CAUSE AND EXPLANATION IN ANCIENT PHILOSOPHY

Edited by
Alberto Ross and Daniel Vázquez

ROUTLEDGE

Cause and Explanation in Ancient Philosophy

This volume offers an updated analysis of the use, meaning, and scope of the classical notion of *aitia*. It clarifies philosophical and philological questions about *aitia* and offers bold and innovative interpretations of this key concept of ancient philosophy.

The numerous meanings and nuances of *aitia* remain difficult to grasp. Ancient philosophers use *aitia* to explain the existence and activity of substances, bodies, souls, or gods. Paradoxically, its own definition remains difficult to establish. This book reconstructs some of the most important uses, variants, and scopes of the term *aitia* within different philosophical perspectives in antiquity, including early Greek philosophy, Plato, Aristotle, Stoicism, and Islamic philosophy. The chapters analyze metaphysical aspects, epistemological issues, and logical implications of *aitia*. They engage with the most relevant critical literature generated in several modern languages. In doing so, they offer an inclusive and overarching re-evaluation of our assumptions about causation and explanation in ancient philosophy.

Cause and Explanation in Ancient Philosophy will be of interest to scholars and advanced students working on Pre-Socratic philosophy, Plato, Aristotle, Hellenistic philosophy, late antiquity, and medieval philosophy.

Alberto Ross is Professor of Philosophy and Humanities at Universidad Panamericana, Mexico. His works include *The Causality of the Prime Mover in Metaphysics Λ* (2016); *Causality, Nature and Fate in Alexander of Aphrodisias* (2016); *The Causality of the Prime Mover in Simplicius* (2020); and he coedited the volume *Time and Cosmology in Plato and the Platonic Tradition* (2022).

Daniel Vázquez is Associate Professor, Head of the Department of Philosophy at Mary Immaculate College, Limerick. He is also a member of the Trinity Plato Centre. He has published in various areas of ancient philosophy, especially on Plato, the Stoics, and the skepticism of Sextus Empiricus. He is coeditor of *Time and Cosmology in Plato and the Platonic Tradition* (2022) and *Plato on Time and the World* (2023).

Taylor & Francis
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Routledge
Taylor & Francis Group
NEW YORK AND LONDON

First published 2024
by Routledge
605 Third Avenue, New York, NY 10017

and by Routledge
4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

Library of Congress Cataloging-in-Publication Data
Names: Ross Hernández, José Alberto, 1977– editor. | Vázquez, Daniel, 1982– editor.
Title: Cause and explanation in ancient philosophy / edited by Alberto Ross and Daniel Vázquez.
Description: New York, NY : Routledge, 2024. | Includes bibliographical references and index.
Identifiers: LCCN 2023037584 (print) | LCCN 2023037585 (ebook) | ISBN 9781032307442 (hardback) | ISBN 9781032307459 (paperback) | ISBN 9781003306450 (ebook)
Subjects: LCSH: Causation—History. | Explanation—History. | Philosophy, Ancient.
Classification: LCC B187.C38 C38 2024 (print) | LCC B187.C38 (ebook) | DDC 122—dc23/eng/20231031
LC record available at https://lccn.loc.gov/2023037584
LC ebook record available at https://lccn.loc.gov/2023037585

ISBN: 978-1-032-30744-2 (hbk)
ISBN: 978-1-032-30745-9 (pbk)
ISBN: 978-1-003-30645-0 (ebk)

DOI: 10.4324/9781003306450

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Acknowledgments

We thank the Institute for the of Humanities and the Faculty of Philosophy of the Universidad Panamericana for funding the two editions of the conference "Cause and Explanation in Ancient Philosophy," held in Mexico City on March 22 and September 17, 2018, and organized by Alberto Ross and Daniel Vázquez.

We also thank and dedicate this book to Ana Crystal García and Gabriela Martínez for their invaluable support in carrying out this volume and all the important projects in our lives.

Contributors

Michael Chase is Extraordinary Researcher at the Centre Jean Pépin (UMR 8230-École Normale Supérieure-PSL) of the French National Center for Scientific Research, Paris. He works at the intersection of Greek, Arabic, and Latin philosophy and has published widely on ancient Greco-Roman philosophy, Greek and Latin patristics, medieval Latin and Arabic philosophy, and parallels between pre-modern and contemporary science.

María-Elena García-Peláez is full-time Professor at Universidad Panamericana, Mexico City. From 2013 to 2023 she was dean of the Faculty of Philosophy. She received her PhD from the Universidad Nacional Autónoma de México and works on the Aristotelian theory of reproduction with a special interest in the feminine contribution to it.

Saloni de Souza is an associate lecturer and the Keeling Research Associate at University College London. She works primarily on ancient Greek philosophy, particularly the Pre-Socratics, Plato, and Aristotle, but also has interests in comparative and contemporary philosophy.

Viktor Ilievski is a postdoctoral researcher in ancient philosophy. He has been affiliated with the Autonomous University of Barcelona and the University of Bucharest. He has been a visiting scholar at Charles University, University of Crete, La Sapienza. His most recent publication is *Plato's Theodicy: The Forgotten Fount*.

David Lévystone is Professor of Philosophy at the University Panamericana. He is the author of various articles on Socrates, Plato, and Aristotle.

José María Llovet is a full-time professor and Associate Dean of Research at the Institute of Humanities of the Universidad Panamericana, Mexico City. He is a member of the National System of Research, level 1.

Luis Xavier López-Farjeat, Professor of Philosophy at Universidad Panamericana, Mexico, writes widely on classical Islamic philosophy. He is coeditor of *The Routledge Companion to Islamic Philosophy* (2016) and

author of *Classical Islamic Philosophy: A Thematic Introduction* (Routledge, 2021); associate director of the "Aquinas and 'the Arabs' International Working Group"; and editor of *Tópicos, Journal of Philosophy*.

Mary Margaret McCabe works on ancient philosophy, ethics, and the philosophy of medicine; she has published mostly on Plato, but also on the Presocratics, Aristotle and the Stoics, as well as on topics in contemporary ethics and medicine. She was Professor of Ancient Philosophy from 1998 to her retirement in 2014, and thereafter Professor of Philosophy Emerita. She is a Fellow of the British Academy, and she is the editor of the Cambridge University Press series, Cambridge Studies in the Dialogues of Plato, for which her *Plato's Euthydemus* is in the late stages of preparation.

Carlo Natali is Honour Professor at Università Ca' Foscari Venezia. He has translated and commented in Italian Aristotle's *Nicomachean Ethics* (1999), Xenophon's *Oeconomicus* (2003), Alexander's *De fato* (2009), and the *Anonymous Commentary on NE II* (2023). In English he has published *The Wisdom of Aristotle* (2001), *Aristotle: His Life and School* (2013), and has edited *Aristotle's Nicomachean Ethics VII* (2009).

Cristina Viano is Directeur de Recherche at Centre National de la Recherche Scientifique, Centre Léon Robin (UMR 8061, Sorbonne-Université, Paris). Her main topics are the ancient doctrines of matter and causation; Aristotle (natural philosophy, ethics, rhetoric and the theory of passions); and Alexandrian alchemy and the relationship with Greek philosophy. She has published *La matière des choses. Le livre IV des* Météorologiques *d'Aristote, et son interprétation par Olympiodore* (Vrin, 2006) and, more recently, the Italian translation, with introduction and notes of Aristotle's *Rhetoric* (2021).

Abbreviations

Aesch.	Aeschylus
Ag.	*Agamemnon*
Choeph.	*Choephoroe*
Eum.	*Eumenides*
Sept.	*Septem contra Thebas*

Alexander of Aphrodisias

In Met.	*In Aristotelis Metaphysica commentaria*
Fat.	*De fato*
Antiph.	Antiphon (or.)
Tetr.	*Tetralogy*

Aquinas

In Ph.	*Commentaria in octo libros Physicorum Aristotelis*
Arist.	Aristotle
An. Post.	*Analytica Posteriora*
An. Pr.	*Analytica Priora*
Cael.	*De caelo*
De an.	*De anima*
Int.	*De interpretatione*
Mem.	*De memoria*
Eth. Nic.	*Ethica Nicomachea*
Gen. an.	*De generatione animalium*
Gen. corr.	*De generatione et corruptione*
Hist. an.	*Historia animalium*
Metaph.	*Metaphysics*
Mete.	*Meteorologica*
Part. an.	*De partibus animalium*
Ph.	*Physics*
[***Pr.***]	Problemata

Cicero

Fat.	*De fato*

Clemens Alexandrinus

Strom.	*Stromateis*
Dem.	Demosthenes
Phil.	*Philippicae*
DK	*Die Fragmente der Vorsokratiker* by Hermann Diels and Walther Kranz
DL	Diogenes Laertius

Epictetus

Ench.	*Enchiridion*
Eur.	Euripides
Med.	*Medea*
Rhes.	*Rhesus*

Eusebius

Praep. evang.	*Praeparatio evangelica*
Eust.	Eustathius
ad Il.	Ad *Iliadem*

Galen

Adv. Jul.	*Adversus Julianum*
Alim. fac.	De alimentorum facultatibus
Hdt.	Herodotus
Hippocr.	Hippocrates
Acut.	*De diaeta in morbis acutis*
Aer	*De aera, aquis, locis*
Aph.	*Aphorisms*

Homero

Il.	*Iliad*
Od.	*Odyssey*
Isoc.	Isocrates
Antid.	*Antidosis*

Hume

THN	*Treatise of Human Nature*

Philoponus

In Ph.	*In Aristotelis Physicorum Libros Comentaria*

Pindarus

Ol.	*Olympian Odes*
Nem.	*Nemean Odes*
Pyth.	*Pythian Odes*

Plato

Epin.	*Epinomis*
Leg.	*Leges*
Prm.	*Parmenides*
Phd.	*Phaedo*
Phlb.	*Philebus*
Resp.	*Republic*
Soph.	*Sophist*
Symp.	*Symposium*
Ti.	*Timaeus*

Plotinus

Enn.	*Enneades*

Plutarch

SR	*De Stoicorum Repugnantiis*
VM	*De virtute morali*

Proclus

Elem. Theol.	*Elementatio theologica*
In R.	*In Platonis Rem publicam commentarii*
In Ti.	*In Platonis Timaeum commentarii*

Seneca

Ep.	*Epistulae*

Sextus Empiricus

Math.	*Adversus mathematicos*

Simplicius

In Ph.	*In Aristotelis de Physica Commentarii*
In Cat.	*In Aristotelis Categorias Commentarium*

Soph.

Soph.	*Sophocles*
Ant.	*Antigone*
El.	Electra
OC	Oedipus *Coloneus*
Phil.	Philoctetes

Thuc.

Thuc.	Thucydides
SVF	*Stoicorum Veterum Fragmenta* by H. von Arnim

Van Ess

ThG	*Theologie und Gesellschaft*

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Introduction

Alberto Ross

This volume aims to provide a comprehensive analysis and an updated approach to the use, meaning, and scope of the classical notion of cause (i.e., *aitios, aition, aitia*, and other causal phrases), a key concept in ancient philosophy. It is well-known that the technical use of these terms among ancient thinkers constitutes one of the primary demarcation criteria between philosophical and prephilosophical discourses. The assumption according to which the world and its change are intelligible gives rise to the research of the causes that explain them. However, a thorough comprehension of the sense and meaning of the classical notion of causality is not an easy task and requires addressing both philosophical and philological questions. The definition of what is an *aitia* has direct implications for its translation to modern languages, and vice versa; the translation choices impact our understanding of the historical development of this term.

The exegetical problems surrounding notions such as *aitios, aition*, or *aitia* have been discussed since antiquity, and this book proposes a review of the subject to establish a *status quaestionis* and explore different interpretations of this issue. It is essential to remember that as contemporary readers of ancient texts, we find ourselves in a very peculiar situation regarding this matter. On several occasions, ancient philosophers describe the world by appealing to an *aitia* in order to explain the existence or the activity of substances, bodies, souls, or gods. Paradoxically, despite that, its definition remains difficult to grasp. This peculiarity justifies the effort to elucidate, to the extent possible, its meanings in ancient Greek philosophy.

In addition to the difficulty of defining *aitia* comes the problem of translating it into modern languages. Its most common translation is "cause," but this term has an important influence from 17th- and 18th-century continental rationalism and British empiricism. As historians of philosophy note, modern notions of causality associate "cause" with an agent that produces an effect, but agency is only one sense of *aitia* among the ancients. Given that difficulty, some contemporary commentators translate *aitia* as "explanation," and not without reason. The different senses of *aitia* in

DOI: 10.4324/9781003306450-1

ancient philosophy normally can answer "Why?" questions. They explain why something is or has come to be, but not all the answers refer to "an agent that produces an effect," hence it is convenient to seek an alternative. Furthermore, translating it as "explanation" strengthens the connections between ancient cosmologies and their epistemologies or theories of demonstration, although the terms involved always present symptoms of untranslatability. Throughout this volume, we will draw upon this breadth of meaning in the terms to understand the positions of the different philosophers that will be studied.

In order to address the complexity of these topic, this book aims to reconstruct some of the most significant uses, variations, and implications of the term *aitia* within various philosophical and philological perspectives in antiquity. This volume will highlight similarities among different proposals that enhance our understanding of its meaning while also acknowledging important differences. It will include studies on early Greek philosophy, Plato, Aristotle, Stoicism, and the reception of these doctrines in Islamic philosophy. It will analyze metaphysical and ethical aspects of the different kinds of causality or explanation and will address epistemological concerns and explore their logical implications.

The first part of this volume, Chapter 1, discusses the original meaning of the adjective *aitios*. David Lévystone proposes a new hypothesis regarding the archaic meaning of this word, which slightly modifies its traditional interpretation as referring to those who or what "plays a part" or "takes a part" in a situation. Lévystone points out that in the Homeric texts, the adjective *aitios* is only found in the masculine or feminine form, never as a neuter, and never as the substantive *aitia*. Its meaning is not "causal," but rather relates to "blame," "culpability," and "guilt." Furthermore, the occurrences of the word in the *Iliad* share common syntactical characteristics that could have significant semantic implications. On the one hand, the word *aitios* is never followed by a genitive. It may seem that it describes the character, "situation," or "state" of the one who is described as such. On the other hand, when a relation is implied, it is expressed through a dative of person, indicating a relation to the one who was disadvantaged. This use of the dative, Lévystone suggests, is as significant as the absence of the genitive: one is *aitios* to or for someone else, in the eyes of someone else, or even regarding someone else, but not absolutely speaking. The presence of this dative becomes rarer with time, but the "subjective" element in the early uses of *aitios* can be understood in different ways. One possibility is to consider that, in relation to the absence of the genitive, the term *aitios* emphasizes a moral "quality" of the subject. With the dative of person, the decision of ascribing a moral quality to someone becomes subjective. A more radical option, which Lévystone finds convincing in archaic texts, is to consider that originally, the one who is at fault, in one way or another,

is *aitios* only "towards someone else" rather than "judged to be faulty from the point of view of someone else." This second possibility is particularly relevant in later texts where the dative is applied to a group rather than an individual, and it is even clearer in the first occurrence of the word in the *Iliad*.

Chapters 2, 3, and 4 explore the notion of causality in Plato. In Chapter 2, Mary Margaret McCabe explores the question "What good is the Form of the Good?" discussing the Platonic thesis according to which "beautifuls are beautiful by virtue of the beautiful" (*Phaedo* 100d7-8). This explanation implies a realist perspective on such properties, suggesting that they are objective features of the world with an objective causal structure. McCabe discusses whether this is an analysis of causation, aiming to demonstrate what causes what in terms of relations and values, or if it should be seen as an explanatory account that extends beyond our expectations of causation. This account focuses on the structures of explanatory reasoning, which may involve causes but may not be causing anything itself. Alternatively, this could be a more complex explanation, involving constraints on causal explanation (as expressed by the peculiar simplicity of the straightforward answer) and a second, more sophisticated account of how this set of explanatory principles generates specific causal claims. McCabe does not attempt to provide a definitive answer to these questions, but rather explores why they remain unresolved. This chapter argues that the presentation of the distinct "answers" in the *Phaedo* aligns with the complexity of the *Republic*'s account of goodness and helps refute a seemingly crude version of "the goods are good by virtue of the good."

In Chapter 3, de Souza and Vázquez point out that causation in the myth in the *Statesman* has received little detailed scholarly attention. They assert that there is a complex and multilayered causal story at work. First, according to the myth, there is a cyclical, causal relationship between the god and the cosmos. At times, the Stranger tells us, the god guides the cosmos in one direction; at others, it lets it go to rotate on its own in the opposite direction until such time as it is appropriate for the god to take charge again and revert to guiding the cosmos in the opposite direction. Second, the direction of the cosmos determines the kind of causation that happens inside the cosmos. When it turns in one direction, for example, men start life with white hair and wrinkled skin and their hair becomes coloured and their skin smoother, in contrast with biological aging in the cosmos when it revolves in the other direction, which works in the way we are familiar. In this chapter, de Souza and Vázquez examine this complex causal story. They argue that not only does it yield an interesting and consistent causal account, but it reveals different kinds of causes that interact in complex ways. Furthermore, some of these causes do not feature anywhere else in the Platonic corpus.

The third chapter dedicated to Plato, Chapter 4, studies the meanings of Plato's notions of chance (*tychē*), necessity (*anankē*), and demiurgic cause as they are used in the *Timaeus*. Viktor Ilievski attempts to demonstrate that these notions progressively converge, with chance ultimately becoming identifiable with necessity in one aspect, and necessity being associated with the principal cause in the *Timaeus* in another semantic feature. Specifically, the analysis aims to show that (1) the Timaean *tychē*, in its cosmological sense, is related to a cause that produces necessary but purposeless effects; (2) Plato explicates the material causal necessity known from the Presocratics, referred to as *anankē*, in the *Timaeus*, which is ultimately identified with *tychē*; (3) Plato also implicitly introduces a different, new kind of teleological *anankē* in the same dialogue, embodied in the figure and actions of the Demiurge, who is a nous characterized by goal-directed, efficient causal powers, actively striving for the best and representing the primary necessity in the unfolding of creation.

Chapters 5 to 9 are dedicated to Aristotle. All of them discuss different aspects of Aristotle's doctrine of causality, both in the context of theoretical and practical philosophy. Chapter 5 presents a reconstruction of the Aristotelian notion of *aitia*, aiming to justify that through this concept, Aristotle proposes a doctrine that explains different ways of explaining something, which is not necessarily tied to a specific cosmology. To prove this thesis, the chapter examines passages from *Ph*. II 3 and *Metaph*. V 1–3 to explain what is common between the different species and modes of causality. Furthermore, the chapter analyzes in particular the classifications of *aitia* according to its *eidos* and its *tropos* in order to illustrate that they offer a wide range of options for answering the question of why something is the case. From these considerations, this part of the volume also aims to prove that these classifications are not necessarily linked to a specific physics or cosmology, but that they are compatible with different conceptions of nature, as evidenced by the history of philosophy.

In Chapter 6, Cristina Viano points out that even if Aristotle is the inventor of the concept of matter and material cause, the passages where he speaks of a prime matter in an absolute sense are rare in the Aristotelian corpus. The problem introduced by Viano, which has puzzled modern interpreters for a long time, can be summarized as follows: did Aristotle believe in the existence of an imperceptible matter, without form and without qualities, as an autonomous level of reality, or did he rather consider the *materia prima* as a logical object, a pure abstract concept? Viano proposes to analyze a dossier of the most relevant Aristotelian passages concerning the question of prime matter. After revisiting interpretations from both ancient and modern sources, she proposes an interpretative proposal aligned with the realistic traditional view, challenging the current trend, that is, the conceptual view of this notion.

Chapter 7 explores a different aspect of the Aristotelian notion of causality. This chapter examines whether accidental causes, according to Aristotle, are operative or inoperative. Contrary to other interpretations, Llovet argues that some accidental causes are indeed operative. According to this reading, Aristotle's concept of "accidental cause" has two senses. In the first sense, an accidental cause is simply an improper way of considering a cause. For instance, an example of an accidental cause would be a physician who, also being a flute player, happens to bring about the healing of a sick person. In this case, the accidental cause is the physician, looked on as a flute player. Llovet suggests that accidental causes in this sense are inoperative because, as Aristotle states in *Metaphysics* E, 2, the accidental is merely a name or a non-being, which is why sophistry deals with it. However, Llovet argues that accidental causes in a second sense are operative and can be better understood in relation to Aristotle's doctrine of the unity of substance. Despite not being inherent causes, these accidental causes can produce real effects. For example, digging a hole in the ground to plant a seed can be the cause of finding treasure. Although finding treasure happens by accident – as happens by accident too that a creditor and a debtor come across each other in the market – these events have perfectly identifiable causes from the point of view of what produces them. Their effects, however, are accidental effects, because they are not the per se accidents of such causes.

Chapter 8 redirects the focus to Aristotelian astronomy and biology. In this chapter, García-Peláez argues against the misreading of Aristotle's explanations about the influence of external conditions on generation. The text addresses the relationship between celestial movements and sublunary living beings, emphasizing the natural tendency to regularity in the generative processes. The yearly cycle of the sun produces seasons that affect the life and generative predisposition of animals. The moon's monthly cycle has an even more direct impact on the readiness of females towards pregnancy. In a restricted scope, local environmental conditions prove to affect animals' tempers, as well as some generative outcomes. Sex determination holds a notorious relation to the winds, which drives her to emphasize the influence of immediate environmental conditions along procreation. This last issue can only be thoroughly explained if there is a revision of the male's contribution to the embryo. Provided that the male transmits the sensitive soul, the material aspect of his seed should also be considered since important features of an animal depend on it and are susceptible to being affected by immediate climate conditions. Throughout the chapter, García-Peláez compares some Aristotelian theses to the Hippocratic text *Airs, Waters, Places* because Aristotle incorporates some of its main ideas into his own generative theory.

In Chapter 9, Carlo Natali proposes a minimalist interpretation of Aristotle's stance on determinism and what depends on us. Natali emphasizes the

question of contingency and the relationship between character and action. After providing a brief summary of the content in *Nicomachean Ethics* III 1–4, the chapter focuses on III 5. The central question revolves around the connection between causality and necessity, and the best approach is to consider Aristotle's complex and non-standard theory of causation. In this chapter, Natali provides some insights into Aristotle's position in the academic debate regarding the responsibility of wrongdoers. He points out that it is correct that Aristotle does not oppose causal determinism, which in his time had not yet been formulated. According to Natali, the interest of Aristotle's thought in the determinism debate, from today's viewpoint, consists both in his conception of movement as the actuation of the capacities of a substance, and in his broad and unrestricted conception of causality, which makes it possible to deny necessity without affirming that there is causeless movement.

Chapter 10 shifts towards Stoicism. In this section, Daniel Vázquez argues that the early Stoics did not have a single and unified doctrine of causation. Instead, they developed a variety of proposals with family resemblances. Although these proposals may share their basic tenets and often build on each other's arguments, there is no need to assume, in addition, that the Stoics were engaged in adversarial partisan apologetics and the construction of a single genuine Stoic system. The surviving evidence allows us to distinguish at least three main moments in the early Stoic discussion of causation. These stages are not necessarily coherent and consistent with each other. The analysis offers three main outcomes. First, it uncovers how closely Zeno engaged with Plato's discussion of causes and how later Stoics became more independent from the Platonic tradition. Second, it also becomes easier to differentiate Chrysippus' contribution from previous and later developments. Finally, the analysis helps clarify how the Stoics establish the number of relata they attribute to the causal relation and how their theories understand and assign moral responsibility.

Finally, in the last two sections of the book, we have included two chapters on the reception of ancient theories of causality in medieval authors of the Arabic tradition. Chapter 11 discusses the epistemology of the theologian Abū Isḥāq Ibrāhīm al-Naẓẓām (ca. 760–ca. 845 CE). Even if Naẓẓām was a theologian rather than a philosopher, Michael Chase points out that he had a fully developed ontology, physics, and epistemology, which are interesting both in their own right and because such early Islamic philosophers as the members of the circle of al-Kindī were, at least to some extent, reacting to the debates within the Mu'tazila between Naẓẓām, his uncle Abū l-Huḏayl, and their predecessors and contemporaries. Chase examines a few aspects of Naẓẓām's thought on ontology and physics in order to see whether we can extract from the fragmentary remains of his writings some

principles that might be said to characterize his scientific epistemology. According to Chase, the proposal of Naẓẓām denies that the phenomena of change we see around us in the natural world are to be explained by God's constant intervention and re-creation, against the views of many of his predecessors, contemporaries, and successors. Instead, Nature – or at least the God-created natures within things – is autonomous, regular, and henceforth largely predictable.

Finally, chapter 12 explores the views of Avicenna (d. 1037), al-Ghazālī (d. 1111), Averroes (d. 1098), and Fakhr al-Dīn al-Rāzī (d. 1209) to introduce the discussion of the recovery of causality in Ibn Taymiyya (d. 1328). López-Farjeat points out that for Ibn Taymiyya, both philosophy and theology were two innovative disciplines that challenged traditional religious views. Ibn Taymiyya endorsed the concept of perpetual creation, an idea already found in Avicenna and Averroes. Several works have recently been published highlighting the influence of Averroes on Ibn Taymiyya, but López-Farjeat discusses the extent to which Ibn Taymiyya adopts Averroes' understanding of causality and where he diverges from him. López-Farjeat concludes that even if Averroes and Ibn Taymiyya hold in common the idea of a perpetual creation, their understanding of causality is different. While both defend the philosophical notion of causality from the criticisms of the *mutakallimūn*, the way they understand it is not identical. In fact, unlike Averroes, Ibn Taymiyya does not usually refer to God in philosophical terms. Nevertheless, if it were possible to translate his position into philosophical terminology, it could be said that his interpretation of the Islamic doctrine of creation places God as a direct and active efficient cause of all that exists.

The historical review presented here aims to illustrate different approaches to notions as *aitios, aition*, and to provide a significant update to the discussion on these subjects. The volume has incorporated the most relevant bibliography and including the most significant philological and philosophical discussion on this matter. The book strives to provide a thorough understanding of the aforementioned notions by considering a wide range of perspectives and interpretations.

The volume has incorporated the most relevant bibliography that has emerged in recent years and in different modern languages. This includes works written in English, German, French, Italian, and Spanish. This approach allows for a more inclusive and comprehensive analysis of the subject matter, enabling readers to gain insights from different perspectives. Even if it is impossible to offer an exhaustive revision of this subject in only one volume, we have tried to offer a representative selection of the main proposals and doctrines on causality and explanation in ancient Greek philosophy.

1 Note on the Original Meaning of Greek *Aitios*[1]

David Lévystone

Greek poetical, judicial, philosophical, and medical texts of the classical period use the term αἴτιος, as well as several derivative terms, to indicate which persons, things, or facts are responsible for, or have caused, a state of affairs. If the adjective αἴτιος appears first in Homer, multiple terms promptly came to be derived. The denominative verb αἰτιάομαι is attested already in Homeric poetry in the sense of 'accuse, incriminate'.[2] More original constructions occurred in time, like the rather amusing adjective φιλαίτιος (for someone "who loves to accuse") in Aeschylus (*Supp.* 485). The feminine substantive αἰτία, 'responsibility', seems to have appeared only in the early fifth century,[3] as does the neuter substantive τὸ αἴτιον.[4] Both bear witness to a rather recent process of abstraction, a process that subsequently led to the significations 'causality', 'responsibility', or 'culpability' for αἰτία. Other terms were introduced only at later times to serve the needs of more specialized or specific areas of knowledge: for example, in the philosophical vocabulary, the adjective αἰτιατός ('produced by a cause') seems Aristotelian,[5] as does its corresponding substantive τὸ αἰτιατόν (the 'effect' as effect opposed to cause – αἴτιον). Most of those terms, however, retain an ambiguity or at least a polysemy between a moral or judicial meaning and a causal or physical one: in the early fourth century, αἰτιατέον could designate both "the person who should be regarded as responsible, who should be accused" in Xenophon (*Cyr.* 7.1.11, 2) and "the thing that should be regarded as a cause" in Plato (*Ti.* 57c9, 87b4).

This multiplicity of significations is quite often explained by the archaic or original meaning of the term in Greek. It is generally admitted that the word αἴτιος was formed from a theme *αἰτος which is attested in ἔξαιτος,[6] derived from αἴνυμαι, 'to take', and that the word was linked originally to αἶσα, 'the loot', 'the share'.[7] The same root gives birth to the very common verb αἰτέω, meaning 'to want to take', 'to demand', or 'to claim one's share' (with an epic reduplication αἰτίζω, 'to beg'[8]) and, at a later date, 'to ask' in general.[9] On the basis of these widely agreed elements, it is also quite often – though not universally – accepted that the word αἴτιος should be

DOI: 10.4324/9781003306450-2

construed originally in the most ancient sense, to refer to someone 'who took part in' or 'who played a part in' the situation under discussion. This would allow us to apprehend intuitively its later specialized meanings in the judicial vocabulary (where αἰτία means 'responsibility', 'culpability', 'accusation'), as well as in the medico-philosophical vocabulary (where αἴτιον signifies 'cause' and αἰτία 'causality').[10]

The full history of this word group is still to be written, though important overviews already cleared the path for such a study.[11] My contribution to this volume has a far more modest aim and could only constitute a first minor step to that end: to put forth a hypothesis on the archaic meaning of the word, which slightly modifies the usual understanding of it as referring to whom or what 'plays a part' or 'takes a part' in a situation. I will do so by focusing on the Homeric texts and most especially on the *Iliad*.

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In the Homeric texts, only the adjective αἴτιος is found, as a masculine or a feminine, never as a neuter, and never the substantive αἰτία. As it has often been noted, its meaning is not 'causal' as yet, but has rather to do with 'blame', or even 'culpability' and 'guilt' – maybe even with a very basic sense of responsibility, if we think of it in very general terms.[12] It is always, without exception, taken *in malam partem*.[13]

But the occurrences of the word in the *Iliad* also share common syntactical characteristics, which have been scarcely noticed[14] but are, I believe, meaningful from a semantic point of view:

1. In the *Iliad*,[15] the word αἴτιος is *never* followed by a genitive (as it is usually in later texts) that would explain the thing for which (i.e., 'of what') the agent is αἴτιος; the information is certainly given or can be drawn indirectly from the context but never appears in direct connection with the word. Thus it could seem that αἴτιος describes a character, or a 'situation' or a 'state', of the one who is described as such, rather than a relation to the act that made him αἴτιος.[16] "The man is αἴτιος" would describe the man, what he is or how he is, but does not, by itself, establish a link between him and something he had done. In a way, he would be said αἴτιος, as he is qualified ἀνδρεῖος, καλός, κακός, and so on.[17]
2. When a relation is implied, it is the one expressed through a dative of person – a dative sometimes omitted in the translations, but most frequently present[18] though absolutely unnecessary in the Greek construction – that is, a relation to the one who was disadvantaged, or at least to the one in the eyes of whom the 'agent' is αἴτιος. In most cases, thus, the Homeric poet felt compelled to specify 'to whom' or 'for whom' the agent is αἴτιος. This use of a dative of the persons

after αἴτιος is as meaningful as the absence of genitive: one is αἴτιος to or for someone else, in the eyes of someone else, or even regarding someone else, but not absolutely speaking. At the very least, it is clear that αἴτιος does not necessarily designate someone who is αἴτιος "by general agreement" (Glucker 2011, 11), or even objectively. It seems even justified to assume that αἴτιος appears mostly as a qualifying term which is assigned subjectively, in the most general sense of the term (of someone who is to blame in the eyes of someone else), not as an objective notion (as trying to ascribe an objective cause to an effect or an objective responsibility to an action). This 'relative' or 'subjective' meaning of αἴτιος, marked by a dative, is still found in later texts, although not as commonly as in the Homeric poems. Not only does the presence of this dative become rarer with time, but it should also be noted that it is progressively 'collectivised': the personal (often individual) pronoun of Homer is extended to the family, to the tribe, and finally to the city itself, following the evolution and development of early criminal law when the offense is over time no longer considered as merely 'personal' or 'individual' but as being of concern to the whole social group or city.[19]

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This 'subjective' element in the early uses of αἴτιος could, however, be understood in two different ways:

1. A first possibility would be (a) to consider that, in relation to the absence of genitive, the term αἴτιος underlines a moral 'quality' of the subject; and (b) to assume that, with the dative of person, the decision whether to ascribe a moral quality or not to a person is a subjective one ("in my eyes, you are a good man").[20] Ascribing such and such quality (or fault) to such and such individual would be "done only from the point of view of the speaker or of the one addressed by him" (Glucker 2011, 11). This would explain directly, without any theoretical reflections on the power of language, the very subjective meaning of the word, as used, for example, in Sophistic works: the guilt of Gorgias' *Helen* or of Protagoras' javelin thrower seems to depend exclusively on the point of view adopted by the skilled orator.[21]
2. A more radical reading, which I believe is more convincing in archaic texts, would be to consider that, originally, the one who is at fault, in one way or another, is 'faulty' or αἴτιος only 'towards someone else' rather than simply, as in (1), "judged to be faulty from the point of view of someone else".

This second possibility certainly makes more sense for later texts where the dative is applied to a group rather than to an individual (*supra* n. 19). But it is even clearer in the first occurrence of the word in the *Iliad* (1. 152–156):

> οὐ γὰρ ἐγὼ Τρώων ἕνεκ᾽ ἦλυθον αἰχμητάων
> δεῦρο μαχησόμενος, ἐπεὶ οὔ τί μοι αἴτιοί εἰσιν·
> οὐ γὰρ πώποτ᾽ ἐμὰς βοῦς ἤλασαν οὐδὲ μὲν ἵππους,
> οὐδέ ποτ᾽ ἐν Φθίῃ ἐριβώλακι βωτιανείρῃ
> καρπὸν ἐδηλήσαντ᾽, . . .

Classical translations rather insist on the notion of blame[22] and, for some, even seem to imply that Achilleus would be referring, among other things, to the responsibility of the war (see *supra* n. 22, Güemes 1996: "in my eyes, they are not responsible for anything"), which of course does not make much sense: Achilleus probably agrees that the Trojans were responsible – for *taking* Helen. But the following verses (154–156) appear clearly as an explanation of the οὔ μοι αἴτιοί of verse 152, which they actually paraphrase: the Trojans *didn't take or steal anything from* Achilleus (only from Menelas!); they never *took* his wealth,[23] nor did they plunder his land. A similar meaning appears implicitly a few verses later with the compound word ἐπαίτιος when Achilleus 'excuses' the heralds (1.335): "οὔ τί μοι ὔμμες ἐπαίτιοι"; only Agamemnon is, as he sent them *to take* Briseis from him.

Thus if one keeps in mind the commonly accepted etymological link to αἶσα ('share' or 'loot') and αἴνυμαι ('take'), αἴτιος could, at least in some early occurrences, not only mean 'to take a part' or 'play a part' in something – a meaning which (1) expresses rather a 'partial' 'responsibility', an idea which is rather found later in compound words like συναίτιος[24] and (2) should, in such a case, also be expressed by a genitive of the 'something' (action or situation) in which the agent is supposed to have played a part – but originally, more basically, and almost *materially*, 'to have taken a part *from* [someone]' (expressed then by a dative of person). This meaning, 'having taken a part that does not belong to one', appears quite clearly in the quoted passage of the *Iliad*: "they didn't take anything from me" – they didn't "take of my share".[25] Such is perhaps the more basic sense of the term.

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One may try to understand the earlier developments of the word by going further back in time. It can be assumed that the root *h1ai- is probably first 'given', or, at best, a reciprocal root of exchange (Rix 2001, 229); the meaning 'take' found in αἴνυμαι should come from a middle signification: 'to give to oneself'. The first, active, sense would be originally found in the

parent term of αἴτιος, namely αἶσα (the part given and received),[26] which would then have followed a different course, αἴτιος being rather related to the middle signification. A quick survey of the use of αἶσα[27] (the 'share', and quickly, already in Homer, the 'fate') shows that it presents, at times, similarity with the use of αἴτιος, but with a dative designating here the one to whom the 'share' 'belongs' *after* the 'exchange', that is, the one to whom it was given.[28] A genitive associated with αἶσα can designate thus the author of the 'gift' or of the 'distribution' (i.e., mostly, Zeus or the gods[29]), while the dative always refers to the one who receives it (it is the 'share' or 'gift' *of* X *to* Y, and thus by derivation, for us, the 'fate of Y [dative] according to the will of X [genitive]'). Thus one may conjecture that the dative designates with αἴτιος, the one *from* whom something was taken; and with αἶσα, the one *to* whom something was given. Now the use of personal pronouns in a dative form rather than a genitive is certainly not uncommon in Homer; but still I suggest that, in both cases, the dative should be construed here in its principal and 'original' sense, and in its original context in the process of gift and exchange,[30] in accordance with the etymology of both terms.[31]

The first evolution towards the notion of *blame* may then appear more clearly than in the conventional account that hinges on the construal 'play a part' or 'take part' in an activity. After all, to say that someone 'plays a part' in an activity implies a merely partial role for the agent and, on the other hand, links the term directly to *responsibility* but not to *blame* properly speaking – for one could be responsible for (i.e., take part in) a *good* action, a meaning which is not found with the adjective αἴτιος before Pindar (*supra* n. 13). The pejorative or 'negative' nuance of αἴτιος could perhaps be explained by the fact that it denotes an exchange which is not reciprocal and is not also a gift – a 'taken', rather than a 'received' or 'given'.[32] Once more, a contrast can be drawn with αἶσα: the adjective αἴσιος, derived from it and which appears as soon as Homer,[33] has on the contrary a positive sense from the beginning ('auspicious', 'favorable', 'of good omen').[34] The negative semantic charge of αἴτιος could also be linked to the last surprising characteristic of the term in the *Iliad* where it is used mostly[35] in negative propositions, as a denial of the αἴτιος.

This hypothesis on the archaic signification of αἴτιος finally allows us to answer some of the objections raised by those who emphasize the difficulties of (or cast doubts on) the meaning 'take part in an event', as it was recently expressed by Carlo Natali (2015, 103):

> Ce sens [i.e., 'take part in an event'] est lié à la notion d'*aisa*, partie assignée, qui a tant passionné les spécialistes de la pensée archaïque de ces dernières décennies. Il ne nous est pourtant pas encore clair si ce 'prendre part' implique aussi l'idée d'une efficacité productive, selon laquelle

> plusieurs agents peuvent prendre part à la réalisation d'un résultat, ou bien elle en fait abstraction. Dans ce cas, cette hypothèse pourrait rencontrer des objections, du moment que la victime du vol aussi prend part à l'événement 'vol', bien qu'elle n'en soit pas responsable.

In other words, it is difficult to see how 'being αἴτιος' evolved from 'taking part' in some activity to 'bearing the blame' for the situation that results. Since all parties to an event take part in it in some sense, the term αἴτιος will not serve to indicate which party is to blame for its bad consequences; so how could this signification have arisen? Our new focus, on αἴτιος referring to someone whose taking of a (shared) good is objectionable or who simply 'took more than his due', allows us to solve the problem.

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The evolution from this basic and material signification toward the moral or proto-judicial notion of blame and, later on, of responsibility in court is then fairly easy to perceive; the one toward the more abstract notion of cause is more remote, and it does in fact happen relatively late. But the negative charge of the term could only be eclipsed after so many evolutions that one can easily understand why none of the Presocratic philosophers was able to use, even metaphorically,[36] the adjective αἴτιος to characterize any of his principles. Certainly, the conflictual expressions of Anaximander – maybe the oldest words which can be attributed with relative certainty to a Presocratic philosopher – were acceptable for generated beings (6D6 LM=12B1 DK: διδόναι γὰρ αὐτὰ δίκην καὶ τίσιν ἀλλήλοις τῆς ἀδικίας), and it would have been possible for him to introduce an early judicial αἴτιος in the tryptic δίκη/τίσις/ἀδικία. But it was certainly more difficult, in other contexts, to claim that the Being, the *Noos*, the Good, the God, and so forth took 'more than his share' or to even imply that it was in a way 'blameworthy'. It was thus rather through political vocabulary[37] that the action of the main efficient cause had to be expressed, and through biological terminology the role of the originating causes.[38] Those expressions, drawn from a political or a biological semantic field, were not metaphorical, or poetical, but merely the only (and most obvious) tools at the disposition of those philosophers to express causality.

Besides, it was probably in a zone distant from philosophy – if such a determination of areas of knowledge can have any meaning in the archaic period – that the terminology for the notion of responsibility and also of cause was developed: in the judicial sphere, where it was obviously needed, used,[39] and reflected upon perhaps at quite an early stage – though this last hypothesis is impossible to prove before Gorgias' *Helen*; and in the medical field, where there was an evident need to find something 'to blame' for the

patient's condition,[40] perhaps even an unbalanced *repartition* or *share* of the corporeal elements.[41]

Admittedly, the formation and earlier significations of a term do not necessarily determine its evolution, nor can any of these be assumed to be the same as its significances in later authors – who were usually themselves unaware of those semantic developments. In the case of αἴτιος, however, it constitutes the starting point for all later reflections, in the Western world, on the crucial notions of cause and responsibility – that is, in general, the starting point for all thought and practice of both science and justice. In this respect, and apart from purely philological interest, it may have a special importance in the history of ideas.

Notes

1 I would like to thank André Laks for his comments on an earlier draft, Simon Langford for revising the text at various stages of its development, and especially both Markus Egetmeyer for our enlightening exchanges on some linguistic points and Doug Hutchinson for his careful reading and corrections on the final version of this article.

2 *Il.* 10.120, 11.78, 11.654, 13.775, 16.202.

3 In Pindarus (*Ol.* 1.35, *Nem.* 7.11), Aeschylus (*Eum.* 679, *Sept.* 4, *Choeph.* 1031), Sophocles (*Ant.* 1312).

4 Aesch. *Choeph.* 68, 836. I don't include the text of Sappho fr. 67a, 6 Lobel & Page, which is too fragmentary to draw any conclusions from, nor of course, in general, the (often Aristotelian) reformulations of Presocratics' theses found in their "fragments". A substantive *masculine* is found however as soon as Archilochus fr. 26, 5–6 West: ἄναξ Ἄπολλον, καὶ σὺ τοὺς μὲν αἰτίους πήμαινε καί σφας ὄλλυ' ὥσπερ ὀλλύεις ("You too, lord Apollo, bring ruin upon *the guilty* and destroy them as you do").

5 Arist. *An. Post.* 76a20, 98a36, 98b3, *Metaph.* 1065a11, Eudemus fr. 32.17, 116.4 Wehrli, Alex. Aphr. *In Met.* p. 73.16, 74.6, 148.8 Hayduck, etc.

6 Referring to something of 'select' or 'choice' quality: *Il.* 12.320; *Od.* 2.307, 5.102, 19.366.

7 And from there, like μοῖρα: the share of fate, the fate. For those basic elements, see Chantraine (1965), Chantraine (1965) and Frisk (1954–1972), *s.v.* αἴτιος, μοῖρα, αἶσα.

8 Only in the *Odysseus*: see 17.222, 228, 346.... The verb is found anew, later, in Aristophanes, *Pax* 120–121: δοξάσαι ἔστι κόραι, τὸ δ' ἐτήτυμον ἄχθομαι ὑμῖν, || ἡνίκ' ἂν αἰτίζητ' ἄρτον πάππαν με καλοῦσαι. "You may guess, girls, but if truth be told, you annoy me whenever you ask me for bread" (tr. Henderson 1998). On the parallel derivations in -ίζω and -έω, see Chantraine (1948, §158, 339–341).

