, which would have been a *per se* cause had he been successful in reaching his destination. In this example, setting out for his destination – let's say Corinth – coincidentally causes him to end up in Aegina because it causes him to be at sea at the time and place where the storm or the pirates strike. Thus, A causes B *per se*, but B is coincidentally C, and C causes a further result D, namely his arrival in Aegina. In E 2 and 3, Aristotle adds further examples. Cold weather during the dog days is a coincidence, as this happens neither always nor for the most part. The builder who heals does so not insofar as he is a builder, but because he coincidentally is a doctor. And if the pastry cook happens to make wholesome pastries, this is a coincidental result, for it is not part of the art of pastry cooking to produce health. Even if most builders were also doctors or most pastries were wholesome, the effect would still be coincidental, since it is not part of the being of the subject to produce these results.

So far, there is no reason to assume that admitting the existence of coincidental properties or events commits Aristotle one way or another with respect to determinism. Failing to have a *per se* cause is not the same as being undetermined by prior causes.

In fact, as should be clear, Aristotle identifies the cause of the coincidence in each of the examples I have cited. In the case of the gardener, the cause of his finding the treasure is the digging a hole for a plant, insofar as it takes place where the treasure is buried. This is the efficient cause of the discovery. Though the digging itself has a purpose, it is not finding the treasure, and so relative to this outcome, the digging is a mere efficient cause. In the case of the pilot, the cause is the storm or the pirates. Though he set out with a destination in mind, and this puts him in harm's way, it wasn't for the sake of being kidnapped or shipwrecked that he set sail, though it placed him in their path. In the case of the unseasonable weather, the cause is presumably meteorological, and in the case of coincidental properties like the musical being pale, the cause is material.

As his examples makes clear, Aristotle does not deny that there is an explanation for coincidental properties or events – his point is rather that this explanation cannot be referred

to some underlying *per se* cause, namely what the subject is for or out to accomplish. Second, if Aristotle had meant to argue that coincidences are *undetermined*, he would have had to hold e.g. that *one and the same chain of events* is undetermined if described from the perspective of one teleological process (the pilot's), but determined from the perspective on another (the pirates') or undetermined with respect to type of cause (e.g. final causality in the case of unseasonable weather), but determined when described from the perspective of another kind of cause (e.g. efficient or material causality causing the unseasonable weather), as his definition of a coincidence in *Delta* 30, and his claims about their causes reveal. Consider Aristotle's remarks about the Aegina case. In Ross's translation:

'There is no definite cause for an accident, but a chance cause, i.e. an indefinite one. Going to Aegina was an accident, if the man went not in order to go there, but because he was carried out of his way by a storm or captured by pirates. The accident has happened or exists, – not in virtue of itself, however, *but of something else*; for the *storm* was the cause of his coming to a place for which he was not sailing, and this was Aegina (D30 1025a25-29)

However, it seems at least peculiar to say that arriving in Aegina when one set sail for Corinth is *causally undetermined* if viewed relative to the sailor's intention, but *causally determined* if viewed relative to the direction of the wind or the intent of the pirates. Whether the event is causally determined or not depends on existence of *a* causal chain producing the result, viz., the pilot setting out in a storm or his being overtaken by pirates. The fact that his intention didn't determine the end result does not, of course, prove that *nothing* did, even if the weather conditions were extraordinary or the sailing usually smooth.[38] And perhaps more importantly, it does not preclude that there are reasons why there was a storm that day or why the pirates were out to overtake vessels.[39] If Aristotle meant to deny determinism, that would require that one and the same event could *not* be treated as coincidental relative to some antecedent event x, but non-coincidental relative to another event y. However, a brief remark at the end of E2 (1027a22-26) may suggest that as far as Aristotle is concerned, no event is a coincidence *haplôs*. Though coincidences, as exceptions to what normally happens, lack *per se* causes when viewed under one aspect, and hence are not the subject matter of the inquiry that deals with this kind of normal relation, they may nevertheless be the subject-matter of some further demonstration through efficient or material causes, provided that the exception to the wider

[38] That's presumably why Aristotle alludes to the example of being carried away by pirates or storms in his explication of force in *Nicomachean Ethics* III 1, for in such cases, the principle (*archê*) of the movement of your limbs is said to be wholly external.

[39] I here concur with D. Frede's judgment in 'Accidental Causes', at 52 ff.

law is itself law-like – that is, provided that the exception to the wider law is explicable in terms of some further law that obtains in virtue of a regular explanatory relationship between two types of properties or events. And this relationship could in principle be the subject matter of science in a wider sense. Thus, in the case of the sailor, a skilled meteorologist might have predicted that the ship would end up in Aegina, given antecedent weather conditions. Relative to the pilot's intention, the event was a coincidence, but relative to the subject matter of meteorology, it was not.[40]

Aristotle seemingly acknowledges this possibility at the end of E2, for he here suggests that exceptions may themselves fall under general rules. Suppose that it is the case that 'honey water is good for fever except at new moon'. If what happens at new moon happens either always or usually, there may be a further law that explains the effects of honey water *at new moon*. The thing that blocks the usual effect from manifesting – the impediment – may itself be causally explicable in terms of material or efficient causation.