9 αἰτέω appears with different preverbs (ἀπ-, ἐξ-, ἐπ-, μετ-, παρ-) that signify 'to ask' with all possible nuances, but also 'to refuse', 'to renounce/give up one's share' (παρ-) or 'to excuse'.

10 For parallels with the Latin *causa*, see Ernout and Meillet (2001, 108a–b, *s.v. causa*). It has been recently argued that this primitive meaning of the term

should be kept further than generally admitted in order to fully make sense of later texts: Darbo-Peschanski (2015); see Pepe (2015).

11 For the early evolution of the notion of cause (rather than simply of the word *aitios*), see, for example, the first general chapters of Hankinson (1998) or the very complete presentation of Vegetti (1999); in general, see the whole special volume of the journal *Mètis* (2015) on *Aitia* (especially for the judicial and philosophical part), of which I quote directly only the most relevant contributions for my immediate purpose.

12 Ebeling 1885, 58b, *s.v.* αἰτιάομαι: "*obiurgo, culpo, expostulo cum quo*"; 58b *s.v.* αἴτιος: "*obnoxius, qui effcit ut alter in malum inciderit*"; 117b, *s.v.* ἀναίτιος "*culpa vacuus, qui non commisit crimen*". See Cunliffe (1963, 14b–15a) and Snell (1979, 388–390).

13 A neuter or positive use of the term is found in later texts, possibly as soon as Theognis (ambiguous in *El.* 1.133–134: Οὐδείς, Κύρν', ἄτης καὶ κέρδεος αἴτιος αὐτός, | ἀλλὰ θεοὶ τούτων δώτορες ἀμφοτέρων·) and clearly from Pindar onwards (*Pyth.* 5.25; with αἰτία, *Nem.* 7.11); see also Bias (6.10.3 DK [I, p. 65.9–10]=3T35.6.15 LM) where αἰτιάομαι cannot possibly mean blame or accuse (=Dem. Phal. *in* Stob. 3.1.172: ὅ τι ἂν ἀγαθὸν πράσσῃς, θεούς, μὴ σεαυτὸν αἰτιῶ). However, the negative connotation of the term stays preponderant, especially in both Sophocles and Aeschylus.

14 See, however, Glucker (2011).

15 Once in *Od.* 22.48, with πάντων, which may, in truth, reinforce the general character of the qualification.

16 Glucker (2011, 11) noted it nicely as "in Aristotelian terms, ποιότης or ἔχειν rather than πρός τι", quoting Eustathius: αἴτιος παρ' Ὁμήρῳ λέγεται ὁ αἰτιατέος καὶ ὑπὸ μέμψιν καὶ αἰτίασιν κείμενος (Eust. *ad Il.* 70.14 – *ad. Il.* 1.153, p. 59.41–42 Stallbaum); see Snell (1979, 388) for the other definitions of the term in Eustathius.

17 This first element already casts doubt on the signification 'take part' or 'play a part' in some activity or situation, which seems to call for a more explicit expression of the situation 'in which' the agent may have played a part or not. See Glucker (2011, 10) for examples.

18 1.153; 1.335 (with ἐπαίτιοι); 3.164–6 (twice); 19.410; 21.275; 21.370.

19 Gernet (2001, 369): "désignant l'individu poursuivi par la famille" and *idem*, 368: "c'est un terme *subjectif* normalement accompagné du datif de la personne collective ou individuelle pour qui l'on est *aitios*" (see *Il.* 1.335; Hes. *WD* 827; Lysias 13.41, 49). This kind of construction and meaning continues in fourth-century orators, where it can apply, as in Lysias 13.33, to the whole city: ὡς τοίνυν ἁπάντων τῶν κακῶν αἴτιος τῇ πόλει ἐγένετο. The evolution seems to be, in general, toward a 'collectivization' of the blame: individual, family–*oikos*, and finally, as in Lysias, the whole city. Compare, for example, with Finley (1954, 77): "Many primitive societies are known in which it is not possible to find any 'public' responsibility to punish an offender. Either the victim and his relation take vengeance or there is none whatsoever. The growth of the idea of crime, and of criminal law, could almost be written as the history of the chipping away of that early state of family omnipotence [. . .]. Homicide, as the most obvious example, remained largely a private affair."

20 This reading is sometimes implicitly adopted by translators, when they do translate the dative; for example, on *Il.* 1.335 (μοι ὔμμες ἐπαίτιοι) from Benner (1903, 231) (μοι: "in my sight") or Murray (1924) ("who are guilty in my sight") to Alexander (2015) ("in my eyes"); see however

Mazon (1937): "Vous ne m'avez rien fait". This is a perfectly normal use of the dative (Kühner §423.18b [1898, 421]): "Der Dativ lässt sich oft durch 'nach dem Urteile, in den Augen jemandes' übersetzen" and (*idem*): "Mit ὡς, wodurch mehr hervorgehoben wird, dass die ausgesprochene Handlung eben (gerade) nur für die genannte Person Geltung habe; ὡς dient nur dazu, die subjektive Beziehung von der reellen zu unterscheiden." Because of the use of personal pronouns in our cases, it may appear close to a 'simple' ethical dative, but see Chantraine II. §93 (1953, 72; see §92), Humbert §480 (1960, 288), Goodwin §1171 (1900, 248) and van Emde Boas *et al*. §30.52 and 53 (2019, 380) for the difference.

21 Protagoras 80A10 DK=31D30 LM; Gorgias 82B11 DK=32D24 LM.

22 "Car, enfin, ce n'est pas à cause de ces Troyens belliqueux que je suis venu, moi, me battre ici. A moi, ils n'ont rien fait. Jamais ils n'ont ravi mes vaches ou mes cavales" (Mazon 1937); "Car enfin, si je suis venu lutter ici, moi du moins, ce n'est pas par haine des Troyens. Que m'ont-ils fait à moi? Jamais ils n'ont ravi mes bœuf ni mes chevaux" (Flacelière and Bérard 1955); "Si je me bats ici, les Troyeurs porteurs de la lance, qui, à moi, n'ont rien fait de mal, car jamais ils ne m'ont volés mes chevaux ou mes vaches" (Brunet 2010); "Les Troyens porteurs de lance ne m'ont pas obligé à venir ici pour faire la guerre. Ils n'ont aucun tort envers moi. Jamais ils n'ont emporté mes bœufs ou mes chevaux" (Judet de la Combe 2019); "Against the Trojans I no quarrel have. In Pthia plund'ring they were never seen, Nor ever thence my kine or horses drave" (Hobbes 2008); "I came not hither to fight by reason of the spearmen of Troy, seeing they are not whit at fault toward me. Never harried they in any wise my kine or my horses" (Murray 1924); "I didn't come here to fight because of the spearmen of Troy, since they are in no way at fault toward me. Never did they drive off my cattle or my horses" (Murray rev. Wyatt 1999); "It wasn't the Trojan spearmen who brought me here to fight. The Trojans never did me damage, not in the least, they never stole my cattle or my horses" (Fagles 1990); "I did not come here on account of Troy's spearmen: why should I fight them? In no way have they ever wronged me. Never have they driven off my cattle or my horses" (Green 2015); "For it was not on account of Trojan warriors I came to wage battle here, since to me they are blameless – never yet have they driven off my cattle, or my horses" (Alexander 2015); "Non sono venuto qui a combattere a causa dei Teucri, a me nulla hanno fatto; non mi hanno rubato né buoi né cavalli, non mi hanno distrutto il raccolto nella fertile Ftia" (Ciani 1990); "Quanto a me, lo sapete, non venni qui a battagliare per odio contro i Troiani valorosi: essi non hanno, nei miei riguardi, colpe. Mai una volta, vedete, razziarono le mie mandrie di bovini e cavalli né mai saccheggiarono i raccolti a tia, là nella mia terra dalle larghe zolle" (Tonna 1973); "No he venido yo por culpa de los troyanos lanceadores a luchar aquí, porque para mí no son responsables de nada: nunca hasta ahora se han llevado ni mis vacas ni mis caballos" (Güemes 1996).

23 For cattle as a usual measure of value, see Finley 1954, 65.

24 Aesch. *Ag*. 1116 (first occurrence, ξυναιτία φόνου); Antiph. (or.) *Tetr. 2* 4.6, l. 4; Isocr. *Antid*. 96, 2, . . . etc. See however Darbo-Peschanski (2009; 2015, 34–35) for a defense of an "acte réparti" in the *Iliad*.

25 If such is the case, Mazon (1937, see *supra* n. 22)– who does not actually translate *aitios* – is probably closer to the meaning intended: "À moi, ils n'ont rien fait" (see also Judet de la Combe 2019, *supra* n. 22). The hypothesis is not *refuted* by later occurrences of the term in the *Iliad*, though it may appear then less clearly. In any cases, I do not deny that the perfectly understandable shift to a more general notion of 'blameworthy' already happens in Homeric poetry.

26 For αἶσα understood as "gebührenden Anteil" ("An diesen Stellen [i.e., in the *Odysseus*] ist der Mensch derjenige, dem etwas gebührt"): Krause (1936, 145–146) (for μοίρα, see 147–8). For the hypothesis αἶσα as 'equal part', see Wilamowitz-Moellendorff (1931, i. 358) and Bianchi (1953, 1–10), but see Dietrich (1965, 339–340). For its link to αἴνυμαι and more generally: Chantraine (1965) and Frisk (1954–1972), s.v. αἶσα.

27 For a comparison and a (later) division between a 'human' *aitia* versus a 'divine' *aisa*, see the discussion in Jaeger (1966, 82–86); see Pfeiffer (1929, 146–148); with a similar idea, implicitly, Vernant (2007, 1130).

28 *Il.* 1.416, 16.707, 24.224; *Od.* 5.113, 5.206, 5.288, 7.197, 13.306, 14.359, 15.276 (often in the form α. <ἐστι> τινί). This has been noticed by various scholars: αἶσα "is commonly found in Homer with the dative of the person whose destiny is in question" (Roberts 1984, 257 n. 9); see Bianchi 1953, 24–25 and 21: "la persona cui si riferisce il destino (espressa solitamente in dativo)." In general, for the various uses of the word: Snell 1979, 372–373.

29 For example: *Il.* 9.608 (Διὸς αἴσῃ), 17.321 (ὑπὲρ Διὸς αἶσαν), *Od.* 9.52 (Διὸς αἶσα), 11.61 (δαίμονος αἶσα). The genitive can also designate *what* is 'distributed' – when αἶσα is *not* the fate: λῃΐδος (*Il.* 18.327, *Od.* 5.40, 13.138), ἐλπίδος (*Od.* 16.101, 19.84) – but never the one to whom it is 'distributed'.

30 See Chantraine II. §85 (1953, 67–68): "Le datif proprement dit, comme son nom l'indique en grec même, est associé à l'idée de donner et s'emploie essentiellement en parlant d'une personne. Il est également associé à l'idée opposée et symétrique de retirer, ôter." When used with verbs meaning 'taking from' or 'removing': "Le datif exprime mieux que l'accusatif ou le génitif l'intérêt de la personne qu'on prive de quelque chose [...]. En cette fonction, le datif qui exprime l'attribution peut se rapporter à un nom."

31 Another possibility, suggested to me by Markus Egetmeyer, would be to understand more directly something like "they didn't give to me <any reason for acting against them>" in the sense "they didn't do anything to me", but the signification of the term seems to me then less immediate, and its evolution less intelligible.

32 This would lead us into general anthropological considerations which are not in the scope of this paper. However, compare to the research on di:domi, which in Mycenaean seems to signify 'to pay or "give" *one's dues*' (see Aura Jorro 1985, 171 *s.v. di-do-si* and Duhoux 1968), or to the complex question of ὀφέλλω (Lamberterie 1992).

33 Only once in *Il.* 24.376. For αἴτιος/αἴσιος, see Schwyzer (1934, 270).

34 It becomes negative only with prefixes: ἐξ-, excessive and thus "outstepping right, lawless" (*Od.* 4.690), or παρ- ("of ill omen"; *Il.* 4.381).

35 Three 'exceptions', which do not, *in their context*, contradict this general statement: 3.164 (following a first denial of the *aitios* of another agent: οὔ τί μοι αἰτίη ἐσσί, θεοί νύ μοι αἴτιοί εἰσιν; *idem* 1.335 with ἐπαίτιος); 13.111 (as a pure hypothesis, in a conditional clause: εἰ δὴ καὶ . . ., 'even if . . .'); 15.137 (in opposition: ὅς τ' αἴτιος ὅς τε καὶ οὐκί); *idem* in the *Odysseus*. ἀναίτιος, which appears only three times in the *Iliad* and twice in the *Odysseus*, is of course used in affirmative propositions. This unbalanced proportion is general in epic poetry (Snell 1979, 388): "überwiegend mit Neg. (doch oft in Antithese), also aus der Verteidigungsposition". My thanks to Margaret McCabe for pointing out to me in the texts of my handout this important characteristic – to which I didn't pay attention at first – during the conference held at the University Panamericana in 2018.

36 If we exclude the Sophists and the doubtful titles attributed to Democritus (68A1 DK=27D2 LM) – who may plausibly have used the term in the late fifth or early fourth century BCE – the word itself does not appear in the *fragments* of the Presocratics, only in the testimonies or paraphrases by posterior writers who apply a later (and essentially Aristotelian) vocabulary to earlier thinkers who obviously didn't have it at their disposal.

37 ἄρχω (Parm. 28D14a LM=28B12 DK), κρατέω (Anaxag. 25D27 LM=59B12 DK; Emp. 22D73.260 LM=31B17.29 DK), κυβερνάω (Parm. 28D14a LM=28B12 DK, see D15a=A37; Heracl. 9D44 LM=21B41 DK; Diog. Apol. 28D10 LM=64B5 DK), αὐτοκρατής (Anaxag. 25D27 LM=59B12 DK), etc.

38 Anaxagoras' "seed" or Empedocles' "roots", see Laks (2022).

39 Already in Gortyn law code: G72.2.53, 54–5 Gagarin and Perlman (2016, 350–351) and G80.15 Gagarin and Perlman (2016, 440) with αἰτία; see Maffi (2015).

40 On medical vocabulary and αἰτία as 'disease', see Bickel (1935) and Björck (1936).

41 See Alcmeon of Crotone (23D30 LM=24B4 DK), who talked of the equal share (*isonomia*) of the powers of the body as health, in opposition to the *monarchy* of one as disease.

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2 What Good Is the Form of the Good?[1]

Mary Margaret McCabe

The Simple-Minded Answer and Ultra-realism

'The beautifuls are beautiful by virtue of the beautiful' (*Phaedo* 100d7–8).[2] This, the 'simple- minded answer', suggests a realist view of such properties: that they are objective features of the world with an objective causal structure.[3] 'The beautifuls' on such a view are in fact beautiful; but they depend for their beauty on something else, 'the beautiful', the form of beauty, which is not one of 'the beautifuls', but which is responsible for the beauty they have.[4] When we seek to explain beauty in the world, the safest answer we can give is to cite the form, by virtue of which beauty is in the world. This answer is safe because it is formally dependable (it is always true of the beautifuls that they are beautiful by virtue of the beautiful); but it is not banal or trivial (nor a mere repetition). For when we do cite such a form, we appeal to something which has independent existence, both from its instances and from our having it in mind when we cite it as responsible.[5] The same kind of safe answer can be given both for relational properties (such as equal or same) and for evaluative properties (beauty or goodness): in each case there are properties, in the sensible world and belonging to their bearers, and forms, independent of the sensible world to account for them.[6] If this is what we should say about goodness, then, goodness too has this kind of real structure: its instances are real features of the world, and its source is real too, a transcendent item,[7] the form of the good. 'The goods are good by virtue of the good'.

Talk of sources and responsibility covers up a long-standing dispute about what kind of account this is: is it an analysis of causation, to show what causes what when it comes to relations and values?[8] If it is, our own assumptions about causation may get in the way, for the simple-minded answer seems, first of all, to range more widely than the push–pull that is characteristic of our own pre-philosophical assumptions about causation; and it seems to describe the relations between individuals, rather than something more broadly understood as an event.[9] Or should we see it

DOI: 10.4324/9781003306450-3

rather as an explanatory account, ranging more widely than our expectations for causation, and focussing on the structures of explanatory reasoning, reasoning which may include something about causes but which may not itself do any causing? In that case, realist commitments might get in the way of an explanatory function (e.g., those commitments might demand explanation in their turn[10]) and so turn out to be too heavy for good explanation. Or do we have here something far more complex: an account of the constraints on causal explanation (expressed by the odd simplicity of the simple-minded answer) and then a second ('cleverer') account of how this set of explanatory principles would generate particular causal claims (such as the way that the heat of fire causes something else to be hot)?[11] I shall not here seek to resolve these questions, but rather to consider why they are unresolved.[12] Indeed, as I shall argue, the presentation of the distinct 'answers' of the *Phaedo* matches a complexity of the *Republic*'s account of goodness and helps to repudiate an apparently crass version of 'the goods are good by virtue of the good'.[13]

These vexed properties[14] are not – I have suggested – mere appearances, but real properties of the things that have them. What does that reality involve? I shall consider two different ways of thinking about this.[15] On one view these real properties are (as I shall say) unmediated – a view that gives rise to what I shall describe as 'ultra-realism'. On the other view, these properties are mediated in complex ways without losing their claim to be real. I shall argue that the unmediated version, ultra-realism, is problematic for Platonic accounts of the good. Instead, I shall argue that mediation fits far better with the account of goodness in the *Republic*. Ultra-realism, I shall conclude, is not how we should understand the *Republic*'s account of causation and explanation.

On the simple-minded answer, equality and other relations and goodness and beauty and other values may be unmediated properties of their possessors in the world.[16] Just as the stick is real and objective, irrespective of its relations to other things (it is, we might think, just out there), so too is the property of equality it has. Like their source, on such a view, these properties will be actual; they will be mind-independent and objective, the unmediated product of whatever causal relation exists between the equals and the equal, or the beautifuls and the beautiful and so forth. (This does not, of course, tell us anything about perfection, nor does it insist that every object in the world out there has properties only defectively[17]). What of goodness, the good, and goods? If values were unmediated real properties of objects in the world, there would be no categorial difference between something's being square, or over there, or pink, and its being good. But goodness and beauty would have an extra feature, all the same: for good things and beautiful things are attractive, valuable, desirable and so forth. We would have positive attitudes towards them, on an unmediated view,

just by their very nature (this might be no different from thinking that heaviness is unmediated but that heavy things have an extra feature, a tendency downwards in normal gravitational circumstances). So goods and beautifuls would be valuable, worth having, acquiring, keeping, aiming at and cultivating. If goodness is like that, perhaps our interest in goodness would be determined by the things that are good: that is, our appetites and desires would be fixed by what they are appetites and desires for.[18] This might then slip into a further thought that all there is to our appetites and desires would be their attraction to the good; and what it is for things to be (really) good would be for us to so desire them (this relational feature of goodness may be, on any account, a vital part of how value works).[19] So – we might think if we are un-mediators – the pursuit of goods would be determined by its object, and our moral psychology likewise.[20] This might lead to a psychological claim (we do in fact pursue all and only goods) or an ethical one (we should in fact pursue all and only goods).[21] Either way, if the role of 'good' is to explain how we engage with this valuable world, it might best be expressed in terms of causation: the goods out there make us want them. (Some such account as this is mounted by Socrates in the name of hedonism in the latter stages of the *Protagoras*.[22] Plato is, that is to say, sensitive to the structure of such a view.) This is (I shall say) an ultra-realist view of the nature of evaluative properties: and its crassness lies in its devaluation of the role of moral psychology in ethical explanation.

Ultra-realism, furthermore, encourages the thought that evaluative properties, like other features of objective reality, can be discerned, picked out by a kind of intuition, perhaps, or by moral perception.[23] Experience may show us that these properties are more tricky to pick out than, for example, first-order perceptual properties like colour or flavour, but still we might hope to develop a kind of expert recognition, which would allow us to figure out where the good of things lies.[24] This then leads to a particular kind of intellectualism: doing well is getting things right about goods, being successful at good acquisition; and failure is just a matter of mistake or sheer ignorance.[25] In what follows I shall suggest that ultra-realism cannot explain the subtlety of the *Republic* on the good. Instead, I argue, the *Republic* offers instead a far more nuanced realist account.

The Choice of Lives

If the central question for ethics – as Plato construes it – is 'how best to live?', ultra-realism will, of course, cast this in objective terms. What then is it for a life to be the best a person can lead? The question dominates the *Republic*[26] as part of the challenge offered by Glaucon and Adeimantus in Book 2, that Socrates explain the difference between the lives of the just and the unjust person, and show how 'it is better in every way to be just

than unjust'.[27] Ultra-realism might respond first with a kind of evaluative monism (goods thus described are comparable and even simply commensurable), and then a maximising view: the best life is one which contains the most goodness.[28] Then a life may just be what it contains, constituted by the actions and acquisitions it includes: so the best life will be the one which contains a maximum of goods. Perhaps to lead a life is to do that maximising (supposing that we can somehow discern the good), so that our appetites either will be, or should be, focussed on the maximising of goodness, and our deliberative choices will be evaluated according as they succeed. The right way to live a life will be determined by such intellectualist considerations and the contents of the life in terms of the maximisation of the goods in it (once again this is a model we find in the *Protagoras*).[29]

How does that then conceive the leader of the life, the just or unjust person? And how does this work as an account of a life over and above its contents, an account of a life rather than some arbitrary segment of time? If ultra-realism is true and any such good is commensurable with any other, then what it is for a life to be good is either for the goodness of the life to be the sum of its contents (so that the best life will be directly the one with the most goods in it); or for the goodness of the life to be an addition to the sum goodness of its contents (so the goodness of a life is another good, included in the sum of the goods in it); or for the goodness of a life to be able to compete with the goodness or otherwise of its contents (so the goodness of a life could be such that on its own it could outweigh the sum of its contents). But the second and third options get complicated: if goods are commensurable and the goodness of a life is not determined by its contents, what are we to say of the competition between the life of someone whose life is good with no (other) goods, and the person who has all the goods she may want, but not a good life?[30] If the question 'how best to live?' is to tell us anything different from the question 'why should I do this now?', then the account of the best life, in ultra-realism, must compute.[31] So for any meaningful response to the challenge about how best to live, what we say about the leader of a life, and whether she leads it well, must somehow fit with what we say about the contents of her life.

Goodness and the Form of the Good

Ultra-realism on the account that I sketch above, thus has four distinct features:

- Goodness is an objective unmediated property of the world, whose source is itself objective, a non-physical, mind-independent form (the metaphysics of it).

- The property of goodness is discernible (even if with difficulty) by an advanced expertise (the epistemology of it).[32]
- Goodness in things is what determines our pursuit of those things (the psychology of it).
- Good things are commensurable, and the best life maximises goods (the ethics of it).

Is ultra-realism the right account of the extended response to the challenge offered in the *Republic*: that Socrates show that in the choice of lives the life of virtue always wins? This would commit him, after all, to showing that virtue and the virtuous life in fact always turn out to be better than any competitor life, no matter how many goods the competitor contains, or how few the life of virtue, apart from itself.

Such a naïve account of goodness is vulnerable to various objections: from obviousness (there are no such manifest properties in the world);[33] from psychology (our attitudes are not simply determined by their objects);[34] from morals (the measuring/maximising account of moral action is loathsome);[35] and from politics (the idea that there are moral experts is politically dangerous).[36]

But I shall focus here on how Plato's account of the causal structure of the form of the good is variously underestimated, despite the way that the discussion of it is framed in the *Republic*. Reflection on this, I shall suggest, may lead us to think rather differently about Platonic realism: not to reject it, after all, but to modify it in ways that change how we should think about a life.

However we think about Platonic realism, if the goods are good by virtue of the good, there are questions to be asked about the good itself, the form of the good, which seems to loom large at the centre of the *Republic*. What good is the form of the good? Is it some item in the contents of the best life, and if so, how?[37] If the good is good like this and if goods are computable, is the form of the good better than other goods? If we have the form of the good (whatever it would be to 'have' it), do we need anything else to live the good life? Or is it good in a different sense, as the source, or essence, or nature of goodness, rather than as one of its own explananda?[38] Does this introduce a distinction among goods (between, for example, final goods and intrinsic ones)?[39] If the form of the good is not merely a good but what is signified by 'the what it is to be good', is that worth having, or knowing, or accessing? If it is, is the point of accessing it instrumental, for the sake of some other good, or is it worth knowing in itself? What would that even mean? Is there something quite strange and obscure in this good, figuring as the detached source of the familiar items that we value and aim our lives towards?[40]

Ultra-realism might suggest that the form of the good is itself a good, which transmits goodness to all the other goods.[41] So the form of the good

would have a role in the best life as a good like others, so as a final good. This is an account of causation, but it is vulnerable to the challenge Glaucon lays down: even if the form of the good is good, so that possessing it, or accessing it, adds to the sum of goodness in a life, does its presence in a life outweigh everything else? Why would this be true? Is this not a tendentious way of insisting on the role of knowledge (and knowledge of the form of the good) in the best life as a means of 'having' the good?[42] Conversely, if the good, in the *Republic* at least, is better understood as the source of goodness, as somehow intrinsic rather than final, it is hard to see how that intrinsic goodness would be suitable also for transmission to other goods; and if not, just how is the transmission secured – if indeed we think causation depends on the property's being transmitted from like to like. Then we may need a different account of how the form of the good has a role in the explanatory structure of goodness; and that role needs to have some contribution to make to Socrates' response to Glaucon and Adeimantus' challenge. But something that is the 'what it is to be good' seems thoroughly alien to the items we might include in the life best lived.[43]

Causes and Explanations

Return to the simple-minded answer of the *Phaedo*. If a cause is what makes something happen, an explanation is what makes us see what makes something happen (it shows us why it happened). We might think that the distinction between cause (out there in the world) and explanation (in the minds of people seeking to understand) shows up in a purely metaphysical difference: causes are out there, explanations are in here in people's heads.[44] Or we might think (quite differently) that where causes are particular to the events in questions, explanations are general and lawlike.[45] Or we might think that causes are events or things, and explanations are propositions or sentences (and that, additionally, sentences or propositions are not things in the way we expect from causes).[46] So the distinction between causation and explanation may have a metaphysical corollary: causation actually occurs at the level of the particular, explanation at the level of the general, and once again does not belong in the ordinary world, rather in abstracto or in minds or within a body of knowledge. But matters are not so simple, for several reasons, and they are not so simple within the Platonic account of causation, or explanation, or whatever it is.[47]

Suppose we agree (in a pre-Humean mode) that causes are things that do things (rather than, in the post-Humean mode, that they are concatenated events with a definite temporal sequence).[48] Explanations seem then to be non-real, in the sense that they are items of language or of cognition, rather than pieces of worldly furniture. But explanations do have a curious feature

that assimilates them to causes: if I say that I have explained something to you, my claim is determined by its success (just as causes cause just when the effect happens).[49] If I claim to explain something to you and you insist that you still don't understand, then not only did you fail to understand, but I failed to explain. If I do explain, then I succeed.[50] An explanation is thus not any old description of something that happens; it is a description that captures what happens or how or why, successfully (it doesn't follow from this, I think, that explanations need to be literalist, since at times a story or a metaphor does as good a job of explaining as a literal description: explaining to me is getting me to see something). Explanations are what they are, that is to say, only if the recipient gets them.

And this feature of explanation connects to some epistemic states of the explainee (if I may be forgiven such a barbarism) – understanding, realising, seeing, recognising, knowing, and so forth. So explanations, we might think, cannot occur in unpeopled worlds absent to thought (as opposed to imagined worlds, or unpeopled worlds that we seek to explain to each other); and cannot occur without some relation between explainer and explainee.[51] Explanation has a strong epistemic constraint, and that in turn is tied to a commitment to there being an explainee, actual or potential, in place. (Do explanations on paper have an explainee? Here, surely the explainee is potential, but until the explanation is realised, the claim to explain is not yet justified).[52]

All of this suggests that the business of explaining needs some rules or conditions: after all, when we are doing the (putative) explaining, we don't yet know (as we don't know when we are putting pen to paper for the first time) whether it will work on whoever is its target audience.[53] That is why explanation has affinities to argument, to deduction and to laws;[54] because these aspects of thought condition the possibility that it will succeed, they show the shapes of explanation, the ways it might be hoped to work.[55] And that too is why explanation goes hand in hand with various bits and pieces of epistemology – with science, of course, but also with logical structures, and also with the epistemic modes of both explainer and explainee: the explainer is trying to explain, going about explaining, succeeding in explaining (so this can be a long and circuitous process) at the same time as the explainee is trying to be properly receptive – in short, trying to understand.[56] The epistemology of explanation, that is to say, comes with two sides: the states, dispositions, activities and outcomes on the side of the explainer, and the strivings, attitudes, potentialities and successful understanding of the explainee. And all of this may go hand in hand with a complex methodology of explanation.

Equally, we might think that explanation would be well served by a careful account of how explainable items interrelate (e.g., by means of causation). This might work best when what we end up calling 'causation' is

ample and plural. It is often complained that Aristotle's four causes are not causes at all, because his account is intended to offer an exhaustive explanation of what there is in the world and how it happens and how its underlying structure can be revealed.[57] But the complaint misses the project, of a full explanation of everything, and is unnerved by the idea that this might be described in terms of causation (after all, causation is frequently associated with change, from which some of the items in Aristotle's metaphysics are exempt). Hence the move to bring in something about explanation (since explanations, for example, can cite things that have not happened yet);[58] or to talking about Aristotle's four 'becauses'.[59] But that move may be resisted, since the point of Aristotle's remarks about 'because' is that the world really is structured like this, and the sentences that describe it do in fact pick out what is there. Sometimes this might encourage us to think, rather, about 'real explanations';[60] but that strategy, I now think, misses out something important. I suggest, instead, that in the extensive discussion in Plato, the complex relations between causation and explanation are monitored and exploited to intertwine epistemology with metaphysics. This has a payoff in the *Republic*, to give us a far richer account of the good than ultra-realism imagines. He uses a varied vocabulary in talking about causation and explanation – the terminology of causation or responsibility (so *aitios* and its cognates[61]); the causal dative (e.g., 'by virtue of');[62] and a collection of verbs that describe making or bringing about or bringing along.[63] This elaborate language is no mere accident; and it is not the case these different expressions all describe the same thing indifferently. Instead Plato seems to be using expressions with care and deliberation to make a complicated point.[64]

The *Phaedo* account features the substantive expression *aition*, more easily used of what we would call a cause; especially (as I remarked above) if we think of causes as individual things. It is supplemented by the expressions *aitios* and *aitia* which, as commentators regularly point out, are commonly used in non-philosophical texts to describe cases where individuals are held legally responsible,[65] where the charge against them is cited,[66] and where the action of holding someone responsible is done by some other body, official or otherwise.[67] But this last feature – the role of, as it were, the accuser – is largely left unconsidered in the literature. I shall suggest that this is an omission that matters. Its significance begins in the simple-minded answer of the *Phaedo* but becomes important in the *Republic*'s account of the form of the good. For here the argument turns on a variety of cognate *aitios* expressions, on claims about what makes/causes what and, as in the *Phaedo*, on a discussion of how we account for things or explain things to each other (507b–509c).

The Sun and the Good

In the *Republic*'s central books, the discussion of causation – the role of the sun in the physical world and the role of the form of the good in the intelligible world – is part of an extended discussion of the 'third wave': how the philosophers may rule (472a–541b). It takes in, therefore, questions of epistemology and ethics, politics and education, as well as the metaphysics of causation. This wide context is important to the account of the form of the good, to which I turn.

Socrates begins with the 'offspring of the good itself' (507a3), an extended image of the ways in which our perception of the sensible world is accounted for by the sun. The passage (507b–509c) is carefully structured. It is framed by an image of a debt owed by Socrates to his interlocutors, Glaucon and Adeimantus, whose interest alone he undertakes to pay, warning them lest he might cheat them in doing so.[68] At the close of the discussion, the financial idiom returns, as Glaucon describes the good as offering a 'divine excess' (509c1). But the idiom of payment and the liability for interest overlaps with a different set of ideas, the payment of a judicial penalty: where repayment is punishment for a crime.[69] It may, then, come as no surprise that Socrates responds by holding Glaucon responsible (*aitios*: 509c3) since it was he who demanded that Socrates say what he thought about goodness.

The excess is an excess not only of the goodness of the good, but also of the account itself, and the language of responsibility and liability shifts from the causal account within the frame to its explanatory role outside. But this echoes the play on the vocabulary of causation, explanation and responsibility throughout the passage. It begins with a discussion of the extraordinary way the maker of the senses made the capacity of seeing and being seen (507c). Socrates observes that in the case of sight, unlike the other senses, there is an additional enabling[70] factor: for without the light, what is visible cannot be seen, what is able to see is unable to do so (507d10-e1).[71] This constitutes a 'yoke' between the sense of sight and the capacity to be seen, which 'yokes them together by a yoke that is more valuable than any other yoking together' (508a1–2).[72] Which, Socrates asks, 'of the heavenly bodies would you hold responsible (*aitiasthai*) as the authority (*kurios*) over this, whose light makes us see as finely as possible, and what is seen, be seen'? The answer is, of course, the sun: and here it is implicated in a highly complex structure of causation: we have faculties to see even when we do not do so (our faculties, rather than their objects, are the focus of attention throughout the passage[73]); what is seen has the capacity to be seen even when it is not seen; the yoke is assured by the light,[74] which is itself made effective by its source – the sun. And this

source, moreover, provides generation, growth and sustenance to the visible world, even while it is not generation (509b).

This elaborate set of causal relations in the visible world is striking and emphatic: there are distinct relations between the sun and its light, the light and visibility, visibility and vision, the sun and vision, and the sun and the working of the visible world. And much of the account is framed in modal terms: by talk about faculties, capacity, enablement, and so forth. This is far from a simple-minded answer to a question about causation.

The analogy between the sun and the good is cashed with similar elaboration, comparing the relations[75] between the visible world and its causal structure and the intelligible world and its intelligibility:

- First, 508d3–9, the soul and its relation to what it knows: 'On the one hand, when the soul focuses on what truth and being illumine, then it successfully intelligises and knows it and it appears that it has intellect. But when [it focuses] on what is mixed with darkness, what becomes and perishes, then it believes and is dimmed, changing its opinions backwards and forwards, and seems like someone without intellect.'[76]

  (508d3–8)

This passage, illuminated by visual language, is notable also for its careful tripartite comparison between the good intellectual state of the soul and a poor one: first between its focus in either case (what is illumined by the truth, what is dark); second between what we might call the intellectual event (knowing or believing); and third between a broader account of the soul's intellectual disposition (having intellect, seeming like someone without intellect). The two tricola, if we read them in ascending order, suggest that the fundamental issue here are the different dispositions of soul; I shall return to why that might be significant.

- Second, 508d10–509a10, the double provision of the form of the good: it provides truth for what is known, and the capacity to know to the knower: the two provisions run parallel, truth and knowledge.[77] This picks up the relation of the 'yoke' 507e5–508a1, between the faculty of sight and the capacity[78] to be seen.

Embedded in this passage, too, is the terminology of causation and liability: the form of the good is the cause of (or responsible for[79]) knowledge and truth, but distinct from them, and far finer. The simple-minded answer echoes in the insistence on the distinctness of the cause from what is caused.

- Third, 509b, just as the sun provides generation to the visible world, so 'to what is known not only being known is provided by the form

> of the good, but existence and being belong to them at its agency,[80] although the good is not being, but goes beyond being in authority and power'.
>
> (509b5–9)

This notorious passage[81] still turns on the running theme of causation. 'Authority' picks up the suggestion that the sun has authority and responsibility over the visible world (508a4–5);[82] and the back-reference ensures that we recall the terminology of causation and responsibility both there and at 508e2.[83] The final stages of the analogy, too, ensure that we see the distinction between whatever account we might give of the way things are (their being) and how that account is explanatory (what is responsible or authoritative).

But the passage has a sting in its tail, for in closing, Socrates and Glaucon return to the conversation in the frame (509c). Glaucon makes a jokey comparison between the overflow from the sun that activates the power to see, and the excess of the good which explains being and intelligibility, and Socrates responds: 'You are responsible, for forcing me to say what I think about these things' (509c3–4). The language of causation and responsibility overflows into the conversation itself, picking up the opening frame of obligation and liability at 506d–507a. In figuring out just how we should talk about causation here, the roles of the conversational partners should not be ignored.

The Subjects of Cognition and Their Objects

Suspend, for the moment, questions about this language of explanation, causation, liability and responsibility, and focus instead on the complex relations between the subjects of the cognitive verbs (vision and intellection) and their objects (things in the world). The shape of the argument depends on a detailed parallel between how things are in the visual world between the seer and what is seen, and how things are in the intelligible world similarly figured between the intelligiser and what is intelligible.[84] That parallel does not depend (at all) on the suggestion, familiar in many discussions of Plato, that the visual world is a world of 'mere appearances' in contrast to a world that is purely real, independent of how it is seen. That kind of contrast between the subjective and the objective is not, I think, compatible with what is being urged here.

First of all, the discussion of perception does not rely on the idea that it is somehow illusory or mistaken by contrast to its intellectual counterpart, but quite the contrary – for the argument is structured to show how our success in understanding what is intelligible can be illuminated by our

success in understanding what is perceptible.[85] Second, both perception and intellection, in the set-up described here, are as much a matter of the capacity and perspicacity of the cognitive subject as of the nature and intelligibility of the objects of cognition. The argument does not rest on the idea that the subject's view is 'merely subjective', but rather on the suggestion that the subject's view and what is viewed are mutually dependent on whatever causal structure has brought them together (this is the point of the yoke). These relational features of cognition, between subject and object, are part of its explanation, not an obstacle to it.

Recall, then, the detail of the comparison between the two worlds: there is, in each case, a subject (of perception, of intellection); its cognitive objects (perceptible and intelligible); a medium which connects them (light, truth); the source of the medium (the sun, the form of the good); and the effects of the action of the source. In both cases, we are dealing with objects whose reality is not disputed by Socrates or Glaucon or Adeimantus; and in both cases we are dealing with subjects whose cognition can be understood at first in terms of an individual interaction with a singular object. In part, this explains the domain of single cognitive events – single perceptions of that green tree, single pieces of knowledge about photosynthesis, or whatever. But the sun and the good also have two longer-lasting kinds of effect. In the case of perception, the capacity to perceive is generated by the sun: vision is not, on this account, a merely passive piece of subjective appearance, but rather something that is determined both by the state of the perceptible world and the state and development of the perceiving subject. I have argued at length elsewhere that the capacity to perceive, as the *Republic* describes it, is a developed capacity, capable of both perfection and deterioration.[86] In the case of intellection, likewise, the capacity to know or to understand is generated by the good, and this can develop into a full intellectual virtue, or deteriorate into something like intellectual vice.[87] The nature of the subject is itself a part of the causal process here.

Goodness Again

What does this tell us about goodness or the form of the good? If we are not here dealing with mere phenomenal experience, nor with a relativist thought that value merely depends on the view of the valuer, but rather with how the subject engages well or badly with value in the world, then the objects of her perception and her cognition will be interdependent with her position as the subject, but not thereby relativised to her point of view. She is not merely the possessor of an accidental point of view on the world but rather a participant in how the world is presented to her. Equally, how the world presents itself to her is constitutive of how she finds it: the two aspects of value are yoked together. Then, we might think, goodness for her

is caused ultimately by the form of the good, but how goodness is for her is a matter also of her responses to goodness, and those responses, too, are caused by the form of the good.[88] The yoke represents a genuine feature of the explanation of goodness.

Consider a visual parallel: on this account, if she sees the green tree, what it is for the tree to be green is not somehow independent of how it looks to her; rather what it is for the tree to be green is in part for it to be such as to look green to her, given that her perception is developed as it is.[89] In the case of the good: that something is good for her is a matter not only of the disposition to goodness of the thing in question, but also of her disposition to find it so. For her disposition (e.g., her virtue or vice) is an element in how good things are for her.[90] This makes goodness complex; but it does not generate a view of the good as 'merely' subjective, even if it is subject dependent.[91] That goodness actually arises, that there are goods in a life, is a matter for the whole complex relation between subject and object. This will allow for goodness to be accumulated in familiar ways, in the sense that whatever then turns out to be good will indeed be good, but not in ways that are independent of the subject any more than they are independent of the object either. It will allow goodness to be conditioned by the state of her soul or her mind in the sense that how she is affects how things turn out to be good for her (likewise, for the case of evil, where her soul deteriorates in the ways described in depth in *Republic* books 8–9) just as how things are affects what she will find good. Finding things good, however, is a demanding business: for without the properly developed disposition she may fail. To succeed requires thought about the development of capacity, character and a life rather than merely occurrent moments, attitudes or events within them.[92] To succeed also depends on the goods themselves; they must be there for her to find them good, and they must have the proper capacity to be good for her. So no matter how good she is, she may be worse off when there are fewer goods for her to find so; and no matter how many goods there are for her to find so, they will be merely potentially good if she lacks the capacity to find them.

When it comes to thinking about the form of the good, what then are we to say of its goodness? What is this ultimate good? Is it a transcendent entity, and if it is how do we access it? What about its goodness: is it better than anything else? If it is, how are we to get it, add it to our stash of good things in ways that will win out over any other combination of goods? If it is not, why should it have anything to do with my leading the best life? Such questions, surely, miss the point of this passage entirely. First of all, in striving to the best life we should not attend to accumulating the largest number of good things, or the best of them. Rather, the best life is one where the leader of the life improves her capacity to find things good by a

better understanding of the good. In finding things good, they are indeed good, if she is so; but that is a matter of their being yoked together, and the dispositions of both subject and object brought to successful actualisation.[93] As the *Republic* repeatedly reminds us, ethical questions turn on the development of our own virtues and our own goods, just as much as they rely on the opportunities offered by the world.

Where does this leave the question of ultra-realism? On this account realism is undiminished: there are real evaluative features of the world, and the subjects engaged with the world are real evaluators. So we may say that something or other is (really) good; but the realisation of its goodness depends on the responses of the subject: these are not first-order pieces of reality but are conditioned by both the world and the responding subject. They are no less real as a consequence; but the reality is complex and demands an interdependence between the disposition of the subject (the development of virtue so as to find things good) and the disposition of the object (such as to be good for such a subject). It is not to be wondered at that this account is set in the language of causation and responsibility.

Suppose we think about 'dispositions' in ways that include powers, capacities, potentialities, virtues, vices and dispositions more narrowly conceived. These dispositional features of both subject and object are real, as they are presented here; but they require the appropriate interaction between them for individual goods to be realised. They are, then, features of the subject which are realised at the second order, conditioned by complex features of the world. We might say exactly the same for other dispositional or attitudinal properties, perhaps. The realisation of a sweet cup of tea depends on the disposition of the sugar to dissolve, and on the tea's capacity to dissolve it, but the dispositions themselves need not then be conceived as unreal.[94] The actualisation of a response of 'fight or flight' may happen as a result of a bad dream; but it may equally occur in the presence of something that is genuinely terrifying: the claim of realism allows us to discriminate between the two cases. If I try to find meaning in my life, whether or not it turns out meaningful is falsifiable; if life does indeed have meaning, its meaning makes demands of reality. For it takes the meaning to be inscribed in the life but to be there for my understanding it.[95] The virtue of a modest agent may amount to a great deal more than the occasional diffident disavowal; one of the central thoughts in the attribution of a virtue is that the virtue is a real feature of character.[96] This is not ultra-realism; but it may be realist still.

So the running modal vocabulary through the passage[97] may be accounted for by this kind of dispositional realism. There are dispositions on both sides, both the subjective and the objective. In the case of the subject, these capacities may change and develop over time – this, after all, is the assumption that lies behind the *Republic's* analysis of moral education. But their

actualisation in something's turning out to be good for this person depends on the form of the good, and the yoke it generates. When we then seek to explain what this disposition of the subject is, this virtue, it is not in the first place (as the intellectualist version of ultra-realism proposes) a disposition to act competently (although that may be its consequence), nor a disposition which is realised ex post facto, just insofar as it reliably produces the right outcomes, either.[98] Rather, it is a disposition to find things good, a disposition which is successful when the disposition works well. In virtue, goodness goes all the way down, within the nature of the person who has it and radiating into her relations with the world. Likewise, the goodness that is found is so by someone properly disposed; and what particular things turn out to be genuinely good are accounted for by that relation. Unlike Glaucon's list of goods in book 2, there is no requirement here that we have a fixed list of putative goods in place, the getting of which depends on some kind of skill.[99] Rather, the goods that are found depend for their goodness on being such as to be found so; and the good disposition of the subject is realised in finding things good. Individual questions about 'what should I do now?' are posterior in explanation, even if they may turn up earlier in time.[100]

Explanation and Virtue

If the image of the sun is as complex as it seems, perhaps the multiform language of causation, responsibility, liability and explanation that surrounds its presentation should not surprise us. Here the different aspects of causation and explanation are interconnected, the objective and the subjective aspects realised together. For the connection is itself made by cognitive means: what it is to realise some good is for it to be seen as good; what it is to realise some good better is to come to understand it better.[101] The intellectualism we find here, then, is not the measuring skill canvassed in the *Protagoras*, but rather a richly intellectual conception of virtue itself.

This complex picture is presented as the response to Glaucon's challenge about virtue in a life. Is this a radical change from the view presented in the *Phaedo* in the simple-minded answer? If the simple-minded answer gives us, for the good, 'the goods are good by virtue of the good', it will still be true in a *Republic* account; but it will not on its own capture the ostentatious complexity of causation and explanation that we find in the discussion of the sun. What is more, if the simple-minded answer underpins ultra-realism, it pushes ethical theory in the direction of a dismal appetitive moral psychology which undermines any account we may wish to give of how best to live.

However, this is not all we should say about the *Phaedo* in this respect. That discussion of causation and explanation is carefully constructed in

two distinct moves: the simple-minded answer[102] and the cleverer answer.[103] The cleverer answer does some heavy lifting in the arguments for the immortality of the soul.[104] And for that, the simple-minded answer has the role of giving a reason for postulating non-physical, mind-independent entities, such as forms and, as Socrates wishes to claim, souls.[105] So are they both answers to the same question? If so, the pressure in the *Phaedo* to decide whether this is a theory of causation (where one thing acts on another, as the terminology of the cleverer answer) or a theory of explanation (where we are given principles for causal accounting, as in the simple-minded answer) still weighs heavy.

Suppose, however, that we bring the *Republic*'s insistence on the dual role of subject and object, the 'yoke', into play. For the *Republic*, the causal account comes in combination with (is yoked to) an account of how the subject comes to understand the place of the good, and the workings of the form of the good, in her life. For the *Republic*, an account of how things work and function (a causal account) is inseparable from an account of how we come to know how things work (an explanatory account). The *Republic* has an interest in rejecting the model of the simple-minded answer for causation, because that answer does damage to the careful moral psychology of lives elaborated from book 4 onwards. But it has equally an interest in conceding the simple-minded answer for explanation, since that gives us a set of principles for understanding explanatory claims. Those principles are basic or fundamental. First, to explain vexed cases such as beauty, no one of the vexed cases can be the source, but there must be some other item, different in standing, which will perform that function.[106] At the same time, the simple-minded answer gives us a second principle, that at its foundations, causation is of like by like.[107] In combination (as the *Parmenides* documents) these two principles can be dangerous. Yet they do offer a particular approach to explanation which is fundamental to the *Republic*'s theme on how we become knowledgeable or wise (consider for this the role of principles similar to the simple-minded answer in the highly formal argument about the nature of knowledge at the end of Book 5).[108] For this purpose of the *Republic*, we need a composite of explanatory principle and causal account. The latter is embedded in the metaphysics of goodness, the former in the proposal that dialectic involves the giving and taking of an account.[109] The combination of the two is needed to explain the role of the form of the good in the development of virtue and the best life.

That characteristic of dialectic may give us a resolution of the tension in the *Phaedo*'s last arguments. Bailey has proposed[110] that here we have both what he calls a methodology (in the simple-minded answer) and an account of causation (in the cleverer answer): and this well captures the different ways in which the answers of the *Phaedo* are set out. For my present purposes, furthermore, it offers a combination of principles for

explanation and a description of causation, where the former is located in the understanding belonging to the subject. The language of the simple-minded answer turns repeatedly on the answers we will give to the questions of others.[111] This is not a mere literary flourish on the text, but rather a marker of how the *Phaedo*, like the *Republic*, can engage with questions of explanation (questions about how epistemic subjects understand) and question of causation (about how the world works) at once. Indeed, for the purposes of both dialogues, these questions cannot be posed distinctly; the structure of the objective world is indivisible from the engagement of knowing agents. And it is this connected structure that lies at the heart of Socrates' response to the question 'How best to live?': an answer founded on the complex account of the form of the good.

Notes

1 This piece is the beneficiary of many years of thinking about Plato and especially about the *Republic* – I record my thanks as always to Verity Harte, and to the members of the Yale-KCL *Republic* workshop convened 2007–2016. Dom Bailey, Vasilis Politis and Daniel Vazquez kindly read drafts and gave me extensive comments and challenges and some wonderful remote discussion – I am hugely grateful to them, although what has emerged is certainly not their fault.

2 This is the 'simple-minded answer', *Phaedo* 100d (contrasted to the 'cleverer' answer, 105c). It is also described as 'safe': that epithet does not mean that it is empty.

3 The realist cast of Socrates' inquiry is in place from the outset of the so-called autobiography at *Phaedo* 96a.

4 I have largely left on one side in what follows the view favoured by some that in fact these evaluative properties, the beautifuls, are not in fact beautiful, or really beautiful, but mere appearances. I argued against this view of Plato's account of the physical world (1994); there I proposed that the argument from appearances is not an argument from 'mere' appearances, but rather an argument about how the way things appear to us render some properties of physical things vexed in the sense that then requires explanation. On this issue see Sedley's important (1998, 2007); more extensive discussion is needed for that, but I merely reiterate here three points I have made before (1994, chs. 2–3). (1) If appearance is non-epistemic or non-veridical (i.e., 'appears' means 'merely appears', 'appears but is not'), then it is hard to disentangle what happens when that is negated ('does not appear but is' seems logically correct but unhelpful for the argument; 'does not appear and is not' makes a mess of the distribution of the negative); so we need to take it as epistemic or veridical. (2) If equality is both a real property of things and a relation between things (by virtue of the way relational features pick out particular relations between things in contrast to where those relations fail), then for any case of it (some particular stick) there will be some other thing in relation to which this stick fails that relation. So (for any sticks and stones at random) if one is equal to another, it may ('sometimes') also appear-and-be unequal (to something else; Sedley 2007 argues that 'the equals' includes the relata pairwise; I think that unnecessarily complicates the argument, and brings in, moreover, asymmetry with the evaluative examples). (3) The disputed text at *Phaedo* 74b8–9 may

then no longer trouble us, since its vague scope covers all sorts of ways in which some item may have a property (in some relation, at some time, from some perspective) and also fail to have that property (in some relation, at some time, from some perspective). I thus retain the reading of the text with the dative of the relatum. Then the argument relies on an undeniably contextualising feature of relational properties while also taking relations indeed to be the properties of individual relata; and in that case it is symmetrical with what might go for values.

5 That this is the proposal of the simple-minded answer is manifest: if 'the beautiful' is not something other than the beautifuls, there would be no explaining done here at all; if, in being other than them, it is not a real entity, there is no basis for the role of the simple- minded answer in the argument for the existence of independent souls at this stage of the *Phaedo*.

6 The simple-minded answer may not cover properties that are not vexed in the way that both relational and evaluative properties are. Non-vexed properties do not at the same time bring along their opposites (so they are not subject to 'the compresence of opposites') so that their instances could provide explanatory examples. On this see, most recently, Politis (2021). In part, this is a question of the scope of the so-called theory of forms; on this see McCabe (1994, ch. 3).

7 So 'the beautiful' in the simple-minded answer is taken to be a separately existing, non-physical, mind-independent entity. One way of fixing the ontological requirements of a form is to recall that a large part of the argument of the *Phaedo* is designed to show the affinity between forms and souls; and the kind of existence needed for souls to satisfy the anxiety about death which drives the arguments of this dialogue needs not to depend either on any particular physical instantiation nor on being the objects of someone's thought. I resist the idea, however, that this formulation trades on some complex background of doctrine about 'Forms' (e.g., as in Vlastos 1969); rather, the postulate of an entity is all that is being offered in the simple-minded answer: this is taken to be the expression of how we give this kind of answer, not a claim about how, for example, 'we Platonists' go about answering the question. Bailey (2014) makes this point clear; so too does Politis (2021).

8 Various positions in the dispute are taken by, e.g., Vlastos (1969), Frede (1987), Sedley (1998), Bailey (2014).

9 Frede (1987), Sedley (1998). What kind of claim do I make here about 'things'? Not much at first, I propose – perhaps just a conceptualisation of causation as one billiard ball (thing) biffing another (thing) rather than as the 'one-billiard-ball-biffing-another event'. But at second rather more: that causation can include the effect of an end on the process towards it, for example, without seeming to work backwards. My thanks to Dom Bailey for conversation about this.

10 This might be one way of accounting for the two 'third man' arguments in the Parmenides 132a–b, d–133a.

11 Bailey (2014).

12 In what follows I am indebted to Bailey (2014) for clarifying the difference between the 'methodological' role of the simple-minded answer and the causal claims made in the cleverer answer.

13 The simple-minded answer is explicitly applicable to the good, *Phaedo* 100b6. The Parmenides, of course, provides a broadside of attacks on the principles apparently represented by the simple-minded answer (especially those principles that have become known as self-predication and non-identity). This is to

remain uncommitted, here at least, on the questions about the role of the *Parmenides* arguments in thinking about forms.

14 Properties, that is, which are subject to the compresence of opposites. It bears repeating that the compresence of opposites, on the account I prefer, is a perfectly reasonable feature of individual items: this stick is equal to that stick (in length) and unequal to this stone (again in length). Socrates puzzle does not arise from dropping the qualifiers (e.g., 'in length') and deriving a factitious contradiction ('this stick is both equal and not equal') but rather from the observation that such a case of equality, no matter how good its equality may be, cannot show us 'what equal is', because it is equally an example of inequality. On this approach to forms, see now Politis (2021).

15 I make no claim that these different ways exhaust the possibilities of evaluative realism.

16 I avoid here the use of the 'primary'/'secondary' distinction between properties in order not to muddy these waters further with the debate on such classifications.

17 See above n. 14. Plato's argument does not move from the idea that the physical world is rubbish to the conclusion that there is a perfect world somewhere else.

18 This is one account to be given of eudaimonism in these contexts; on this issue see Irwin (1995).

19 This is what marks the affinity between relations such as equal and values such as beautiful: this statue is beautiful for its admiring viewer. This should not be confused with evaluative relativism, the view (discussed and apparently rejected in several places in the dialogues, e.g., *Protagoras* 334a–b; *Theaetetus* 166d ff.) that the statue is beautiful just if it is beautiful for its admiring viewer.

20 This is liable to produce a moral psychology of blind desires, e.g., Evans (2023).

21 Irwin (1995).

22 351b ff. and e.g., Aristotle, *EN* 1145a15–47b15. My claim here is not that Plato subscribes to such a view, but that this passage in the *Protagoras* shows that he understands it (the argumentative structure of the *Protagoras* as a whole, as it seems to me, militates against such a conclusion about the view to which Plato 'subscribes').

23 The *Protagoras* suggests they can be 'measured': so both picked out and effectively compared, 356d. I have argued (2016), that the language of perception and moral perception, notably in the *Republic*, underwrites a far more complex psychology.

24 This may be where talk of skills (e.g., in the *Protagoras*) is entirely appropriate. I am not persuaded that things are this simple, even in the *Protagoras*, but see Annas' persuasive account (2011).

25 This is how *Gorgias* 465ff. is sometimes taken.

26 In what follows unqualified page references are to Slings' edition of the *Republic*. All translations my own.

27 357b1. The comparative point makes clear that the point is not to suggest that the life of justice is absolutely good, but rather that it is better than any version of the unjust life. This allows, therefore, for there to be two just lives one of which might be better than the other; there is no absolute claim here that the just person is happy, tout court, on the rack. The discussion that follows imagines such a just person deprived of any of the other goods and concludes that her life is better than any competitor without justice.

28 Is this what we get in the background assumptions of Glaucon and Adeimantus' challenge in *Republic* 2? Certainly, it seems to be how best to understand the story about Gyges and his grubby appetites: faced with opportunity, he just

grabs whatever he can. On this see McCabe (2024). The crudity of a maximising thesis is to be found in some contemporary utilitarianisms.

29 The careful posing of that discussion in a hedonist context may put it at arm's length, rather than as endorsed from the point of view of that dialogue as a whole.

30 This is the burden of Glaucon and Adeimantus' challenge: what are we to say of a life that has nothing but its virtue?

31 Again, these strategies are outlined in the last arguments of the *Protagoras*.

32 By 'discernible' I mean that it is the kind of property that can be picked out by whatever intellectual function we might think is analogous to perception. On this see McCabe (2016).

33 Mackie (1990).

34 This isn't just an argument from the possibility of akrasia; but it shows why the akrasia debate is so troublesome.

35 This may be the lesson from unbridled utilitarianism, but nonetheless from the moral bluntness of effective altruism.

36 See, of course, Popper (1945).

37 This question may well arise as a result of a too swift reading of Glaucon's classification of goods. When, at 357c6ff., he proposes a class of goods that are good 'in themselves and in what comes from them', does such a class include the good 'in itself'? Before we too swiftly think so, it is worth noticing that the examples of such a class may include, not things like forms, but activities such as thinking, and virtues such as justice (357c3).

38 On this see Williams (2006).

39 On this see Korsgaard's influential, but tricky (1983).

40 Both Williams (2006) and Korsgaard (1983) manifest this difficulty, in different ways.

41 This would be how the Sedley proposal of causation by transmission would play out (1998): after all, if the causal relation between the good and the goods is one of transmission it seems to follow that the source from which the property is transmitted itself has that property.

42 The parallel with Gyges, exploiting his invisibility (360a–b, and note *euthus*, 'immediately' to describe his voracious progress at 360c8), suggests that this may not be the model of knowledge we should have in mind here.

43 This is an argument that has been elaborated by Williams (2006), following Korsgaard (1983), although with a dispiriting conclusion.

44 Ruben (1990). Does this make explanations particular, Daniel Vazquez asks me? To a point, perhaps it does, in the sense that explanation is, as I suggest below, tied to success, and that will occur in individuals.

45 E.g., Salmon (1990).

46 Frede (1987), Sedley (1998).

47 At this stage a warning is perhaps in order, against too doctrinaire a view of what counts as 'Platonic'. Vlastos, for example, expresses the view (1969) that Plato is rather groping towards some view that he holds deeply but cannot in fact articulate. My own view is rather the reverse: that Plato is saying exactly what he wants to say, in order to get us, his readers, to think in the complex ways he supposes we need to think to try to tackle these very difficult questions. This has Plato engaged in an ongoing process of philosophical engagement with his readers, rather than what we might think of as philosophical instruction.

48 Sedley (1998), Frede (1987).

49 One might (I tend to) think of this in terms of factiveness; see, e.g., Buckwalter (2014). But perhaps the success condition is enough.
50 This in despite of a (different) reductive kind of view that in fact explanations are pretty much subjective and over-optimistic, and that they would be better replaced eventually by a proper description of whatever is under scrutiny.
51 To the objection here that in fact Plato is perfectly happy with the idea that the explainer and the explainee may populate a single mind (as in the soul's silent dialogue of, e.g., *Theaetetus* 189e ff.), I respond that the case where explanations take place between two people is the standard formula, both for the dialogues and for the *Republic's* condition on knowledge of 'giving and taking an account' (531e). The *Theaetetus* case, I say, is secondary to the primacy of dialogue in Platonic epistemology.
52 It is still possible, notwithstanding, for 'explain' to be imperfective: I can be trying to explain, hoping to explain and so forth: but my hopes are not fulfilled, and my explaining is not actualised, until someone gets it.
53 One way of thinking about this might be to think of 'explain' as an aspected verb; I can be 'explaining' when I am trying to do so just as much as when I succeed, but if the trying fails, then I failed to explain in the perfective sense. 'Learn', as the *Euthydemus* explores, has a similar feature.
54 Salmon (1990).
55 I have wondered whether we might think that explanation presents (or represents, on more visual/realist mode) the explanantia to the explainee.
56 On understanding 'understanding', see Burnyeat (2012), McCabe (2021).
57 On this see, among others to make similar points, Vlastos (1969). Hence, of course, Vlastos' interest in reasons and causes.
58 See here Ruben (1990).
59 Again, Vlastos (1969) or Hocutt (1974).
60 See here Ruben (1990). This was my preferred strategy once (1994, ch. 3).
61 E.g., *Phaedo* 96a8, 97a4, 97c2 and so on. Sedley (1998), Frede (1987).
62 E.g., *Phaedo* 100d7, 100e5, 101a, 105c2.
63 E.g., *Phaedo* 100d5, 102d ff.
64 This is excellently brought out by Bailey, who offers a contrast between the discussion of *aitios* or the 'by virtue of which' in the simple-minded answer of the *Phaedo* – this occurs in what Bailey describes as a philosophical methodology – and in the last argument, where Socrates talks about what makes something thus and so, so about causation in a more limited sense (2014).
65 So the individual is responsible, *aitios*, *Laches*; so e.g. of Anaxagorean Mind controlling the whole universe, *Phaedo* 97c2, or of the individual choice of life in the Myth of Er, *Republic* 617e ff.
66 *Aitia* for the charge brought against someone: in a complex forensic context, *Apology* 38e.
67 *Aitiasthai* for holding someone responsible, or blaming them: see the play on the set of *aitios* words by Cephalus, setting the *Republic* scene, 329b, and again in a forensic context *Phaedo* 98d.
68 This elaborate pun (where *tokos* means both 'interest' and 'offspring') warns us both of the complex language of the passage and of the play on responsibility and liability that follows.
69 So *apoteiseis* at 506e6 for the payment of a penalty from Homer onwards, and see *Apology* 36b for the extended discussion of penalty and counter-penalty in Socrates' proposal to the jury.
70 507c ff.

71 These are modal claims: what can be seen is invisible, what can see is unable to do so: in both cases there is a first level of capacity before the light actualises them.

72 The repeated vocabulary of the yoke here makes it clear that this point matters. Daniel Vazquez raises the question whether here the yoke is the light, or is a relation that results from the light. My own preference is to take *zugôi* as an internal qualification on the verb (so yoked by a yoke, very seriously yoked), and to take the *idea*, namely light, as the instrument of that yoke (so, in the grammar of the sentence, the 'idea' is not in apposition to the yoke). So the yoke itself is the relation that is explained by the light (and, incidentally, this obeys the formula of explanation from the simple-minded answer, that the explanans is different from the explanandum). Adam suggests that the idea is the measure of the relative value of the relation (and does not comment on the yoke).

73 Note the ordering of the argument with the sense-faculty leading at 507c11, d7, d10, e5.

74 See note 72 for this construal.

75 Note the particles and adverbs piled up in a short introductory phrase at 508d3.

76 οὕτω τοίνυν καὶ τὸ τῆς ψυχῆς ὧδε νόει: ὅταν μὲν οὗ καταλάμπει ἀλήθειά τε καὶ τὸ ὄν, εἰς τοῦτο ἀπερείσηται, ἐνόησέν τε καὶ ἔγνω αὐτὸ καὶ νοῦν ἔχειν φαίνεται: ὅταν δὲ εἰς τὸ τῷ σκότῳ κεκραμένον, τὸ γιγνόμενόν τε καὶ ἀπολλύμενον, δοξάζει τε καὶ ἀμβλυώττει ἄνω καὶ κάτω τὰς δόξας μεταβάλλον, καὶ ἔοικεν αὖ νοῦν οὐκ ἔχοντι The two tricola are marked by τε . . . καὶ . . . καὶ at d5 [Slings] and d7–8; and the comma at 508d8 should not have been added by editors. Each element in each tricolon says something quite different: the first is about focus (that may be rather a loaded notion), and the third is about how the person appears to us. The second is more puzzling: what is it to say that he 'knows it', *egnô auto*? Does this just mean much the same as *enoêsen*? That it means something distinct is suggested (if I am right about the paired tricola) by the second tricolon, where 'is dimmed, changing its beliefs backwards and forwards' seems to describe something at least conceptually distinct from 'it believes'. Two things might follow from the parallel: first, the second items in both tricola are extended over time; if they are taken to follow from the first items, then they explain the intellectual category 'intelligises', 'believes' as a state rather than, e.g., a cognitive event (which we might have been tempted, I think wrongly, to take from the parallel with vision at 508c); second, the content of the second item in the second tricolon is internalised: the changing of beliefs is somehow the consequence of being dimmed, and so seems to have at least some reflective content. If that is right, then we should perhaps say the same of the second item of the first tricolon, so that the intelligiser (a) intelligises and (b) knows that she is doing so (so the anaphora of *auto* at d5 is 'it intelligises' rather than the relative clause at d4). So the pair of tricola give us a classification (intelligises, believes); a further account of the intellectual content (if not just 'p', but 'I have understood that p'); and the view from others of the state of mind (properly accounted for). That might mean, further, that an apparent parallel at 505e allows for the idea that we might generally aim at the good; but be aware that we miss it; and in such circumstances we are in the dark. I am grateful to James Warren for discussion of these passages.

77 Repeated three times in different language, 508e2–3; e4; e5–509a1. This seems to confirm the reading of the yoke at 508a1 as distinct from light/truth, see above n. 75. It also reinforces the suggestion I am making here that there is more to knowing here than a passive encounter with its illumined objects.

78 *Dunamis* applies to both relata throughout; see 508a1 of the visible, 508b6 of vision.
79 508e2. The expression *aitian* appears in emphatic first place in the clause; is this a substantive, so 'cause', even 'explanation', or an adjective, 'responsible'? I suspect that its emphatic place, and its slight unclarity, confirms my suggestion that the passage is focussed on the language of causation/explanation itself (and this perhaps supports reading *aitia* as a substantive here).
80 *Hup'ekeinou*, 509b7; again the language of causation is piled up ('agency' may not be entirely felicitous; but it picks up the agential *hupo*).
81 Neoplatonists took this as a claim for some kind of transcendence; see Adam's lengthy note *ad loc*. and, e.g., Plotinus *Enn*.V.1.8. However the claim about the relation between being and the good is posed in terms of the good's priority in authority and power: this need carry no implications that it is 'beyond being' in some existential sense (I am grateful for Christopher Rowe's long-standing insistence on this point). This is still about causation amply understood.
82 The entire passage is characterised by a flexible vocabulary, whose connections are brought out by their metaphorical dimension: so *kurios* at 508a5 has overtones of political power, as does *presbeia* 509b8: see, e.g., 429b and 565a for *kurios; presbeia* can refer to an envoy (560c) or an old man (as for Cephalus at 328e), but also confers a normative sense of authority, even where it is inverted as at 548c.
83 Especially since the causal language at 508a4 is best understood in terms of 'holding responsible'.
84 I use 'intellect' and 'intelligise' and so forth to remind that we don't yet have a good idea of what that involves; and to separate this argument out from modern assumptions about knowledge, which often begin with particular propositional claims, 'I know that p'.
85 See especially the transitional move 508b12–c2 and the introduction of the parallel account at 508d3.
86 (2016).
87 Consider the extensive accounts of the deterioration of character in Books 8–9 and Cassam (2016).
88 On various accounts of this approach in contemporary discussions see, e.g., McDowell (1998), Wiggins (1976), Thomas (2006).
89 McDowell (1998).
90 I have argued that this account of the role of the subject's moral disposition in value is a feature both of Platonic realism (in the *Euthydemus*, notably 278–282) and of its Stoic heir (2015, ch. 12).
91 McDowell (1998).
92 Wiggins' brilliant account of how lives have meaning is illuminating here (1976).
93 Again, the metaphysics of this is carefully spelled out in the argument of *Euthydemus* 278–282.
94 Consider Aristotle's defence of the reality of second potentiality as first actuality; *De anima* 2.1.
95 Wiggins (1976) McDowell (1998).
96 That this is our commonplace view may be well illustrated by the unease generated by experiments that claim to show how shaky virtue really is: notably recently Doris (2002).
97 507d1–2, e1; 508a1, b6, e1; 509b2, b5–9.
98 The *Meno*, for example, asks about the value of knowledge over and above reliable true belief – so the value of knowledge apart from its issuing in the right results. On this see the contemporary debate about various versions of virtue

epistemology, e.g., Sosa (1980), Zagzebski (1996) Brady and Pritchard (2006). What has become known as virtue responsibilism (see Wright 2018) better captures Plato's point in the *Republic*, but even that, I think, underplays just how the *Republic* thinks about the choice of lives.

99 The *Euthydemus*, in my view, makes the same point in a transition from talk about skills (279d–281b) to talk about wisdom (281b–e).

100 This contrast is essential to a sensible account of the development of virtue, a project which is the central strand of the *Republic*.

101 I have argued for a rich account of perception in the *Republic* at (2016).

102 100c ff.

103 105c.

104 102d ff.

105 The last argument, to avoid begging the question, needs there to be an existing option for some item to persist 'on the approach of its opposite', 102d ff. – to persist rather than simply to disappear. But what does that, other than souls? The simple-minded answer gives us forms; and so the argument as a whole runs on an analogy between souls and forms (I have defended this view at (1994, ch. 3)).

106 On this see a theme of Politis' new study (2021): 'the ti esti question cannot be adequately answered by example and exemplar'.

107 This is not, in my view, a claim about transmission, but rather a deeper metaphysical claim about the nature of essence or form – so a more complex claim about how we should understand what it is to be (good, or equal, or large) than is captured by the old worry about 'self-predication' in the case of forms. This shows up, perhaps, in the difference between the first 'third man' argument of the *Parmenides* (132a–b) and the second (132d–133a), where the former but not the latter requires self-predication: on this see Schofield's excellent (1996) and McCabe (1994, ch. 3).

108 476a ff.

109 McCabe (2021).

110 Bailey (2014).

111 100c10ff.

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3 That's What Makes the World Go Round

Causation in the Myth in the *Statesman*

Saloni de Souza and Daniel Vázquez

The myth in the *Statesman* is presented by the Eleatic Stranger as a means of demonstrating that the interlocutors have made two related mistakes in their search for the definition of the statesman. The first was comparing a statesman to a shepherd; this, the myth supposedly shows, confuses the statesman with a god because it assumes that there is a bigger gap between the ruler and the ruled than there really is. The second was failing to fully understand the context in which humans become rulers of the state; the myth paints a picture of what the world would be like if the head of state were a shepherd that is completely different from our experience of what the world is in fact like.

One of the most striking aspects of the myth is its complex cosmological story. According to the myth, at times, the cosmos, an intelligent body that is designed by god, rotates itself.[1] We call periods of this sort "the backward cycle". However, although it is part of the nature for the cosmos to rotate, it cannot turn or sustain itself forever.[2] Thus the cosmos deteriorates under its own guidance until it is in danger of being destroyed altogether.[3] At this point, in order to rejuvenate the cosmos, god takes hold of the cosmos and rotates it in the opposite direction.[4] We call these periods "the forward cycle".[5]

When god intervenes in this way, there is a kind of apocalypse, which is marked by disasters and the mass destruction of (φθοραὶ) of animals (ζῴων).[6] However, the reversal of the direction of the cosmos also results in changes that seem extraordinary to the few surviving humans – and to the reader. Initially, the Stranger tells us, all mortal creatures stop looking older. Then, the direction of the external features of ageing reverses, so that old men's hair changes from white[7] back to pigmented, they lose their wrinkles and their bodies revert to those of young men. They appear younger and younger until they resemble newborn babies (both physically and cognitively), eventually disappearing.[8] This reversal applies not only to the few surviving humans but also to those of the "earthborn race",[9] who seem to also be generated backwards: they are born from the earth rather than buried in it[10] and also begin life looking like old men and look

DOI: 10.4324/9781003306450-4

younger and younger until they eventually resemble babies and then disappear. The direction of the movement of celestial bodies also reverses.[11]

Despite its strangeness, the god-guided cycle, the so-called age of Cronus, seems blissful.[12] God ensures that every part of the cosmos is cared by entrusting the care of each and every part to a minor god.[13] Animals are also divided up, with each species cared for by a minor god acting as shepherd. Under their guidance, no creature eats another, there is no tension between species, all animals are tame – and they even speak.[14] The earthborn have an entirely toil-free existence.[15] They do not need to farm for their food because it simply grows spontaneously from trees and plants. The temperature is pleasant, allowing them to roam naked in the open and they sleep in soft grass beds that spring from the ground. They have no responsibilities for the care of others.[16] There are no wars, no states – and therefore, no need for human statesmen.

However, once the appropriate time arrives, this forward cycle ends, marked by god letting go of the cosmos. At this time, the minor gods stop ruling[17] and the cosmos, whose nature it is to rotate,[18] turns itself in the opposite direction again. Although there are some survivors, who are the source of the stories about the earthborn, the lives of those in the backward cycle seem to work in many ways that we are familiar with – it is neither magical nor blissful. The description of the changes that arise in the backward cycle are less detailed. However, the Stranger makes it clear that it resembles our own life. The people who are born during the backward are generated by ordinary birth, beginning life as small. As time passes, they grow bigger and later, humans' smooth skin becomes wrinkled, their pigmented hair turns white, they die as adults and are buried in the earth.[19] In addition, animals are savage and prey on humans, food does not grow spontaneously but requires farming and that humans need to work more generally in order to look after themselves.[20] Presumably there are wars and states, as there are for us. These series of backward and forward cycles apparently go on forever, so that a succession of divine interventions guarantees that the cosmos never dies.[21]

Not only is this cosmological account striking, it is also far more detailed than we would expect if it were merely serving to provide the backdrop against which the Stranger demonstrates the mistakes that the interlocutors have made. Thus, we take it, it has some independent philosophical value.[22] It is not surprising then that there is a great deal of literature on the metaphysical workings of the cosmology.[23] However, causation in the myth has not attracted much attention – and it has not, as far as we are aware, received detailed direct investigation. Yet, causation is clearly at issue; in fact, the Stranger first introduces the myth with overtly causal language, claiming that there is a single *pathos* (πάθος), which is the *cause* (αἴτιον) of certain phenomena.[24]

Here we show that reflection on this neglected aspect of the cosmological story in the myth generates interesting lessons and questions about causation more generally. We begin by setting out some assumptions and giving an interpretation of the causal structure of the myth. We proceed to reflect on what causes the cosmos to change direction at the beginning of the backward cycle. We argue that this points to "causation by removal", a kind of causation which seems both explanatory and relevant in many ordinary cases of causation. Next, we suggest that the myth points to particular kinds of causal chains that are useful when thinking about phenomena in terms of mechanics or biology. We then argue that the reversals at issue in the myth help us to understand more ordinary cases of reversal. Finally, we unearth the problem of backwards causation.

To and Fro, Stop and Go

The myth poses some problems for any interpreter interested in the metaphysics of the myth. First, there is a great deal of controversy about how many cycles there are (two, three, even more or deliberately ambiguous) and how long each cycle takes to complete.[25] Second, there is a question about whether the direction of time is ever reversed.[26] Third, there is disagreement about whether the earthborn race arises in a god-guided cycle or a cosmos-guided cycle (and therefore, to what extent god is involved in their lives).[27] Fourth, one might disagree about whether we should treat any cycle as correlating to our own experiences and, if so, whether it is identical or merely similar in particular respects. Fifth, the myth in the *Statesman* bears striking resemblance to one in the *Timaeus*. Thus one might take the view that we ought to look for an interpretation of the myth in the *Statesman* that is consistent with the *Timaeus*. Alternatively, one might disagree, for example, on the grounds that the myth in the *Timaeus* differs, not only in its purpose in the wider contexts of the dialogue, but also in some of the metaphysical details. For example, the cosmos in *Timaeus* does not need god's constant intervention to guarantee its immortality, and thus there are no cycles or any of the related events. Finally, there are disagreements about how philosophically seriously we should take the details of the myth.[28] These disagreements might arise for a number of reasons. For example, one might note that the Stranger claims that the myth introduces an element of play,[29] that many aspects of the myth have been inherited from other traditional myths[30] or that some of its details are very bizarre and suppose on any of these grounds that the myth should not be taken seriously. Alternatively, one might take the view that we should at least be open to the possibility that any detail of the myth has philosophical value since the Stranger also suggests that the myth has historical reality,[31] or just because Plato chose to include them.

We do not have space to settle these issues here. Hence, we make some assumptions. We take it that there are two cycles of equal length and speed: a god-guided forward cycle and a cosmos-led backward cycle. We assume that the direction of time remains the same throughout and read the myth in the *Statesman* independently of the *Timaeus*. We take it that the earthborn arise in the god-guided cycle and that the backward cycle should be taken to resemble our own lives, although we assume only those similarities that we think are explicit in the text. Finally, we treat the myth as a thought experiment, such that we are invited to reflect on what the myth might teach us about causation more generally.[32]

Causal Structure

We begin by giving an interpretation of the complex causal structure of the cosmological account. The Stranger introduces the myth by making a causal claim about the stories they have been discussing (the race of earthborn, the change in direction of the celestial bodies and the blissful "age of Cronus")[33] and others:

> Well, all these things together are consequences of the same state of affairs (πάθους), and besides these thousands of others still more astonishing (θαυμαστότερα) than these . . . but as for the state of affairs (πάθος) that is the cause (αἴτιον) of all of these things, no one has related it.
>
> 269b5–c1[34]

It turns out that the cause is the change from the cosmos rotating in the direction it currently does (backwards) to rotating in the opposite direction (forwards):

> Then drawing on what has just been said, let's reflect on the state of affairs (πάθος) we said was the cause (αἴτιον) of all those astonishing things. In fact it's just this very thing . . . the rotation of the universe is at times led in the direction of its present rotation, but at times in the opposite direction.
>
> 270b3–8

We take it that some x is an αἴτιον of y if and only if x at least partly explains y and x is at least partly responsible for y. This fits with the description of the reversal of direction as an αἴτιον here: the change in the direction of the rotation of the cosmos from backwards to forwards is at least partly responsible for and explanatory of the celestial bodies' reversal in direction, the existence of the earthborn race and the blissful age of Cronus and,

presumably, the tightly connected reversals in the direction of generation and particular features of ageing that the Stranger mentions later.[35]

However, this does not provide the complete explanation for any of these phenomena, since we are still left asking, "Why did the cosmos change from the present direction to the opposite direction?" We suggest then that for each of the effects above (the existence of the earthborn, the celestial bodies' change of direction, the reversal in direction of generation, etc.), the change in the direction of the rotation of the cosmos from backwards to forwards is a "subordinate cause" (our term). A subordinate cause is something that is partly responsible for and provides part of the explanation of an effect but which itself has further, different cause which is responsible for and explains it. Therefore a subordinate cause is always part of a causal chain. For example, the playing of the *Encanto* soundtrack is the cause of baby Abigail's dancing since the playing of the *Encanto* soundtrack explains and is responsible for Abigail's dancing (the effect). However, it is only a subordinate cause since Robbie's pressing the play button explains and is responsible for the playing of the *Encanto* soundtrack. Where there are multiple subordinate causes, each adds another layer of explanation and responsibility for the initial effect. Hence, saying "Abigail's dancing is caused by the playing of the *Encanto* soundtrack, which is caused by Robbie's pressing the play button" provides a fuller causal account than referencing *only* the playing of the *Encanto* soundtrack or *only* Robbie's pressing the play button"; after all, it draws attention to two parts of a causal chain, one more local to the effect (the playing of the *Encanto* soundtrack) and one further away from it (Robbie's pressing the play button).

The change from the cosmos' rotating backwards to forwards then is a subordinate cause in a causal chain. The next subordinate cause in each chain is god's taking hold of the cosmos and guiding it; this is responsible for and explains the reversal in the direction of the cosmos from backwards to forwards. God's desire to make the cosmos good is responsible for and explains this activity[36] but itself requires a causal explanation, and so it is a further subordinate cause.

The next cause in the causal chain is god being benevolent – that is what explains his desire to make the cosmos good. This, however, is not a subordinate cause but what we call a "terminal cause": a cause for which nothing else is responsible and which requires no further explanation so that any finite causal chain ends with a terminal cause. For example, suppose the causal chain for Abigail's dancing has the following ordered series of causes: the playing of the *Encanto* soundtrack, Robbie's pressing the play button, Robbie's intention to press the play button, Robbie's intention to make Abigail happy, Robbie's good nature. One might suppose that there is nothing further that is responsible for and explanatory of Robbie's good nature either because Robbie's good nature is responsible for and explains

itself or because that is just the way that Robbie is. Thus there are finite causal chains for the celestial bodies' change in direction, the coming into existence of the earthborn race and of the golden age, reversals in the direction of particular features of ageing and generation – every one of which ends with the god's being benevolent.

One might think that the case for interpreting god's being benevolent as the terminal cause of each of the causal chains in question in the myth is particularly strong. The Stranger is clear that god is the designer of the cosmos,[37] and it seems that god's benevolence is responsible for and explanatory of this designing.[38] In contrast, there is no textual evidence whatsoever for the view that the cosmos or anything inside it is in any way responsible for god's being good. Thus it does not seem that there is anything in the myth that *could* be responsible for the benevolent god other than himself. In addition, the explanation seems to end with the god's being benevolent; if we ask, "Why did the celestial bodies change from the present direction to the opposite?", "Why did the earthborn come into being?", "Why did the age of Cronus happen?" and so on, "The god is benevolent" is the ultimate answer.

However, the beginning of the forward cycle is marked by destruction.[39] We therefore face the objection that neither god's desire to make the cosmos good nor the god's being benevolent can be causes in these causal chains. A full defence of our interpretation would require its own paper. However, note that god is not omnipotent; indeed, the Stranger explicitly says that this destruction comes "from necessity" (ἐξ ἀνάγκης).[40] We take it then god's desire to make the cosmos good and god's goodness are parts of the causal chain, but that divine goodness is limited; that is, god wants the cosmos and everything in it to be good, but since his divine benevolence is not accompanied by omnipotence, he is not able to make it entirely good.

Consider the correlate effects in the backward cycle: the existence of the human-born race and age of toil, the change in direction of the celestial bodies – as well as the change in direction of generation and external features of ageing. We maintain that there are similar kinds of causal chain here. The change of direction of the cosmos' rotation from forward to backward would be a subordinate cause, since god's letting go of the cosmos is responsible for and in turn explains this change in direction. However, god's letting go requires further explanation; we are left asking, "Why does god let go?" Thus god's letting go is a subordinate cause too.

One might suppose that god's desire to make the cosmos good and god's being benevolent cannot be subordinate and terminal causes in these causal chains either. Rather, since we are explicitly told that the cosmos deteriorates and that life is difficult in the backward cycle, letting go would be

explained by god's desire for the cosmos to deteriorate and divine malevolence. However, remember this benevolent god is not omnipotent but is rather constrained by necessity. A plausible explanation then is that letting go of the cosmos *is* motivated by the desire to make the cosmos, which is caused by god's being benevolent, but where the god cannot make everything perfectly good. God's desire to make the cosmos good and god's being good then are a subordinate cause and a terminal cause, respectively.

On our interpretation then, there are causal chains in the myth that end with god's being good in the myth. Every one of these causal chains also has god's desire to make the cosmos good as a subordinate cause. We take it that a full explanation would require not only reference to these causes but to every other cause in the chain. So far, though, we have only claimed that very specific effects have causal chains of this type. However, the Stranger claims that "at times (the cosmos) is helped by the guidance of another, divine cause (συμποδηγεῖσθαι θείας αἰτίας); acquiring life once more and receiving a restored immortality from the one who fashioned it".[41] This suggests that god causes not only the reversal in the direction of the rotation of the cosmos at the beginning of the forward cycle but also its continued rotation throughout the forward cycle (via his guiding). Thus it seems that causal chains are in play more widely. Moreover, we see no reason why *every* effect would not have causal chains of this kind. For example, the subordinate cause of the tame animals in the forward cycle would be the shepherding of the minor gods, which is subordinately caused by the instructions of the main god, which is subordinately caused by the god's desire to make the cosmos good, which is terminally caused by the benevolent divinity. After all, each cause here partly explains and is responsible for the effect(s) or cause(s) that precede it. Likewise, the subordinate cause of a particular human beings' toil in the backward cycle is the rotation of the cosmos, which is subordinately caused by the activity of the cosmos, which is subordinately caused by the nature of the cosmos, which is subordinately caused by god's designing the cosmos, which is subordinately caused by desire to make the cosmos good, which is terminally caused by god's being benevolent.

Our interpretation has three important features. First, every effect has a cause that is part of a causal chain where every causal chain has the subordinate cause of god's desire to make the god good and ends with the same terminal cause (god's being benevolent), where a full explanation of some effect would require reference to every cause in its causal chain. Second, there are different kinds of cause (e.g., divine activity, cosmic activity, intention, goodness). Third, effects are caused in different ways, for example, by mechanical motion, design, intention. Thus the myth has a complex, teleological and god-driven causal structure.[42]

We do not have space to offer a full defence of our interpretation. However, we address one serious objection. *Only* the change in direction of the cosmos from backwards to forwards and the god are described as an αἴτιον and *only* for specific phenomena inside the cosmos and the rotation of the cosmos itself in the forward cycle. Moreover, if these are the only two causes, there are only two kinds of cause (mechanical reversal in direction and divine), which both cause by rotating. Thus one might object to our interpretation, which takes there to be a plethora of causal chains, multiple kinds of cause and things that cause in different ways on the grounds that it does not fit with the text.

We defend ourselves by looking at the wider context of the dialogue. Consider the following passages:

> Then again, in addition to these, we must suppose that the kinds of expertise responsible for crafting the tools through which what weaving does is completed will also lay claim to being at least a *contributory cause* (συναιτίας) of every woven article.
>
> (281c2–5)

> Those which do not craft the thing itself, but which provide tools for those that do, tools which, if they were not present, what has been assigned to each kind of expertise would never be accomplished – these are what I mean by contributory causes (συναιτίας) while those that bring the thing itself to completion are causes . . . and shall we call contributory causes all those that are concerned with spindles and shuttles and whatever other tools share in the process of production in relation to garments, and causes those that look after and craft garments themselves?
>
> 281e1–10

This passage features quite some time after the myth in the dialogue. However, we maintain that since a (re-)reader of a Platonic dialogue ought to look both forward and backward in the text, especially when reading such a striking and difficult passage, we are entitled to use this passage in demonstrating that we are encouraged to think about causation in ways that are in line with our interpretation of the myth.