In his commentary on the final lines of E2, Ross remarks that

[40] Aristotle's reference to the '*aoriston*' cause of a coincidence reflects his claims in *Physics* II 5: 'That which is a *per se* cause is determinate, but the coincidental cause is indeterminable, for the possible attributes of an individual are innumerable' (196b27-29). Considering the man who accidentally collects subscriptions for a feast when he comes to the market, Aristotle remarks, 'It is necessary, no doubt, that the causes of what comes to pass by chance be indefinite; and that is why chance is supposed to belong to the class of the indefinite and to be inscrutable to man, and why it might be thought that, in a way, nothing occurs by chance. For all these statements are correct, as might be expected. Things do, in a way, occur by chance, for they occur coincidentally and chance is a coincidental cause. But it is not the cause without qualification of anything; for instance, a house builder is the cause of a house; coincidentally, a flute player may be so. And the causes of the man's coming and getting the money (when he did not come for the sake of that) are innumerable. He may have wished to see somebody or been following somebody or avoiding somebody, or may have gone to see a spectacle. Thus to say that chance is unaccountable is correct. For an account is of what holds always or for the most part, whereas chance belongs to a third type of event. Hence, since causes of this kind are indefinite, chance, too is indefinite. (Yet in some cases one might raise the question whether any chance fact might be the cause of the chance occurrence, e.g. of health the fresh air or the sun's heat may be the cause, but having one's hair cut cannot; for some coincidental causes are more relevant to the effect than others)' (*Phys*. II 5, 197a8-24). Aristotle's argument in the last lines indicates that coincidences have explanations, and that not just any coincidence or coincidental property explains a chance happening. But what the relevant explanation is must be determined case by case.

'This clause is very important, for it is perhaps the only place in which Aristotle implies the view that there is nothing which is objectively accidental. There are events which present themselves as accidents, i.e. as unintelligible exceptions, but if we knew more about them we should know that they obey laws of their own. Elsewhere Aristotle speaks as if there were events which are sheer coincidences and below the level of knowledge; here he admits that they are merely beyond our present knowledge'[41]

This is probably too strong – the fact that *some* coincidences may be explicable relative to causes that can captured in laws does not mean that *all* can. Nor does it mean that there will be a *formal* cause of coincidences thus explicable, and it is these that are the subject-matter of science and demonstration. But even if we grant, pace Ross, that not all coincidences are due to law-like relationships (an objection raised by Kirwan and Sorabji), it is still striking that many of Aristotle's examples of coincidences in the *Metaphysics* are readily explicable if we merely relate the event to the right antecedent principles. And there is no need to suppose that these causes and principles are themselves uncaused. If this is right, then the causes of coincidences could not be uncaused in any straightforward way. Having an indeterminate (*aoriston*) cause is not the same as having a cause that is itself uncaused.

The implications of Aristotle's acknowledgement at the end of E2 have not been brought to bear on his argument in E3. I believe that taking the final lines about honey-water into account allows us to understand the otherwise cryptic remark that closes E3 – labeled (E) above – where Aristotle asks, after examining coincidental causes, whether these are material, final, or efficient, and states that this is in need of investigation (*malista skepteon*). Though he does not undertake that important inquiry in book E, the remark makes little sense if we adopt the dominant indeterminist reading of the chapter. For there is simply no reason to suppose that these kinds of causes, as what interferes with *per se* causes or produces effects in their own right through intersection of different teleological processes, themselves are uncaused. This explains why most indeterminist readers simply leave it out, and close their analysis of the chapter before Aristotle has said his final word.[42] If, however, we keep in mind the purpose of the chapter, namely to explain how coincidences have coincidental causes, then the reference to the material, efficient, and final causes makes eminent sense. The list indicates that coincidences can have any number of causes – the cause is 'indeterminate', as

[41] Ross, *Commentary*, note ad loc., at 361.

[42] Indeed, in his analysis of E3, Sorabji does not even include the line in his 'full' quotation of the argument in 'Necessity, Cause, and Blame', at 7.

Aristotle puts it, and so it must be determined case by case why the coincidence occurs. In some cases, it is due to the matter, in others, merely efficient causes that exert their force (winds), in yet others, the intersection of final causes (pilots' and pirates' intentions).

Now, one might object that the coincidence is not landing in Aegina, full stop, or producing a healthy result, or finding a treasure, but rather landing-in-Aegina-when setting-sail-for-Corinth, producing-health-while-baking-cakes, and finding-a-treasure-when-digging-a-hole-for-a-plant. Are there explanations for these events, thus construed? I don't see why Aristotle should deny that there is – namely the conjunction of the gardener's digging in his bed and the treasure having been buried there, the conjunction of the pilot's setting sail at time t for Corinth and northern winds brewing at t, or the conjunction of a cake's being delicious and its being healthy. There is no underlying *per se* cause for the *conjunction* of these states or events, but there are still antecedent sufficient conditions why they obtained, namely the conjunction of the relevant causes. Thus, nothing Aristotle says about coincidences in Delta 30 or E 2 suggests that he rejects determinism.

The backtracking argument

This leads us to the backtracking argument contained in (C) of E3. Does it involve Aristotle meeting determinism 'head on'? Here Aristotle introduces what appears to be an example of what has later become known as an ineluctable causal chain. It will pay to consider the steps of Aristotle's argument in detail, before we venture a guess as to the purpose of the argument. The example concerns a nameless man who one day happens to eat a spicy meal. The spice makes him thirsty, and he leaves his house to find drink. As a result of leaving the house, he is killed. Pseudo-Alexander names the unfortunate man 'Nicostratus', possibly alluding to a historical character, and he assumes that he is killed by criminals who happen to be at the well, or 'ruffians', to use Sorabji's label. In Aristotle's example, the man in question is a mere pawn, with no name and no history, an 'anonymous Coriscus', if you allow the expression, who suffers sudden death.

In one textual variant, it is not even clear whether he meets a violent death or contracts a disease by heading out to drink – but from the perspective of Aristotle's argument it doesn't much matter what the proximate cause of death is. The conjecture about ruffians is Pseudo-Alexander's elaboration, not Aristotle's.

The argument now attempts to show not all causes are necessary – some are capable of being and not being. Here is a stab at a translation of the whole passage (C) based on Ross:

'Will this be or not? It will, if this happens, and if not, not. And this will happen if something else does. And in this way, if time is constantly subtracted from a limited extent of time, it is clear that we will arrive at the present, so that this man will die [by illness or] by violence, if he goes out; and he will do this if he thirsty; and he will be thirsty if something else happens. And in this way we come to what is now the case, or to something that happened in the past. For instance, he will go out if he is thirsty; and he will be thirsty if he eats spicy food. And this is either the case or not; so that he will of necessity die or [of necessity] not die. And likewise it's the same account if one jumps over to the past. For this – I mean the past condition – is already present in something. Everything, therefore, that will be, will be of necessity, just as it is necessary that the man who lives will die. For something has already come to pass, i.e. the presence of contraries in him. But whether he will die by disease or by violence is not already determined, but only if this comes to pass'.

Consider some future event: the death of a man by violence. We then reason backwards, considering the conditions that must be in place for this event to occur, and thus constantly subtracting a segment of time from a limited period, we arrive at some present condition that either obtains or does not obtain, viz, in Aristotle's example, his eating spicy food. Aristotle concludes that everything that happens, happens of necessity given this argument. Just as it is necessary that a man who is alive will one day die, it becomes necessary that he should die of a particular cause, namely by violence (if that is how he died) or by disease (if that was how it happened). The conclusion, then, is that whatever way he dies, his cause of death is necessary. But this, Aristotle suggests, is absurd. For whether someone will die by disease or violence is not necessary in the same way as his death is. His death is necessary given his nature as a man, whereas his manner of death instead depends on particular antecedent conditions. The next segment of the argument, (D), attempts to explain the status of the antecedent conditions of events that are not necessary in this absolute sense; i.e., that are not inevitable given the nature of the subject in question.

How should we understand Aristotle's argument in the backtracking passage (C)? Those who see in Aristotle's example a refutation of determinism typically import assumptions from elsewhere in the corpus to fill a hole that they otherwise note in the assumptions of the argument. Aristotle appears to argue that each chain in the causal series leading up to the man's death necessitate the next, and he concludes that the death will be necessary without qualification. But this conclusion only follows if the cause is not just necessitated by what

went before, but itself necessary without qualification. To establish this premise, they maintain, with reference to *Nicomachean Ethics* VI, 2, 1139b7-9 and *Rhet.* III 17 1418a4-5, that Aristotle holds that the past is necessary, and that this premise, when combined with the claim that causes necessitate their effects, yields the conclusion that everything that happens, happens of necessity.[43] Thus, the argument moves from the necessity of the past condition, via a chain of premises stating that it is necessary that if the cause obtain, its effect obtain, to the conclusion that the effect is necessary. On this reading, Aristotle would have to accept the necessity of the past cause, since it is furnished by Aristotle's alleged claim to this effect elsewhere, while he rejects the conclusion of the argument that the man's death by violence is necessary without qualification. But this he can only do by denying that the cause-effect chains are necessary. If it is already a fact that the man has eaten the spicy meal, then nothing can alter this fact, and so if the remaining links in the causal chain leading to his death were unavoidable, he would meet a violent end necessarily. Since Aristotle denies this, he must deny that the relevant kind of causes necessitate their effects.

However, if the argument really traded on a past-future asymmetry, as Sorabji, Weidemann and Kelsey allege, it would be very curious that Aristotle claims that 'ὁμοίως δὲ κἂν ὑπερπηδήσῃ τις εἰς τὰ γενόμενα, ὁ αὐτὸς λόγος' ('the argument would be the same if we go over to the past'). But the argument would quite obviously not be the same if we go over to the past, as Aristotle's alleged conclusion would then simply be identical to the claim contained in his first premise (the past and the present are necessary, because irrevocable), and he would not in fact need to bring in any argument at all to prove the point.