In these passages, the Stranger makes a distinction between two different kinds of cause: contributory causes (συναιτίας) and what we term "principal causes". A principal cause of a product is the corresponding expertise, for example, carpentry is the principal cause of every bench, chair, bed and so forth. However, this is not the end of the causal story. A contributory cause is a different kind of expertise that provides tools that are necessary conditions for the making the product. Thus the contributory cause of a

bench is blacksmithery, since in order to finish making a bench, chair, bed and so forth, a carpenter requires products that are in the domain of blacksmithery: nails, hammer and so on.

The discussion of contributory causes on its own leads us to believe that there are more than just mechanical and divine causes in the dialogue: there are expertises. Moreover, it is quite clear that contributory and principal causes are different kinds of cause that explain things in different ways. Carpentry is the cause of carpentered items presumably because it is the expertise that provides the *knowledge* that allows the carpenter to produce the effect, so that carpentry causes my bench by providing the expertise that the carpenter Ms. Taiwo uses to make it. However, unlike carpentry, blacksmithery causes my bench by providing *the physical tools* that are necessary for Ms. Taiwo to make my bench.

In addition, there are two reasons to suppose that causal chains or something like them might be in these sorts of cases. First, contributory causes seem to be secondary causes that are more explanatorily distant than principal causes. This is in keeping with the more and less distant relationships between causes and their effects that arise depending on how far along the causal chain they are in our interpretation. Second, it is difficult to see how the distinction between contributory and principal causes could work without giving rise to causal chains. Grant that blacksmithery is a contributory cause of my bench. It is a contributive cause of my bench because of what it itself principally causes: certain *products* (e.g., hammer, nails) – which are the tools that Ms. Taiwo must use to produce my bench. Thus there is a causal chain: my bench is caused in some (unspecified) way by Ms. Taiwo's tools, which are principally caused by blacksmithery.[43]

Causation by Removal

We turn now to argue that one of the subordinate causes in the myth is a kind of cause that seems genuinely explanatory and plausible in ordinary cases: "causation by removal".

As we have already explained, god's activity, taking hold of and guiding the cosmos, is the subordinate cause of the change in direction in the rotation of the cosmos that seems to mark the beginning of the forward cycle. As the following passage demonstrates, god is also actively involved throughout the forward cycle, guiding the cosmos throughout the forward period:

> Listen then. This cosmos the god himself sometimes accompanies, guiding it on its way and helping it move in a circle (συμποδηγεῖ πορευόμενον καὶ συγκυκλεῖ), while at other times he lets it go (ἀνῆκεν), when its

> circuits have completed the measure of the time allotted to it, and of its own accord it revolves backwards, in the opposite direction, being a living creature and having had intelligence assigned to it by the one who fitted it together in the beginning.
>
> 269c4–7

However, god's "letting go" (ἀνῆκεν) of the cosmos, which marks the end of the forward cycle, is the *removal* of his activity or divine force. This suggests that the removal of some activity can count as a cause of changes in direction: a case of what we term "causation by removal".

Seeing the removal of an action or force as a cause seems prima facie to be a strange thing to find in Plato. However, causation by removal seems plausible when we think of many ordinary cases of change in motion. For example:

1. The string of her kithara moves in one direction when Sasha the kithara player stretches it and in the opposite direction when she lets go of it. At least part of what is responsible for and explanatory of the change in movement from one direction to the opposite direction seems to be the removal of an activity or force that was previously there: Sasha, who had previously been pulling the string, lets go.
2. Christina is sitting on a park bench and talking to a friend whilst holding her dog Boris by the lead, who is straining against it, desperate to run around the park. When she lets go of it, he runs off. Her answer, "I let go of the lead" to her friend's question "Why did Boris run away?" is explanatory and picks out something that is responsible for his running off.
3. Julia and Isaac are driving their van when it suddenly stops. Isaac's question "Why has the car stopped?" is partly answered by "the motor has stopped"; this explains why the car has stopped. It also picks out what is responsible for the car stopping: the motor stopping.
4. Jose is waterskiing. His letting go of the tow rope seems to play a causal role in why he falls; if we ask "Why did Jose fall?", "He let go of the tow rope" provides an answer. His letting go is also responsible for his falling.

Notice that causation by removal here applies not just to a change in motion from one direction to the opposite direction (1) but starting (2) and stopping (3 and 4), where the very same thing is both the cause of the removal and the thing affected (4), where they are different (1–3). Thus there is quite a variety in the cases of change in physical motion where causation by removal is helpful.

Causation by removal can be helpful in other kinds of change too:

5. Baby Lucy is sad because Sophie has stopped holding her.
6. Socrates stops learning geometry because his teaching stopped teaching him.
7. Juanita lied to her friend because he stopped respecting her.
8. Manuel found happiness because he stopped judging himself too harshly.

Number 5 is an emotive case, 6 is an intellectual case, 7 is an ethical case and 8 is plausibly a teleological case. The effects in 5, 7 and 8 are things that start, whereas the effect in 6 is an activity that ceases. Causation by removal then is widely applicable.

We have shown that readers of the myth find causation by removal, which is worth taking seriously. Reading the dialogue also yields a pertinent question about causation by removal: how far does causation by removal cause what follows? This stems from a question about the text. It seems that when god lets go, this causes the cosmos to roll backwards (thereby changing its direction). The cosmos then intervenes and rotates itself in that direction. However, it is not clear how far, if at all, god's letting go also plays some causal role this subsequent cosmic rotation. For example, one might think that the cosmos' rotation is still influenced by some of the impetus from god's letting go when it *initially* takes over. Alternatively, one might think that god's letting go is responsible and explains why the cosmos continues to turn *throughout* the backward cycle. This might be on the grounds that without some kind of impetus in play throughout the backward cycle, the cosmos would not continue to rotate *in the same direction*, or because god's having let go in the first place is a necessary condition for the cosmos' rotation at every point in the backward cycle. Another view is that as soon as the cosmos starts to turn itself, god's letting go stops having any causal influence – and this remains the case throughout the backward cycle. After all, even if it were a very minor and indirect causal role, if the god were in any way causally involved, we would not expect Plato to portray the Stranger as being so insistent that the cosmos rotates itself.[44]

The reader then will find herself asking what kind of causal role, if any, god's letting go has in the backward cycle beyond the initial reversal in direction. Similar questions arise in some of the ordinary cases of causation by removal. Consider 2. One might suppose that letting go is only really responsible for and explanatory of the Boris' initial starting forwards; thereafter, Boris takes over. However, one might argue that since Christina's letting go was necessary for Boris' running off at every point during his running away, it is in play throughout. Yet, there is something strange

about strange about claiming that Christina's letting go of the lead still has a causal role when Boris has been running away for five days.

Take 3. One the one hand, it is difficult to explain why the motor stopping is not responsible for or explanatory of the car stopping two seconds after it has stopped. On the other hand, it is strange to claim that the motor stopping is still responsible for and explanatory of the immobile car when it still has not moved ten years later. Thus the myth also points to a question to settle if we want to buy into causation by removal more generally.

Mechanical Causation

We turn now to show that reflection on the connection between the rotation of the cosmos and some of the phenomena inside the cosmos yields useful kinds of causal chain. We begin by thinking about the relationship between the mechanical and biological. In the myth, in both cycles, the rotation of the cosmos is driven by the intention of something intelligent (god or the cosmos) which causes something mechanical: rotation. The rotation of the cosmos in turn causes something else mechanical: the movement of celestial bodies. Therefore the myth gives us a particular kind of causal chain: an intelligent being's *intention* causes a *mechanical* cause for *mechanical* effect.

This kind of causal chain seems to be explanatory in many cases that are familiar to us. For example, John's intention to produce thread causes him to rotate the spinning wheel and this rotation causes a particular process: the spool of wool thinning into thread. Makela's intention to obtain water to drink causes her to rotate handle on the well, which in turn causes the bucket of water to rise to the top of the well. Shalini's intention to get to the station causes her to rotate the pedals on her bicycle, which then causes the bicycle's motion. There are also many obvious cases of causal chains that are similar but do not involve rotation specifically or where intention is not the initial cause; for example, when Tilla the carpenter's intention to make a good table causes her to hit the nail with a hammer (mechanical but not rotational), which causes the nail to move (mechanical), or when Femi *accidentally* knocks over a table (mechanical but not intentional), which in turn causes the drink on it to fall (mechanical). Thus the myth gives us a particular kind of causal chain that is genuinely explanatory.

However, the rotation of the cosmos also causes the progression of biological processes concerning generation and ageing.[45] The idea that an intelligent being could cause a *mechanistic* cause for *non-mechanical* biological processes more widely might seem strange. However, this kind of causal chain does seem helpful in very specific ordinary cases. For example, when Leela decides to go for a run, there is an intention (to run) that causes

a mechanistic motion (the regular movement of her legs), which explains the progression of a biological process (her heart rate speeds up). It also seems that even where intention is not part of the causal chain, a mechanical motion can explain a biological process; for example, if some careless builders have left a swinging bucket at head height, which hits Leela in the head, we have a mechanistic cause (a bucket swinging) for a biological process (the development of a bruise). Therefore the myth gives us causal chains that are explanatorily useful for us too.

Causation and Reversal

According to the myth, the reversal in direction of the cosmos at the beginning of the forward cycle causes reversals inside the cosmos too. When god later lets go and the cosmos rotates itself in the opposite direction, the reversals inside the cosmos are reversed in turn. It seems then that the direction of rotation of the cosmos determines the direction of certain phenomena inside the cosmos.

There are two interpretative problems that we need to settle. First, only three reversals are obviously in play: in the direction of the celestial bodies, the direction of generation and the direction of ageing. Aside from psychological and epistemic processes (presumably learning and thinking cannot change direction in the forward cycle since these are necessary conditions for the good life), the option of other reversals is left open. We take it that there are no further reversals. Second, the Stranger only claims that *external* features of ageing are reversed;[46] however, one might think that other features of ageing reverse too. We take it that the biological processes that underlie these external changes reverse too but go no further.

The reversals explicitly mentioned in the myth in the forward cycle might seem very strange to us since it seems obvious we see the celestial bodies turn regularly in one direction, we are never generated from the earth, we always begin life looking like babies and in later life (if we live long enough), our hair changes colour and we do not die by disappearing into thin air.

However, while celestial bodies seem to many to always turn in one direction, to the careful observer of the sky, it is quite plausible that the direction of *some* celestial bodies is periodically reversed. This is because of the phenomenon of "apparent retrograde motion": there are short periods where planets appear to switch from moving from west to east to east to west before returning to their original direction.[47] In addition, there are other, more ordinary mechanical processes that seem reversible: a cart might repeatedly move to the end of the road and then back again; a bucket of soil might repeatedly move up to the scaffolding and then down to the ground.

There are also certain biological processes connected to generation that are familiar to us that are reversible to some extent. If I forget to water my plant, it will wilt (deterioration) – but if I realise in time, I can water it, thereby reversing this process (generation) and, as god does with the cosmos, rejuvenating it. Suppose poor Iqbal the aardvark cannot find any food for a week. This causes weight loss. However, he then finds a huge anthill and eats a great deal for another week, thereby reversing the process of starvation and is rejuvenated.

Furthermore, Plato's focus on age makes us think about particular cases of reversibility: those relating to disease and injury, since the elderly and babies/small children are more susceptible to these. When Abigail the baby returns from nursery with a virus, she develops a high temperature – but this returns to normal as she gets better. When Grandpa Joe falls over and hits his knee, he develops a bruise – but his skin then returns to normal.

It seems then that, as on the myth, there are in fact some processes, both mechanical and biological, that are reversible. But in the myth, these are explained by something that is *itself* reversed: the rotation of the cosmos. Moreover, the reversed processes in the forward and backward cycles do not mirror one another; whilst life in the forward cycle ends with disappearing, people do not pop into existence in the backward cycle – their mothers give birth to them. Yet, they are caused by a process which is entirely symmetrical in both directions: the rotation of the cosmos. This prompts us to ask whether the more familiar of cases of reversals in mechanical and biological processes are caused by some further reversals – and if so, whether these other reversals are also symmetrical.

Even to the skilled astronomer, apparent retrograde motion is incredibly difficult to explain – we therefore leave this case aside. However, consider the ordinary and obvious cases of reversals we pointed to above: the cart that first moves forward and then backward and the bucket in the well that first moves up and then down. We take it that in both cases, a further reversal might explain the reversals in motion. For example, the cart changes direction from forward to backward because its wheels rotate in the opposite direction. The bucket changes from moving up to moving down because the rope it is attached to changes from moving up to its opposite. These reversals are mechanical at both levels. As with the cosmos and the change in direction of the celestial bodies, an exact reversal in direction of the cause will (other things being equal) result in an exact reversal.

Familiar cases of generation also seem to be compatible with many aspects of the myth. Consider the plant and Iqbal the aardvark again. In both cases, the reversals are caused by a change from adequate nutrition to inadequate nutrition. This is not mechanical but is still a kind of reversal: a change from one state of affairs to the opposite. As in the case of generation and destruction in the myth, the reversals at the level of nutrition may

not have results that exactly mirror on another. For example, the leaves of the plant might be paler, and Iqbal might put weight on in different places from where he lost it or not regain the muscle he lost.

Reversals in injury and illness are also explicable if we take some aspects of the myth seriously. The rise in Abigail's temperature is explained by some kind of increasing imbalance or dysfunction; the fall in her temperature is caused by the reversal of imbalance and dysfunction, (i.e., towards balance and function). Likewise, the change from a bruise developing to it disappearing is due to a kind of change from one direction to another: from increasing imbalance or dysfunction to decreasing imbalance or dysfunction. While not mechanical explanations as in the myth, they are nonetheless similar in that there is some kind of change from one direction to its opposite. Moreover, as in the myth, despite symmetric reversal at the level of cause, the results need not mirror one another. For example, a bruise as it develops might not have all of the same colours as it does when it disappears; a scratch might heal but leave a scar, rather than disappear entirely.

Backwards Causation

So far we have argued that the myth reveals a particular kind of causation, causation by removal, which is genuinely explanatory. We have also suggested that it points to useful causal chains and points to explanations of ordinary reversals of mechanical and biological processes. We turn now to suggest that the myth points to the possibility of a kind of backwards causation.

In contemporary metaphysics, the possibility backwards causation is taken to pose a challenge to the way we ordinarily think about causation. Consider: necessarily, for any a and b, if a causes b, a temporally precedes b. Call this the Rule of Forward Causation (henceforth RFC). RFC seems to fit with the way we ordinarily think about causation; indeed, we might think it is so obvious as to be trivial. For example, suppose Stella's hunger causes her to eat the cake at 3 p.m. It seems obviously *impossible* that this hunger could have happened after 3 p.m. The radioactive spider patently *must* have been bred before it bit Peter Parker if it is the cause of his superpowers. However, consider what we term the Rule of Backward Causation (henceforth RBC): it is possible for there to be a case where a causes b but a happens *after* b. If RBC is true, then RFC is false after all. Discussions about backwards causation in contemporary philosophy tend to focus on whether RBC is true and why or why not.[48]

It is widely assumed that the problem of backwards causation does not feature in Plato. (Indeed, it is often taken to be first raised in the Western philosophical tradition as late as Hume.) We might not be surprised by this. "Cause" in contemporary contexts picks out efficient causation. αἴτιον (what is responsible for and explains something) in Plato seems to be far

less restricted, as is its correlate effect. If understood in this broader way, RFC is not obvious at all. In particular, it seems plausible that there are cases of overlapping and simultaneous cause and effect. For example, if a philosophical problem is something that explains and is responsible for Socrates' confusion, one might think that it is a cause that exists *before, during and after* the effect of Socrates' confusion (i.e., they overlap). If having the property of redness is the cause (explanation of and thing responsible for),[49] the postbox's being red (effect), then cause and effect are *simultaneous*; the postbox has the property of redness for exactly the same amount of time as it is red.

However, even on this broader understanding of cause and effect, we take it, it is difficult to imagine a cause that *only* occurs after the effect. For example, suppose we ask what is responsible for and explains Plato talking to Socrates. There are lots of answers: the movements of Plato's voice box (simultaneous/preceding), Plato's intention to talk to Socrates (preceding), Socrates' desire to alleviate his boredom (preceding). However, it is difficult to imagine any explanation that only happened *after* Plato finished talking to Socrates. Likewise, there are lots of answers to the question "Why does the sun always rise in the west and set in the east?" that pick out something that is responsible for this effect: the nature of the sun, the movements of other celestial bodies, god. However, an explanation that happens after the sun always rises in the west is difficult – or indeed, impossible. Thus even though there is a much wider range in the kinds of things that count as cause and effect, a clarified version of RBC would still act as an interesting challenge: it is possible for there to be a case where a causes b but a *only* happens after b.[50] Call this RBC2.

Reflection on the myth in the *Statesman* yields exactly this challenge. On the picture painted by the myth in the *Statesman*, it seems, the order of cause and effect differs in different cases. For example, it seems that the change in direction of the cosmos causes and precedes many of the phenomena in the forward cycle. On the other hand, god is presumably the ultimate cause of the existence of the cosmos, but since god and the cosmos exist infinitely, cause and effect are simultaneous.

If the direction of time stays the same but the direction of causation reverses, effects will precede causes. At some levels, causation is obviously not reversed in the forward cycle. God's activity explains the change in direction of the cosmos, but the former does not happen after the latter. The change in direction of the cosmos in turn causes a change in the direction of biological processes but precedes it. However, looking closely at changes in causation that arise at the level of biological processes leads us to ask if RBC2 is true after all. Consider the case of the reversal in biological ageing. Physiological explanations of age-related features would plausibly only be available *afterwards* because they depend on what happens

later. For example, in the forward cycle, the earthborn Barry's white hair, it is partly explained by developments in pigmentation processes that happen *after* his hair is already white. This pigmentation process also seems *responsible* for his white hair. Likewise, at least part of the explanation for Ellie the 100-year-old elephant's worn teeth is what she *will* eat – and it is difficult to see how what she *will* eat would not be responsible in some way for Ellie's worn-down teeth. Or suppose we ask why David is more wrinkled than Joseph. At least part of the answer lies in David having more sun exposure than Joseph *in future*. Again, it is difficult to see how the amount of sun exposure would not be partly responsible for this discrepancy – or indeed in their wrinkles in each of their cases. This then implies RBC2.

We have suggested that the myth in the *Statesman* invites us to think about a scenario in which there is a version of backwards causation (i.e., that RBC2 is true). However, one might argue that this does not have all that much significance. There is no motivation provided for accepting RBC2. No problems like paradoxes or inconsistencies are apparent.[51] Why, then, should anybody take it to be a serious challenge? We suggest that it invites us to ask *why* we are so committed to rejecting RBC2 – and, perhaps a more difficult question: What must reality be like if it is false? For example, does the trouble stem from our ideas about the nature of time? One might think it does: it is *because* we think that the future does not yet exist that we are worried by the idea that the effect of the amount of wrinkling that earthborn Grandpa Joe has precedes its cause; that is, nothing that is responsible and explains the effect *exists* until after the effect *stops* existing.[52] One might think that it is because the direction of time stays the same but some things change backwards in the myth that RBC2 arises – and if this is the case, perhaps it motivates us to provide an argument for the view that it is impossible for the direction of time and at least some kinds of change to be separated.

Concluding Remarks

We have shown that reflection on the myth in the *Statesman* yields interesting and important ideas about causation more generally. In particular, we have shown that we find a specific kind of cause (causation by removal) and causal chains that are worth taking seriously, as well as ways to explain mechanical, generative and biological reversals. We have also argued that the myth yields a difficult challenge: backwards causation.

Notes

1 269c7–8, 270a5–8.
2 269d5–270a8, 272e4–6.
3 274c4–d4.

4 269c4–6, 270d4–e4.
5 God's turning of the cosmos is initially linked to the myth of Atreus and Thyestes (*Statesman* 268e8–269a6). For this myth see Sophocles, *Electra* 504–515, 726–744; Euripides, *Orestes* 810ff., 986–1006; *Electra* 726–744; and *Iphigenia in Tauris* 192–105. For a discussion on the identity of this God, see White (2007, ch. 2), Skemp (1952, 24), Miller (1980, 36), Rosen (1979, 42, 43), Dorter (1994, 194) and Carone (2004, 2005, ch. 6).
6 270c11-d2.
7 The only reference to a white-haired race before Plato is in Hesiod, *Works and Days* 181; see Guthrie (1978, 195). Note that there is in fact longstanding disagreement about whether the earthborn really are white-haired in Plato; see, for example, Adam (1902, 295–296), Diès (1935, xxxiv–xxxv), Ferrari (1995, 390, n. 2), Fraccaroli (1934, 254, n.1), Taylor (1926, 397) and Rowe (2010). We do not have space to address objections here.
8 270d7–e10.
9 For other references to earthborn people in Plato, see *Critias* 109d ff., *Symposium* 190b, 191b–c; *Republic* 3.414c–415e; *Sophist* 247c–248e; *Protagoras* 320e–321c; *Menexenus* 237b–c; and *Laws* 663e. Apart from the strong similarities with Hesiod's *Works and Days*, compare with autochthonous races in Homer's *Odyssey* (vii.58–60, 206; x.120) and Hesiod's *Theogony* (182–187, 675–715), but also the story about the *Spartoi* (for example, in Ps.-Apollodorus, *Bibliotheca* 3.22ff.; Apollonius of Rhodes, *Argonautica* 3.1179ff.; Pausanias, *Description of Greece* 9.5.2; Ps.-Hyginius, *Fabulae* 178; Ovid, *Met*., 3.101ff., 3.541ff.; Seneca, *Oedipus* 725ff.).
10 The text is not altogether clear on whether (all of) the earthborn are born as reanimated corpses who rise from their graves in the ground.
11 271c5–7.
12 The Stranger himself eventually suspends judgement on whether this is really the case because of a lack of sufficient evidence (272b8–d7). For discussion of whether the earthborn could genuinely have a better life than those in the backward cycle, see, e.g., McCabe (1997) and Lane (1998).
13 271d5–6.
14 271d6–e4, 272b8–d3.
15 271e4–272b1.
16 Our evidence for this is 271e8–272a1. We are told here that the earthborn do not possess (κτήσεις) γυναικῶν καὶ παίδων. It is clear that the earthborn do have childhoods (whether conceived of as the earliest temporal stages of their lives or in terms of the external features that we associate with childhood). We can see no good reason why there would be no earthborn women. Thus we take it that Plato does not mean that there are no women or children but rather that there are no marriages (hence Rowe's translation of γυναικῶν as "wives" rather than "women") or children who *belong* to any other earthborn person, so that the point here is that the earthborn have no caring responsibilities.
17 272e6–273a2.
18 269d5–270b1.
19 273c6–e12.
20 274b5–e1.
21 270a4–5, 273a2–3.
22 McCabe makes this point, suggesting that it might function as "a discussion of divine teleology or a serious explanation of the structure of the cosmos" (1997, 99).

23 Scholars have also dealt with the cosmology indirectly in the context of ethical investigations into the myth; e.g., Lane (1998), McCabe (1997), Rowe (1995). We leave aside ethical matters here.
24 269b5–c1.
25 For recent discussions on this, see Betegh (2021), Lisi (2004), Carone (2004, 2005) Gardner and Yau (2020), Rowe (1995) and Verlinsky (2008, 2009).
26 Giorgini argues that the direction of time is reversed in the god-guided cycle (2005, 199), but this view is something of an outlier.
27 See, e.g., Brisson (1974, 1995), Carone (2004, 2005), Rowe (1995) Verlinsky (2008, 2009).
28 Readings that take the details of the myth more seriously are offered, for instance, by Mohr (1978) and Robinson (1967). An influential reading that takes a different view is offered by Brisson (1974).
29 "Eleatic Stranger: Then we must travel some other route, starting from another point.

Young Socrates: What route is that?

Eleatic Stranger: By mixing in, as one might put it, an element of play: we must bring in a large part of a great story, and as for the rest, we must then – as in what went before – take away part from part in each case and so arrive at the furthest point of the object of our search. So should we do it?

Young Socrates: Absolutely.

Eleatic Stranger: In that case, pay complete attention to my story, as children do; you certainly haven't left childish games behind for more than a few years." (268d5–e6), trans. Rowe (1995).
30 The myth is deeply reminiscent of Hesiod (*e.g.*, *Works and Days*, 174–250). El Murr (2010; 290) discusses the two texts side by side in detail, persuasively characterising the central difference between Plato and Hesiod's myths as providing an explanatory account (Plato), rather than a detailed description (Hesiod). Apart from the strong similarities with Hesiod's *Works and Days*, comparisons can be made with autochthonous races in Homer's *Odyssey* (vii.58–60, 206; x.120) and Hesiod's *Theogony* (182–187, 675–715), but also the story about the *Spartoi* (e.g., in Ps.-Apollodorus, *Bibliotheca* 3.22ff.; Apollonius of Rhodes, *Argonautica* 3.1179ff.; Pausanias, *Description of Greece* 9.5.2; Ps.-Hyginius, *Fabulae* 178; Ovid, *Met*., 3.101ff., 3.541ff.; and Seneca, *Oedipus* 725ff.). Guthrie (1978, 195), agreeing with Skemp (1952, 111) also reminds us that "Theopompus, a younger contemporary of Plato, wrote of a tree whose fruit made men's lives flow backwards from old age through maturity and childhood to its end, and it is a matter of opinion whether he is more likely to have borrowed this from the *Politicus* or used a common source (Theop. *ap*. Ael. *VH* 3.18, text in Frutiger, *Mythes* 243 n. 1)." For the myth's relation to the religious and literary tradition more widely, see Hernández de la Fuente (2016).
31 "There have occurred in the past, and will occur in the future, many of the things that have been told through the ages" (268e7–8).
32 On thought experiments in Plato and ancient philosophy more generally, see Ierodiakonou (2005, 2011, 2018) and Becker (2018).
33 For references to the age of Cronus, see Hesiod, *Works and Days* 109–120, Empedocles DK31B127, B17 and 26. Rowe (1995, 187) also alerts us to Egyptian priests who reported the reversal of the sun's course (Herodotus 2.142) and an Egypt ruled by gods (2.144).
34 All translations are by Rowe (1995) with some modifications.

35 Interestingly, the idea that a πάθος can be a cause is markedly different from causes in the *Phaedo*, for example.
36 273d4–e3.
37 E.g., god is the one who "fashions" (δημιουργοῦ) the cosmos at 270a5.
38 Hence, the description of god as "the father" of the cosmos at 273b2.
39 270c11-d2.
40 270c11–12.
41 270a3–5.
42 See McCabe (2000, 185–193) on teleology and terminal causes here.
43 Note also that longer causal chains could arise if contributory causes themselves have contributory causes.
44 E.g., god, being compared to a "steersman", is said to have "*retired to his observation-post*" after letting go of the oars (272e3–6). See McCabe on what this tells us about god's control (1997, 100 n.29)
45 As we explain below, many details of these processes are not given.
46 Hence Rowe's translation of 270d7–270e1: "First the *visible age* of each and every creature, whatever it was, stopped increasing, and everything that was mortal ceased moving in the direction of *looking* older" (Rowe 1995, 67).
47 It is worth noting that, as far as we know, this change in direction was not shown to be *only* apparent until Ptolemy.
48 For arguments in favour of RBC, see, e.g., Dummett (1954, 1964), Evans (2015), Lewis (1973a, 1973b); for arguments against, see, e.g., Black (1956). The range of considerations in answering these questions is very wide and includes physics (see, e.g., Csonka [1970], Price [2012]), the nature of time (see, e.g., Faye [1997], Mellor [1991]), counterfactuals (e.g., Lewis [1973b], Seli [2020]) and paradoxes (see, e.g., Schlesinger [1980], Lewis [1976]).
49 This is one way to look at the causal role of participation in Forms in the *Phaedo* and *Parmenides*.
50 This, of course, would still be concerning in the context of contemporary metaphysics.
51 In contrast, there is much discussion of paradoxes and inconsistency in contemporary discussion, notably the Newcomb paradox (see, e.g., Locke 1978, 1979; Gallois 1979; Schlesinger 1980) and the retrosuicide paradox (see, e.g., Lewis 1976).
52 This would be consistent with both modern-day presentism and possibilism.

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4 Chance, Necessity, and Demiurgic Causation in the *Timaeus*

Viktor Ilievski

This chapter's main objective is to explore the meanings of Plato's notions of chance (*tychē*), necessity (*anankē*), and demiurgic cause as employed in the *Timaeus*, while occasionally referring to other dialogues as well. An attempt is made here to demonstrate that they – as far as their cosmologically relevant conceptual sides are concerned – approximate progressively one another, to the effect that chance, in one of its aspects, ultimately becomes identifiable with necessity, and necessity, in yet another of its semantic features, may be associated with the principal cause of the *Timaeus*. More precisely, the analysis embarked upon here aspires to show (1) that the Timaean *tychē*, in its pertinent cosmological sense, is related to a cause that produces necessary but purposeless effects; (2) that Plato in the *Timaeus* explicates the material causal necessity known from the Presocratics and named *anankē*, which is ultimately identifiable with *tychē*; and (3) that Plato in the same dialogue also implicitly evokes a different, novel kind of teleological *anankē*, embodied in the figure and the exploits of the Demiurge, who is a *nous* characterized by goal-directed, efficient causal powers that actively strives for the best and represents the prime necessity of the unfolding of the creation.

I

Plato uses the noun *tychē* (and its cognate *tynchanei*[1]) frequently in the *Timaeus* but does not provide an explanation or definition of the concept behind it. He also discernibly employs it with at least three, probably four, different senses. Of course, taking into consideration Plato's virtually consistent disregard of terminological accuracy, it is little wonder that the same phenomenon resurfaces in this case as well. For the purpose of this text there is no need to supply a detailed list of the word's occurrences; instead, it will suffice to point out, by way of illustration, no more than five most remarkable and idiomatic ones.

DOI: 10.4324/9781003306450-5

Plato employs *tychē* for the first time at 18e3, in a passage that refers back to the "white lie" of the *Republic* 460a. Long story short, Plato's Socrates in both dialogues proposes a rigged marriage lottery that would enable Kallipolis' guardians to make matches productive of best progeny, without thereby accepting upon themselves the blame for the prospective parents' dissatisfaction or enmity caused by the probable absence of mutual emotional and physical attraction. The latter are supposed to hold *tychē* responsible for their lot: "because they would think that *tychē* is the reason behind the pairing" (*tychēn hēgoumenois aitian tēs syllexeōs*, 18e3).[2]

At 25e, Critias, concluding his preliminary tale of Athens and Atlantis, marvels at how Socrates' account of the best city bears such strong affinity to the ancient story of Solon, claiming that it must be "due to some divine fortune" (*daimoniōs ek tinos tychēs*, 25e4); one Stephanus page later, Socrates encourages Critias to deliver the whole narrative, and wishes him to be assisted by good luck (*agathē(i) tychē(i)*, 26e6) in that enterprise.

One of the crucial ideas of the *Timaeus* – the bifurcation of causes into rational (*emphrōn*) and those bereft of intelligence or purpose (*monōtheisai phronēseōs*) – is introduced after the discussion of the mechanism of vision, in a passage beginning at 46c and extending to 46e. The second kind of cause is therein famously declared to "bring about on each occasion effects chancy and disorderly" (*to tychon atakton hekastote exergazontai*, 46e5–6). It represents the principle of corporeality which contributes to the world all the unwanted properties the latter regularly displays.

Lastly, at 69b, in course of recapitulating the primordial stuff's general condition encountered by the Demiurge before the dawn of creation, Timaeus reminds his interlocutors that the elemental *ichnē* used to subsist in a state of utter irregularity. The formative principle lacking, all proportion was absent from those traces, unless it seemed to emerge in them "by some chance" (*hoson mē tychē(i)*, 69b6). They could be utilized as building blocks of the cosmos about to be moulded only after the Maker had set them in order, in accordance with the codes of rationality.

So these would be probably the most important occurrences of *tychē* in the *Timaeus*. Now, before attempting to clarify the senses in which the word is used, it may be profitable to cast a glance, taking Plato as a reference point, at some interpretations that both follow and precede him. Unsurprisingly, it was the great systematizer, Aristotle, who toiled to determine what *tychē* really stands for. The main bulk of his analysis of the concept, as pertaining to the non-moral sphere, is given in the *Physics* II.4–6.[3] He therein also differentiates between *tychē* and *to automaton* (chance or luck, and the automatic or the spontaneous), but this distinction is not crucial for our purpose, and it will not be pursued here.[4]

Aristotle turns on to *tychē* after having enumerated and defined the various kinds of *aitiai* in *Ph*. II.3. He does not doubt that the former exerts causal influence, based on both *endoxa* and everyday experience (196b13–17). Still, it is not on a par with the four standard *aitiai*, but instead produces its outcomes as an accidental cause only (*aitia kata symbebekos*, 195a5–6; see *Metaph*. 1027a7–8).[5] Besides, it is never the cause of things that always, or for the most part, come to be in the same way (196b10–13), and belongs to the area of that which is for something (i.e., that has a purpose). *Tychē* is, thus, an accidental cause "in the field of things which are capable of coming to be neither simply nor for the most part, and of such of these as may come to be for something" (197a33–35).[6] To illustrate this, Aristotle gives the example of a man who chose to go to a certain place for a purpose (e.g., to buy a book) but happened to meet a debtor of his and collect the money. So the recovery of the money was in this case caused accidentally by *tychē*, considering that he neither left his home with that specific intention in mind nor used to visit that place regularly (i.e., always or for the most part; 196b32–197a5).

There were, of course, other opinions on *tychē* in the ancient world, both before and after Aristotle, and he, in accordance with his general methodological approach, catalogues some of the former in *Ph*. II.4. His complaint is – predictably – that none of them had been either properly articulated or correct. I shall mention three views portrayed in the *Physics*, as well as a fourth, post-Aristotelian one, which seems related to the relevant Platonic sense.

The first outlook belongs to those who deny that there exists anything like chance in the architectonics of the universe. They claim that everything that is said to arise as a consequence of chance or luck, in fact has a distinct and discernible cause other than *tychē* (196a1–11).[7] So *tychē* is basically a misnomer applied in the field of causal theory by those who are not reflective enough.

Next come the *physiologoi*, Empedocles and Democritus in particular, who make use of chance and the spontaneous in their cosmogonies but stop at that and leave them unelucidated and obscure (196a20–196b5). Especially astonishing is the case of the Atomists, who ascribe to chance the very activation of the atomic swirl which produces the worlds. As they have famously been considered causal deterministsince the early days (196b3), their view could imply that necessity has its origin in chance, and this is what Aristotle holds to be rather significant.

The *Physics* also mentions those who believe that *tychē* is a genuine cause, although inscrutable to human mind, because of being something godly and mysterious (196b6–7). The ascription of chance and luck to divine will or providence was, of course, a prominent (but not exclusive[8]) feature of the grasp the lyric poets and dramatists (e.g., Pindar, Aeschylus,

Sophocles, Euripides) had on the phenomenon, and it also, naturally, survives to some extent in Plato.[9] This understanding, however, is not philosophically relevant. Just the opposite is true of the last viewpoint that is going to be mentioned here, namely the one advanced by Epicurus. He seems to have awarded a prominent place to *tychē* both in his ontology and his ethics.[10] It is inseparably tied to the both criticized[11] and lauded[12] idea of the *clinamen*, which is a property of the atoms that constitute gross objects, as well as of those out of which the soul is composed.[13] Its function is to break the heavy chains of determinism in nature and in the moral sphere. One can therefore justifiably state that Epicurus admits a principle of chance and indeterminateness in his ontology, as well as that it is, with a degree of certainty, ascribable to the workings of the atomic swerves.[14]

It was necessary to present this panoramic view of the opinions of Plato's predecessors and successors in order to establish the context and perspective against which his own take on the issue can be assessed. Now that this has been done, we can revisit the five aforementioned occurrences of *tychē* in the *Timaeus* and try to discern the sense in which they were used. First, it is safe to dismiss from consideration the Aristotelian interpretation; it is clear that Plato never developed (at least in writing) anything even distantly similar to Aristotle's elaborate and systematic treatment of the subject. He also does not uphold the first historical position presented in the *Physics*, according to which *tychē* is just a word wrongly applied by the uneducated to unknown but distinct and knowable causes. Indeed, Plato explicitly consigns certain outcomes to *tychē*, although without providing any account of its nature and workings.[15]

It is equally certain that Plato sometimes associates *tychē* with a godly or daimonic powers, as witnessed by the *daimoniōs tychē* of *Ti.* 25e4.[16] Here the phrase is probably best rendered as "divine fortune", and it stands in affinity with the third historical view cited in Aristotle's *Physics*. Rather close in sense could be the *agathē tychē* of 26e6, because the Ancients often associated good luck with Fortune personified, or with divine interference.[17] This, however, does not justify Dudley in claiming that Plato's general tendency, recognized by Aristotle in the *Physics*' passage in question, was to use *tychē* with this meaning (2012, 5–7). Very sketchily: my contention is that whenever *tychē* is employed in philosophically significant statements, it means something else.[18] Even when Plato plainly writes of *theia tychē*, he often does not want to state that chance, or luck, is necessarily godly; that is, he does not apply the adjective predicatively but uses the whole phrase as an adjective-noun collocation. In other words, he is not saying that *tychē* is *theia*, or of divine origin, but that sometimes people witness the presence of godly chance, or divine fortune (*theia tychē*). Such is the case of *Resp.* 529a and *Leg.* 798a–b, for example.[19] Besides, there are passages where Plato puts chance and the divine side by side, which indicates that he would

take them to be two separate factors. Such examples are *Resp*. 499d, 619c, and *Leg*. 757e.

The distinct nature of *tychē* is even more manifestly portrayed in the *Laws* 709b, where chance (*tychē*) and opportunity (*kairos*) are said to cooperate with God (*meta theou diakubernōsi*) in producing certain results. The word again seems to refer to a power inferior and subordinate to, but to a degree independent from, God. Thus both throughout the Platonic corpus in general and in the *Timaeus* in particular, *tychē* emerges as something different from the instances when it is qualified by an adverb or an adjective and is probably best rendered as "divine fortune" and "good luck".

This is precisely the case with the other three occurrences of *tychē* in the *Timaeus* cited above, namely 18e3, 46e5–6, and 69b6. The first impression that one gets is that Plato is there talking of some unforeseen and unforeseeable, accidental incidence, to which no definite cause can be safely ascribed – and that would align his position with the pre-philosophical understanding of *tychē* as a "brute fact", chance proper, which asks for no explanation and to which no distinct cause can be allotted. However, there could be, in fact ought to be, something more to it, because randomness seems to play a rather peculiar role in the Timaean cosmogony. More precisely, *tychē* at 18e3 – with its seemingly random falling of the lot – can be delegated to the province of inexplicable accident, while 46e5–6 and 69b6, though they do not deviate from the same meaning, ask for a still additional interpretational layer. This is also what we gather from 34c3: *alla pōs hēmeis poly metechontes tou prostychontos te kai eikē* – "but as we to a large degree partake of the accidental and the purposeless".[20]

In this last sense, *tychē* bears its cosmogonical and cosmological import, and is, to a degree, a reaction to the Democritean unilluminated concept, and also possibly reflects itself upon Epicurus' brief handling of *tychē* in his *Letter to Menoeceus*.[21] Of course, Democritus' understanding of chance and randomness is, to put it mildly, murky to the modern reader. On the one hand, there are the testimonies of Diogenes Laertius[22] and Pseudo-Plutarch,[23] which bear witness to Democritus' doctrine of necessary proceeding of everything that is, from the first conceivable moment onwards. On the other, we have Aristotle's aforementioned remark in the *Physics* IV, as well as his late antique commentator's testimony,[24] which indicate that Democritus considered chance to be the initial trigger of all necessary events. This conflation of two so disparate notions has indeed been a cause of disbelief and puzzlement, but as a prominent 20th-century classical scholar put it, "There can be no serious doubt that Democritus did give these two apparently inconsistent accounts of the origin of the whirl, that it was 'necessity', yet came into being 'automatically' ".[25] As a matter of fact, it will turn out that the inconsistency in this case has indeed been only apparent, and so not only for Democritus, but for Plato and Aristotle as

well. This is an idea as important as it is peculiar, and I shall return to the chance-necessity relation in the concluding paragraphs of the next section. In the interim, it is important only to keep in mind that, for Democritus, an act of *tychē* in the cosmological sense was an event devoid of purpose,[26] or even of proper cause,[27] and that this was the conception both appropriated and criticized by Plato in the *Timaeus* and *Laws* 888d–889e, respectively. Thus *tychē* in *Ti.* 46e5–6 is related to the Democritean notion, and acquires the meaning of an effect of the blind forces of nature, or rather of corporeality, which exerts its influence on the Demiurge's creation – to a certain extent against his will – and which, if left unrestrained, would produce not only chaos and disarray[28] but could ultimately endanger the very subsistence of the world.[29]

To sum up, it seems that Plato in the *Timaeus* uses the word *tychē* in several different meanings: divine fortune (25e4), good luck (25e4), inadvertent occurrence (i.e., chance to which a definite cause can be hardly ascribed [18e3 and possibly 69b6]), and finally chance in the cosmological sense in which it is associated with an event, or a cause, that produces purposeless, arbitrary effects (46e5–6, but also 34c3, and possibly 69b6).

II

The Greek work *anankē* and its cognates are common enough, so Plato utilizes them plentifully, both in the *Timaeus* and throughout his corpus. I shall, therefore, mention only a few, perhaps more noteworthy occurrences. Necessity figures prominently in 42a, where the souls' initial incarnation is being described: whenever they should of necessity (*ex anankēs*) be implanted in bodies, first sensation and affections necessarily ought to arise: *anankaion eiē . . . gignesthai* (42a3–5) – and the same *pathemata* are once again said to be necessary (*anankaia*), at 69c8. The accessory causes, which are to play such a significant role in Timaeus' second, improved cosmogonical discourse, are said to be causes that – among other things – are first themselves set in motion and then necessarily make yet other entities move (*kata anankēs kinoutōn gignontai*, 46e1). One Stephanus page later, Plato indeed sets out to explore and explain the results of the secondary, wandering cause; that is, the "things that come into being through Necessity" (*ta di' anankēs gignomena*, 47e4–5). This is essential for the new beginning because the cosmos was, in fact, "begotten from the bringing together of Necessity and Intellect" (*ex anankēs te kai nou systaseōs egennēthē*, 48a1–2). However, not in just any odd way, but through the primary cause's careful planning and directing of the secondary ones towards the best, as far as that was possible: "Intellect established its reign over Necessity (*nou de anakēs archontos*) by persuading her to lead most of the created things towards what is best . . . this All was put together in the

beginnings through defeat of Necessity (*di' anankēs hēttōmenēs*) by intelligent persuasion" (48a2–5). In summing up his discourse on what comes into being through Necessity, Plato once again emphasizes the subservient role of the secondary, material causes, and the superior, formative part of the divine one: "the artificer of the fairest and the best . . . took up . . . all those things thus naturally disposed of necessity (*ex anankēs*) . . . wherefore two kinds of causes need to be distinguished – the necessary, on the one hand (*to men anankaion*), and the divine (*to de theion*) on the other" (68e1–7).