Consider Sorabji's version of the argument in (C) (as presented in Judson, p. 189):

(i) The past and present are irrevocable, and so absolutely necessary
(ii) For any future event, there is a continuous chain of causes, each of which necessitates the next, which leads from some present or past event to that future event.
(iii) If X is absolutely necessary, and X necessitates Y, then Y is absolutely necessary
(iv) Every future event is absolutely necessary.

'The same argument' (ὁ αὐτὸς λόγος) clearly does not result if we replace 'future event' with 'past event' – that is, if we talk about the man's death the day after it happened – if we

[43] Sorabji, 'Necessity, Cause, and Blame'; Weidemann, 'Das Problem'; also T. Oki 'Accidental Causation in *Metaphysics* E3' (unpublished).

assume the reconstruction defended by Sorabji. For then every event in the causal chain, including the outcome (his mode of death) would be absolutely necessary by default (i.e., by virtue of the reason stated in premise (i)), and we wouldn't need any backtracking argument to prove the point.

What about Kirwan's version of the anti-determinist reading? Kirwan thinks that coincidences lack causes that stretch into the past – they are instantaneous events, and so not necessitated by anything that went before. Thus, there is no train of events leading up to the discovery of the treasure or the arrival in Aegina.

That is not what Aristotle is arguing in (C), however. His issue with the argument he has just outlined concerns the status of the cause at the terminus of the *anagogê*; that is, the first cause in the series leading up to the thirsty man's death. It is *this* cause that he claims is coincidental. His death is coincidental because eating spicy food is not usually conjoined with meeting a violent end, or with disease, as the case may be (we're leaving out ulcers as a possible complication). We cannot construe an account of suffering a violent death that makes eating spicy food its *per se* cause, except if we hold the hypothesis that is being targeted for refutation, namely that all causes are per se, and so necessary (and Aristotle's subsidiary hypothesis that each step in the actual causal chain is necessary given its antecedents). Thus, the example is meant to show that there are other types of causes, namely those that produce their effects coincidentally, and these are coincidental causes, since they cannot be traced back further to some underlying *per se* cause. To prove his point, Aristotle must accept rather than reject that eating spicy food causes the man to be thirsty, and that being thirsty makes him seek water, and that seeking water necessitated him leaving the house. But he holds that even if we grant this, it does not follow that the man's death had to happen the way it did, for he could have had something else for dinner. If he had had pancakes he might still be alive. That is why Aristotle adds that even if it is already necessary that a man will die due to the presence of contraries in him, it is not thereby necessary that he will die from violence or disease, but instead, this will be the case *depending on something else*. Thus, whether he dies by violence is contingent on what he has for dinner and so forth. Therefore, it will be conditionally necessary that he die from violence if he eats spicy food and leaves the house as a result, but not absolutely necessary in the sense that the first cause in the series is necessary.

As Sorabji, Weidemann, and Kelsey recognize, the main challenge of understanding the argument in the *anagôgê* is to establish why Aristotle thinks the cause in question will be necessary if there are no coincidental causes. I have suggested that it will be necessary because *per se* causes would always produce the effect that they have as objective and would

never produce effects other than their objective if there were no coincidental causes, in the same way as causes in the super-lunary sphere. That Aristotle makes this assumption may be thought puzzling, but if it is a puzzle, it is a puzzle concerning Aristotle's account of what exists 'of necessity' in general, and not a puzzle specific to the interpretation of his argument in E 3.

The Interpretation of E3 in K8

My interpretation of E 3 receives indirect support from the briefer version of the backtracking argument that we find in K 8. The author of K8 offers an version of the argument that takes Aristotle's point to be drawing a distinction between types of causality rather than arguing that some events are caused and others not. He starts by drawing a contrast between what is coincidental and what happens always or for the most part, where only the latter is a subject of scientific demonstration. He then rephrases the argument of E3 in a way that highlights the crucial issue:

ἔστι δὴ τὸ συμβεβηκὸς ὃ γίγνεται μέν, οὐκ ἀεὶ δ' οὐδ' ἐξ ἀνάγκης οὐδ' ὡς ἐπὶ τὸ πολύ. τί μὲν οὖν ἐστὶ τὸ συμβεβηκός, εἴρηται, διότι δ' οὐκ ἔστιν ἐπιστήμη τοῦ τοιούτου, δῆλον· ἐπιστήμη μὲν γὰρ πᾶσα τοῦ ἀεὶ ὄντος ἢ ὡς ἐπὶ τὸ πολύ, τὸ δὲ συμβεβηκὸς ἐν οὐδετέρῳ *(5)*τούτων ἐστίν. ὅτι δὲ τοῦ κατὰ συμβεβηκὸς ὄντος οὐκ εἰσὶν αἰτίαι καὶ ἀρχαὶ τοιαῦται οἷαίπερ τοῦ καθ' αὑτὸ ὄντος, δῆλον· ἔσται γὰρ ἅπαντ' ἐξ ἀνάγκης. εἰ γὰρ τόδε μὲν ἔστι τοῦδε ὄντος τόδε δὲ τοῦδε, τοῦτο δὲ μὴ ὅπως ἔτυχεν ἀλλ' ἐξ ἀνάγκης, ἐξ ἀνάγκης ἔσται καὶ οὗ τοῦτ' ἦν αἴτιον ἕως τοῦ τελευταίου λεγομένου αἰτιατοῦ (τοῦτο δ' ἦν κατὰ συμβεβηκός), ὥστ' ἐξ ἀνάγκης ἅπαντ' ἔσται, καὶ τὸ ὁποτέρως ἔτυχε καὶ τὸ ἐνδέχεσθαι καὶ γενέσθαι καὶ μὴ παντελῶς ἐκ τῶν γιγνομένων ἀναιρεῖται. κἂν μὴ ὂν δὲ ἀλλὰ γιγνόμενον τὸ αἴτιον ὑποτεθῇ, ταὐτὰ συμβήσεται· πᾶν γὰρ ἐξ ἀνάγκης γενήσεται. ἡ γὰρ αὔριον ἔκλειψις γενήσεται ἂν τόδε γένηται, τοῦτο δ' ἐὰν ἕτερόν τι, καὶ τοῦτ' ἂν ἄλλο· καὶ τοῦτον δὴ τὸν τρόπον ἀπὸ πεπερασμένου χρόνου τοῦ ἀπὸ τοῦ νῦν μέχρι αὔριον ἀφαιρουμένου χρόνου ἥξει ποτὲ εἰς τὸ ὑπάρχον, ὥστ' ἐπεὶ τοῦτ' ἔστιν, ἅπαντ' ἐξ ἀνάγκης τὰ μετὰ τοῦτο γενήσεται, *(20)* ὥστε πάντα ἐξ ἀνάγκης γίγνεσθαι.

'(…) Evidently, there are not causes and principles of what is by coincidence of the same kind as there are of what is in its own right, for if there were, everything would be of necessity. If A is when B is, and B is when C is, and if C exists not by chance but of necessity, that of which C was cause will exist of necessity, down to the last mentioned of the things caused (but this was supposed to be by coincidence). Therefore all things will be of

necessity, and chance and the possibility of a thing's either occurring or not occurring are removed entirely from the range of events. And if the cause be supposed not to exist but to be coming to be, the same results will follow; everything will occur of necessity. For tomorrow's eclipse will occur if A occurs, and A if B occurs, and B if C occurs; and in this way if we subtract time from the limited time between now and tomorrow we shall come sometime to the already existing condition. Therefore, since this exists, everything after this will occur of necessity, so that all things occur of necessity' (K 8, 1065a1-21)

K8's thesis is that not everything that comes to be has a *per se* cause or principle – there are also coincidental causes and principles. If this were not the case, everything would be of necessity. For in that case, the causes and principles of any later event would themselves have to be necessary insofar as they would not be capable of not being or not coming to be. K8 thus states explicitly what E3 would have us understand, namely that the first cause or principle in the chain will be a necessary cause, and that if there is a necessary connection between it and its effect (N (if C then B) & N (if B then A) and so forth), then we can infer that everything that happens as a result of this initial cause will also be necessary. But since *ex hypothesi* there are no causes or principles of any other kind, everything happens of necessity. The result, says K 8, is that what is as the case may be ('*to hopoterôs etuche'*) is removed, as Aristotle explicitly says in E3. The author of K8 also adds the further observation, absent from E 3, that what is capable of being and not being would equally be removed (*to endechesthai kai genesthai kai mê*). Thus, K 8 remarks that it isn't simply *coincidental* events that are usurped by necessity, but also things that happen due to human decision (*prohairesis*) and in general due to human desire (*orexis*), since these fall into the category of what is both capable of happening and not happening.

Most critics deny that the argument in E3 has any direct implications for our understanding of human action or their principles as Aristotle sees them.[44] In light of the conclusion in (D), defenders of the indeterminist reading might be tempted by K8 to infer that Aristotle establishes not only that the causes and principles of coincidences are themselves uncaused, but also that the causes and principles of human action, whether it is caused by a decision or some non-rational desire, lacks a further cause. If that were Aristotle's view, he would be holding a view akin to the agent-causation view defended by Chisholm[45], for while actions

[44] An exception is Frede, 'Limits of Determinism', though I don't see any clear reference to human agency as the central issue in E3.

[45] R. Chisholm, 'Freedom and Action', in K. Lehrer (ed.), *Freedom and Determinism* (New York: Random House, 1966), 11-44.

would be explicable by being referred back to the decision or desire that caused it, these decisions or desires themselves cannot be traced back to antecedent causes – the principle of sufficient antecedent conditions does not apply to human actions. However, all the argument proves is that there are no *per se* causes of human decisions or desires in general, and so the causes of our actions are not in the process of coming into being all along, since they are not the objective of a teleological chain of events. Although I think E3 has ramifications for our understanding of all contingent causes in Aristotle, attributing a view akin to Chisholm's to Aristotle is a mistake. It presupposes an indefensible analysis of the argument as a whole, as well as a problematic interpretation of (D) that does not cohere well with the thesis Aristotle sets out to defend in (A).

Aristotle's Conclusion and A Summary of the Argument

Finally, let me turn to the conclusion of Aristotle's argument. It is contained in the section that I labeled (D) above. Recall that in (D), Aristotle says that it is evident that the *anagogé* will go back to some principle, but this principle not to another. And this will be the principle of what happens as the case may be, and there is no other cause of its coming to be: δῆλον ἄρα ὅτι μέχρι τινὸς βαδίζει ἀρχῆς, αὕτη δ' οὐκέτι εἰς ἄλλο. ἔσται οὖν ἡ τοῦ ὁπότερ' ἔτυχεν αὕτη, καὶ αἴτιον τῆς γενέσεως αὐτῆς ἄλλο οὐθέν. Anti-determinist readers render this along the lines of, 'Clearly, then [it – the process/ the chain of causes/ the coincidence] goes back to some principle, but this no longer points to something further. This then will be the principle of the contingent, and will have nothing else as cause of its coming to be'. In other words, coincidental causes are themselves uncaused – it goes back to some starting point, but not further. An alternative anti-indeterminist translation of Aristotle's conclusion proposed by Harry Ide makes the subject not the process or chain of causes, but rather a possible, but non-actual cause whose existence Aristotle has aimed to establish from the very first sentence of the chapter:

'Clearly, then, a [possible but non-actual cause] proceeds as far as some origin, and this [origin does] not [proceed] to another'

Ide comments on his translation: 'That is, a causal chain leading to this non-actual cause does not connect with the actual world; at some point, if we trace it back, we come to a cause tl1at is different from the actual state of the world, and there we stop. This sentence, then, does not show that Aristotle rejects determinism; instead, he is restating the claim with which the

chapter began. Some causes do not come about, and therefore not every effect is necessary (whether or not it is necessitated) (Ide, 'Causality and Determinism', at 353).

As much as I am sympathetic to Ide's anti-indeterminist reading of E3, I am reluctant to accept this reading of (D), since it creates a very odd line of argument in the second sentence that follows the one whose translation I just gave. For how could the *principle* not proceed to another? Isn't it rather the unrealized possibility that doesn't proceed to another on Ide's reading? I find this puzzling. Unfortunately Ide does not defend his proposal at length. In light of these difficulties, I think Aristotle should rather be taken to argue along the lines suggested by the following translation:

'It is evident, then, that it [*the anagogê*] will go [back] to some principle, but this principle not to another. And this will be the principle of what happens as the case may be, and there is no other cause of its coming to be'

If, instead of taking Aristotle here to be speaking directly of any particular causal chain, we instead take the point to be about types of causal chains, viz., (i) those that can be traced back to a *per se* cause and (ii) those that can be traced back to a cause that is not *per se*, we can make sense of the conclusion without holding that coincidental causes are uncaused – i.e., without thinking that there is no account of why a coincidental cause occurred. On this line of interpretation, in the first sentence, Aristotle observes that in both cases, whether we are speaking of the chain of causes that explains why everything living will die or why something will die in a particular way, it must go back to some principle. He then observes that in cases like that of the man who dies after eating spicy food, the principle will be of a particular kind, namely the kind of principle that is as the case may be. When Aristotle states that there is no other cause of this principle's coming to be, he is maintaining that *there is no further per se cause of the coincidental cause* – the principle that is as the case may be cannot be traced back to the workings of a *per se* cause. For in that case, the principle would not be as the case may be. So, it follows that coincidental causes can never be traced back to some underlying *per se* cause. The claim that 'there is no other cause of its coming to be' should then be parsed 'there is no *further per se cause* of its coming to be'. In any particular causal chain, the coincidence may be due to the operations of some material, efficient, or final cause, Aristotle suggests, and these may in turn be explicable with reference to further material, efficient, or final causes (albeit not some one final cause that is for the sake of the result that actually obtains. Accepting this point is not tantamount to rejecting determinism; it is rather preserving a distinction between different kinds of causes, namely those that are the objective of a teleological process, and those that aren't.

I therefore think that the following reconstruction captures the gist of the argument in E3. It explains how Aristotle can argue that denying the existence of coincidental causes leads to the conclusion that everything that happens, happens of necessity, but it does this without dubiously importing philosophically ideas about the necessity of the past (which in any case fit Aristotle's argument awkwardly).[46] Instead, the crucial premise resulting in the necessity of the outcome is secured by observing that if there are no coincidental causes, then all *per se* causes would be necessary if their outcomes either have obtained or will obtain in the future. For the relevant *per se* cause is the very kind of thing that always leads up to and explains effects of this kind.

(1) Suppose that everything that happens has a *per se* cause
(2) Consider this man's death (by violence, for example)
(3) If (1), this man's death from violence has a *per se* cause.
(4) Furthermore, each step in the causal chain resulting in his death is necessitated by the previous step, which leads up to it.
(5) Ultimately, if we subtract time from a limited amount of time, we come to what is now the case or to the past.
(6) This present or past event (the 'cause and principle' of his death) is the supposed *per se* cause of his violent death, say his eating spicy food.
(7) But since the man's violent death has occurred or will be, and since every step leading up to it is the very kind of thing that always leads up to – and teleologically explains – his violent death, the cause and principle of his death is necessary (it is not possible that he should die from violence without having eaten spicy food, and the fact that he ate spicy food explains why he died in the way that he did, via the exact chain of events that occurred).
(8) So, there is a teleological process leading from eating spicy food, via getting thirsty, and leaving the house, to dying from violence, where cause and effect are conjoined in the necessary manner elsewhere said to be characteristic of the super-lunary sphere.
(9) Therefore, the man's violent death was necessary.
(10) However, whether he died in this way or that is not necessary, but rather as it happens.
(11) Therefore, the cause of his death was not necessary

[46] As Aristotle treats the temporal location of the outcome and its causal antecedents as irrelevant, moving freely between future and future perfect, and past and past perfect.