Just as in the case of *tychē* above, so with *anankē* here, I shall begin the discussion with a short overview of Aristotle's views, and again on account of his love of preciseness. The *locus classicus* for Aristotle's delineation of meanings of the word "necessity" is *Metaphysics* V (1015a20–1015b15), although he engages with the subject in many other places.[30] The necessary, for Aristotle, is (1) that which cannot be otherwise (*Metaph.* 1015a33–34).[31] It is from this primary sense that all other kinds of necessity are derived. This necessity belongs, first and foremost, to the simple (*to haploun*, *Metaph.* 1015b12), to things eternal and unalterable, such as are the celestial bodies or the immutable truths of mathematics.[32] It is called necessity absolute, simple, or unconditional (*to haplōs anankaion*, *Part. an.* 639b24). There is, however, also conditional, or hypothetical necessity (*to ex hypotheseōs anankaion*, *Part. an.* 639b25), which belongs to things born of nature or created by craft. The latter denotes the necessity of the material, without which a thing, *if it is to be*, cannot be. This is to say that material things have certain fixed properties – stone is heavy, water is light – and these necessarily have to be utilized as such if, for example, a wall is to be constructed.[33] However, they contribute to the final product as matter only; the wall is not on account of them, but on account of some purpose (i.e., "for something").[34] To this realm of hypothetical necessity seem to belong (2) the necessity of respiration and food, in whose absence life is impossible; and (3) the necessity of the conditions without which some good cannot be, as restoring health is impossible without medicine, or earning money without a business trip (*Metaph.* 1015a20–25). Aristotle also recognizes (4) necessity that arises from the compulsory and compulsion (*to biaion*, *he bia*, *Metaph.* 1015a26), that is, the constraint imposed upon the natural impulse and the free act of choice (*para ten hormen kai ten proairesin*, *Metaph.* 1015a27); and (5) the necessity of logical deduction, when the conclusion cannot be otherwise, provided the premises are true (*Metaph.* 1015b6–9).[35] The last two are also conditional necessities, being relative to the exertion of force and to the premises' truth-value.[36]

The distinction between absolute and hypothetical necessity made in the preceding paragraph is important for understanding Plato's notion of *anankē* in the *Timaeus*. Apparently, that is also the area where Aristotle's

debt to his teacher is rather easily observable. Indeed, it seems almost indisputable that Aristotle derived his doctrine of hypothetical necessity from the *Phaedo* 96b–99d, where Socrates famously narrates his intellectual biography. In short, after suffering disappointment after disappointment with the cosmological theories of the early *physikoi*, Socrates stumbles upon Anaxagoras' book, where he finally discovers the sagacious idea that Intellect is the director and cause of everything that is.[37] Still, then yet another disillusionment follows. Instead of bestowing true precedence on *nous* and explaining its causal activity through the account of why it is the best for things to be the way they are,[38] Anaxagoras ascribes to it some kind of *deus ex machina* status, while direct causes he finds in the same old physical elements. This strategy is detrimental, complains Socrates, because it will forever preclude the researcher from distinguishing the real cause (*to aition tō onti*) from that without which the cause would not be a cause (*aneu hou to aition ouk an pot' eiē aition*, 99b3–4). And these are, obviously, the same things that Aristotle will later denominate as hypothetical necessity and that for the sake of which (*hou heneka*) something is,[39] that is, the material and the teleological cause.[40]

The factor without which a cause would not be a cause is also present in the Timaean cosmogony.[41] It is, however, promoted to a higher status – the necessary condition of the *Phaedo* becomes a proper cause in the *Timaeus*, although a subservient one. In the *Timaeus* the physical elements are turned into contributing or accessory causes (*synaitia*, 46c7), meant to complement and facilitate the work of the *prōtē aition* (i.e., the *nous* personified in the form of the Demiurge): "Now all these things are among the accessory causes which the God uses as his servants in achieving the best as far as possible" (46c8–d1). The *synaitia* of 46c–d in 48a receive the name *planōmenē aitia*, the wandering or irregular cause, which turns out to be non-different from *anankē*, or Necessity – a *term* so unexceptional to the Greeks in general as well as to Plato in particular, but a *concept* so peculiar to the *Timaeus*. And although *anankē*'s latter aspect, which is usually rendered capitalized in English, is of central importance, there is more talk of necessity in the *Timaeus*.

Thus from 28a4–6 we learn that "everything that becomes necessarily comes into being through some cause".[42] That is to say, everything that exists in the world of becoming, of necessity must have been caused by something: *ex nihilo nihil fit*. Next, an incarnated soul cannot not be afflicted by affections, pains and pleasures, if it is to function in the physical environment. Their encroachment is necessitated by the mutual interaction of the material elements and the embodied spirit, as in 42a3–5 and 69c8. Also listed above was the 46d–46e passage, where the secondary causes were contrasted with the primary one and said that, once themselves put in motion, they of necessity set yet other entities in motion. Finally, from

48b and 53c–55c – where the construction of the geometrical shapes of the four primary bodies is described – it seems apparent that the elements also have certain necessary natures.

These examples disclose tacit allusion to the concept of necessity which possibly has its origin in the *Phaedo* discussions of causation and immortality (103a–107b). Plato there seems to operate with a concept of necessity which is different from the one that simply provides necessary conditions for something to be. For example, he explains that a thing must never be an opposite to itself (103b–c) – consequently, fire could not admit of coldness and remain fire (103c–d); threeness can never be separated from, or must necessarily contain, oddness (104a, 104d), and so on. Since Plato obviously never made that conceptual distinction, Sorabji holds that it remains unclear whether he has in mind logical or causal necessity here;[43] still, it is conceivable that he might have implicitly worked with both notions. On the one hand, he could have considered that "nothing can be opposite to itself" and "fire is hot" were, to put it anachronistically, expressions of the law of identity and an analytic truth, respectively, while on the other that a shower of heavy snow must necessarily extinguish a burning pyre.

The same is applicable to the above examples from the *Timaeus*: "everything generated must have a cause of its generation" can be read as a statement of an analytic truth, whereas causal necessity is implied, for example, in the assertion that a group of physical entities propelled into motion in a material plenum[44] must necessarily cause other entities to move as well. Alternatively, one may claim that some of the examples are instances of both logical and causal necessity, and so on. Still, they all seem to be subsumable under the provisional heading of material necessity, because their operation is limited to the realm of becoming – indeed, the Demiurge and the Paradigm have no cause of their existence, the World Soul is never being attacked by violent passions and emotions or subjected to irrationality, and so on. And falling thus within the province of becoming and its material, all Timaean necessity discourse (unlike the *Phaedo* one, which does imply relations and entailments of Forms) may be linked to the one of the dialogues great novelties – the irregular, contributing cause, better known as *anankē*, or Necessity. This is to say that, although Plato most probably had possessed a richer concept of necessity, in the *Timaeus* he put to the fore what was going to become the Aristotelian hypothetical necessity, and for a reason.

The *Phaedo* speech on causation and teleology, the entire Timaean cosmogony, huge chunks of the *Laws* X are all, to a large degree, reactions to the Presocratic materialistic and mechanistic accounts of the cosmos. Plato is there raising his voice against the non-teleological explanations; he is convinced that the world is *designed* for a *purpose*. Design and purpose presuppose intelligence, and they are all deducible from the perceived order

and regularity. For the bodily is incapable of orderly conduct,[45] it is intrinsically indeterminate, and, if left on its own, destined to "plunge into the boundless sea of unlikeness".[46] However, it is also an indispensable ingredient of the universe, without which the Demiurge cannot operate: once again, he does not create *ex nihilo*. And exactly this is the *anankē* of the *Timaeus*, variously designated as *synaitia, planōmenē aitia, to sōmatoeides* (*Pol*. 273b4) – Necessity used in a substantial, and not only adverbial sense[47] – an entity and a force that, to a degree, constrains the *poiētēs kai patēr*, a notion that expresses strong compulsion and inevitability, and which is, somewhat surprisingly, compatible with certain aspects of *tychē*, as applied in the Presocratic cosmologies.[48] This congruency is contrary to the contemporary intuitions, because we often view necessity as connected with laws of nature[49] or laws of logic.[50] However, for Plato and Aristotle it was not so, at least as far as non-absolute necessity is concerned. They both conceived of corporeality as intrinsically indeterminate and therefore incapable on its own – that is, without the guidance of the teleological principle – of law-like behaviour and purposeful causal efficacy.[51] And if material necessity is taken in isolation, divorced from the goal imposed by the final cause – although in its workings there always will be some grade of regularity – it turns out to be not only compatible, but even identifiable with *tychē*, which always remains ateleological, blind, and inscrutable.[52] As already mentioned, the four elements have necessary natures and are characterized by invariable properties, that are also fixed by the specific combinations of the basic triangles which constitute them. Thus fire, as long as it is fire, will always remain dry and hot, will move upwards, and will display regular behaviour. Still, unlike us, both Plato and Aristotle saw law, order, *cosmos* not simply in repeated behaviour, but first and foremost in rational purposeful action and goal-directedness. Necessity, that is, the *causa materialis* of the creation, on the other hand, "is not capable of displaying fixed structure nor any intelligence for no purpose whatsoever" (*logon de oudena oude noun eis ouden dynata echein estin*, 46d4–5). Therefore the initial predictability of Necessity's effects diminishes and ultimately disappears along the causal chain, especially in view of the overwhelming complexity of the material cause's multifarious instances of blind agency. In virtue of this, it acquires its close relatedness to *tychē*. This is why Aristotle sees no issues in ascribing to his opponent the thesis that rain may come, or teeth may grow, *ex anankēs*, when he obviously means that this would happen by coincidence, spontaneously, by chance.[53] Obviously, his position is that if a phenomenon does not come about "for the sake of something", if it could be somehow produced through the necessity of the material only, than it would be a product of coincidence or chance. Necessity is here contrasted to goal-directedness, and thus *anankē* becomes almost synonymous with *tychē*.[54]

For that same reason Plato is justified in equating Necessity (*anankē*) with the irregular cause (*planōmenē aitia*), and in stating that its results are chancy and disorderly (*to tychon atakton*). Plato's universe is a world of the great divide between "divine purpose and chance associated with necessity",[55] where the former has the upper hand and enjoys absolute priority. The absence of purpose in natural things and the reliance on chance instead was the doctrine of the "wise men" (*sophoi*),[56] which Plato first explicates in the *Laws* 888d–889e, and next sharply criticizes. Their claim is that the amalgamation of the elements and their properties into visible and tangible objects is not due to Intellect (*nous*) or God (*theos*), but simply to nature (*physis*) and chance (*tychē*). These necessary combinations give rise to chancy mixtures (*kata tychēn ex anankēs sunekerasthē*, 889c1), which is another example of the conceptual cohabitation of chance and necessity. And exactly against such conditional, contingent necessity perceived as the originator of the cosmos, Plato raises his voice; in opposition to it he constructs the elaborate Timaean cosmogony of sacred design. This is to say that in Plato, as paradoxical as it may sound to the modern reader, the causal necessity of the material is contingent and chancy, while the teleological directedness propelled by Intellect is factually necessary, because it strives for the Good. It is thus not surprising to find that the "necessity of the good" is present in Plato under the very same name of *anankē*. This one plays a prominent role in the *Republic*'s Myth of Er, where the principle of the universe's rational order is portrayed in the garb of the goddess Necessity (616c; 617b, c, d; 621a). Unlike the Timaean *anankē*, which is chancy, essentially disordered and ultimately inscrutable, this other *anankē* stands for the necessity of an all-encompassing law, since it represents implementation of the divine *nous* in the sensible realm, meant to direct the motions of the universal spheres, and in general to lead the whole towards its goal, towards what is best. This same kind of final necessity has very likely been alluded to in the *Phaedo* 97e1, where Socrates speaks of his hopes of discovering in Anaxagoras' treatise the reason and the necessity (*tēn aitian kai tēn anankēn*) behind the present architectonic of the universe, presupposing – as it will become clear, wrongly – that the latter would share with his readers the teleological and superphysical understanding of reality. Finally, in the aforementioned *Ti.* 42a3–5, the term *anankē* is utilized to express both types of necessity: the necessity of the goal, by which the souls are planted in bodies in order to make the universe complete and a perfect image of the paradigm, as well as the necessity of the material, by which the embodied souls are bound to experience violent disturbances due to the irrational motions of the elements.[57]

Thus it may be said that two major types of necessity are discernible in the *Timaeus*. The first one is the material causal necessity inherited from the Presocratic cosmologies, which is random, unreliable, and productive

of chancy effects. The second is the novel, Platonic necessity of intelligent, teleological, and providential nature. As Plato emphasizes on several occasions (48a, 68e–69a, 75b–d, 75e), they stand for two distinct causes that combine to produce the sensible world.

III

These are, of course, the famous Timaean *anankē* and *nous*, the former being a subordinate cause of hypothetical necessity, the latter the primary one – which I also called necessity of the good – personified by the figure of the Demiurge. In what follows, Plato's stance on demiurgic causation as a crucial ingredient of the *Timaeus*' causal model will be briefly explored, together with its essential affinity to the second kind of necessity outlined above. For obvious reasons, no attempt will be made here to delve into the intricacies of the long-standing debate over Plato's general stance on causation, which includes such difficult and contested issues as the causal efficacy of the Forms,[58] Aristotle's exclusion of efficient and final causation from his interpretation of Plato's theory,[59] souls as causes, and so forth.[60]

At the beginning, however, a word is due to the general conception of cause and causal relation as it is conceived now and was conceived in the Antiquity. The cause-effect connection is one with which we operate almost daily, throughout our adult lives; and since it is so common and important, every developed person has some intuitive grasp of what is going on there. It could be suggested that the contemporary pre-philosophical notion of causality includes at least three ideas: temporal precedence of the cause, its employment of some kind of active force in order to give rise to the effect, and the one-way dependence of the latter on the former. This is a simple and, as it seems, rather veridical intuition of the surface features of the complex phenomenon of causation, which has been thoroughly investigated and analysed by the philosophers. Once again, it is impossible here to mention even the basic aspects of the debate;[61] instead, for the purposes of illustration, only the characterizations offered by Hume will be enumerated.[62]

In *THN* I.III.15 he proposes eight general rules for determining a causal relation between two objects: (1) the cause and the effect must be contiguous in space and time; (2) the cause must be prior to its effect; (3) the union between them must be constant; (4) the same cause always produces the same effect and the same effect never arises but from the same cause; (5) where several different objects produce the same effect, it must be by means of some quality that is common to them all; (6) the difference in the effects of two resembling objects must be due to that feature in which they differ; (7) when any object increases or diminishes with the increase or diminution of its cause, it is to be regarded as a compounded effect,

arising from several different parts of the cause; and (8) an object, which exists for any time in its full perfection without any effect, is not the sole cause of that effect, but requires to be assisted by some other principle, which may forward its influence and operation.[63] So Hume envisages that, in order for a causal action to take place, certain relations must obtain – the most prominent ones being those of contiguity, temporal succession, and necessary connection (among objects). And even this almost painfully incomplete account of Hume's position indicates how patently different is the modern concept of causality from the ancient one.[64]

A casual glance at the Antiquity's most famous contribution to the theories of causation – the Aristotelian taxonomy of causes[65] – is enough to highlight the disparity: the material cause is a substrate, the formal does not adjoin its effect, the final one is often posterior to it,[66] and these three "causes" are not agents or events, but rather things or peculiar entities – like forms, matter, God. This should suffice as an illustration of the fact that the very concepts of cause and causation that the Greeks had were substantially different from both the folk and the philosophical notions we share nowadays. There is, however, little surprise here, considering that they were associated not only with the idea of activity, but primarily with that of responsibility – causes of something are all those things that may accurately be proclaimed responsible for its existence or state of being.[67] This conception has its roots in the original lexical definition of the words employed to designate cause: *aitia* and *aition*.

The former is a feminine noun, first attested in Pindar. Primarily it bears the senses of responsibility, guilt, blame, accusation,[68] and this is how it used to be employed in everyday language and in juridical contexts. With further extension of meaning, it acquires the senses of occasion, motive, and a category under which a thing can be subsumed, and thus becomes related to the notion of explanation.[69] Finally, Herodotus seems to be the author who initiates the usage of *aitia* in the sense of cause and reason for something.[70]

The adjective *aitios* apparently has a longer history, since it is attested already in Homer's *Iliad*.[71] Originally it used to denote a person or a thing that is culpable or responsible for something, while *aition*, the Greek term most commonly rendered as cause besides *aitia*, is the neuter substantive of *aitios*. Plato in the *Timaeus* uses both terms interchangeably, without much difference in meaning – which is rather uncontroversially that of "cause" and, every now and then, "reason". No distinction is made in denoting intelligent and secondary causes either: they are both referred to sometimes with the neuter, sometimes with the feminine form. Two details to take notice of are that *aita* occurs more frequently, and that the meaning of "reason" is conveyed almost exclusively by it – which seems to be in line with the word's lexical definition.[72] So we have *aition* at 28a5, 28c2,

29a6, 42e4, 46d2, 46e3, 57c8, 61b6, 63e8, 64a3, 66b6, 67c8, 69a7, 76c6, and 80a1. *Aitia* occurs at 18e3, 44c7, 46d8, 47a2, 48a7, 58a1, 61c7, 63e9, 64a7, 65b7, 67b1, 68e4, 68e6, 79c7, and 87c2 (denoting cause); 22e4, 29d7, 33a6, 38d7, 40b4, 45b4, 67e4, and 79a6 (denoting reason); and 47b6 (reason, purpose).[73] Especially interesting are the pairs 46d2 and 46d8, 63e8 and 63e9, 64a3 and 64a7, where *aition* and *aitia* are both found in the same passage, or even sentence, with no discernible variation of sense.[74]

Now, the locus classicus for Plato's investigation into causes of things is *Phaedo* 95e–105e. As it is well-known, this analysis is nested within Socrates' answer to Cebes' doubts and culminates into the Final Argument for the soul's immortality (102a–107b). Socrates first briefly recapitulates the objection of Cebes, and then, when about to initiate his own exposition, remarks that such a venture indeed requires a thorough examination of the cause of generation and destruction (*peri geneseōs kai phthoras tēn aitian diapragmateusasthai*, 95e8–9). In the following passage Socrates points out that already as a youth he has been desirous to learn the causes of each thing (*eidenai tas aitias hekastou*, 96a9), and then in a sense glosses the word *aitia*, by stating that the search for cause was at the same time a search for an explanation, for "the why" (*dia ti*) behind any object or phenomenon.[75]

This is undeniably a crucial aspect of Plato's usage of the word *aitia/aition*: very much like in Aristotle, the search for "cause" of a substance or property in the *Phaedo* implies something else than just recounting their causal history or relating the antecedent necessary and sufficient conditions for their generation or production.[76] A significant part of the discussion actually focuses on the attempt to explain the presence of certain properties (e.g., tallness, greatness, oddness) in concrete and abstract entities, while the responsibility ascribed and the "whys" given are predominantly of final[77] and formal[78] nature – to apply (somewhat inaccurately) the Aristotelian parlance.[79] However, in the text are also discernible some causal descriptions that can be interpreted as instances of efficient causation; such is certainly the soul's "bringing of life" to the body (105c9–d5), and possibly also the cases of fire and fever acting upon a body (105c1–4). Thus besides being engaged in the broader quest for finding explanations and reasons, Plato also operates with the narrower, or so to say modern, sense of *aitia* as an active force that results in bringing about, or production, of something.

As a matter of fact, the latter aspect of Plato's ruminations on causation is not only present throughout the corpus,[80] but even takes precedence over causality of Forms in the late period, when the main emphasis is placed upon the causal output of active agents – be they God and *nous*, or souls.[81] Now, from the vantage point of a theory of causation, it may be

urged that much of the Timaean cosmogony is motivated by the aspiration to provide a tenable teleological account, that is, to explain "how it is Intellect that sets in order and causes everything".[82] That was the task which Anaxagoras failed to accomplish and which Socrates in the *Phaedo* skipped in favour first of his safe and later on the more subtle answer to the problem of causation.[83] Plato's Timaeus is at the same time more daring and more prudent than his Socrates of the *Phaedo*. Daring, because he does not shy away from what is apparently considered to be the foremost explanation – identifying *nous* and *what is best* as the reason for the way things are as they are (*Phd*. 97c–98b); prudent, because he does not hold that giving a causal status to the necessary causal material conditions is utterly ridiculous (*atopon*, *Phd*. 99a5). And these are, indeed, the oft mentioned *aitiai* of the *Timaeus*: *nous*, or the Demiurge, and *anankē*, the contributing *aition*. Both this causes demonstrate clearly that the notion of agency is also of great importance in the *Timaeus*. The Intelligent cause is, of course, the primary and decisive one, and it embodies the aspects of both finality and efficiency. Plato's *dēmiourgos* is, on the one hand, an explanatory entity – in him lies the answer to the "why-question" of the generation. And it is a rather straightforward one: the God was good and wanted everything to be as similar to himself as possible;[84] therefore, upon encountering the pre-cosmic chaos, he took up the task of organizing it. On the other hand, he is, obviously, also a productive agent that actively strives for the best.[85]

Taking all this into consideration, one may characterize Plato's Demiurge as a complex causal entity that displays the features of Aristotle's efficient and teleological causes. To reiterate, the demiurgic cause of the *Timaeus*, qua the principal source of change and orderly motion, embodies the faculty of efficient causation; besides, qua an entity defined by the desire to lead the creation to its best state and affinity with himself, the Demiurge plays the role of a final cause as well. In this sense, he is both the beginning and the end. And that is why the primary cause of the *Timaeus* also represents the prime *necessity* of the creation. Being obligated by his own goodness or omnibenevolence, the Demiurge cannot do otherwise but order the world and lead it to its best state of the closest possible resemblance to himself and the archetype. That Plato raises this idea to the level of a law is made clear at *Ti*. 30a6–7: "And for him who is the best neither was nor is lawful to do anything except what is most noble".[86] Then again, almost like any common craftsman, he is bound to accomplish this task by acting upon a pre-given stuff, which, to a significant extent, limits his performance and dictates some of the final product's properties. This is, of course, the secondary, corporeal cause of the *Timaeus*, the somewhat stubborn *anankē* that must be persuaded into cooperating with God and his divine plan.[87]

It is now easy to see how the Timaean causal model represents an improvement in comparison to the one presented in the *Phaedo*. Here the lead role is not played by the unilluminating notion of participation, which stood at the core of Socrates' earlier discussion on the Forms causal role,[88] because now the Demiurge officiates over the linkage of the two worlds. To put it differently, this means that – almost in anticipation of Aristotle's criticism that his philosophy yielded no notion of efficient causation[89] – Plato in the *Timaeus* gives an account of a productive cause that acts upon its material counterpart. This entity was unquestionably conceived as the fountainhead of creative powers; it is of lesser importance whether it should be granted the status of a proper agent or of a demythologized principle of intelligent agency.[90] And as though to seal the deal on the issue of Aristotle's complaints, Plato, having divine productivity in mind, writes: "Isn't it that the nature of the Producer differs from the cause by nothing more than name, and that the Producer and the cause may rightly be said to be one?" (*Phlb.* 26e6–8).[91] Of no lesser importance is the aforementioned fact that Plato's efficient cause also acts with a specific *telos* in mind – which is to instantiate the good in his product, so far as its constitution allows (*Ti.* 29e). The pivotal point of the Timaean creation story is the Demiurge's decision to take over the deficient stuff and lead it to the best state possible; and the latter is the end of both the universe[92] and its most important constituent – the immortal soul and its vehicle.[93] Thus by introducing the principle of goal-directed divine agency – incarnated in the figure of the transcendent craftsman – Plato offers an answer to his own inquiry regarding the Intelligent cause's nature and workings, posed in the *Phaedo*.

IV

In conclusion, let me reiterate the principal findings of the study undertaken in this paper. The *Timaeus* is a very complex and profound work, and here two of its numerous important features were brought to the fore. They are mutually related and pertain to Plato's thoughts on causation: first, the partial incorporation of the otherwise criticized mechanistic causal explanation of the Presocratics, and second, the rejoinder to Socrates' causal theory from the *Phaedo*. Within the frame of the former belong the notions of chance (*tychē*) and necessity (*anankē*), that were found to be complementary to a high degree. As odd as it may sound to the modern ear, chance and necessity in the *Timaeus* are paired to the point of overlapping. Although both clearly are possessed of distinct semantic ranges, they share the same cosmologically relevant sense. In that respect, Plato associates *tychē* with a random, purposeless effect (46e5–6), but also with a cause that is of such nature (69b6). *Anankē* is uncontroversially the subservient (*synaitia*) and wandering cause (*planōmenē aitia*) of the *Timaeus*, the Aristotelian

necessity of the material. Although *anankē* does display superficial regularity, this is due to the *prōte aitia*; in itself it remains essentially chancy and blind, and if let on its own, it is bound to degenerate into utter randomness, as illustrated by the cosmological myth of the *Politicus*. Thus the common denominator that unites chance and necessity is their teleological barrenness and the consequent arbitrariness, which is inseparable from any entity or cause bereft of soul and intellect. Such are the raw forces of corporeality, which Plato included in the causal scheme of the *Timaeus*, after they had been ordered and tamed by the primary cause.

The latter stands in opposition to *tychē* and *anankē* by being intrinsically goal-directed and striving for the best. Plato in the *Timaeus* expounds the causal theory that Socrates of the *Phaedo* hoped to find in Anaxagoras, although he had it vested in a mythical garb. Its full personification is the Demiurge of the *Timaeus*, who is an independent *nous* and who, through the images of a skilled craftsman and an omnibenevolent deity combines the causal functions of efficiency and finality. This is the essence of Plato's novel demiurgic cause: it produces the world and leads it to the best state possible. Finally, it also represents the highest necessity of the creation, although taken in a radically different sense from the above. The emergence of the world is necessitated by the omnibenevolence of the Demiurge, who, being perfectly good, cannot but lead it to perfection and his likeness, as far as the preexisting material allows (29e1–30a2); for the same reason, he cannot permit its decay and dissolution (41a7–41b2). This is how the sense of highest necessity is captured by the principle of demiurgic causation. And although in the *Timaeus* the term *anankē* itself is reserved for the secondary cause, in the *Phaedo* and in the *Republic* the same is applied to the intelligent, ordering principle operational in the world.

Notes

1 Its most consequential occurrence being the neuter participle form *tychon*, at 46e.
2 Unless noted otherwise, the translations from Greek are the author's.
3 See also *Metaphysics* V.30, VI.2. *Tychē* as a factor in moral agency is examined in all three ethical treatises ascribed to Aristotle: *Eudemian Ethics*, *Nicomachean Ethics*, and the disputed *Magna Moralia* (for a detailed discussion and exact references, see Dudley 2012, 199–266).
4 It is communicated in *Ph*. II.6. In a word, *tautomaton* has a wider extension than *tychē*, because the latter belongs only to entities capable of engaging in rational activities and making independent choices, while the former also involves the inanimate and sub-rational. All *tychē* is spontaneous, but not all *tautomaton* is chancy. Thus the event of meeting one's debtor while going to the marketplace would be an outcome of both chance and spontaneity, while the stone accidentally falling and hitting someone's foot, or the generation of monsters, would be due to *tautomaton* only.

5 For a discussion of accidents and accidental causes, see Sorabji (1980, 4–13).
6 Tr. Charlton (1970, 35). There is a lot to unpack in this definition. However, only the three crucial concepts that comprise it can be touched upon here. (1) An accidental cause is the one that causes by virtue of concurrence, or coincidence – like when a builder, who is the cause par excellence of a house being build, also happens to be pale or musical, and somebody says that the pale man, or the musician, built the house (see *Ph*. 196b25–29). (2) The clause "things that come to be always or for the most part in the same way" refers to the accountable, that is, to the natural and regular processes and phenomena, like the downward movement of earth, the predominance of hot weather in summer, or the regular intake of food by humans. (3) That which is for something, or for some purpose, is anything which is an outcome of deliberation or of nature as form (196b20–22) – thus teaching somebody Greek, producing an amphora, or the development of an apple tree from an apple seed would be for something. For further elucidation of these and other issues pertaining to Aristotle's treatise on chance (*Ph*. IV–VI), see Charlton (1970, 105–111).
7 Interestingly, Simplicius ascribes this outlook to Democritus (see DK A 68). If this is true, Aristotle would, perplexingly, refer to two Democritean opinions on *tychē*, and, for that matter, rather incompatible ones.
8 See Lüthi and Palmerino Carla (2016, 18).
9 See *Resp*. 592a8–9, *Leg*. 759c1 (*theia tychē*); *Ti*. 25e4 (*daimoniōs tychē*).
10 See *Letter to Menoeceus* 133, 134. However, he does not offer a detailed explanation of *tychē*, but only claims that it is not a god (as the profane think), that it is disorderly, and that it is not the cause of all things (since many happen by necessity as well).
11 By the Stoics (*apud* Plutarch, *De Anima Procreatione* 1015B–C), Cicero (*De Finibus* I.6.19, *De Fato* 18, 20), Plutarch (*De Sollertia Animalium* 964C), and Plotinus, *Ennead* III.1.1.
12 Lucretius, *De Rerum Natura* II.216–293.
13 Plutarch ascribes dual function to the *clinamen* (*parenklisis*): it allows for the stars and animals to come in by chance (*kata tychēn*) and saves the free will (*to eph' hēmin*) from destruction (*De soll. an*. 964C). A thorough discussion of the causal relation between the swerve and free volition is provided in Purinton 1999. For the relation of the swerve and contingency with physical nature, see Long (1977).
14 See Bailey (1928, 324–327). If this is true, it becomes arguable (*pace* Dudley 2012, 10) that for Epicurus chance is not entirely uncaused, but instead supervenes on the *clinamen*, which is more "primitive" than the former, and which inheres in the very nature of the atom.
15 Beside the *Timaeus*, it will suffice to mention only the *Republic*'s Myth of Er, 619c and 619d (for this see Ilievski 2023b, 64–66, 83–84); the *Laws* 709b, 757e, and 759b–c.
16 There are plenty other places in the Platonic corpus where *tychē* in the sense of divine fortune is invoked. For a collection of those and further references, see Dudley 2012, 5–6, fn. 13, 15.
17 Although, again, not exclusively. It is, of course, very difficult to discern the intention of the characters in the ancient texts who use this phrase, but it seems at least possible that they might have used in a way a contemporary speaker would, or even ironically. See, e.g., Aeschylus, *Ag*. 755; Aristophanes, *Pax* 360, *Av*. 675; Plato *Cri*. 43d, *Symp*. 177e, *Leg*. 625c, 640d.

18 This is acknowledged by Dudley (2012, 157–158), which makes his ascription of the *Physics*' religious view to Plato even more puzzling.
19 See the parallel case of *theia moira* in the *Meno* 99e6 and 100b3, where *moira* is not godly or divine, but a *moira* of, or from, the gods.
20 The perplexing Myth of Er contains indications that *tychē* could have its say even in the moral sphere (619c, 619d). For some contemporary interpretations of the role of chance in the myth, see Inwood 2009; McPherran 2010.
21 Although ascription of any account of *tychē* to Epicurus could rightfully be declared controversial due to the meagreness of the preserved texts, it may still be claimed that he was aware of Democritus' and Plato's thoughts on the issue, and that his conception was formed against this background. He could be dismissing the assumed Atomistic position in the *Letter to Menoeceus* 134.5–6, where he says that chance is not the unreliable, or unsteady (*abebaios*) cause of things. More importantly, in other statements concerning *tychē* there are unmistakable echoes of Plato's thoughts. Thus in 133.9, *tychē*, said to be uncertain, or unstable (*astatos*), is contrasted with what is under our control (*to par' hemas*), which is *adespoton* (a clear reference to Plato's *aretē de adespoton* of *Resp*. 617e3); chance is never divine, because it is essentially *ataktos* (i.e., disorderly; *Ep. Men*. 134.4–5). And although he does not provide any positive definition, *tychē* is for Epicurus obviously a phenomenon unstable, random, and disorderly, very much like the philosophically significant counterpart of Plato. Bailey (1928, 325) is of the opinion that Epicurus conceived of *tychē* as an "intervention of unaccountable force which to some extend thwarts natural law", and this is not far neither from the folk concept, nor from the Platonic take in the *Timaeus*, provided we replace "natural law" with "goal directedness" or the like.
22 DL IX.45.1–2 = DK A 1.26–27: "All things come into being according to necessity, the whirl being the cause of the coming to be of all things, the whirl that he calls 'necessity' ".
23 DK A 39.11–12: "As farthest back the whole of limitless time goes, all things that have been, are, and are about to become, are predetermined by absolute necessity."
24 Simplicius, in DK A 67: "He seems to produce it (i.e., the whirl, *dinē*) from spontaneity and chance". He also complains in DK A 68.7–9 that Democritus resorts to chance while describing the creation of the cosmos but disposes of *tychē* and brings in other causes when it comes to the particular entities.
25 Bailey (1928, 149). For detailed discussion and some further interpretations of the role of chance and necessity as causes of the Democritean world, see Bailey (1928, 138–143).
26 In which case it is very closely allied with the Atomists non-teleological necessity. See Guthrie (1969, 417).
27 In its simultaneous factuality and inexplicability, it is once again associated with the folk concept of chance. This is, I believe, the distillate of what Dudley is arguing for in (2012, 144–153). In *Quaestiones Convivales* 740C–D, Plutarch first seems to ascribe to Plato the view that chance is one of the three causes of human fortune and misfortune, the other two being fate and "what is up to us". This is in reference to the lottery episode of the Myth of Er. Ultimately, however, Plutarch strips *tychē* of its causal status and relegates it to the realm of inscrutable randomness, lest it shall transform into some kind of fate or providence (*heimarmenē kai pronoia*).
28 See *Ti*. 30a, 42c, 46c, 53b, 69b.

29 The state of God's absence or withdrawal from the creation which is in the *Timaeus* only hypothetical (see 53b3) is turned into a kind of thought-experiment conveyed through the *Politicus* cosmological myth (272e–273e), where it threatens to cause the universe's disintegration and its return to the chaotic state.
30 E.g., *An. Pr.* I (29b29–30b40); *Ph.* II (199b34–200b9); *Gen. corr.* II (337b1–338b18); *Part. an.* I (639b21–640a9); *Metaph.* IV (1006b29–33), V (1019b22–32), VI (1026b25–35, 1027b1–10), XI (1064b30–33, 1065a20–21), XII (1072b2–15); etc.
31 See *Metaph.* 100631–33, *GC.* 338a1.
32 For an overview of the concept of absolute necessity in Aristotle, see Dudley (2012, 102–104).
33 The same applies to living organisms: if the form of human is to inhabit it, the particular matter must be of a certain composition, must contain a heart, and so on.
34 Aristotle explains this in *Ph.* II.9. For further analysis, see Charlton (1970, 127–128), Dudley (2012, 108–110). For the complex interplay of absolute and hypothetical necessity in the sublunary world, see Williams' detailed and learned commentary on *De generatione et corruptione* II.11 (1982, 197–210).
35 See Kirwan (1993, 132).
36 For the latter, see *An. Pr.* I (30b31–40). A rather rich list of kinds of necessity recognized by Aristotle is given in Sorabji (1980, 222–224).
37 *Nous estin ho diakosmōn te kai pantōn aitios* (91c1–2).
38 *Hoti beltiston auta houtōs echein estin hōsper echei* (98a8–9).
39 *Ph.* II (194b32–35).
40 Obviously, I do not claim that Plato distinctly recognized or had the Aristotelian distinctions labeled, but only that, with the benefit of hindsight, we can recognize some of them in his works.
41 Thus also Gallop (1975, 176).
42 See *Phlb.* 26e3–4.
43 See Sorabji (1980, 206–208). He argues in favour of the latter option.
44 See *Ti.* 58a5–7, where it is said that in the spherical universe no allowance for empty space is given.
45 See *Resp.* 530a–b; *Pol.* 269c–270a, 272e–273e; fn. 28 *supra*.
46 *Tēs anomoiotētos apeiron onta ponton, Pol.* 273d6–e1.
47 In the above examples, "necessity" is used adverbially at 42a, 46e, 69c, whereas substantively at 47e, 48a.
48 "The term necessity was chosen, so it seems, because that is the name of the cause which Plato's predecessors – in particular Leucippus and Democritus – had found here [i.e., in the material and its powers]" (Morrow 1950, 151). For the ontology of the Timaean Necessity as causal factor and entity, see Ilievski (2023a, 182–193). Cf. Ferrari (2022), lxxxiii-xc, Petrucci (2022, 321–328).
49 "Nature, as her picture is being drawn for us by modern science in increasing fullness of detail, is a texture of events, each of which is determined by antecedent events, or at least follows upon antecedent events in accordance with causal laws that have a high degree of statistical reliability" (Morrow 1950, 148). This could have also been Democritus' position, who in his writings on nature awarded a superexcellent position to the mechanical, causal necessity (see, e.g., DK A 39, A 66, A 68, A 83; Bailey 1928, 120–122; Morrow 1950, 150). For the view that natural laws imply strict physical necessity but are contingent with respect to logical tautologies (*only* because the former depend on certain

initial conditions that need not obtain in every possible world), see Popper (2002, 440–463). The Neo-Humeans, although accepting that laws of nature are true always and everywhere in the universe, claim that it is redundant to associate them with any kind of nomic necessity.

50 They express *absolute* necessity, being by definition applicable to *all possible worlds*.

51 For an argument that leads in this direction and references to Aristotelian texts, see Williams (1982, 201–203).

52 See Vamvacas (2009, 219). For an elaborate and well-argued elucidation of this position, see Cornford (1937, 163–177).

53 See *Ph*. II (198b16–32).

54 "Yet although 'necessity' and 'chance' are reasonable translations of the relevant Greek words, the Greeks saw things so differently that to them the expression 'necessary chance' was perfectly natural" (Guthrie 1969, 415).

55 Cornford (1937, 171).

56 These are, of course, the *physiologoi*, most notably Leucippus, Democritus, and Empedocles.

57 See Johansen (2004, 145–146).

58 The controversies regarding the problem of formal causation start already in the Old Academy. Critiques and interpretations were offered at least by Aristotle (*Metaph*. I (987a27–988a19, 990b–991b20), *Metaph*. XII (1071b22–1072a18), *Metaph*. XIV (1090a2–20)); Speusippus (*apud* Arist. *Metaph*. XIV (1090a8–15)); Xenocrates (*apud* Proclus *in Parm*. IV.888, see Morrow and Dillon 1987, 248–249).

59 For the latter see Johansen (2010). Aristotle famously recognizes only formal and material causes in Plato (*Metaph*. 988a9–10), which are the One and the Dyad.

60 Some relatively recent seminal essays that have initiated fruitful debates on understanding and delineating Plato's causal theory are Sedley (1998), Strange (1999), C.C.W. Taylor (1969), and Vlastos (1969).

61 For the main problems that are engaging the contemporary thinkers' minds and some of the answers to them, see Schaffer (2016).

62 Although they date from the 18th century, Hume's thoughts remain one of the key reference points in the discussions on causation. It is not an overstatement to say that, by shattering the received dogmas and opinions, he ushered the inquiries on the subject into a new era.

63 Hume (1960 [1739], 173–175).

64 Again, there is no need to introduce here the contemporary intricacies and controversies, like the discussions on events or states-of-affairs causation, the nature of the causal connection, and the direction of the causal arrow would be.

65 The genealogy of Aristotle's theory of four causes remains somewhat unclear; the language he sometimes uses (e.g., *Ph*. II (194b24), *Metaph*. I (983a26)) may indicate that the distinction of causes has already been discussed in the Academy, or that some of the characterizations were based on ordinary parlance concerning explanation and accountability. Be that as it may, its first appearance in written form is in *Ph*. II.3, 7 (see *An. po*. II.XI). As is well-known, we customarily denominate the four Aristotelian causes as material (that out of which, *Ph*. 194b19), formal (the paradigm and account of being, 194b27), efficient (the source of change and remaining unchanged, 194b30), and final cause (the end, what a thing is for, 194b33).

66 Even the fourth type – the one that we call efficient cause – is not prior to its effect but contemporaneous with it (see Charlton 1970, 101).

67 "*X* is called an *aition* in respect of *T,* if it is responsible for *T* in any way whatever, if *T* can for any reason be set down or ascribed to it" (Charlton 1970, 98). See also Ebrey (2014, 248).
68 See Liddell et al. (1996, 44).
69 For this sense of *aitia* in Plato, see Natali (2013, 43–45).
70 *Hdt*. I.1.0, III.122.1.
71 See Liddell et al. (1996, 44).
72 This could prompt us to conclude that there is a distinction, after all; the point is, however, that Plato is not at all consistent in applying it, wherefore it cannot be generalized and turned into a rule.
73 This is not supposed to be an exhaustive list: for example, some verbal forms, like *aitaomai*, have been purposefully omitted. Neither is the division of meaning pertaining to *aitia* set in stone and beyond dispute, although the various contexts do seem to demand it.
74 Apparently, the terminological distinction was made explicit some century and a half later, by Chrysippus: "Having explained that an *aition*, a cause, according to Chrysippus is an entity, Stobaeus goes on to say, 'But an *aitia*, he says, is an account of the *aition,* or the account about the *aition* as *aition*'. Obviously, the idea is that the *aitia,* the reason or explanation, is a *logos*, a prepositional item of a certain kind, namely a statement or a truth about the *aiton*, the cause, . . . the truth in virtue of which it is the cause" (Frede 1987, 129).

    Frede is convinced that this semantic distinction was recognized already in the *Phaedo*. For a more thorough discussion of the issue and rejection of the non-propositional versus propositional item distinction, as well as of the view that reads *aition* and *aitia* as applying to cause and reason, see Wolfsdorf (2005). Vázquez (2020, 83) disagrees and holds that the two terms, at least in the *Phaedo*, are used with different senses.
75 Socrates here equates knowledge of causes with the ability to understand "why each thing comes into being and why perishes and why it exists" (*dia ti gignetai hekaston kai dia ti apollytai kai dia ti esti*, 96a9–10). Ebrey (2014, 247–249) argues that "because of what" is a more appropriate translation of *dia ti*. I have kept the former only for the sake of brevity.
76 "An *aitia*, then, can be anything which is referred to as being in some way explanatory of something" (Hankinson 2001, 86).
77 Still, Socrates wants us to believe that, at the time, he was unable to pursue the method of fathoming "the best" as the sole cause of everything that is; that is why he embarked on the "second voyage" (99d1) and proposed the Forms-as-causes hypothesis (see Gallop 1975, 176–177). The teleological cause will be thoroughly explored in the *Timaeus*.
78 These mostly depend on the infamous and rather uninformative notion of the particulars' *participation* in Forms (e.g., 100c4–6, d4–8, e5–6; 101a2–5, b5–7, c2–7; 102c1–c8). The latter does not seem to manifest any efficient, productive powers: "The Form Beautiful, for example, should not be taken as a beautifying agent, which is somehow supposed to impart beauty to things, or generate beautiful objects" (Gallop 1975, 183).

    Still, in Plato's mind, the search for the cause of a beautiful thing is a search for the Form, because it provides an explanation of the nature of beauty; colour, shape, smoothness, symmetry, do contribute as necessary physical conditions, but remain impotent as explanatory factors.
79 That no correspondence between Plato's views on causation in the *Phaedo* and Aristotle's taxonomy can be sought became clear to some scholars already long time ago: "Actually, Aristotle's four causes are quite inapplicable to the Theory

of Ideas because Plato and Aristotle disagree on certain fundamental points" (Delacy 1939, 103).