(12) Therefore, not everything that happens has a *per se* cause.

I have argued that if there is no such thing as coincidence, then the class of things that happen for the most part (i.e., those things that are natural and have *per se* causes) will be identical to that of things that happen always, and this class consists of necessary events. The very same point underlies Aristotle's argument in (4), for though a cause may fail to have its usual effect due to material impediments or interference from external causal processes, if we have already done away with coincidences, such failures would not be possible.[47] Each *per se* cause would produce its effect of necessity, and each *per se* cause would also be necessary to bring about the relevant result, since it could not occur spontaneously, as it were, or by chance. The effect could not occur by coincidence, as the result of the intersection of separate teleological processes, since by hypothesis, such coincidental intersections would need to be referred back to some underlying *per se* cause that would explains the intersection teleologically.

As it is, because the cause of his death is not necessary, but rather happens as the case may be, the same applies to what it causes, namely the man's death by violence. The argument importantly never introduces the premise that the past or present is necessary; in fact, it denies it, by giving an example of an event that is clearly 'as the case may be' (eating spicy food) and that is not teleologically connected to death, by being the first principle of a process leading up to it in the way described.

What is at stake in E3, then is the limit of teleological causation. Some events are not the end-point of a teleological process, either because they must be explained with reference to material or efficient causes, or because, through they must be explained with reference to some teleological processes, they are the result of the intersection of two or more such processes, where there is no overarching teleology that explains their intersection. As I have argued, we can concede this point to Aristotle without holding that determinism – the view that everything that happens is necessitated – is false. For each event and each outcome, there is an account of why it happen, albeit not necessarily a teleological account. Lacking a teleological cause is not the same as being uncaused.

Providence and Astrological Fatalism: Later Challenges to E2-3

[47] For this, see Aquinas's Commentary on Metaphysics E3, where the point is underlined, especially at

In the final section of the paper, I wish to briefly consider some further implications and difficulties for Aristotle's view that were discussed by Aristotle's followers

As Aquinas notes in his Commentary, Aristotle's defense of coincidences and coincidental causes in E 2-3 may seem incompatible with certain views of providence and astrological fatalism that trace seeming coincidences back to a *per se* cause, in the form of the movements of the heavenly bodies or the providence of a divine being. Views akin to these became popular in the centuries after Aristotle's death. They preoccupied Aristotle's followers in the Peripatos, even if Aristotle himself shows little awareness or concern about squaring his theory in the *Metaphysics* with the idea of providence or astrological fatalism. As R. W. Sharples puts it, Aristotle 'had not explicitly discussed, in his esoteric works at least, [this] topic which became of much interest later'.[48] If seemingly coincidental events in the sublunary world can be traced back to the operations of some heavenly per se cause, which explains the seeming coincidence as a result of a teleological process, then the coincidence is not, in fact a coincidence, and so we are back with the eliminative position that Aristotle rejects. 'The standard position attributed to Aristotle in the first two centuries AD was that divine providence has the heavenly bodies as its objects, but is not concerned with the sublunary region' (Sharples, 'Introduction', at 25), and so he may be thought to escape the problem.[49] Against this, Alexander argued in his *On Providence* that providence was directed not at the heavenly bodies, but rather the sublunary sphere, and that providence is exercised by the souls of the heavenly spheres rather than the unmoved mover. Their rotations ensure the continuations of the species, but importantly do not govern the fortunes of individual agents. Nor do the heavenly bodies have any concern with the minutiae of coincidental events in the sublunary sphere, such as the man's choice of spicy food or his death by violence or disease. Providence, on Alexander's interpretation, is limited in scope to those states of affairs in the sublunary sphere that already exhibit *per se* causation, and so the potential problem is avoided.

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[48] R. W. Sharples, 'Introduction' to *Alexander of Aphrodisias on Fate* (London, Duckworth, 1983), at 25. Sharples cites Aëtius, 2.3.4, Diogenes Laertius 5.32, Atticus fr. 3.56f.,69ff. des Places, Epiphanius *Dox*. 592.10 + 20; also Arius Didymus *fr phys*. 9 (Dox. 450.16) and Aspasius *in eth. Nic*. CAG 19.1.71.25ff. as evidence. Aëtius (2nd century AD) maintains that the heavens have an accidental providential effect on the sublunary, whereas for Alexander, 'accidental providence is a *contradictio in adiectio*', notes Sharples, as the discussion in Alexander's treatise *de Providentia* 63.2ff., and in *Quastiones* II.21 65.25ff reveal.

[49] R. Sharples cites the criticism leveled against Peripatetics by the 2nd century A.D. Platonist Atticus (de Places fr. 8.8ff) against certain Peripatetics who hold that fate only governs the motions of the heavens, and not the natures in the sublunary sphere.

Aristotle's claim that some happenings are coincidental by having coincidental causes would not be threatened by the view ascribed to him by Alexander, but rather by a universal astrological fatalism of the kind that Thomas Aquinas introduces as a potential challenge to Aristotle's views in his commentary on *Metaphysics* E 3. This is the view that *all* events in the sublunary sphere can be 'traced back to some power of a celestial body, whose activity produces in a certain order those things which, when viewed in themselves, seem coincidental' (Aquinas, *Commentary on the Metaphysics*, 1203). Since the movements of the heavens are teleological and absolutely necessary, all events that they cause will be necessary, too. Aquinas is also concerned that Aristotle's argument seems inimical to the view of providence at the heart of his Catholic faith, namely the view that everything that happens in the super- and sublunary sphere is ordained by some highest divine cause, to which all events can be traced. On this conception of providence, every seeming coincidence can be explained with reference to the intentions of a higher-order divine cause.

Aquinas' aim is to carve out space for fate and providence while preserving Aristotle's argument for coincidental causes in E3. To this end, Aquinas argues that whether a cause is coincidental or non-coincidental will depend on whether we are considering it only in relation to other causes in the sublunary sphere, or whether we consider it in relation to the highest, divine cause:

'It is evident, then, that (a) when effects are referred to lower causes they seem to be unrelated and to coincide with each other accidentally, but (b) that when they are referred to some higher common cause they are found to be related and not accidentally connected but to be produced simultaneously by one proper cause' (Commentary on E 3, 1205).[50]

Aquinas does not in the end think that celestial causes have the power to govern coincidences

[50] He illustrates the change in frame of reference as follows: 'if the blossoming of one plant is referred to a particular power in this plant and the blossoming of a second plant is referred to a particular power in that plant, there seems to be no reason (indeed it seems to be accidental) why the first plant should blossom when the second does. And this is true, because the cause of the power of the first plant extends to the blossoming of this plant and not to that of the second, so that while it causes the first plant to blossom, it does not cause it to blossom at the same time as the second. But if this is attributed to the power of a celestial body, which is a universal cause, then we find that the first plant blossoms when the second does, not by accident, but by the direction of some first cause, which ordains this and moves each plant to blossom at the same time.' (1206).

in the sublunary sphere in this way, for, as he notes, even if they have an influence, this would not eliminate contingency from the world. Their effects in lower bodies (those that are mutable and corruptible) can fail because matter is not disposed, or because a rational soul may choose to follow or not follow the inclinations produced to it by the influence of a celestial body (1217). Therefore, not everything would happen of necessity even if we were to posit astrological fate. However, when it comes to God's providence, Aquinas faces are more complicated picture: 'there is greater difficulty with regards to providence, because divine providence cannot fail; for these two statements are incompatible, namely that something is foreknown by God and that it does not come to pass' (1208). Once providence is posited, its effects follow of necessity. How, then, can Aquinas reconcile the existence of divine providence, which is a principle of his faith (1216), with Aristotle's insistence of the existence of coincidental causes? Aquinas' answer is to distinguish between frames of reference. Though everything that happens is divinely ordained, and subject to divine providence, nevertheless, when we consider effects relative to causes at the same level of being, some will be contingent, others necessary. Furthermore, the highest divine cause is the cause both of the contingency of contingent effects and the necessity of necessary effects. It is evident, then, concludes Aquinas, that when we speak of divine providence, a thing is foreseen by God not just insofar as it is, but also insofar as it is either contingent or necessary. Aristotle's discussion in E3 remains at the level of finite and mutable substances, and correctly defends the existence of coincidental causes in this realm. That these, just like *per se* causes, owe their existence to a highest divine cause does not rule out contingency; rather it is the precondition both for the existence of contingent and necessary causes alike.

That Aristotle's defense of coincidental causes in E3 should give rise to the theological subtleties contained in Aquinas's discussion of astrological fatalism and providence may strike us as remarkable in light of the terse analysis we find in E 2-3, where the motions of the heavenly bodies or the unmoved mover do not seem to enter Aristotle's mind. However, Aristotle does, in E 1, allude to theology as the science of what is most worthy of esteem, and first philosophy as the study of 'some changeless substance'. He states that 'if there is no substance apart from those constituted naturally, the discipline concerned with nature would be primary, whereas if there is some changeless substance, this is prior and is primary philosophy' (E 1, 1126a27-32). Depending on the causal relationship between the objects that theology and natural philosophy study, we may suspect that the question raised by Aristotle's followers and later addressed by Aquinas are lurking just beneath the surface. If Aristotle sees the motions of substances lower down in the hierarchy of being as governed by those further up, then questions about universal teleology and the compatibility between higher-order teleology and lower-level coincidence will sooner or later arise. To explore Aristotle's

implicit position on these questions would require a separate analysis, one that moves beyond the confines of *Metaphysics* E.[51]

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