80 As for the early dialogues, in the *Hippias Major* Plato has Socrates state: "wasn't the cause seen to be a producer?" (*ou to aition poioun ephanē*, 297a4), as well as that the cause is a cause of things that come to be from it, or because of it (*hyph' heautou*, 297b1). From the outset of the middle period, we have the long etymological section of the *Cratylus*, where the cause (*to aition*) is defined as "that through which, or on account of which, something comes into being" (*di' ho gar gignetai, tout' esti to aition*, 413a4) and is therefore linked to Zeus (*Dia*). In the *Republic* 379b–c God, who is good, is said not to produce (*poiei*) anything bad; to be the cause (*aition*) of good things only, while remaining guiltless (*anaitios*) of the bad ones; to be responsible (*aitios*) only for a few things pertaining to humans (i.e., for the good ones), while for the bad he bears no responsibility (*anaitios*). The same idea is concisely reiterated at 617e4–5.

81 In the *Phaedrus* 245c–246a Plato presents an argument for the soul's immortality, and at 245c9 famously proclaims it to be the source and principle of motion (*pēgē kai archē kinēseōs*), which is not much different from saying that the soul is the latter's cause. And this is how he actually expresses himself while expounding the *Laws* X proof for the existence of God (893b–899c), where the soul is said to be not only *archē kinēseōs* (896b3), but also *metabolēs te kai kinēseōs hapasēs aitia hapasin* (896b1) and *tōn pantōn aitian* (896d6). In the *Politicus*, God is referred to as "the one who puts [the world] together" (*ho synarmosas*, 269d1), "the begetter" (*ho gennēsas*, 269d9), "leader" (*hēgoumenos*, 269e6), "divine cause" (*theia aitia*, 270a3), *dēmiourgos* (270a5, 273b1), *patēr* (273b2), "the composer" (*ho syntheis*, 273b7), and "the orderer" (*ho kosmēsas*, 273d4). Finally, there is the *Philebus* 23c–27c discussion of the four kinds (*eidē*) of existents (*ta onta*). They turn out to be the limitless (*to apeiron*), the limit (*to peras*), their mixture (*to symmisgomenon*), and the cause (*aitia*, 23d7, 26e1–27c1) which unites them. At 28c Socrates states that all wisemen agree that *nous* is the king of heaven and earth, while in 30a10–30e3 he demonstrates the affinity of *nous* and *aitia*, which at times turns into equivalence (most emphatically at 30c5–6: the cause may most justly be called *sophia kai nous*).

82 *Hōs ara nous estin ho diakosmōn te kai pantōs aitios*, *Phd*. 97c1–2.

83 See fn. 77 *supra*.

84 "Let us, then, declare for what reason the maker put together Becoming and this All: he was good, and in him who is good never arises no envy whatsoever over anything; being thus free from envy, he desired everything to become as nearly similar to him as possible. Someone who would accept from men of wisdom that this is above all the supreme principle of the becoming and the cosmos, would be wholly right in accepting it" (29d6–30a2).

85 Plato designates the primary cause of the *Timaeus* as the father and maker (*poiētēs kai patēr*, 28c3), artificer (*ho tektainomenos*, 28c6), and craftsman (*dēmiourgos*, 29a3) – terms as if purposefully chosen for their mundanity to unambiguously express creative ability and power.

86 *Themis d'out' ēn out' estin tō(i) aristo(i) dran allo plēn to kalliston*.

87 See *Ti*. 48a2–5, 53b5–7, 56c5–6.

88 For Aristotle's dismissal of its explanatory relevance see *Metaph*. 987b6–13, 992a28–29. That is not to say that that the Forms exert no significant causal influence in the *Timaeus*; the Paradigm is uncontroversially a (compound) Form, according to the likes of which the creation was conceived and effectuated (see, e.g., 29a, 30c–31b, 48e2–49a1, 50d1–2). This makes it a paradigmatic cause, but also possibly a goal aimed at (i.e., a final cause). For the

Paradigm's relevance to these two types of causation, see Fine 2003, 366–367. Proclus (*In Parm*. 837–848) offers a lengthy explanation of the Platonic notion of participation, but he also ascribes demiurgic powers to the Forms.

89 *Metaph*. 988a35–988b6, 991b3–9, 992a25–26. Aristotle here has the *Phaedo* in mind, and his complaints are probably justified. However, it remains unclear why he passes over the *Phaedrus* and *Laws* passages on the soul as the prime mover, as well as over the *Sophist* 265b–e, the *Philebus* 26e, and the *Timaeus*. For possible reasons why he discards the Demiurge as efficient cause, see Dean-Jones 2000, 103.

90 The first view is entertained by, e.g., Broadie (2012), Guthrie (1978, 215, 253–262), Taylor (1928, 71–82), and Steward (1909), and the second by Carone (2005, 28–31), Cherniss (1944, 607), Johansen (2004, 79–86), and Menn (1995). I hold, in brief, that the Demiurge is transcendent *nous* and late Plato's primary cause and highest God. This stance is elaborated on in Ilievski (2022), where also a historical overview of the debate on the Demiurge is provided.

91 *Oukoun he tou poiountos physis ouden plēn onomati tēs aitias diapherei, to de poioun kai to aition orthōs an eiē legomenon hen*.

92 See *Ti*. 28c–30b. Further obviously teleological views on generation and production are to be found in the *Philebus* 20d and 53e–54c.

93 See *Ti*. 46e–47e, 90a–d.

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5 Cause and Explanation in Aristotle

Logos, Eidos, and *Tropos*[1]

Alberto Ross

Simplicius explains the discovery of the different kinds of *aitiai* proposed by Aristotle in the following terms: "what first meets the eye is the product and its elements, and then, having discovered that this is a product, we seek the productive cause, and then the reason why the producer produces and the product is produced".[2] In this way, the ancient commentator describes how the different principles of reality are identified to explain why something is the case. As is well-known, the account of these notions has gone down to posterity as one of the most important doctrines of Aristotle and has a long and complex reception in later traditions. I will not focus my attention on the history of this interesting transmission, but I will try to explain the notion of *aitia*, its definition, its species, and its ways. I will try to show that Aristotle proposes this doctrine as an account of the different ways of explaining something, which is not necessarily linked to a specific cosmology.

The itinerary that I will follow in this chapter starts with the review of the relevant passages for this topic from *Ph*. II 3 and *Metaph*. V 1–3. I will explain what is shared between the species and the ways of the *aitiai* identified by Aristotle in both books. Second, I will focus my attention on the analysis of the identification and characterization of the different species and ways of causality. Thus I will try to show that these classifications give us a wide variety of options to answer the question of why something is the case. Furthermore, I will try to prove that they are not irretrievably linked to a specific vision of nature, although they support the proposal of Aristotle himself. The diversity of nuances and distinctions included in these accounts yields a theory of explanations that allows us to approach the complexity of reality and avoid different forms of reductionism. This is one of the most important aspects to identify the epistemic and philosophical value that this theory can have.

The Problem of the Definition: What Is an *Aitia*?

The notion of *aitia* in Aristotle is a key concept of his philosophical proposal, but it is not easy to accurately define what this means to him. If we

DOI: 10.4324/9781003306450-6

review the most relevant texts for the understanding of the term, we will find that the answer of the Greek philosopher is not transparent at first glance. On the contrary, an effort must be made to reconstruct its meaning or, at least, try to approach it. This complication is not a minor point, since we must consider the description of different kinds of entities offered by Aristotle (e.g., the body, the soul, the Unmoved Mover) appeals precisely to this notion as part of his explanation. However, its own definition is not easily grasped. It is, therefore, a key element of his philosophical proposal but difficult to capture completely. Due to this, it is convenient to try to determine its definition and be very careful in its use to avoid ambiguity.

Along with the complications to define *aitia*, we have the problem of translating the term. As its meaning is not evident for everybody, it is not easy to find the right words or concepts to take it into modern languages. The most common translation of *aitia* is "cause", although this option is not free of objections among interpreters.[3] It is a term that, for different reasons, has symptoms of untranslatability. As various scholars have noted, the term "cause" in our time is often associated with an agent that produces an effect. However, agency is only one of the senses of *aitia* for Aristotle.[4] Hence, we are dealing with a term that exhibits the aforementioned symptoms, and therefore, it is worth seeking a description that is as precise as possible.

In this problematic context, a good strategy for addressing the issue of defining and translating the term *aitia* is to review some of the most relevant passages of Aristotle on this topic, even if they do not provide a definitive solution. As is well-known, the most important expositions on the subject are found in *Metaph*. V 1–3 and *Ph*. II 3. Although these are not the only texts that refer to the notion of *aitia*, they are the ones that present his position in greater detail.[5] There, we find a classification of this notion based on two criteria mentioned earlier: its species (*eidos*) and its way (*tropos*). Both criteria are key concepts for comprehending the doctrine.

Book V of *Metaphysics* is undoubtedly a source from which we would expect to obtain a clearer answer to the question of what an *aitia* is. This text includes different senses or ways in which the most essential terms of Aristotelian philosophy or, at least, of his first philosophy are used. In most of the entries collected in the text, its focal meaning is offered, which is a rather common practice in Aristotle. The Stagirite warns in *Metaph*. X 1, speaking about unity, that we must "consider that it is not the same to ask what kind of things are said <one> and what is (*tí esti*) the being of what is one and what is its *definition*."[6] The prescription collected in this passage helps us identify that, for Aristotle, two things can be distinguished when talking about polysemic notions: (1) what is the *logos* of "X" and (2) which things are called "X". This way of proceeding is common in Aristotle and is repeated systematically in *Metaph*. V with most of the notions collected in the book. Unfortunately, for our purposes, this prescription is not followed

to the letter in the *Metaph*. V 1's exposition of the notion of *aitia*, as is the case with most other terms.

If we review the first chapters of *Delta*, we will find that Aristotle starts his exposition with the presentation of three notions: principle (*archê*), cause (*aitia*), and element (*stoicheion*).[7] All of them are closely related to each other. For the Greek philosopher, we could say that every cause is a principle and every element is a cause, but not vice versa.[8] That is, not every principle is a cause, nor is every cause an element. These different implications emerge from the descriptions offered by Aristotle in the aforementioned chapters of *Metaph*. V. The definitions and examples shown there serve to reconstruct the links between the three notions and are shown in a tone that allows us to see that they are not linked to a single way of understanding nature. It is, therefore, a broader concept that can be used beyond physics.

If we ask to Aristotle, for example, what is a principle (*archê*), we find the following definition: "to be the first from which something is, is made or is known."[9] As can be seen, this description includes the senses of principle that can be causes and those that could not be. We have, for example, cases such as privation which, for the Stagirite, is a principle and not a cause, while we also have the father, who is a principle of the son because it is precisely its cause. Therefore we say that the notion of *archê* is more general than that of *aitia*. The element (*stoicheion*), in turn, is the one with the most minor extension. It appears defined in *Metaph*. V as "the first thing that is immanent in everything."[10] It is a principle and a cause, although not all principles, nor all causes, are elements. While the latter is immanent, the former may be external. Therefore given the breadth of meanings that the term *archê* has, we can say it is the most general notion of the three in question.

Unfortunately, this detail in the explanation offered by Aristotle is not found when he describes the *aitiai*. In this case, we do not find a focal meaning among the diversity of senses that the term has. Why didn't Aristotle define *aitia* as he did with *arche* and *stoicheion*? The reason for this omission is difficult to establish. We can speculate about it and offer philosophical or philological reasons to explain this peculiarity of the explanation about what a cause or *aitia* is. However, the question is still open to debate. Notwithstanding this, the relationship that can be reconstructed between the three terms mentioned is undoubtedly valuable for their understanding.

An additional strategy to look for or establish the description of an *aitia* implies focusing on another text that, although it does not give an explicit definition either, provides us with elements to reconstruct it. I refer to the beginning of *Ph*. II 3, where Aristotle states,

> Now that we have established these distinctions, we must proceed to consider causes, their character and number. Knowledge is the object

> of our inquiry, and men do not think they know a thing till they have grasped the "why" of it (which is to grasp its primary cause). So clearly, we too must do this as regards both coming to be and passing away and every kind of natural change, in order that, knowing their principles, we may try to refer to these principles each of our problems.[11]

This methodological digression of II 3 helps us complete a definition of the notion of *aitia* based on the elements it provides. As can be seen in the passage, the speculative nature of physics presupposes a prior clarification about which and how many are the *aitiai*. This is also suggested by the beginning of *Ph*. I 1, where Aristotle declares that scientific knowledge results from the knowledge of the principles, causes, and elements, which is why the science of nature must focus on delimiting them.[12] This indication is crucial to advance a definition of *aitia*, since it points towards a second element to highlight our purpose, namely, that to know the first cause is to appropriate the why of each thing.

If we connect the treatment of the notions of principle, cause and element of *Metaph*. V with this thesis, we could say that the peculiarity of an *aitia* is to be a principle (since every cause is a principle, but not vice versa), which responds to a "why". There would be principles that would not comply with the second part of the statement since the notion of *archê* is broader than that of *aitia*. However, this is an explanatory principle. In this sense, I agree with the thesis of Carlo Natali, according to which Aristotle makes a "deconstruction" of the notion of "divine cause" of the *Timaeus*, the result of which is the distinction of the four species of *aitiai*.[13] All of them are related to each other, but they are also irreducible to each other, and the way to clarify their scope would imply defining in that sense each of the ways in which said term is said, are explanatory. This theory establishes conceptual delimitations that serve to account for different phenomena.

This definition or description of the notion of *aitia* as an explanatory principle allows us to say something about the translation problem mentioned before. Some contemporary interpreters, such as Max Hocutt, have suggested translating *aitia* as "explanation" instead of appealing to the traditional option (i.e., as "cause").[14] This option is undoubtedly suggestive and reflects very well the emphasis introduced in *Ph*. II 3. Furthermore, it allows us to approach the theory of syllogism exposed by Aristotle in *Posterior Analytics* and the rest of his works, since in II 11, he says that the *aitiai*, without exception, serve to demonstrate as middle terms.[15] Even an explanation by *aitiai* can be formulated as a syllogism, according to Aristotle.

Of course, in this context, we must keep in mind that, for Aristotle, *aitia* is not only a logical or linguistic category but that it has a correlate

in reality. The same examples proposed by Aristotle are a clear example of this, as Julius Moravcsik has pointed out.[16] Thus if all the nuances of the case are made (i.e., the meaning or the contemporary connotations of the notion of cause), it appears that the traditional translation should not be completely ruled out either. In any case, it is convenient to appeal to the context to try to deal with the symptoms of untranslatability that the term has. Therefore there will be passages in which it is convenient to translate *aitia* as a cause and others as an explanation. In this context, we must remember that the Greek word *aitia* comes from the legal world.[17] The adjective *aitios* refers to a "responsible" or "guilty".[18] We could say, then, that even the term originally only referred to one of the kinds of causes or explanations listed by Aristotle and that this was not an obstacle for him to associate it with another kind of explanatory instance that did not refer to a specific agency that can be held responsible in this regard. We could somehow conclude that Aristotle and his audience were in a similar or analogous situation to ours regarding the term's connotations and that this was not an obstacle to expanding his semantic field. In the following sections we will return to this point.

The *Aitiai* According to Their *Eidos*

The different senses in which the *aitia* is said are classified, as anticipated, according to two criteria: its species (*eidos*) and its way (*tropos*).[19] The first classification is better known, although both are important to explain the complexity of reality in Aristotelian philosophy. If only the species of *aitiai* were distinguished, for example, it would not be possible to explain the existence of chance and fortune, the relationship of the Unmoved Mover with the sublunary world, and everything that admits the distinction act-potency within a causal relationship. For this reason, it is convenient to study and to take in consideration both classifications. I will start, then, by giving a brief explanation of each of the species of causes known as four basic principles among themselves and then we will move on to the ways. I will emphasize the explanatory nature of both groups of causes and some aspects that have not received enough attention.

The four species of *aitiai* have gone down in the history of philosophy with the following names: material, formal, efficient and final cause. As is well-known, these explanatory principles are deeply explored by Aristotle in different works, although not always with the same names. In *Physics* II 3, for example, the Greek philosopher refers to matter as "that out of which a thing comes to be and which persists, is called a cause, e.g. the bronze of the statue, the silver of the bowl, and the genera of which the bronze and the silver are species".[20] This statement, as can be seen, does not refer to a specific kind of matter (such as the four elements or

atoms) but is a general denomination ("that out of which"), expressed as an explanatory principle. The examples given of this first cause or explanation in *Ph*. II 3 are interesting since not all of them refer to physical realities.[21] We have, then, the bronze of a statue,[22] the silver of the bowl,[23] the letters of a syllable,[24] the material of manufactured things,[25] the four simple elements concerning composite bodies,[26] the parts of the whole,[27] and the premises of the conclusion.[28] The list, as can be seen, includes physical realities (e.g., bronze, silver), and non-physical realities (e.g., a premise, a syllable), although they would all have in ordinary being, precisely, that from which something is made and that remains intrinsically in what is done – the silver in the cup and the letters in the syllables, for example. As can be seen, the Aristotelian notion of matter is broader than one might suppose at first instance. In *An. Post*. II 11, for example, when Aristotle speaks of matter as a cause, he mentions that it is an antecedent that needs a consequence.[29] In turn, at *Metaph*. VII, he says that matter is "that which by itself is not said as something determined, *i.e.*, neither as quantity nor as any of the other determinations with which being is delimited."[30] From these two texts, the characteristics of said explanatory principle can be identified.

If we attend the mentioned descriptions of this explanatory principle, we will find that an answer to the question "Why is x the case?" would be the reference to that from which something is generated and that remains intrinsic or immanent. As can be seen, this kind of cause or explanations does not simply answer the question "Of what 'x' matter is the 'y' body made up?" but in what sense "x" explains or accounts for "y", whether this is a body or not. In *Ph*. I, Aristotle proposes an explanation to the problem of change in which a necessary condition, although insufficient for its existence, is the presence of a substratum that would correspond to this first sense of *aitia*.[31] That is, the substratum of the change is precisely that (1) from which something is generated and (2) that remains at the end of the change (i.e., an immanent principle). We must not lose sight of these two conditions, since the first is also satisfied by privation (*sterêsês*), although the second is not (i.e., to remain at the end of the change). Since the statue cannot be made from nothing, it is necessary for there to be "something" that is not yet one (otherwise, there would be no production), but that can become one. Thus the bronze explains the statue's existence in a very specific sense: as that from which it is made, but which remains as something immanent.[32] Moreover, matter, in contrast, to form, is not only immanent but also at the beginning of change, while the other co-principle is not present.[33] In this way, we can also speak analogously of matter in the case of non-physical entities, as in a syllogism or a word, since they are made up of elements (e.g., premises, syllables). Therefore it can be said that the reference to that from which something is generated and that remains

as something immanent is a way of explaining something for Aristotle, at least partially. At the same time, matter can also be an explanation of the behavior or properties of something. An answer to the question "Why does the cup sink when it is thrown into the water?" could be "Because it is made of silver and silver is heavy". Here matter explains, in a sense, what happens to a compound, which in turn exists, in part, thanks to it as well. If the question is simply "Why does the cup exist?", a possible answer, or part of it, is because there was a material, namely silver, from which the cup was created, and that remained at the end of production.[34] As can be seen from this explanation, this comprehension of what is an *aitia* is not necessarily linked to a specific physics, but it is compatible with different accounts.

Aristotle introduced a second sense of cause or explanation: the form (*eidos*) and the model (*paradeigma*).[35] Aristotle, echoing his education at the Academy, thought that matter and its properties cannot be the only explanatory principles of a substance or a phenomenon.[36] Although the element explained above is necessary to account for the behavior of natural entities, we also need to say that it is not enough. We must add a co-principle (i.e., the form) to give a reason for something different. In order to clarify how this kind of *aitia* explains something, we can refer to *Ph*. II 1, where Aristotle states that just as "art" is called what is in accordance with art, so also "nature" is called what is by nature.[37] However, it could not be said that something is in accordance with art, nor that it is art if it is only a potential work (e.g., a bed), although without its form. The same would happen with the human being and the parts of his body. They still need to have their own nature, and they are by nature before acquiring their specific conceptual determination. Therefore the *eidos* would be responsible for what is currently a substance. The form does not explain why something could become what it is now, but rather takes charge of a different "why", namely the actuality of a substance, since the elements of a compound only constitute it when they are organized in a certain way. To the extent that act and potency are irreducible to each other, material and formal explanations are also irreducible.[38] In this case, the explanation of this kind of aitia is not necessarily linked to a specific view of the cosmos, but is also compatible with different accounts.

The third sense of *aitia* is known as efficient cause. We mentioned before that the notion of cause in the contemporary context is usually associated mainly with the agency or production of effects. However, in the case of Aristotle, this is only one of the senses of *aitia* (i.e., the primary source of the change or rest).[39] The examples given by Aristotle in *Ph*. II and *Metaph*. V are that who makes a decision,[40] the father regarding his son,[41] a seed,[42] the doctor,[43] and that who gives advice.[44] The reason for introducing this explanatory principle appears in Book I of *Metaphysics*, where he

states that matter is unable to update itself and therefore introduces the driving cause in the scenario of causes: "not even wood makes the bed, nor does the bronze make the statue, but rather the cause of the change is something else . . ., in our terminology, that from which the beginning of the movement proceeds".[45] The mover, therefore, explains the actualization of a power as an external principle, unlike matter which is immanent. In this case, if someone asks why the statue sinks into the water, we no longer appeal to the constituent elements or the form, but the question and the answer points out to what or who is responsible for the statue being pushed into the water.[46] Again, as it is evident from the examples, this account is compatible with different cosmologies.

The last sense of cause identified in *Ph*. II and *Metaph*. V is the end (*telos*) or "that for the sake of which" (*to hou heneka*) a thing is done.[47] The examples offered by Aristotle are health with respect to walking and everything that, moved by something other than itself, is an intermediary between the mover and the end, such as diets, purges, medicines, or healing instruments, all of which exist from toward an intended end.[48] Some are activities (e.g., walking), and others are instruments (e.g., medicines), but all aim for health. The common *ratio* or the focal sense of this kind of *aitia* can be found in *Ph*. II 8, where Aristotle defines the final cause, within a discussion framework with a specific version of materialism.[49] That is, if F is the end of the sequence a1, a2, and a3, then a1, a2, and a3 aim for F.[50] Diets and walking, for example, aim for health. In the same book II of *Physics*, Aristotle wonders if nature is among these kinds of causes giving rise to one of the most essential texts in the history of teleological explanations. As is well-known, Aristotle discusses in II 8 the presence and dominance of purpose in the natural world. For this, he opens a discussion with a materialist opponent (incarnated mainly by Empedocles) to later try to refute his explanation and correct some misunderstandings about teleology. Undoubtedly, this is one of the most interesting topics to explore regarding the current situation of the Aristotelian theory of causality, not only from a general perspective but also applied to more specific phenomena. Here, if we ask ourselves why the statue sinks, the answer no longer points to its constituent elements, nor to what or who pushed it, but to a why that is a "why".[51]

Once Aristotle has presented this classification of causes according to their species, he draws some consequences that would be paradoxical in a context where the notion of cause was univocal. The implications would be the following: the same effect has many different causes, and not by accident (e.g., sculptural art and bronze are the cause of sculpture);[52] some things are mutual causes, for example exercise is the cause of physical strength and this is the cause of exercise, but not in the same way, but one as the end and the other as the start of the movement;[53] and the same

thing is the cause of contrary things, because what is considered a cause at a given moment by its presence is sometimes considered the cause of its opposite by its absence.[54] As can be seen, the variety of *aitiai* species allows us to draw these consequences that would otherwise be paradoxical or contradictory. None of this would be possible if there were only one kind of authority for specific phenomena. However, this is the case, because there are four kinds of specific answers to why something happens. One thing worth insisting on at this point in the speech that the examples used by Aristotle and the methodological moment in which he finds himself allow us to see that this theory is compatible with different cosmologies. In the case of Aristotle, his vision of nature supposes this notion of causality, although not in a deductive way, since this is not the kind of demonstration that corresponds to the science of nature according to him.

Now we will see that this diversity of explanations can be further extended thanks to the *aitiai* classification according to its ways (*tropoi*). If someone asks why subject S went to place X, the answer can be given from the efficient cause or the final cause. The relevance of this will depend on the context of the issue. However, these two causes also admit different modalities, as we will see below, which lets us give a more precise answer to that question.

The *Aitiai* According to Their *Tropos*

The four species of causes mentioned in the previous section are partly the same, as they all provide an answer to the question "Why?" However, they are also distinct and irreducible among themselves because they do not strictly explain the same thing. Additionally, we could also say that within the same species of cause, there is also room for further distinctions. Though two causes may be the same by their species, they can be distinguished by the way in which they are related to their effects by exerting their causal power. That is, cause A and cause B can be the cause of effect C under the same species, but the mode can be different.[55] These relations are the causal or explanatory ways (*tropoi*). Simplicius explains that the classification of causes by species would refer to the difference between the first causes and that the ways would refer to the differences *kath'hekaston tôn aitiai*, so that the most basic classification would be the first one.[56] Aristotle introduces them in pairs, as we will see below.

The first causal *tropos* to which Aristotle refers to is the following: "For things are called causes in many ways and even within the same kind one may be prior to another: e.g. the doctor and the expert are causes of health, the relation 2: I and number of the octave, and always what is inclusive to what is particular".[57] The prior (*proteros*) and the posterior (*husteros*) are

taken in a logical sense by Aristotle (i.e., as the universal and the particular), although it is also possible to speak of proximate and remote causes.[58] The same cause, in number, is distinguished, according to reason, in universal and particular, being the first prior and the second subsequent. Aristotle gives two examples of this kind of relationship between cause and effect, one of which is by efficient cause and the other by formal cause. The particular and subsequent efficient cause of health is the doctor, and the universal and prior cause is the craftsman. The doctor, the one who possesses the art of medicine, is contained within the genre of artisans, which is in turn prior, and more universal, to that of doctors. In the other example, we have that the formal and subsequent cause of the octave is the duality or double proportion, while the number or the proportion between number and number is the universal and prior cause. This is because the double proportion would be included in a broader genre, the proportion between numbers. Something similar could be said of the other kinds of causes.

In this context, it is possible to say, for example, that the aim of the sculptor is the manufacture of a statue that belongs, in turn, to the genre of works of art. About matter, we could say that the cause of a compound is water, earth, air and fire, but the prior cause is the "simple elements", with which we include the individuals that are under such gender. In the prior case, the material cause of the statue can be bronze, or else, taken universally, metal.[59] Of course, in this causal way it is also possible to distinguish between proximate and remote causes. Aristotle resorts to it in different passages such as when he says that the cause of man is the sun and another man, as well as when he tries to explain the relationship of the Unmoved Mover with the sublunary world through its relationship with the heaven.[60] If this distinction was not made, the explanation would not be understood or would be contradictory.

The second causal way that Aristotle introduces is the following: "Another mode of causation is the accidental and its genres, *e.g.* in one way Polyclitus, in another a sculptor is the cause of a statue, because being Polyclitus and a sculptor are accidentally conjoined".[61] We have said before that the term *aitia* can be understood in four different ways, which have different relationships with what is explained. Aristotle called these different relationships causal ways. So if "proper" (*kath'hauto*) and "accidental" (*kata symbebêkos*) are causal ways, then they are two different kinds of relationships between an explanans and an explanandum. In this case, the difference between the two relationships could be expressed in necessity and contingency. The example of Aristotle is the case of the sculptor Polykleitos, who is the efficient cause with respect to the statue; however, there is one more distinction if we stick to the fact that the relationship between "being a sculptor" and the statue is different from the relationship between it and "Polykleitos". The latter, says Aristotle, is merely accidental

since while the sculptor has the ability to sculpt by definition, Polykleitos does not necessarily have it. The same could be projected in effect and, in a synthetic way, it could be said that:[62]

1. A is the proper cause of B if and only if the relation of A and B is necessary.
2. A is an accidental cause of B if and only if the relationship between A and B is contingent. This can be in two ways:
   i. Because A coincides with C, and C is the proper cause of B.
   ii. Because A is a proper cause of C, and B coincides with C.

The description of an accidental cause seems to depend on (1) a proper causal relationship and (2) an accidental unity in cause or effect.[63] This gives rise, among other things, to the occurrence of situations such as the one described above, in which we said that the same cause can be of opposite objects. The presence of the pilot in a boat is the proper cause of navigation, but his absence may be the cause of the shipwreck. In this case, however, the pilot is not his own cause but only accidental, to the extent that he is not present. The pilot could be the proper cause of the shipwreck if he made a hole in the ship or intentionally crashed it into another, but if the shipwreck occurs only due to his absence, then the efficient causality exerted is only by accident. Through these distinctions, Aristotle articulates his response against determinism in *Ph*. II 4–6. If he only counted on the distinction of causes according to his species, his doctrine of chance and fortune would be impossible to formulate.[64]

The third way of causality distinguished by Aristotle is the following: "All causes, both proper and accidental, may be spoken of either as potential or as actual; e.g. the cause of a house being built is either a house-builder or a house-builder building".[65] Causes, like everything that exists also admit the act-potency distinction.[66] If that were not the case, then everything that is a cause would always be causing, or would always be in potence to act. Both options are absurd since we know that a builder is not always building, nor is a music composer always composing. On the other hand, it is absurd to say that all causes are potential causes, since they would be unknowable, since something is known only insofar as it is in action. These considerations must be taken with what we have already explained previously. The prior and subsequent causes are said to be actual or potential, as well as proper and accidental causes.

The last causal way is where we take the cause in a simple or combined way. This is expressed by Aristotle in the following way: "Furthermore, the causes understood in the proper and accidental sense may be stated in combination (*sumplekomena*); e.g. not 'Polykleitos' or 'sculptor' but 'the sculptor Polykleitos' ".[67] The proper cause of sculpture is the sculptor,

while Polykleitos is only an accidental cause, but both can be expressed together. This last modality of the causes refers in the text only to the way in which they can be stated, although some commentators, such as Thomas Aquinas, suggest a less logical reading.[68]

In view of these causal modes, Aristotle draws some conclusions, just as he did when he concluded the exposition of the causal species. In this case, he states that (1) the causes that are specific and actual are simultaneous with what they explain;[69] (2) when investigating the cause of each thing it is always necessary to look for the main one (*akrotatos*);[70] (3) the genera of causes must be considered in relation to the genera of things and the specific causes with respect to specific things;[71] and (4) the things that can cause must be considered in relation to the things that have the possibility of being caused, while the things that are actually causing in respect to the things that are in act.[72] The distinction between these causal ways and these conclusions obtained from it are also elements to consider in order to study nature, and obviously, they are compatible with different accounts of it.

In this case, it is possible to point out, as we mentioned before, that these distinctions are not necessarily linked to a specific cosmology. Actually, once Aristotle has explained the different species and ways of causes or explanations, he states: "Since there are four causes, it will be the task of the physicist to know them all and, referring to all of them – to matter, to the form, the engine and the end–, you will be able to answer the why in a physical way".[73] The inference collected in the text is not justified in advance, as can be seen at first glance. It is not enough to say that there are four causes to endorse the physicist the task of referring to all of them. As can be seen, the exposition of the different species and ways of *aitia* is prior to determining the kind of explanations that the science of nature gives and articulating these explanations for the substances and phenomena in question.

Conclusion: The Explicative Role of the Aristotelian Notion of *Aitia*

The Aristotelian answer about what is explained by the different kinds of *aitiai* appears in the passages already mentioned. In the case of the species, Aristotle states that the explanatory power of matter consists in being that from which something comes to be and which persists at the end of the change.[74] It, however, does not explain the actuality of a substance (i.e., its actual being), which is explained by the form[75] and not the beginning of a movement, which refers to the intervention of an efficient cause.[76] The "end" would have another role within the explanation. As we have said, Aristotle introduces, in the final chapters of Book II of *Physics*, part of his response in this regard, showing which aspects of change and natural

dynamism are obscured if we do without the consideration of teleology. All of these species of *aitia* would admit other distinctions within them, namely the causal *tropoi* that we have already explained.

Looking at this doctrine as a whole, one consequence that is very important can be clearly seen that the determination of the species and causal ways is prior to the formulation of a specific cosmology in Aristotle. From the methodological point of view, first the different ways in which something can be explained are defined and then the specific explanations are sought. For this reason, Book II of *Physics* establishes the different kinds of *aitiai* already mentioned and then asks which ones are used by the scientist of nature. This order in the way of proceeding allows us to recognize the relevance that the doctrine can have since it is not irremediably linked to a single conception of the natural world. This even allowed some ancient commentators to argue against Aristotelian physics itself based on their own explanatory principles. Hence, when we talk about the relevance of this doctrine about the different ways of explaining reality, we are facing a theoretical core of great intellectual performance. It does not force us to subscribe to a specific physics but commits us to accept a framework of principles that try to account for the complexity of reality and, in this way, avoid reductionist responses.

The relevance of this doctrine can be seen from these considerations, but also from some examples that we can find of its use among some contemporary commentators and philosophers. The Italian philosopher Enrico Berti, for example, has proposed recovering the notion of formal cause to account for some issues in contemporary biology from a philosophical perspective and, like this, we can find other cases.[77] This kind of explanation appeals to the Aristotelian notion of *aitia* not only from a historical perspective but from a thematic one, without the need to subscribe to the details of Aristotelian cosmology itself. This is possible, specifically, by virtue of the pre-scientific nature of the theory that we have tried to show here. Aristotle appeals to this doctrine of the different kinds of *aitiai* to describe and explain different aspects of reality, which not only refers to nature or a specific vision of it, as we can infer from the examples used by him. We find references to practical reason (e.g., we walk to be in good health), to art (e.g., bronze is an element of the statue), and even to logical inferences (e.g., the relationship between premises and conclusions) within the framework of this theory. Thus we see that its scope, of origin, is much broader than that of its own cosmology. So when looking at the diversity of explanatory principles that emerge from the two classifications of *aitiai* that we have seen, we will find ourselves facing a proposal that allows us to articulate better and more complete answers to the philosophical question par excellence, namely the research of why something is the case.

Notes

1 An earlier version in Spanish has been published in Ross (2007, 2020).
2 Simplicius, *In Ph*. 315, 6–9.
3 See Hocutt (1974, 385–399).
4 See Annas (1982, 323).
5 See *An. Post*. 94a20ss; *Metaph*. 994a1–11 and 996b6–8.
6 *Metaph*. 1052b1–3.
7 See *Metaph*. 1012b34–1014b15.
8 See *Metaph*. 1013a17.
9 *Metaph*. 1013a17–19.
10 *Metaph*. 1014b14–15.
11 See *Ph*. 184a10–b14.
12 See *Ph*. 194b16–23.
13 See Natali (1999, 45).
14 See Hocutt (1974, 386–387).
15 See Hocutt (1974, 388–391) and *An. Post*. 94a20ss.
16 Moravcsik (1995, 33).
17 See Boeri (1993, 209).
18 For a more extensive review of this point, see Giardina (2011, 47–82). See also the contribution by David Lévystone to this discussion in Chapter 1 of this volume.
19 Simplicius explains that the classification of causes by species would refer to the difference between the first or most basic causes and that the ways would refer to the differences *kath'hékaston ton aition*, so that the most basic classification would be the first (see *In Ph*. 322,18).
20 See *Ph*. 194b24 and 1013a24–25.
21 See Ross (1936, 293) and Moravcsik (1995), 44).
22 See *Ph*. 194b24–25; *Metaph*. 1013a25.
23 See *Ph*. 194b25; *Metaph*. 1013a25–26.
24 See *Ph*. 195a16; *Metaph*. 1013b17–18.
25 See *Ph*. 195a17; *Metaph*. 1013b18.
26 See *Ph*. 195a17–18; *Metaph*. 1013b18–19.
27 See *Ph*. 195a18; *Metaph*. 1013b19–20.
28 See *Ph*. 195a18–19; *Metaph*. 1013b20–21.
29 See *An. Post*. 94a20ss.
30 *Metaph*. 1029a20–21.
31 See *Ph*. 191a14–22.
32 See Simplicius: *In Ph*. 309,35–310,17; Thomas Aquinas: *In Ph*. II, l. 5, n. 118.
33 See Thomas Aquinas: *In Ph*. II, l. 5, n. 118.
34 In *An. Post*. 94a20ss, Aristotle says that the *aitiai* serve to demonstrate as middle terms. Thus an explanation for *aitiai* can be formulated as a syllogism. Using an example from Barnes, this could be expressed like this:

Bronze is malleable.
The statue is bronze.
Therefore, the statue is malleable.

Bronze would be the middle term, explanatory, in this reasoning. See Barnes (1987, 92, 1993, 227).
35 See *Ph*. 194b26–29.
36 The use of the term *paradeigma* along with *eidos* has received different explanations. According to Simplicius' testimony, Alexander of Aphrodisias said that this is because the form is a model in which nature has been directed not by

choice, but rather as a kind of puppet (see Simplicius: *In Ph*. 311, 29–30). However, there is no definitive consensus on this point among commentators. Ross, for example, maintains that this is due to the fact that we are dealing with a writing closer, in time, to Aristotle's stay at the Academy (see Ross 1936, 512). Thomas Aquinas, says that these two elements (species and paradigm) are introduced "due to the various theories about the essence of things" (*In Ph*. II, l. 5, n. 118), referring specifically to Plato and the philosophers of nature. The example of the eighth, indeed, must be Platonic (see Charlton 1970, 100). However, this should not be confused with what the Neoplatonic tradition developed under the name of "exemplary cause", as the ancient commentator Philoponus rightly points out: "currently there are two other causes of things that come to be, the instrumental and the paradigmatic, which Plato also listed among the causes, but Aristotle, as a philosopher of nature, did not include them" (*In Ph*., 241, 15–19). Likewise, Simplicius attributes the introduction of the exemplary cause and the instrumental cause to Plato (*In Ph*. 3, 16–19).

37 *Ph*. 193a31–193b3.

38 Barnes, considering the observation of *An. Post*. II 11, thinks that a syllogistic explanation for formal cause could be the following:

Things deprived of light, because they are hidden, are eclipsed.
The moon is deprived of light as it is hidden.
The moon is eclipsed.

Being deprived of light because it is hidden is the middle term that explains why an eclipse occurs. The explanation is by formal cause because the form and essence of an eclipse would be enunciated. See Barnes (1987, 92, 1993, 227–228).

39 See *Ph*. 194b29–30.

40 See *Ph*. 194b30; *Metaph*. 1013a30–31.

41 See *Ph*. 194b30–31; *Metaph*. 1013a31.

42 See *Ph*. 195a21; *Metaph*. 1013b23.

43 See *Ph*. 195a21–22; *Metaph*. 1013b23.

44 See *Ph*. 195a22; *Metaph*. 1013b23–24.

45 *Metaph*. 984a24ss.

46 The formulation of a syllogism that explains by efficient cause could be, as per Barnes, the following:

Children of pointed-nosed parents have pointed noses.
The son has a father with a pointed nose.
The son has a pointed nose.

Having a father with a pointed nose is the average term that would give reason for the conclusion in this case. Aristotle's example is: Why did the Persian War come to the Athenians? *Because* they attacked Sardis with the Eretrians and that started the change. See Barnes (1987, 93, 1993, 228–229).

47 *Ph*. 194b32–33.

48 See *Ph*. 194b33–195a3; *Metaph*. 1013a33–1013b3.

49 See *Ph*. 199a8–12.

50 See Charles (1995, 114).

51 The explanatory power of final causality could be expressed, using the example of Barnes, as follows:

Health is obtained by walking.
The man wants health.
The man walks.

The middle term, in this case health, has the purpose of an end, that is, it is about that for which the agent acts. Health explains or causes the walk, but note that it does so in a different way than the engine. See *Ph*. 195a3–5. Also see Barnes (1987, 93, 1993, 229–233).

52 See *Ph*. 195a3–8.
53 See *Ph*. 195a8–11.
54 See *Ph*. 195a11–14.
55 See *Ph*. 195a26–29.
56 See Simplicius, *In Ph*. 322, 18.
57 *Ph*. 195a29–32.
58 *See* Thomas Aquinas: *In Ph*. II, l. 6, n.121.
59 See *Ph*. 193a18–20.
60 See *Ph*. 258b10–27.
61 *Ph*. 195a32–35.
62 See Ross (1936, 518).
63 See Freeland (1995, 69).
64 About the details of this review, see Rossi (2011).
65 *Ph*. 195b3–6.
66 See *Ph*. 200b26–28.
67 *Ph*. 195b10–12.
68 Thomas Aquinas: *In. Metaph*. V, l. 3, n.17.
69 See *Ph*. 195b16–21.
70 See *Ph*. 195b21–25.
71 See *Ph*. 195b25–27.
72 *Ph*. 195b27–30.
73 *Ph*. 198a22–24.
74 See *Ph*. 194b23–24.
75 See *Ph*. 193a28–193b21.
76 See *Metaph*. 984a16–27.
77 See Berti (2015).

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6 Aristotle *With* Prime Matter[1]

Cristina Viano

Aristotle is the inventor of the notion of matter and material cause.[2] However, the passages in which Aristotle talks about absolute *prôtê hulê* (prime matter) are rare. The problem long posed by modern interpreters is the following: Did Aristotle really believe in the existence of imperceptible matter, devoid of form and quality, as an autonomous level of reality, a self-subsisting principle, or did he view it as a logical object, a purely abstract concept?

While in some passages Aristotle seems to affirm the existence of this zero degree of the physical world, his position is nevertheless clear in *Metaph*. Z3, on what can be known about it: matter is in itself undefinable, unknowable, elusive, and cannot be identified stricto sensu with substance because it is devoid of autonomy and individuality.

While most modern commentators tend to conclude that Aristotle did not believe in the existence of prime matter and that he considered it as a mere conceptual instrument, almost all ancient commentators attributed to Aristotle, and share with him, the conception of the existence of a unique and completely amorphous prime matter that lies at the base of all physical reality.

This discrepancy can be explained in part by attempting to understand the different perspectives in which commentators of antiquity and modern times pose themselves, the questions they seek to answer, and by trying to comprehend the extent to which they attribute this position to Aristotle and to what extent they themselves develop this doctrine from Aristotle.

In fact, we must not forget that for these commentators the boundaries between the history of philosophy and philosophy were not as clear as they are for us. They are above all philosophers who ask themselves if Aristotle was right and, in most cases, they not only agreed with his school of thought but also taught and commented on it in order to clarify its meaning.

To address this question, we must first ask ourselves: What was Aristotle's support for sustaining this view? I will re-examine the dossier of some

DOI: 10.4324/9781003306450-7

of Aristotle's more *sensitive* passages[3] on the question of prime matter and, after a brief *status quaestionis* of the ancient and modern interpretations, I will propose an interpretation following the 'traditional line', and hence countercurrent to the actual tendence.

I have divided the Aristotelian passages into four groups: (1) the definitions of the material cause and of matter as substratum; (2) the passages where *prôtê hulê* appears; (3) where *hulê kath' hautên* (i.e., 'matter *per se*') is explicitly mentioned; and finally (4) the passages devoted to the critique of the material principle in Plato's *Timaeus*.

1. Definitions: Material Cause, Matter, First Substratum

T1 *Ph*. II 3, 194 b 23–26 (cf. *Metaph*. Delta 2, 1013a24–6):

> In one way, then, that out of which a thing comes to be and which persists, is called a cause (ἕνα μὲν οὖν τρόπον αἴτιον λέγεται τὸ ἐξ οὗ γίγνεταί τι ἐνυπάρχοντος), e.g. the bronze of the statue, the silver of the bowl and the genera of which the bronze and the silver are species.

T2 *Ph*. I 9, 192 a 31–32 (Context: Criticism of the Doctrines of Predecessors):

> For my definition of matter is just this – the primary substratum of each thing, from which it comes to be, and which persists in the result, not accidentally (λέγω γὰρ ὕλην τὸ πρῶτον ὑποκείμενον ἑκάστῳ, ἐξ οὗ γίγνεταί τι ἐνυπάρχοντος μὴ κατὰ συμβεβηκός).

T3 *Ph*. II 1, 193a 9–12 (Nature as Matter):

> Some identify the nature or substance of natural beings with that primary constituent (τὸ πρῶτον ἐνυπάρχον) of it, which taken by itself is without structure (ἀρρύθμιστον), e.g., the wood is the nature of the bed, and the bronze the nature of the statue.

T4 Metaph. Z 3, 1028b 36–1029a 2 (Examination of Substance as Substratum):

> Now the substratum is that of which other things are predicated, while it is itself not predicated of anything else. And so we must first determine the nature of this; for that which underlies a thing primarily (τὸ ὑποκείμενον πρῶτον) is thought to be in the truest sense its substance. And in one sense matter is said to be of the nature of substratum, in another, shape, and in a third sense, the compound of these.

The definitions of matter and material cause present the main characteristics of matter as being that from which a thing is derived and which remains as an inherent substratum (see Natali, 2016). Its characteristic is that it is in itself devoid of form, of structure, with respect to the object of which it is matter. The definition of matter is that of *primary persistent substratum (proton hupokeimenon enuparchon)*. These characteristics apply to all types of matter, be it proximate matter or prime matter.

2. 'Prime Matter' (*prôtê hulê*)

Aristotle's 'prime matter' (*prôtê hulê*) has traditionally been interpreted as the ultimate, eternal and completely indeterminate substratum of change, a pure potentiality placed on the *scala naturae*, at the opposite extreme of the pure act. It may be objected that the independent existence of a pure form does not necessarily imply as a correlative the independent existence of pure matter. Moreover, while Aristotle dedicates to the prime mover as pure act the analyses of *Metaph*. Λ and *Ph*. VIII, there are no similar analyses of prime matter in the Aristotelian corpus.

In fact, the expression *prôtê hulê* is rare in Aristotle's corpus.[4] In most cases, *prôtê hulê* does not indicate the zero degree of matter but refers to a physical entity that plays the role of material cause of an object, such as blood, sperma, menses, bronze, wood and, in the most remote case, the four elements.

T5 *Metaph*. Delta, 4, 1015a 7–11 (Context: The Meanings of *Phusis*):

> And nature is both the prime matter (πρώτη ὕλη) – and prime is in two senses: either it is prime in relation to the object itself, or prime in general (καὶ αὕτη διχῶς, ἢ ἡ πρὸς αὐτὸ πρώτη ἢ ἡ ὅλως πρώτη), e.g. in the case of bronze objects, bronze, in relation to these same objects, is prime matter, whereas prime matter in general is, perhaps, water, if all things that can be melted are water –, but also form or substance: and this is the end of the process of becoming.

T6 *De gen. anim*. I 20, 729a 24–33 (On Conception):

> For there must needs be that which generates and that from which it generates; even if these be one, still they must be distinct in form and their essence must be different; and in those animals that have these powers separate in two sexes the body and nature of the active and the passive sex must also differ. If, then, the male stands for the effective and active, and the female for the passive, it follows that what the female

would contribute to the semen of the male would not be semen but material for the semen to work upon. This is just what we find to be the case, for the menstrual blood has in its nature an affinity to the primitive matter (κατὰ γὰρ τὴν πρώτην ὕλην).

T7 *Metaph*. Delta, 4, 1014b 26–33 (The Meanings of *Phusis*):

Furthermore, nature means the original material principle of which some natural object is made or from which it derives, and which is devoid of form (ἀρρυθμίστου) and incapable of change by virtue of its own power alone. For example, the nature of a statue or object made of bronze is said to be bronze, and of those made of wood it is said to be wood; and so also for the other cases: for each of these objects is made of those, without any change in the original material. In this way, people call the elements of natural object also their nature.

T8 *Metaph*. Delta, 6, 1017a 3–6 (Context: The Meanings of the One):

Evidently 'many' will have uses corresponding to those of 'one'; some things are many because they are not continuous, others because their matter – either the proximate matter or the ultimate (ἢ τὴν πρώτην ἢ τὴν τελευταίαν) – is divisible in kind, others because the formulae which state their essence are more than one.

In *Metaph*. Delta, 4 (T5; T7) we can observe how Aristotle distinguishes two meanings of *prôtê hulê: prôtê* in relation to the object, as in bronze and the statue, and *prôtê* in general, such as water in fusible bodies composed of water. Evidently, in the case of bronze, which is a fusible body, Aristotle wonders what the primary matter actually is. Respectively, the two meanings indicate proximate and remote matter (*cf. teleutaia,* 8) rather than the completely amorphous absolute matter. In fact, *haplôs* matter is identified with an element, as often occurs, as the final stage of the division of the sensible bodies. But Aristotle also gives the meaning of *prôtê hulê* as something "which no longer is called after something else, and said to be of it":

T9 *Metaph*. Theta, 7, 1049 at 18–29 (Potentiality and Actuality):

It seems that when we call a thing not something else but 'of' that something (e.g. a casket is not wood but of wood, and wood is not earth but made of earth, and again perhaps in the same way earth is not something else but made of that something), that something is always potentially (in the full sense of that word) the thing which comes after it in

> this series. E.g. a casket is not earthen nor earth, but wooden; for wood is potentially a casket and is the matter of a casket, wood in general of a casket in general, and this particular wood of this particular casket. And if there is a first thing, which no longer is called after something else, and said to be of it, this is prime matter (εἰ δέ τί ἐστι πρῶτον ὃ μηκέτι κατ' ἄλλο λέγεται ἐκείνινον, τοῦτο πρώτη ὕλη), e.g. if earth is airy and air is not fire but fiery, fire then is prime matter, not being a 'this'. For the subject and substratum differ by being or not being a 'this' (τούτῳ γὰρ διαφέρει τὸ καθ' οὗ καὶ τὸ ὑποκείμενον, τῷ τόδε τι ἢ μὴ εἶναι).

The elements are again evoked as examples: "if earth is airy and air is not fire but fiery, fire then is prime matter". The hypothesis that fire is the prime matter of air seems to allude to the *archê* of the Presocratics (probably Heraclitus), who conceived the unique principle of all things *en hulês schêmati* (cf. *Metaph*. A 1).

3. "Matter With Nothing Else but It"

Rather, Aristotle uses expressions such as 'matter with nothing else but it' (μὲν ὕλη οὐδὲν ἄλλο παρ' αὐτήν), 'matter *per se*' (καθ' αὐτὴν) to designate the totally amorphous prime matter.

In Book IV of the *Meteorologica*, regarding the determination of the finality of compound bodies, Aristotle establishes an inversely proportional relationship between matter and evidence of the own function. He illustrates this with a segment at whose extremes (*eschata*) are, on the one hand, pure matter and, on the other, pure form: "matter with nothing else but itself", that is, without qualities, and substance expressed solely by its definition. It is a scheme that sums up all the natural compound bodies that appear in it as intermediates (e.g., elements, homeomers, anomeomers, organisms):

T10 *Meteor*. IV 12, 390a 3–7 (Context: Matter, Essence and Definition):

> But in the case of flesh and bone the fact (the function performed: *ergon*) is not so clear to see, and in that of fire and water even less. For the final cause (τὸ οὗ ἕνεκα) is least obvious there where matter predominates most. If you take the extremes, matter with nothing else but it (ἡ μὲν ὕλη οὐδὲν παρ' αὐτήν) and on the other hand substance with nothing else but definition; but the bodies intermediate between the two are related to each in proportion as they are near to either.

But it is above all in *Metaph*. Z 3ff. that Aristotle, through an operation of subtraction of all determinations, describes the characteristics of

absolute prime matter in negative terms: indefinite (*aoriston*) (insofar as it is not quantity, quality, any of the categories); inseparable (*akhôriston*), unknowable (*agnostos*). He refuses matter the full status of substance because of its lack of autonomy and individuality:

T11 *Metaph*. Z 3, 1029 a 9–28: *hê hulê kath'hautên* (Context: Matter and Substance)

> We have now outlined the nature of substance, showing that it is that which is not predicated of a subject, but of which all else is predicated. But we must not merely state the matter thus; for this is not enough. The statement itself is obscure, and further, on this view, matter becomes substance. For if this is not substance, it is beyond us to say what else is. When all else is taken away evidently nothing but matter remains. For of the other elements some are affections, products, and capacities of bodies, while length, breadth, and depth are quantities and not substances. For a quantity is not a substance; but the substance is rather that to which these belong primarily. But when length and breadth and depth are taken away we see nothing left except that which is bounded by these, whatever it be; so that to those who consider the question thus matter alone must seem to be substance. By matter I mean that which in itself is neither a particular thing nor of a certain quantity nor assigned to any other of the categories by which being is determined (λέγω δ' ὕλην ἣ καθ' αὑτὴν μήτε τὶ μήτε ποσὸν μήτε ἄλλο μηδὲν λέγεται οἷς ὥρισται τὸ ὄν). For there is something of which each of these is predicated, so that its being is different from that of each of the predicates; for the predicates other than substance are predicated of substance, while substance is predicated of matter. Therefore the ultimate substratum is of itself neither a particular thing nor of a particular quantity nor otherwise positively characterized (ὥστε τὸ ἔσχατον καθ' αὑτὸ οὔτε τὶ οὔτε ἄλλο οὐδέν ἐστιν) nor yet negatively, for negations also will belong to it only by accident. For those who adopt this point of view, then, it follows that matter is substance. But this is impossible; for both separability and individuality (καὶ γὰρ τὸ χωριστὸν καὶ τὸ τόδε τι) are thought to belong chiefly to substance. And so form and the compound of form and matter would be thought to be substance, rather than matter.

T12 Metaph. Z 10, 1036a 7–9 (The Definition and the Parts of the Definition and Their Relations to the Form and the Parts of the Form):

> However, they (i.e. the compounds of matter and form) can still be known and defined in their universal notion. Yet the matter is in itself unknowable (ἀλλ' ἀεὶ λέγονται καὶ γνωρίζονται τῷ καθόλου λόγῳ. ἡ δ' ὕλη ἄγνωστος καθ' αὑτήν).

T13 Metaph. Z 11, 1037a 25-b4:

> And we have stated that in the notion of the substance the material parts will not present but there are only of the compound; but of this there is, in a sense a notion, and in an another, there is not; for there is no notion of it with its matter, because matter is indefinite (ἀόριστον γάρ); on the other hand, there is notion if we consider it according to the primary substance – e.g. the notion of man is that of his soul –, for the substance is the indwelling form, from which along with the matter the so-called concrete substance is derived. . . . It has also been shown that the essence and the individual thing, in some cases, coincide, as in the primary substances, e.g. curvature and essence of curvature, if this is primary (by a primary substance I mean one which does not imply the presence of something in something else, which is its material substratum) (λέγω δὲ πρώτην ἢ μὴ λέγεται τῷ ἄλλο ἐν ἄλλῳ εἶναι καὶ ὑποκειμένῳ ὡς ὕλῃ). All things that are considered as matter or that are considered in union with matter, do not coincide with essence.

4. Against Plato

A fundamental piece of the Aristotelian prime matter *puzzle* is Aristotle's criticism of the theory of elements and the 'material' principle of the Platonic *Timaeus*. This critique unfolds in three key points:

(1) In *De generatione et corruptione* II 1, according to Aristotle the question of the separability of prime matter is explored by Plato in an unclear manner: it is not clear how "Omnirecipient" (τὸ πανδεχές) has separate existence from the elements of which it is the substratum. Aristotle probably has in mind the pre-cosmic state in which there were already traces of the elements in the *khôra*. This is a remarkable passage, perhaps the most important, in favour of the 'materialistic' thesis, in which Aristotle explicitly affirms the existence of an original matter of sensible bodies, not separable from them, from which the elements are generated. It plays the role of substratum for the contraries, and Aristotle underlines that the contraries cannot be as a substratum for one another. This passage is at the heart of the discussions on the existence of prime matter in Aristotle's thought. A particularly problematic point is the final passage, where he states three principles: "the potentially sensible body" (τὸ δυνάμει σῶμα αἰσθητὸν), the contraries and the elements. Now, one would have expected 'prime matter' instead of the 'potentially sensible body' that has been interpreted by the deniers of Aristotelian prime matter as proof of the exclusion of absolute prime matter. In reality, this expression underlines the indeterminate sensible potentiality of prime matter anterior to the physical determinations of the various bodies.

T14 *De generatione et corruptione* II 1, 329 a 13–36:

> And what Plato has written in the *Timaeus* is not based on any precisely articulated conception. For he has not stated clearly whether his 'Omnirecipient" (τὸ πανδεχές) exists in separation from the 'elements'; nor does he make any use of it. He says, indeed, that it is a substratum prior to the so-called elements – underlying them, as gold underlies the things that are fashioned of gold. . . . Nevertheless he carries his analysis of the 'elements' – solids though they are – back to 'planes', and it is impossible for 'the Nurse' (i.e. the primary matter) to be identical with 'the planes'. Our own doctrine is that although there is a matter of the perceptible bodies (a matter out of which the so-called 'elements' come-to-be), it has no separate existence, but is always bound up with a contrariety (ἀδύνατον δὲ τὴν τιθήνην καὶ τὴν ὕλην τὴν πρώτην τὰ ἐπίπεδα εἶναι. Ἡμεῖς δὲ φαμὲν μὲν εἶναί τινα ὕλην τῶν σωμάτων αἰσθητῶν, ἀλλὰ ταύτην οὐ χωριστὴν (25) ἀλλ' ἀεὶ μετ' ἐναντιώσεως, ἐξ ἧς γίνεται τὰ καλούμενα στοιχεῖα). A more precise account of these presuppositions has been given in another work (cf. *Ph*. I 6–9): we must, however, give a detailed explanation of the primary bodies as well, since they too are similarly derived from the matter. We must reckon as an 'originative source' and as 'primary' the matter (ἀρχὴν μὲν καὶ πρώτην . . . τὴν ὕλην) which underlies, though it is inseparable from, the contrary qualities: for the hot' is not matter for 'the cold' nor 'the cold' for 'the hot', but the substratum is matter for them both. We therefore have to recognize three 'originative sources': firstly that which potentially perceptible body, secondly the contrarieties mean, e.g. heat and cold), and thirdly Fire, Water, and the like.

(2) In fact, Plato then reduces the elements to the plane surfaces and it is impossible to identify these and its material principle ('the Nurse' = the prime matter). Indeed, in *De coel*. III 7, Aristotle criticises the thesis of the generation of bodies from the surfaces in the name of the principle of homogeneity between principles and the things derived from them: bodies cannot generate themselves from the surfaces because these are not corporeal.[5]

T15 *De caelo*. III 7 306a 5–11 (Criticism of Those Who Find the Solution for the Problem of Transformation of Elements into Surfaces):

> In fact their explanation of the observations is not consistent with the observations. And the reason is that their ultimate principles are wrongly assumed: they had certain predetermined views, and were resolved to bring everything into line with them. It seems that perceptible things require perceptible principles, eternal things eternal principles,

corruptible things corruptible principles; and, in general, every subject matter principles homogeneous with itself.

(3) Finally, in *Ph*. IV 2, Aristotle criticises the identification of matter (*hulê*) and space (*khôra*): place and matter cannot be identified because the former is separable, the latter is not. Here Aristotle adds an allusion to the identification of matter with the Large and Small Dyad and the relationship with place. In *Ph*. I, 9, 191b 35ff., Aristotle presents this identification as an unsuccessful attempt by Plato to account for the primary substratum of becoming, which confuses matter with privation and hence with non-being.

T16 *Ph*. IV 2 209b 5–210a2) (Place is Neither Form nor Matter):

From this point of view, place appears to be the form of each thing; but, on the other hand, insofar as place appears to be the extension of greatness, it is matter (*hulê*). For extension is a different thing from greatness. . . . When indeed the limit and the affections of the sphere are suppressed, nothing remains but matter. This is why Plato states in the *Timaeus* that matter and space are the same thing; the receptacle and the *khôra* are in fact one and the same thing (διὸ καὶ Πλάτων τὴν ὕλην τὴν χώραν ταὐτό φησιν εἶναι ἐν τῷ Τιμαίῳ- τὸ γὰρ μεταληπτικὸν καὶ τὴν χώραν ἓν ταὐτόν). He states instead that the receptacle exists in a different way in the so-called unwritten doctrines, where he assimilated *khôra* and place. Of all those who say that place is something existing, in fact, Plato alone has attempted to say what it is. . . . But still it is not difficult to see that it is impossible for place to be any of these things. Form and matter are not separate from things, whereas it is possible for place to be so. . . . So the place of each thing is neither part nor a state (*hexis*) of the thing itself, but is separable from each of them. The place seems to be something like a vase. The vase is indeed a transportable place. But the vessel is not at all a property of the thing. Then, insofar as it is separable from the thing, it is not its form; but insofar as it contains the thing, it is different from matter. But, on the other hand, it is evident that what is in some 'where' is always something that exists in itself, and that there is another something outside it. (At this point, if we may digress, Plato should be asked why ideas and numbers are not in a place, if place is what makes participation possible, both in the case of this agent being the great and the small, and in the case of it being matter, as he wrote in the *Timaeus*).

Many scholars widely believe that the origin of the "traditional" interpretation, according to which Aristotle believed in the existence of prime

unique and amorphous matter, is to be found precisely in a contamination between the Aristotelian conception of matter and the Platonic conception of 'receptacle' (*khôra*), provided by the later tradition.

In this regard, Charlton traces a history of the stages of this contamination, from the Stoics to Thomas Aquinas, moving through Neoplatonic commentators, such as Simplicius, for whom the search for agreement (*sumphônia*) between Plato and Aristotle was fundamental.[6] But Charlton also demonstrates that the origin of this 'misunderstanding' is Aristotle himself, and precisely his criticism of the *khôra* of the *Timaeus*, developed as if Plato had attempted to define the notion of matter from his own theoretical requirements.

The criticism of the *Timaeus khôra* that Aristotle develops in *Ph*. IV, 2 has been analysed in various articles by L. Brisson (1997, 2011). He observes that Aristotle translates the non-rigorous terminology concerning the 'material principle' used by Plato in the *Timaeus* into the terms of his own philosophy. The result is a partly distorted translation. According to Brisson, the abusive identifications Aristotle establishes are as follows: *khôra* = matter; *metalêptikon* (that which enables participation) = *khôra*; *khôra* = place (*topos*). Aristotle identifies the *Timaeus' khôra* with his concept of matter (*hulê*) because he believed that Plato arrived at the formulation of this concept by following the same path that led him to postulate the existence of a prime matter, namely the problem of alteration. Instead, for Brisson, Plato postulated the existence of *khôra* because he needed a third term in which to make those images that are sensible things appear and from which to make them disappear.

On the contrary, in my opinion, the fundamental point of interest in Aristotle's critique of Plato lies precisely in the fact that Aristotle is making a comparison with a cosmological model he knew well and which served him, in a certain sense, as a model symmetrically opposed to his model of an eternal cosmos. In fact, *Timaeus* provided a cosmogonical model that attributes the current order of the cosmos an origin, based on pre-existing principles, among which is the principle of formless and indeterminate matter, which was, at a certain point in time, separated from the elements which are derived from it. All this, naturally, according to the literal interpretation of the myth of the demiurge and the generated universe, which Aristotle most definitely and logically followed. In fact, as observed by Sedley, the account of *Timaeus* is too precise to be merely fictional; much too detailed to be read in a purely allegorical manner (Sedley 2007, 98 ss). Aristotle used this to demonstrate the problem of separability that prime matter presents also from a temporal perspective, the only way in which it can be represented as autonomous and shows how Plato himself was unable to formulate this notion in a clear manner.

5. Modern-Day Commentators: Aristotle With or Without Prime Matter?[7]

We have seen that the current debate on prime matter in Aristotle is essentially posed in the following manner: Did Aristotle truly believe in the existence of this absolute substratum, or did he merely consider it as a logical possibility? In other words, for Aristotle, is prime matter an autonomous level of reality or a borderline concept? The traditional interpretation, favouring the real existence of prime matter, was brought into question by King (1956): the notion of prime matter appears to be a mistake transmitted by tradition, which confuses an abstract concept, derived from the logical analysis of matter, with a part of the nature, derived from the physical analysis of bodies. Therefore for Aristotle, the ultimate limit of the analysis of the bodies, the authentic more primitive form of matter, would be the elements. This thesis, disputed by Solmsen (1958) and Lacey (1965), was later pursued and redefined by Charlton (1970, 1983) in order to respond to the criticism of Robinson (1974), Dancy (1978) and Williams (1982).

Charlton (1983), as well as King (1956) and Aubenque (1986), considers prime matter as a conceptual necessity linked to the notion of generation. It does not designate an eternal, formless substratum, but rather a '*robust* way' of conceiving ordinary materials (Charlton 1983, 210). According to Charlton, the origin of the traditional, abusive interpretation can be found in a contamination made by the later philosophical tradition between the Aristotelian conception of matter and the Platonic conception of "receptacle", the *khôra*. As mentioned previously, Charlton traces the history of the stages of this contamination and also demonstrates, as we have already seen, how the origin of the misunderstanding is precisely Aristotle and his criticism of the *Timaeu's khôra*.

After Charlton, most critics followed this new interpretative trend, which considers prime matter as a conceptual necessity and denies the existence of an ultimate, absolutely indeterminate and formless limit in the division of bodies. This was also the dominating position at the 15th *Symposium Aristotelicum*, dedicated to the first book of *De generatione et corruptione*.[8] Ultimate (or prime) matter must always be identified with something determinate. The most widespread tendency is to identify it with the four simple bodies – air, water, earth and fire – which constitute the ultimate level of the division of the complex bodies. Such is the opinion, for example, of Mary Louise Gill, who insists that the notion of matter and form should not be applied to the elements in the sense of ingredients and structure, but rather in the sense of their role in the transformation of bodies (Gill 1989, 41 ss., 177 ss.). Similarly, the contrary qualities cold, heat, dry and wet are defined as active and passive because of their role and do

not constitute the ingredients of the elements which, on the contrary, are simple. An exception is represented by F.A. Lewis (2008): he rejects this view of the idea of prime matter as an abstract or purely logical object, recently re-proposing a "philosophical reconstruction" of Aristotelian prime matter in a "traditional" manner from a "functionalist" perspective. Focusing attention precisely on the objective reality of matter as pure potentiality, which comes prior to the passive properties of the bodies, he distinguishes two different levels: a first level, in which prime matter is the persistent, underlying principle of the elementary changes and has the ability to receive or lose the contraries; which comes before the elements and the passive, casual, and limited properties of the second level, that of proximate matter, which makes them possible. In fact, the second level involves the passive, functional properties that disappear once a statue of bronze is made, for example.[9]

6. Ancient Commentators: The Temptations of 'Materialism'

While, as we have seen, a large part of modern scholars agree to regard Aristotle's prime matter as a 'logical or abstract object', all ancient commentators, starting with Alexander of Aphrodisias, acknowledged that Aristotle's prime matter exists as 'something' substantial.

In fact, Alexander distinguishes the composite bodies from the simple bodies. The matter of the former is a natural body, composed of matter and form. By contrast, the matter of the latter is a simple nature, separate from form, amorphous, without form and configuration (*haplê tis phusis kai chôris eidous, amorphos te kai aneideos, ousa kai aschêmatistos*). This kind of nature is matter in the truest sense of the word (*kuriôs*).[10]

The *prôton hupokeimenon* of *Metaph*. Z, 3, was regarded as a 'shadow' by Plotinus,[11] as incorporeal and lacking in qualities by Philoponus, at first[12] and, at a later stage, as an indefinite three-dimensional extension (*trichêi diastaton*), separated from the determinate dimensions that make it a magnitude (*megethos*).[13] This complex doctrine is extremely interesting because it comes close to the notion of a 'field' that manifests certain properties, a notion that modern-day physics uses to explain the subatomic levels of matter.[14]

7. Conclusions. Aristotle *With* Prime Matter

It is true that especially in *Metaph*. Z 3, Aristotle defines prime matter as unknowable and indefinable. This declaration of gnoseological impotence has been linked by most modern-day commentators as Aristotle's denial of its existence.

Pellegrin summarises the most common position among scholars as follows:

> La 'matière première', qui serait pure puissance sans aucune détermination, est un concept rendu nécessaire par la doctrine aristotélicienne de la matière, mais elle ne se réfère à rien de réel, car la matière première, en tant que pure potentialité, sans rien de formel, ne peut ni être pensée ni exister. (Pellegrin 2009, 68)

Aristotle was certainly interested in proximate matter as a way to explain the becoming of the sublunar world: for him, the ultimate corporeal stage are the elements, and these are the basis of the simpler compositions in the physical world, which Aristotle explains through another qualitative model, that of the *mixis*.

Indeed, we have seen that *protê hulê* almost always refers to the elements or the homogeneous bodies, such as bronze or wood, and that any mentions of the prime matter per se, without any determinations, are rare. However, this does not mean that Aristotle excluded its existence and that he viewed it merely as a concept.

In my opinion, Aristotle believed in the existence of a prime matter, analytically anterior to the elements, as the substratum of the qualities that define them. It is a realistic scientific hypothesis to describe something that objectively exists but is not immediately deducible from sensible data. Paradoxically, this leads to an interpretation of the 'likely myth' (*eikos muthos*) of the *Timaeus*. We know that, in the *Timaeus*, Plato was not describing an empirical and objective natural reality but was proposing a model of the world that is the best and most coherent possible. Such is the function of Timaeus' discourse, designated from the start as an 'likely myth' but above all, as a 'likely discourse' (*eikos logos*).

By focusing on the positive meaning of the attribute *eikos*, and hence on the component of truth that the sensible world presents, being an image (*eikon*) of the intelligible world, some scholars have recognised Timaeus' *eikos logos* as having the dignity of a true scientific discourse. In fact, as rightly observed by Brisson, analyzing the epistemological problems with ancient and modern cosmological models, if a scientific explanation must, by definition, express necessity and idealism (I would say of universality), characteristics that cannot be immediately deduced from the data of sensible perception, Timaeus' discourse, which seeks in the sensible values such as symmetry, order and proportion, could be considered as the first attempt to give a scientific explanation to the visible world (Brisson and Meyerstein 1991, 10ff. and 33ff.) and, in particular, to the ultimate constitution of bodies. Just as Plato postulates plane surfaces, Democritus postulates atoms, and modern physicists postulate the particles of the atom, so Aristotle postulates

a qualitative model consisting of matter and form (the qualities). Now, matter in itself is imperceptible, unknowable, undefinable, and never exists separately to form. As Aristotle places the unmoved mover is a pure form and the origin of movement, thus, at the extreme end of the *scala naturae*, he postulates amorphous matter as the limit of the corporeal. The difference between the two extremes is that form, in one case, can subsist separately while matter is always inseparable from its correlate, which is form.

The theory of prime matter, hinted at by Aristotle, was later developed by his successors. The interest in this theory will continue to be reinforced by the emergence of new perspectives and new questions, such as the search for the *sunphônia* between Plato and Aristotle by the Neoplatonic commentators, the comparison with Stoic corporealism, the metaphysics of creation, the revolutionary idea of the transmutation of substances by the Alexandrian alchemists, or even the Christian doctrine of transubstantiation.

In regard to modern commentators, it would be just as interesting to reconstruct the historical and theoretical reasons and epistemological perspectives that led them to move away from the 'traditional' interpretation and embrace what can be described as a 'conceptual' interpretation. Naturally, there is not enough space to explore this right now. I simply would like to make a comparison.

It seems to me that the alternative between traditional and conceptual interpretations of the Aristotelian prime matter can be viewed from the same perspective as the alternative that has been presented concerning the unitary meaning of the Aristotelian notion of cause (*aitia*). The alternative here is between considering the Aristotelian notion of *aitia* as having a purely epistemological function (*explanation*) or as an objective dependency relation that actually exists in the world between two entities.

The solution is that Aristotle acknowledges a unitary sense of cause, even though he does not say what that cause is. But a reading of Aristotelian texts shows how the four causes indicate a type of truly objective, unilateral and transmissible dependence existing in the world (Natali 2013, 57).

So mutatis mutandis, regarding prime matter one could then say that Aristotle says it exists (as we have seen in the texts), but he does not tell us what it is – or, more precisely, he tells us what it is not.

Notes

1 Different stages of this paper have already been presented at the University of L'Aquila, in 2016, and in Paris, in 2019. I would like to thank the friends and colleagues who on all these occasions provided me with their valuable criticism and suggestions. An Italian version has been published under the title "Aristotele e l'enigma della materia prima" in the journal *Chôra* (Viano 2021).

2 In *Metaph*. A, 3, Aristotle says that most of his predecessors strove to explain the causes of becoming by only the corporeal elements as principles and

identified all reality with the material world. But Aristotle does not attribute the discovery of his concept of material cause to his predecessors; he evaluates the principles admitted by them (air, water, earth and fire) as causes which from his point of view are material, in the light of his theory of the four causes: "We have studied these causes sufficiently in our work on nature, but yet let us call to our aid those who have attacked the investigation of being and philosophized about reality before us. For obviously they too speak of certain principles and causes; to go over their views, then, will be of profit to the present inquiry, for we shall either find another kind of cause, or be more convinced of the correctness of those which we now maintain" (982a33–983b4). On this topic, see Viano (2011). On Aristotle's material cause and its developments in the Hellenistic age, see Viano (2016).

3 Quotations of Aristotelian passages are based on translations, sometimes partially modified, of the *Complete Works of Aristotle*, Volume 1: The Revised Oxford Translation (J. Barnes 1984).

4 Bonitz (1870) cites *Ph*., II, 1, 193a29; *De gen. an*., I, 20, 729a32; *Metaph*., E, 4, 1015a7–10; H, 4, 1044a23; Θ, 7, 1049a24–7. (Charlton 1970, 129) n.1, adds *Metaph*., E, 4, 1014b32; 6, 1017a5–6; *Ph*., I, 9, 192a31; II, 1, 193a10 (but in these last two passages Aristotle does not speak of matter as *prôtê hulê* but as *prôton hupokeimenon* and *prôton enuparkhon*).

5 Simplicius refers to *De caelo*, 564, 10 *ss*, a Neoplatonist debate on this point: according to some (Iamblichus), the geometric explanation of Plato is symbolic (*sumbolikôs*), while according to more recent Neoplatonists, Plato should be interpreted to the letter. In the same way, Proclus attributed a certain weight to the elementary triangles of *Timaeus*: "If we maintain that the body is generated by the surfaces (*ex epipedôn*), the thing that is generated cannot be generated from a body. In fact, the surface only possesses length and width. Proclus reiterates that the physical surfaces (*ta phusika epipeda*) are not devoid of depth. In fact, if the body lends corporeality to the whiteness that belongs to the same, the case for surfaces that surround it becomes more feasible. If it has depth, then there can be no generation of the body, starting from that which is incorporeal, but instead a more complex body starting from a much simpler body" (ibid., 576, 16).

6 Charlton (1970, 142ff.). On the harmonisation of Aristotle's matter with Plato's *chôra* in the Neoplatonic age, see De Haas (1997) and Gregory (2003).

7 For a *status quaestionis,* see Viano (2006, 116–122).

8 Charles (2004) decisively defines Aristotle's prime matter as a "logical or abstract object" that serves to indicate the substratum in the reciprocal transformations of the elements. On this line see also in the same volume: Algra (2004), Broadie (2004), Frede (2004). See also Irwin (2016): in *Metaph*. Z 3, the position that the matter of a statue is a substratum and, consequently, a substance can only be sustained if one admits that Aristotle is referring here to ordinary and proximate matter rather than to amorphous and remote matter. To resolve the difficulties this interpretation entails, Irwin distinguishes two levels of proximate matter in bronze, one functional and the other potential.

9 "On the functional property account, as before, we think of a stuff or structure or prime matter, *s*, as having the property of being matter *in virtue of* it having the relevant first-level powers for being made into a thing of a given kind, *k*" (p. 138).

10 *De an*. 3, 21–4,4.

11 See, e.g., *Enn*. VI 3 [44] 8 (34–37). The literature on the *puzzle* of the Plotinian concept of matter is extremely wide. As observed by Chiaradonna (2016) in his recent article "La materia e i composti sensibili nella filosofia di Plotino", Plotinus' theory of composite bodies appears to be problematic. In fact, on one side, Plotinus attributes them with a composition sui generis of matter and sensible qualities that does not entail the alteration of matter. Indeed, he speaks of a "conglomeration (*sumphorêsis*) of qualities and matter," a term that seems to suggest a mass in which each part remains separate from the other. According to this view, matter is nothing more than inert shadow, and sensible objects are nothing more than projected apparitions onto the same. However, on the other side, in other instances, Plotinus seems to attribute material objects with an intrinsic unity. According to Chiaradonna, this oscillation indicates a real and unresolved tension in the philosophy of Plotinus, which stems from the aporia of the negation of material causality, which in turn stems from the aporia that peripatetic hylomorphism itself leads to.
12 Cf. *In Cat*. 83, 13–19; *In Ph*. 561, 3–24; 578, 32–579, 8.
13 Cf. *Contra Proclum*. 405, 23–7; 424, 4–11; 23–425, 14; 425, 25–428.5. On Philoponus' two later positions on prime matter, see De Haas (1997).
14 For a summary on post-Aristotelian conceptions of prime matter, see Sorabji (2004). This anthology summarises and completes the earlier work (1988).

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7 Aristotle on the Efficiency of Accidental Causes

José María Llovet

Introduction

Can an accidental cause (αἰτία κατὰ συμβεβηκός) be effective, that is, produce what it causes in the strict sense? At first glance, it may seem nonsensical to ask this question because if an accidental cause is not effective, then why would Aristotle call it a "cause"? On the other hand, if accidental causes turn out to be effective, how are they different from causes *per se*? Aristotle repeatedly exemplifies an accidental cause with a doctor who also happens to be a flautist; it can then be said about him that he turns out to be a flautist who heals. But does the fact of being a flute player have any kind of influence on or efficacy in a doctor's healing power? Since there is no reason to think that the ability to play the flute is in any sense productive when it comes to healing a sick person, then it seems that the accidental cause here is indeed ineffective. In the words of Tyler Huismann, accidental causes are "causally inert" insofar as they do not meet a necessary condition to be effective, that is, they are not commensurate with their effects (Huismann 2016).[1]

But there also seems to be good reason to claim otherwise. In the first place, if accidental causes are ineffective, why then does Aristotle refer to them frequently when seemingly offering explanations of a certain kind? In *Physics* II: 3 195a32, in fact, he refers to accidental causes as one of the τρόποι of causes. Second, in *Physics* II: 4–6, Aristotle refers to a special type of "accidental cause," namely the causes of chance events. A chance event occurs, for example, when a man goes to the market and, without planning to do so, bumps into one of his debtors. What is the cause of this event? Aristotle affirms that it is an accidental cause because the encounter was caused by having gone to the market, which in this case had an accidental effect. The question then arises as to whether the causes of chance events are accidental in the same sense in which a flute player is an accidental cause of healing. I am convinced that the answer is no. It seems to me, in fact, that it is possible to affirm, following Aristotelian texts, that

DOI: 10.4324/9781003306450-8

accidental causes in general are ineffective, but certain types of accidental causes, those pertaining to chance events, are effective.

In what follows, I will review Aristotle's assertions throughout the Corpus about accidental causes to show that accidental causes are generally ineffective and therefore also epistemologically irrelevant. Later, I will show that chance and luck constitute an exception to this rule, since Aristotle conceives of them as effective, although indeterminate, accidental causes.

General Observations on συμβεβηκός

Before talking about accidental causes, it makes sense to clarify the notion of the accidental in general. In the first place, a predicamental accident should not be confused with an accident understood as that which inheres in the substance, according to the doctrine of categories, that is, an ontological or categorical accident. This is commonly accepted.[2] Second, Aristotle uses the terms συμβεβηκός and κατὰ συμβεβηκός interchangeably to refer to the predicamental accident, which is what interests us here.[3] Throughout this text, then, I will refer to συμβεβηκός and κατὰ συμβεβηκός synonymously, varying between them only for grammatical reasons.

It is also important to clarify whether Aristotle considers the συμβεβηκός as something with many senses or if it is rather a univocal term for him. According to my reading, Aristotle has a univocal notion of the συμβεβηκός, but it has different applications in the different argumentative contexts in which it is used, without changing its original meaning. Now, it is true that there are two definitions of the συμβεβηκός in his Corpus, but the difference between these definitions is minimal and probably does not amount to an intention to speak of the συμβεβηκός in two senses; rather, he appears to perhaps have modified his original notion of the συμβεβηκός over time in order to distinguish between the accidental and the contingent, as clarified below.

Let us first consider the definition that appears at the beginning of chapter 30 of the Delta book in *Metaphysics*:

> We call an accident (συμβεβηκός) that which attaches (ὑπάρχει) to something and can be truly asserted, but neither of necessity nor usually (ὡς ἐπὶ τὸ πολύ), e.g., if one in digging a hole for a plant found treasure. This – the finding of treasure – happens by accident to the man who digs the hole; for neither does the one come of necessity from the other or after the other, nor, if a man plants, does he usually find treasure. And a musical man might be white; but since this does not happen of necessity nor usually, we call it an accident. Therefore since there are attributes and they attach to a subject, and some of them attach in a particular place

> and at a particular time, whatever attaches to a subject, but not because it is this subject, at this time or in this place, will be an accident.[4]

This passage is particularly problematic because, in it, we first find a general definition of the συμβεβηκός, followed by an example that corresponds to an application of the συμβεβηκός in a particular argumentative context (an accidental cause of a certain kind exemplified with treasure found by chance). But, for now, we can extract from it a general formula of the συμβεβηκός:

> [F1]: X is συμβεβηκός with respect to Y iff it is possible for X to be true of Y and it is not necessary[5] for X to be true of Y always or for the most part.[6]

It is possible for a musician to be white, and it can be positively affirmed if it is the case, but it does not necessarily happen always or even for the most part. Even if there has never been a white musician, the mere fact that there could be one is reason enough to say that "white" in general is accidentally predicated of "musician." If all current existing musicians are white, since we know that it is not necessary that this be the case and that it is also possible that none of them be, then we can say that "white" is accidentally predicated of "musician" in the sense that "white" belongs to "musician" only as accidentally predicated. For example, although there has never been a single female president of the United States to date, it is clear to us that when "male" is predicated of "president of the United States," that predicate is accidental since it is not necessary for the president to be male, not even for the most part. And the same for any other predicate that does not necessarily always or for the most part apply to a subject. This is the first definition of the συμβεβηκός.

In *Topics* I, 5, Aristotle outlines the four predicables: definition, property, genus and accident. And after explaining what the first three are, he states: "An accident is something which, though it is none of the foregoing yet belongs to the thing; and something which may either belong or not belong to any one and the self-same thing, as being seated may belong or not belong to any one and the self-same thing" (*Top*. I, 5 102b4–7). Although in this passage he does not clarify that the accidental does not need to be predicted always or for the most part, by contrast to the other 3 predicables that he previously explained, it follows that it is not always predicated: definition, genre and property, in effect, are always predicated,[7] while the accident "may belong or not belong."[8] The only important difference between the formulation found in *Topics* I, 5 and that which is found in *Metaphysics* V, 30 is that, in the former, it is not set as a necessary and sufficient condition for something to be accidental that it is not necessary

for it to happen for the most part. The notion of συμβεβηκός in *Topics* I, 5 can be formulated as follows:

[F2]: X is συμβεβηκός with respect to Y iff it is possible that X is true of Y and it is not necessary that X is always true of Y.

What are the consequences of [F2]'s omission of the necessary and sufficient condition of not necessarily occurring for the most part? (ὡς ἐπὶ τὸ πολύ) The real difference between [F1] and [F2] is fundamental in order to distinguish between the contingent and what is κατὰ συμβεβηκός in events: while everything κατὰ συμβεβηκός is contingent, not everything contingent is κατὰ συμβεβηκός. For example, it is contingent that a doctor heals (since not every doctor always does so). But when he heals, we cannot say that he accidentally healed. An even clearer example is found in that an archer may not necessarily always hit his target, but when he does, we cannot say that he did it κατὰ συμβεβηκός[9] (if that were the case, we would not be able to distinguish the archer from any other person capable of drawing a bow). Doctors and archers generally heal and hit their target,[10] respectively. And although these events are always contingent, since they could have not occurred, they are not κατὰ συμβεβηκός.

In the strict sense, then, a doctor's act of healing is accidental under [F2], but not under [F1], because for something to be accidental under [F2] it is enough that it be possible, but not necessary. The advantage of [F1] over [F2] is that [F1] allows us to introduce the consideration of what occurs for the most part (ὡς ἐπὶ τὸ πολύ), which is particularly important for two areas, namely art and nature. That which happens according to nature in the sublunary sphere happens for the most part, but not always. But it happens *per se* rather than accidently since it is not accidental that for the most part humans have ten fingers, although it is contingent. On the other hand, that something happens for the most part or always, factually, does not guarantee that it is *per se*: all the presidents of the United States are males and even if in the entire history of the United States all the presidents or the majority were males, this would be accidental since we know that it is not necessary that this be the case.

The variation between [F1] and [F2] must have some explanation (the date of the first book in *Topics* and the particular history associated with the composition of *Metaphysics* V, or perhaps that, in *Topics*, Aristotle is only interested in dialectical reasoning), but that is not relevant here. Rather, what interests us is to highlight that, as general formulations of the συμβεβηκός, they have a strictly modal character: in accordance with [F1] and [F2], we can establish whether two things, upon being predicated on one another, are predicated accidentally or not. From this considerably general point of view, the reasons why any two things are accidentally

predicated do not matter. That is, from this strictly modal perspective, causal explanations, whereby an item is only accidentally predicated of another, are left aside.

Now, the concrete meaning associated with the συμβεβηκός depends on the argumentative context in which it appears and the causal scheme with which it operates.[11] Aristotle's observations on the συμβεβηκός are always secondary or marginal in the sense that he is above all and always interested in that which is not accidental, that which is *per se*. For example, what does Aristotle mean when he states, in *Physics* II, 1, that nature is a "principle or cause of being moved and of being at rest in that to which it belongs primarily, in virtue of itself and not accidentally" (Phys. II, 1 192b21–22)? In this case, "not accidentally" must be understood according to [F1], but in light of the positive doctrine on nature that Aristotle presents. The meaning of "not accidentally" then corresponds to the following: a natural being has the principle of change and rest precisely by virtue of its nature and not by virtue of something accidental. This being seems akin to a patient who has the principle of his cure in himself based on also being a doctor, but it is not really like him because, according to [F1], a patient only accidentally turns out to also be a doctor (it is possible that a patient be a doctor, but it is not necessary that he be so all the time nor for the most part; on the other hand, it is necessary for a natural being to have in itself the principle of movement and rest precisely by virtue of being a natural being rather than by virtue of a coincidence, as in the case of the doctor).

The above shows that the notion of συμβεβηκός applied to the argumentative context found in *Physics* II, 1 is of a special character that differs from the one it acquires when used, for example, in mathematical discourse. In *Metaphysics* V, 30 Aristotle writes:

> "Accident" has also another meaning, i.e., what attaches to each thing in virtue of itself but is not in its substance, as having its angles equal to two right angles attaches to the triangle. And accidents of this sort may be eternal, but no accident of the other sort is.
>
> (Met. V, 30, 1025a30–33)

Here, Aristotle says that it is καθ' αὑτό, but accidental, that a triangle is equal to two right angles. What is the meaning of συμβεβηκός here? I don't think this is a different definition of συμβεβηκός, but rather shows how the notion of συμβεβηκός applies to the realm of mathematical knowledge. In light of [F1], we can suggest that Aristotle asserts that the knowledge of a triangle as triangle can include the knowledge that a triangle is equal to two right angles, but it is not necessary that both pieces of knowledge always come together, nor even for the most part; it is certainly possible

to know what a triangle is without knowing that it is equal to two right angles and it is perfectly possible that, at some point, no one familiar with a triangle will know that it is equal to two right angles, although it is also perfectly possible (but not necessary) for all or most people to know so.[12]

There is still more room to discuss the particular senses that the συμβεβηκός takes on in different parts of the Corpus,[13] but what interests us here is to show the meaning it acquires in relation to the theme of accidental causes.

Accidental Causes

In *Physics* II, 5, Aristotle affirms that, just as predication can be accidental or *per se*, so it can also be said that a cause is accidental or *per se*:

> For just as a thing is something either in virtue of itself or accidentally (κατὰ συμβεβηκός), so may it be a cause. For instance, the housebuilding faculty is in virtue of itself a cause of a house, whereas the pale or the musical is an accidental cause. That which is *per se* cause is determinate, but the accidental cause is indeterminable; for the possible attributes of an individual are innumerable.
>
> (196b24–29)

How is the quality of being white related to the ability to build a house? The quality of white or musician accompanies the cause (the builder as builder), but it is not the cause. According to [F1], we can say that being white is said of a constructor *per accidens* because it is true, but not necessarily in all or in most cases. Now, since Aristotle specifically refers to an accidental cause (αἰτία κατὰ συμβεβηκός), [F1] applied to the notion of accidental cause can be formulated as follows:

[F3]: X is (AKS)[14] with respect to Y iff it is possible that X is true of the cause *per se* of Y and it is not necessary that X is true of the cause *per se* of Y always nor for the most part.

[F3] seems to be a plausible formulation of the concept of αἰτία κατὰ συμβεβηκός because it fits Aristotle's examples of accidental causes (except, as we shall see, the examples of chance events). In that sense, if it turns out that a doctor is a flute player and that such a doctor cured Socrates, it is true that a flute player cured Socrates. The quality of being a flute player can be accidentally predicated of, according to [F1], a doctor. But then, according to [F3], the αἰτία κατὰ συμβεβηκός is nothing more than an accidental quality (according to [F1]) of the cause *per se*. Now, is that the only sense that an αἰτία κατὰ συμβεβηκός admits? If so, then it could be argued

that the accidental cause is ineffective, insofar as it is only accidental that it accompanies the cause *per se*. Indeed, for every accidental cause under scheme [F3], what is combined is causally irrelevant[15] so that whether it comes together or not does not affect the fact that the cause *per se* can in fact produce its effect *per se*. It is not just that, in the specific case of a certain doctor who turns out to be a flute player and cures a certain patient, the relationship between being a flute player and being a doctor is neither explanatory nor productive of the fact of curing the patient. Rather, in any case in which the quality of being a flute player is combined with that of being a doctor, being a flute player is not an explanatory or productive quality of the ability to heal. I agree then on this point with interpretations that consider them either "causally inert" or parasitic with respect to the causes *per se*. The relevant question, however, is the following: when Aristotle speaks of chance and luck and says that they are causes *per accidens*, does he understand causes *per accidens* according to [F3]? I do not think so. In what follows, I will show that chance is a particular type of cause *per accidens* that is effective.

Chance and Luck Are Effective Causes *per Accidens*

When Aristotle refers to causes *per accidens*, he mostly does so in the sense seen in [F3], and the message he wants to convey is clear: if a doctor turns out to be a flute player, then it is true that every time he heals, a flute player heals, but he heals not because he is a flutist but because he is a doctor. Therefore his flute player status is irrelevant in explaining his ability to heal.

When Aristotle speaks of chance, he claims that it is an accidental cause. But can it be taken in the same sense as [F3]? The key passage in which he characterizes chance and luck as accidental causes is as follows:

> First then we observe that some things always come to pass in the same way, and others for the most part. It is clearly of neither of these that chance, or the result of chance, is said to be the cause – neither of that which is by necessity and always, nor of that which is for the most part. But as there is a third class of events besides these two – events which all say are by chance – it is plain that there is such a thing as chance and that things due to chance are of this kind.
>
> Of things that come to be, some come to be for the sake of something, others not. Again, some of the former class are in accordance with intention, others not, but both are in the class of things which are for the sake of something. Hence it is clear that even among the things which are outside what is necessary and what is for the most part, there are some in connexion with what which the phrase "for

> the sake of something" is applicable. (Things that are for the sake of something include whatever may be done as a result of thought or of nature.) Things of this kind, then, when they come to pass accidentally are said to be by chance. For just as a thing is something either in virtue of itself or accidentally, so may it be a cause. For instance, the housebuilding faculty is in virtue of itself a cause of a house, whereas the pale or the musical is an accidental cause. That which is *per se cause* is determinate, but the accidental cause is indeterminable; for the possible attributes of an individual are innumerable. As we said, then, when a thing of this kind comes to pass among events which are for the sake of something, it is said to be spontaneous or by chance. (The distinction between the two must be made later – for the present it is sufficient if it is plain that both are in the sphere of things done for the sake of something.)
>
> Example: A man is engaged in collecting subscriptions for a feast. He would have gone to such and such place for the purpose of getting money, if he had known. He actually went there for another purpose, and it was only accidentally that he got his money by going there; and this was not due to the fact that he went there as a rule or necessarily, nor is the end affected (getting the money) a cause present in himself – it belongs to the class of things that are objects of choice and the result of thought. It is when these conditions are satisfied that the man is said to have gone by chance. If he had chosen and gone for the sake of this – if he always or normally went there when he was collecting payments – he would not be said to have gone by chance. It is clear then that chance is an accidental cause in the sphere of those actions for the sake of something which involve choice. Thought, then, and chance are in the same sphere, for choice implies thought.
>
> 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 the occur accidentally and chance is an accidental cause. But it is not the cause without qualification of anything; for instance, a housebuilder is the cause of a house; accidentally, a fluteplayer may be so.
>
> (*Physics* II, 5 196b17–197a16)

In this passage, Aristotle resorts twice to the general notion of cause *per accidens* in accordance with [F3] to explain what chance is. And he uses the same example both times: a housebuilder who turns out to be white, musical, or a flute player. Does this mean then that, for Aristotle, chance

is an accidental cause in exactly the same sense as [F3]? There is another possibility: Aristotle begins the passage by establishing the argumentative context to which the theme of chance belongs. First, he clarifies that he is going to deal with certain things that sometimes happen, but do not necessarily happen always or for the most part. That is, he deals with certain things that are accidental under [F1]. At this point in the text and in particular, he then clarifies that he wants to deal with entities that come to be and, specifically, with those that are "for the sake of something." The particular argumentative context here is that of final causes, which exist both in nature and in human praxis. He then presents a key assertion: that we can also think that, among the things that do not happen always or for the most part, there are also some that are done with an end in mind. This makes it clear that, when articulating the theme of chance (and luck), Aristotle considers certain types of events in which an end can be found, like, for example, that a human being chooses to travel to Piraeus, even if it is not something he necessarily has to do or something he does frequently. Aristotle immediately affirms that among this kind of thing (which belongs to the field of teleology), we say that they happen by chance when they happen accidentally. And to explain what he means, he states that, just as we can distinguish between predication *per se* and predication *per accidens*, so we can also say that there are causes *per se* and *per accidens*. Aristotle then gives the example of the builder who happens to be a flute player. But this example serves to show, in general, the sense in which the notion of συμβεβηκός can be applied to the notion of cause, namely it has a pedagogical function. We are talking about causes, and I introduce the topic of accidental causes. Don't you know what I mean? Here is an example of an accidental cause: the cause of the house is a builder, but a builder may be a flute player, so then a flute player will be an efficient cause of the house. The example fits [F3], but it is not a case of the accidental causality that Aristotle is interested in, that is, chance. It is not a case of a chance event because Aristotle had previously claimed that chance has to do with final causes, but the example resorts to an efficient cause rather than to a final one. However, the example serves to show what an accidental cause is generally.

Next, Aristotle adds a fundamental observation: the cause *per se* is determined (ὡρισμένον), while the accidental cause is indeterminate (ἀόριστον). This is a general observation that still holds for anything that falls under [F3]. Not only is the builder white, but he is also perhaps close-browed, flat-nosed, and Thracian. Countless predicates can be affirmed with truth from the cause of the house. That is, although the accidental cause cannot be just anything (the constructor cannot be double nor can he be eternal), there is no determined accidental cause insofar as it is precisely an accidental cause.

Having said all this about accidental causes in general, Aristotle goes on to talk about the kind of accidental cause that interests him, namely chance. He repeats that this accidental cause has to do with events that have ends and then introduces the example of a chance encounter between a creditor and a debtor. If the example and description of chance that can be made from it fit [F3] perfectly, then one would have to conclude that chance is an ineffective accidental cause. It seems to me, however, that Aristotle intends to show that chance is a special accidental cause; its distinctiveness lies precisely in that it is effective.

The example of this encounter does not fit [F3] because there is no cause *per se* of the chance event with which an accident can be combined. What is the cause *per se* of encountering a debtor at the market? The answer is that there is no determinate cause of such a thing, in the sense that such a thing is not always or for the most part caused by something determined. The meaning of αἰτία κατὰ συμβεβηκός is different in this case because it does not correspond to something that is accidentally combined with the cause, but rather to something that is said to be κατὰ συμβεβηκός regarding its effect according to [F1]. Going to the market and encountering a debtor conforms to [F1] in the following sense:

[F1]: X is συμβεβηκός with respect to Y iff it is possible that X is true of Y and it is not necessary that X is true of Y always or for the most part.
[F1^{AKS}]: GOING TO THE MARKET is αἰτία κατὰ συμβεβηκός of ENCOUNTERING A DEBTOR iff it is possible that GOING TO THE MARKET causes ENCOUNTERING A DEBTOR and it is not necessary that GOING TO THE MARKET causes ENCOUNTERING A DEBTOR always or for the most part.

Which leads us to formulate [F4]

[F4]: X is αἰτία κατὰ συμβεβηκός of Y iff it is possible that X causes Y and it is not necessary that X causes Y always or for the most part.

In the formulation of [F1^{AKS}] and [F4], it is problematic if the relationship between the cause and effect must be presented as an event (something that already happened) or just as something that could happen. That is, are there accidental causes that are so of certain effects in the universal sense? Aristotle's explanation seems to suggest that we are actually thinking about chance events that have already happened,[16] especially because an accidental cause, as precisely indeterminate with respect to its effect, may or may not produce such an effect, but we cannot be sure that it really will produce it. That is, is going to the market an accidental cause of encountering, for example, the emperor of China? It does not seem impossible. And yet,

strictly speaking, it will only be an accidental cause of such an effect when such an event occurs, if it occurs. In that sense, we can affirm that if I met the emperor of China at the market, the cause would be an accidental one according to [F1], but since such a thing has not happened, it is not something that has a cause except in a potential sense (cf. *Physics* II, 3 195b16). This is not irrelevant since the accidental cause is marked by unpredictability, which Aristotle wants to emphasize. A chance event is characterized by its cause lacking determination with respect to the effect, so that, from the point of view of the effect, it is also valid to affirm that if an effect were perhaps going to be produced by an accidental cause, that cause is unpredictable; if it were predictable, it would no longer be an accidental cause. It is impossible, for example, to initiate a given movement and look for an accidental effect because, precisely by setting it as an end, it ceases to be accidental. Similarly, it is impossible to foresee all the accidental effects of an accidental cause.

[F4] serves as a criterion or test in order to understand whether we could affirm that the cause would be an accidental cause or not if cause X and effect Y were combined. According to [F4], if a peasant digs a hole in the ground to plant an olive tree and finds treasure, digging a hole in the ground to plant an olive tree is an accidental cause of finding treasure, because it is not necessary that always, nor for the most part, digging a hole in the ground to plant an olive tree is a cause of finding treasure.

On the other hand, although causes and effects are unpredictable in general, it is true that we can have some idea about the effects certain causes might accidentally produce. For example, we implement means to eliminate, as far as possible, the causes that could potentially and accidentally produce certain unwanted effects (e.g., security measures in a house or in any building try to prevent accidents). By not allowing sharp objects within reach of small children, we are avoiding something that, if it happened, would happen accidentally. We cannot foresee all the possible effects that a knife could have as a cause, but since one of those possible effects is a fatal accident, we eliminate the accidental cause by putting it out of reach, while also eliminating many other possible effects.

The second part of [F4] notes that "it is not necessary that X causes Y always or for the most part." This brings us back to the problem mentioned above, namely if the accidental cause need not cause the effect in relation to which it is identified as an accidental cause, then it seems that the cause *per se* must necessarily cause its effect *per se* always or for the most part. But this is factually false because there are doctors who almost never heal, either because they do not want to or because they have lost their license or are in a coma. But, as I pointed out above, the need for the cause *per se* to cause its effect *per se* always or most of the time depends on the right conditions under which such a cause can produce its effect.

A doctor will not heal anyone if he only cares for patients who have incurable diseases; a builder who is not supplied with the proper material will not build solid houses. But we can even think of natural processes in which the cause *per se* hardly ever produces its effect *per se*. For example, in the case of humans, most sexual acts do not have the effect of conception, but certainly this is the effect *per se* from a biological point of view at least. No one would think, however, that because only a tiny percentage of human sexual acts have the effect of conception, the sexual act is an accidental cause of conception. But, in this case, it is also necessary to adequately describe the event. If most sexual acts are not successful from the point of view of the biological purpose of the sexual act, it is because a man can only fertilize an egg that is capable of being fertilized. If there is no ovum to be fertilized or conception is impeded by some natural or artificial obstacle, the male will not sire a child on most occasions or ever due to circumstances outside of his ability to sire a child. Certainly, if he is not infertile, he will sire a child most of the times in which there is an ovum capable of being fertilized present, and likewise the archer will hit the target most of the time and the builder will successfully build a house.

In [F4], then, the notion of cause must be understood as an actual cause and not as a potential cause: and the cause is in action, it is causing, when it has started the process by which it causes its effect *per se* and is the cause of the effect *per se* insofar as said effect is within its reach.[17] From this point of view, a man who performs a sexual act with an infertile woman cannot be characterized as a begetter, but only as a lover. It is the cause of x in act because it is already, through its activity, affecting the passive potency. A teacher before starting to teach is only a potential cause of teaching, but it cannot be said that he fails as a teacher if he has no students: he will fail as a teacher if, once he has started the process by which he should teach, he fails to teach anyone (and then, if circumstances were normal and there were students with the proper conditions for learning, he would be a teacher in name only; a teacher who was really a teacher would be able to teach the majority of students who have the appropriate disposition for learning).

The cause *per se*, although it does not always necessarily produce its effect *per se*, precisely as the cause *per se* of something, is the best means that can be used to achieve it, if it is a desired end. In the field of human praxis, we usually use means that we believe generally produce what we want. If I want to eat something mouthwatering, I will ask for something mouthwatering at a restaurant and not for something healthy, although it could turn out that some healthy meals are also mouthwatering (it is possible, but unlikely). This may seem like a truism, but it is not if we now think about the correct means to find treasure or to run into a debtor. It is clear that such events have accidental causes because if we look for them as

ends, we will not find the appropriate means: there is no definite cause for finding treasure or running into a debtor. In other cases, certain accidental causes produce certain accidental effects that surely do have a cause *per se*, but then if we looked for the effects we would not choose accidental causes as means, since the chances of achieving such ends through accidental causes are minimal. Although someone unfamiliar with the art of gastronomy could produce a mouthwatering dish with beginner's luck, if we really want a mouthwatering dish, it is better to ask someone who has cultivated the art of producing mouthwatering dishes to make it.

Conclusion

An important question remains regarding why Aristotle says, as seen above, that chance is restricted to the realm of teleology. This is an aspect of the doctrine of chance to which attention is not always paid and that also contains the key to understanding the topic of the efficacy of this type of accidental cause. In this way, it then connects with the main objection that can be raised against the efficacy of accidental causes: how can we explain that something is originated from a cause that is not *per se*? It would be like saying that something can be produced by a potency that just does not have the potency to produce such a thing.[18] The only possible alternative, then, seems to be to reduce all causation to causation *per se* and to assert that when something appears to have been caused by an accidental cause, it was actually another cause *per se* that produced it. If a builder builds a house because he can do so as a possessor of the art of construction and it turns out that the house is pleasing to a person who is always cold, since the house is located on a hill and the sun hits it directly for most of the day, certainly the builder built a pleasant house for that person by accident, without having intended it, but could we not also say that the fact that the house is pleasant for such an individual must be explicable from other causes *per se*? If this is the case, then Aristotelian chance, in as far as it intends to serve as an explanatory framework, constitutes a kind of cognitive error similar to the one that we would attribute to someone who ascribes causal efficacy to an accidental cause according to [F3] (someone who thinks that the flute player as a flute player is the cause of a house's construction).

Is it not true, however, that a merely mechanical explanation of the encounter between two men at the marketplace can be produced? If we dispense with the ends for which they were directed to the market and conceive of them only as substances capable of moving and that, like any two animals or any two bodies, approach one another until they collide or interact in some way, the encounter is somehow explained (the encounter, not their reactions as a result of it).

I do not mean that Aristotelian mechanics dispenses with teleology, but we can absolutely think that, as bodies subject to certain natural laws, the ends we pursue are constantly canceled out or diverted by strictly material and efficient causes[19] that are disconnected from the ends that we pursue (not the natural ends according to which we also move, as material substances, but the properly human ends to which our προαίρεσις is directed when it chooses certain means). I can try to lift a bull with my arms, but I will not succeed, and perhaps, in trying to lift it, I will break my back, which is certainly not an end I intend. Now, a physicist witnessing this accident can perfectly work out a natural explanation: given the weight of the bull and the interacting forces, it is no accident that I would break my back. The physicist need not even ask me what I had intended to do to give a *physical* explanation of the event.

This perspective could be objected to as anachronistic, that is, Aristotle did not have a mechanical understanding of nature that dispenses with teleology; for him, ends are also explanatory of all the changes that operate in nature. But wouldn't his doctrine of chance then be precisely an attempt to show that, when certain ends are not fulfilled, a merely mechanical explanation of the event can be found to underlie it? From this perspective, then, affirming that chance events have no cause, as Sorabji (Sorabji 1983) tries to show, is simply false; rather, chance events contain something that was not intended as an end on the part of at least one of the entities involved. I did not try to lift the bull to break my back, just as the horse did not walk through a certain place to be crushed, nor did the rain fall to rot the harvest – but these outcomes are perfectly explicable from another point of view. If this is so, then only from the teleological point of view is it accidental that a man who wants to carry a bull also breaks his back, because that was not what he intended.

But, from another point of view, which is what really explains the event, there is nothing accidental in the fact that such a thing happened. This makes my reading of accidental causes compatible with Huismann's thesis that causes are commensurate with their effects, but without thereby accepting that accidental causes are ineffective. Aristotle certainly had a very rudimentary idea of mechanics, but he was not totally unaware of mechanical explanations. Rather, we can say that, in his conception of nature, mechanics are subject to teleology because natural substances operate according to their form, which, in turn, contains corresponding ends. But it is precisely in the sublunary sphere where such ends are fulfilled only for the most part rather than always. And they are not always fulfilled because natural bodies are constantly colliding with one another, preventing intended ends from being achieved or from being achieved exactly as nature has arranged for them to be achieved.[20] But this interaction is mechanically explainable, although it always constitutes an irregularity

from the teleological perspective. In another sense, then, teleology is subject to mechanics, since mechanical causes explain that some ends are not met, as well as that certain events happen that were not intended by at least one of the entities involved.

Accidental causes are effective because whenever there is an irregularity from the formal-teleological perspective, there is an underlying mechanical explanation that accounts for such an event.[21] This, however, does not necessarily imply adopting a deterministic view of Aristotle's work because the interaction between mechanics and teleology is a two-way road: mechanics can explain how certain ends are met and how others are not fulfilled, but that does not mean that the teleological perspective supervenes mechanics *tout court* because, for Aristotle and on a metaphysical level, material and efficient causes are not enough by themselves to explain, for example, the regularity in nature.[22] Nature, on a mechanical level, is also subject to the forms of natural beings, but not completely. The dependence that mechanics has on teleology and formal-final causes explains the regularity observed in the world precisely from the formal-final perspective, that is, that human beings are usually born with ten fingers on their hands. And teleology's dependence upon mechanics explains irregularity from the formal-final perspective, that is, sometimes human beings are born with nine fingers because forms and ends also depend on matter and efficient causes for their fulfillment and because they are also constantly colliding with other entities that also aim toward the fullness of their form.

Notes

1 Huismann argues, "Commensurateness involves two constraints, that causes be both (i) necessary and (ii) sufficient for their effects" (Huismann 2016, 573). I do not generally disagree with Huismann that causes must be commensurate with their effects, but I do not think that means that accidental causes are ineffective. I will address this matter in the last part of this text.

2 Cf. *Metaphysics* V, 7 and Quevedo (1989, 26–31).

3 Sometimes a distinction is made between the συμβεβηκός and the κατὰ συμβεβηκός, using the former to refer to the accident in the ontological sense (that which is opposed to the substance and that inheres in it) and the latter as that which occurs accidentally in an adverbial sense (e.g., in Rossi 2018). This distinction may be useful for avoiding confusion, but it does not really have textual support: Aristotle uses συμβεβηκός and κατὰ συμβεβηκός interchangeably to refer to the predicamental accident. For example, in *Metaphysics* V, 30, Aristotle does not use the expression κατὰ συμβεβηκός even once, but it is clear that he refers to the predicamental accident and not the ontological one.

4 All quotes from Aristotle are from Jonathan Barnes' revised edition (Aristotle 1984).

5 In this formulation, I want to emphasize that the accidental is characterized by not necessarily occurring for the most part or always, but this does not exclude the possibility that something accidental could in fact occur for the most part

or always. On this, I do not agree with Rossi (2018, 201); the example of being a man and president of the United States precisely demonstrates that something accidental can factually occur for the most part, even in all cases, but it is accidental to the extent that it does not have to be that way. This issue is taken up in Cooper (1982), Judson (1991) and Mignucci (1981). By describing the accidental as that which does not necessarily always or for the most part happen, my formulation works whether Aristotle refers to "always in time" or "always in all cases" (cf. Mignucci 1981, 185). It is true that it is still possible for the majority of US presidents not to be male. We know this precisely because it is obvious that the relationship between being a man and the president of the United States is accidental (historical and social circumstances explain why, during the first 200 years of US history, the relationship between being a man and the president of the United States was "almost necessary," but those circumstances can and have changed, which is precisely why, as subject to circumstance, it is not necessary that the majority of the presidents of the United States be male). Often, we are unable to realize that something regular is accidental because regularity seems to be a sign that there is a causal relationship. For example, for centuries, sailing was causally associated with coming down with scurvy because most people with scurvy were sailors. But the relationship was accidental in the sense that, since the cause of scurvy is vitamin C deficiency, those who spent long periods at sea and did not have access to fresh vegetables got scurvy. Today, most people with scurvy are not sailors. Without the proper causal explanation certainty that the correlation is not accidental cannot be had, even if the correlation occurs in most cases. To know then if something is accidental or not, in the strict sense, it is necessary to do a broad empirical investigation that leads to finding the causes *per se*, because the fact that something is presented as regular or irregular is not enough to establish whether it is *per accidens* or not; the existence of a causal relationship is precisely the most important element.

6 In this formulation, I am assuming that everything necessary is necessarily possible.

7 Example: risible, animal and rational are predicated on every human being without exception.

8 For a detailed study of accident in relation to the other three predicables, review Urbanas (1988, 27–70).

9 It could only be so in a very far-fetched case: although not intending to hit the target, the wind moved the arrow and hit the target anyway. In the same way, a doctor could cure a sick person *per accidens* if, intending to kill him, he made a mistake and administered the appropriate remedy instead of a poison. But, in these cases, the art of the archer or the doctor would not be the cause of "success"; the cause would be otherwise and they would then constitute, precisely, κατὰ συμβεβηκός events because, as will be seen later, they were produced by indeterminate causes (the wind and an error, respectively).

10 Obviously, the truth of this proposition depends on an adequate characterization of his technique: a doctor who does not generally heal (even though he wants to do so), is not really a doctor. An archer who generally misses his target, even though he wants to hit it and tries to make good shots, is not really an archer. Under special circumstances, a true doctor may almost never heal, for example, if he only deals with very difficult cases. But under an adequate description of what it means to possess the art of medicine, it should be said that this doctor, upon possessing the art, could necessarily heal the majority of

his patients if he were to attend to non-exceptional cases, because the art of medicine consists precisely in being able to do that. A cause *per se* will cause most of the time given the right conditions for it to cause. A builder who really is a builder, but who is not generally provided with the proper materials, will not build well.

11 In *Metaphysics* V, 7, for example, Aristotle operates with a univocal notion of the συμβεβηκός when he says in 1017a20 that an accidental thing is meant in three ways; he does not mean that there are three different senses of συμβεβηκός, but rather that the συμβεβηκός applies in three different ways.

12 For a different interpretation, see Tiles (1983).

13 According to my reading, then, the notion of συμβεβηκός with which Aristotle operates throughout his Corpus corresponds to [F1] (or to [F2] which, as seen, is almost identical to [F1]). But [F1] is applied to different argumentative contexts and, when applied, it then leads to various reflections on the nature of the accidental. For example, in *Metaphysics* E, 2–3, Aristotle addresses the *ens per accidens*. But here, the συμβεβηκός has the same meaning as [F1] in the framework of an ontological and epistemological discussion that tries to establish the extent to which things that are accidental according to [F1] can be treated scientifically. For a study of why *ens per accidens* cannot be studied scientifically and of the consequences this has for first philosophy, see Rossi (2018).

14 αἰτία κατὰ συμβεβηκός.

15 In a passage from *Posterior Analytics*, Aristotle clarifies that the accidental cannot count as a cause precisely because it simply joins together, coincides: "What does not belong because of itself is accidental – e.g., if it lightened when he was walking, that was accidental; for it was not because of his walking that it lightened, but that, we say, was accidental. But because of itself, then in itself, – e.g. if something died while being sacrificed, it died in the sacrifice since it died because of being sacrificed, and it was not accidental that it died while being sacrificed." *Posterior Analytics* I, 4, 73b10–16.

16 On the view of chance events in relation to the past and the unpredictability of the future, see Dudley (2010), esp. chap. 8 (271–325).

17 Julia Annas (1982) delves into the importance of describing the cause as causative (see esp. p. 321).

18 See Rossi (2018, 208). In *Metaphysics* E, 2 1027a6, Aristotle rightly affirms that there is no potency or art that produces the accidental.

19 Cf. *Metaph*. VI, 2 1027a15.

20 All change always implies the transmission of a form. In a chance event in which beings with a nature interact, the transmitted form does not entirely correspond to nature's plan from the formal-final perspective. For example, in principle, monsters shouldn't exist, but they do because the form is not always transmitted according to nature's plan. For a complete study on change as a transmission of form, see Marmodoro (2013).

21 "What is necessary then, is necessary on a hypothesis, not as an end. Necessity is in the matter, while that for the sake of which is in the definition" (*Phys*. II, 9 200a13–15).

22 In light of *Physics* II: 8, if we do without formal and final causes, then we cannot even say what is regular and what is not: every perspective of regularity is formal-final. There can be, for example, accidental efficient causes in the strict sense, as Judson (1991) thinks, because the efficient causes that we call accidental are labeled so from a formal-final perspective.

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8 The Relevance of Environmental Conditions as Causes for Animal Generation in Aristotle[1]

María-Elena García-Peláez

Aristotle knew nothing about spermatozoa, ova, chromosomes, or hereditary genes. Nevertheless, the theory of reproduction found in the *Generation of Animals* provides an exhaustive account of the generative phenomena with references that range from plants and "lower" animals to human beings.

In the case of sexual reproduction, the feminine and masculine principles are the main factors to be considered. The former, that is to say, menses (*katamenia*), respond to the material cause and to the potential "vegetable" soul, while the latter, masculine sperm (*goné*) acts as an efficient cause and transmits the form and final cause, that is the sensitive soul.[2] According to a minimalist interpretation, the male transmits to the new animal only the specific nature to which the father belongs, that is, to be a dog or a dolphin. A more far-reaching interpretation could add to the specific form that a successful generative process should manage to transmit to the embryo also the particular hereditary traits of the father.[3]

In any case, Aristotle is crystal clear on the importance of meteorological and geographical aspects ruling or modifying the generative process as a whole as well as its particular outcomes. Both masculine and feminine spermatic residues come from specific individuals and are produced from certain diets and affected by determinate environments.

Most scholars tend to disregard the actual influence of external conditions on the generative process due to different reasons. (1) Since Aristotle tackles this issue explicitly in *Gen. an.* 4.2, climatic effects are usually studied only when dealing with the material and accidental features developed in the last *Gen. an.*'s books. (2) Aristotle states that lower living beings tend to be much more impaired by external factors than higher animals, such as quadrupeds or human beings.[4] (3) While *katamenia* are clearly studied in their material constitution, masculine *goné* is said to contribute no matter whatsoever: the specific form then, could not be affected by the environment. (4) Some of Aristotle's explanations pinpointing wind or

DOI: 10.4324/9781003306450-9

some other climate factors affecting generation seem to come from folkloric or pre-scientific thought.

In this chapter, I argue against the misreading of Aristotle's explanations about the influence of external conditions on generation. I address the relationship between celestial movements and sublunary living beings, emphasizing the natural tendency to regularity in the generative processes. The yearly cycle of the sun produces seasons that affect the life and generative predisposition of animals. The monthly cycle of the moon has an even more direct impact on the readiness of females for pregnancy. In a restricted scope, local environmental conditions prove to affect animals' tempers, as well as some generative outcomes. Sex determination holds a notorious relation to the winds, which drives me to emphasize the influence of immediate environmental conditions along procreation. This last issue can only be thoroughly explained if there is a revision of the male's contribution to the embryo. Provided that the male transmits the sensitive soul, the material aspect of his seed should also be considered, since important features of an animal depend on it and are susceptible to being affected by climate immediate conditions.[5] Throughout the chapter, I compare some Aristotelian theses to the Hippocratic text *Airs, Waters, Places*, since Aristotle incorporates some of its main ideas into his own generative theory.[6] This also shows that, according to the Aristotelian works, environmental conditions belong to the scientific realm, even if secondary compared to form.

Celestial Bodies and Animal Generation

Aristotle defends that the eternal cycle of generation and corruption of all beings (and in the first place of the elements) finds its origin in the circular translation of the celestial bodies, and more precisely of the sun. Since reproduction is part of the "sublunary events" it must be subject to the material causality of the elements and to the "driving power of the eternally moving bodies". A meteorological text puts forward the transition:[7]

> Fire, earth and the kindred elements must therefore be regarded as the material cause of all sublunar events (for we call the passive subject of change the material cause); while the driving power of the eternally moving bodies must be their cause in the sense of the ultimate source of their motion.
>
> (*Mete*. 1.2.339a29–33; trans. H. D. P. Lee 1952)

It should come as no surprise to find a connection between external environmental factors and the generation of plants and animals in the biological works as well. Some of these factors influence seasonal activities other than

reproduction, for example, the making of honey,[8] while others influence the process of reproduction. The influence could be direct, as in sunshine causing spontaneous generation,[9] or it could be indirect, as in the warming spring weather triggering sexual desire in mammals.[10] But in most cases, the causality between the eternal regular cycles and the lesser ordered part of the cosmos is not so obvious and requires some interpretation.

A long passage of the *Gen. an.* displays in a fascinating way the eternal regularity to which nature aims, combined with contingent factors when it comes to generation:

> In all cases, as we should expect, the times of gestation and generation and of lifespan aim, according to nature, at being measured by periods. By a period, I mean day and night and month and year and the times which are measured by these; also, the moon's periods which are: full moon and waning moon, and the bisections of the intervening times, since these are the points at which it stands in a definite aspect with the sun, the month being a joint period of both moon and sun. The moon is a principle on account of its association with the sun and its participation in the sun's light, being as it were a second and lesser sun, and therefore is a contributory factor in all processes of generation and perfecting. As we know, it is heat and cooling in its various manifestations which up to a certain due proportion bring about the generation of things, and beyond that point their dissolution; and the limits of these processes, both as regards their beginning and their end, are controlled by the movements of these heavenly bodies. Just as we observe that the sea and whatever is of a fluid nature remains settled or is on the move according as the winds are at rest or in motion, while the behavior of the air and the winds in turn depends upon the period of the sun and the moon, so too the things which grow out of them and are in them are bound to follow suit. . . . Nature's aim, then, is to measure the generations and endings of things by the measures of these bodies, but she cannot bring this about exactly on account of the indeterminateness of matter and the existence of a plurality of principles which impede the natural processes of generation and dissolution and so are often the causes of things occurring contrary to nature.
>
> (*Gen. an.* 4.10.777b16–778a9; trans. Peck 2000)

The context of this passage is the different lengths of the pregnancy of diverse species. But the explanation can be applied smoothly to generation in a broader sense: "it is reasonable to consider that in all cases" (Εὐλόγως δὲ πάντων . . .) the various processes of generation are measured by periods. Although measuring is a human action, in this context it is not meant to be

contingent: the regularity proceeding from the heavenly bodies is related to each species through constant cycles.

When it comes to celestial movements that influence reproduction, I will not focus on the most obvious way in which the celestial bodies help to measure time, namely months or years; nor in the common references to stars or constellations which were used to signal the timings of different phenomena in the zoological context.[11] Instead, I will study the actual effects of those regular movements on animal generation. This influence is not however of the absolute necessary kind.[12] In the *Gen. an.* passage, Aristotle focuses on how the movements of the sun and the moon act on the winds and on bodies of water, and on whatever is generated and lives in them. Even when these living beings follow the pattern of the celestial bodies, concomitant factors may spoil the development of offspring, producing premature or defective babies. The last lines of the passage go that way. The production of any living being, therefore, results from the conjunction of eternal movements, regular ones, and individuality.

The moon is said not only to be useful for measuring but is explicitly depicted as a "contributory factor in all processes of generation and perfecting" (διὸ συμβάλλεται εἰς πάσας τὰς γενέσεις καὶ τελειώσεις), and its capacity to influence reproduction is related to the sun and its light. Aristotle is not assuming a mysterious remote influence of those two heavenly bodies on generation, but a very concrete action: heating and cooling, which directly affect sublunary beings,[13] result from the movements of the sun and the moon.

Cycles of the Sun: Seasons

Aristotle claims in *Hist. an.* 7 that activities and lives of animals differ according to seasons and nutrition. The activities Aristotle has in mind mainly concern reproduction:

> Their activities all have to do with mating and rearing of young, or with their supply of food, or are contrived against periods of cold and heat or the changes of the seasons. For all animals have an innate perception of change in respect of hot and cold, and just as among humans some move indoors during the winter while others who command extensive territory spend their summer in the cold parts and the winter in the warm sunny parts, so it is with those animals that are able to change their locations.
>
> (*Hist. an.* 7.10.596b20–28; trans. Balme 1991 with modifications)

Aristotle declares that reproduction, or "making another like oneself", is "the most natural deed for complete (or perfect) living beings" (*De An.*

2.4.415a26-b1), so it is reasonable to find in the biological works that most of their activities (*praxeis*) are concerned with basic survival needs like getting food and monitoring the environment, and with reproduction. Aristotle mentions in *Hist. an.* 596b23 an inborn perception of change in temperature (τὸ θερμὸν καὶ ψυχρὸν μεταβολῆς αἴσθησιν ἔχει σύμφυτον), which explains their awareness of and response to external conditions.[14] Even human beings, while less impacted by weather due to their rational and technical abilities, are mentioned in the passage: the most complex of animals modifies its behavior too, even if not demonstrating dramatical changes such as the hibernation of a bear.

The seasons exert various kinds of influence and impact on animals: the migration of birds and fishes (*Hist. an.* 7.12.597a28–30), the moulting of certain birds (*Hist. an.* 6.9.564b1–3), and the general sickness and health of various animals, as well as their periods of thriving (*Hist. an.* 7.18.601a23–26). But for each species it varies; some prefer cold conditions, others prefer mild weather, and others flourish in summer. As for reproduction, the urge or disposition for it tends to occur when this teleological process benefits the most to the offspring. According to this, the length of pregnancy and adequate climate for the newborns will determine the mating season.[15] For example, in the case of blooded quadrupeds:

> The generation of these takes place in spring, though copulation does not occur at the same season in all cases. Some copulate in spring, . . . depending upon how the approaching season favors the generation of their offspring.
>
> (*Hist. an.* 5.33.558a1–4; trans. Peck 2002)

Although Aristotle is aware that there are differences among species,[16] what he stresses here is nature's propensity to fix the mating season at about the same time:

> Nature intends that most animals have intercourse at about the same time of year, when winter is changing over to summer, in other words, in spring, which is the time when most creatures that fly or walk or swim feel the urge for copulation.
>
> (*Hist. an.* 5.8.542a20–24; trans. Peck 2002 with modifications)

Seasons govern the general tendency to begin the generative process in all animals, even if each species realizes it in its own way.[17] Aristotle notices, however, that human beings and domesticated species such as dogs engage in sexual activity without weather constraints all through the year. For domestic animals, the reason is that they receive plenty of food and do not need to worry about shelter (*Hist. an.* 5.8.542a26–30). The same could

be said of their masters: technical improvements free them from environmental constraints for mating and breeding. Besides, at a biological level, human beings have the ability to reproduce in any given season because mature healthy individuals produce spermatic residues constantly throughout the whole year. But that does not imply that their generative process is not affected by external conditions. The case of women is the most noticeable since Aristotle states that among female animals, they are the ones that produce the largest amount of residue and that their reproductive cycle is linked to the celestial bodies.[18]

Cycles of the Moon

The menstrual cycle is necessary for women to become pregnant, and the cycle of *katamenia* is irresistibly associated with the cycle of one of the heavenly bodies, namely the moon.[19] The name itself evinces the relationship since it means precisely a monthly situation and in the plural, it refers to a woman's menstrual discharge;[20] as Aristotle says (*Hist. an.* 9.2.582a34), "the onset (ὁρμὴ)[21] of the menses develops during the waning of the month", literally "the waning of the moon" (φθίνοντας τοὺς μῆνας).[22] The *Gen. an.* provides an explanation of this by relating the phases of the moon to heat and cooling factors:

> In women the period is not accurately fixed, but it tends to happen when the moon is waning, which is what we should expect, since the bodies of animals are colder when their environment is colder, and the time of new moon is a cold time on account of the disappearance of the moon: the same thing explains why the end of the month is stormier than the middle. When the residue has changed into blood, the menstrual discharge tends to occur in accordance with the period just mentioned.
>
> (*Gen. an.* 2.4.738a17–23; trans. Peck 2000)

The moon has an impact on the generation and development of living things.[23] That idea was barely mentioned in *Gen. an.* 777 (*supra* p. 149): "The moon is a principle on account of its association with the sun and its participation in the sun's light, being as it were a second and lesser sun" (ἔστι δὲ ἡ σελήνη ἀρχὴ διὰ τὴν πρὸς τὸν ἥλιον κοινωνίαν καὶ τὴν μετάληψιν τὴν τοῦ φωτός· γίνεται γὰρ ὥσπερ ἄλλος ἥλιος ἐλάττων·). Now it can be fully understood: the moon's presence raises the temperature of the sublunary world, as it projects the sun's light. As it wanes and disappears, the nights get colder. The same explanation appears in 4.2.767a2 where the moon is called not only a "smaller sun" but is also said to do in a month what the sun achieves in a year: "the sun makes a winter and a summer in the course of a whole year; the moon, on the other hand, in a month" (ὁ μὲν

γὰρ ἥλιος ἐν ὅλῳ τῷ ἐνι αυτῷ ποιεῖ χειμῶνα καὶ θέρος, ἡ δὲ σελήνη ἐν τῷ μηνί; my translation).

And yet cold might not be the only factor that explains the timing of the menstrual period. Both passages suggest another factor: *Gen. an.* 738 calls this time of the month stormier (χειμερίους), while 767 says it is more humid (ὑγρότερος). The environmental cause of a female's period is the combination of coldness and humidity.[24] This time is not the one considered favorable for pregnancy, but contrariwise the one which has a better temperature and when the feminine residues are still in the womb. Such a period would roughly be in the middle of the month, that is, with the waxing of the moon at its best, in the full moon.[25] The suitability of this period is exemplified also in the case of most Testacea. Sea urchins are reported as having their "eggs" "most plentifully at the times of full moon and when the days are warm and sunny" (*Hist. an.* 5.12.544a19–20; trans. Peck 2002). *Part. an.* also includes such a reference: "they have ova in them as soon as they are born, and at the time of full moon these increase in size; and this is not as some think, because the creatures eat more then, but because the nights are warmer owing to the moonlight" (*Part. an.* 4.5.680a32–34; trans. Peck 1991).[26] The influence of the moon (on behalf of the sun) is then well attested, and the former two examples (human beings and Testacea) show that the movements of the celestial bodies affect the simplest living beings as well as the most complex ones.[27]

The Importance of Local Environmental Conditions

Below the level of the moon's orbit, local geographical differences on the surface of the earth are also factors that affect the development of humans and other animals. Aristotle is not a pioneer in this field. The Hippocratic treatise on *Airs, Waters, Places* is a clear example of how ancient physicians thought that external conditions could affect certain characteristics of different peoples according to the kind of winds and waters they are usually exposed to. The author is confident that local geography is a factor not only in the physiques but also in their characters (τὸ δὲ λοιπὸν γένος τὸ ἐν τῇ Εὐρώπῃ διάφορον αὐτὸ ἑωυτῷ ἐστι καὶ κατὰ τὸ μέγεθος καὶ κατὰ τὰς μορφὰς διὰ τὰς μεταλλαγὰς[28] τῶν ὡρέων; *Aer.* 23). They might be energetic and courageous or the opposite:

> For in general you will find assimilated to the nature of the land both the physique and the characteristics of the inhabitants. For where the land is rich, soft, and well-watered, and the water is very near the surface, so as to be hot in summer and cold in winter, and if the situation be favourable as regards the seasons, there the inhabitants are fleshy, ill-articulated, moist, lazy, and generally cowardly in character. Slackness

> and sleepiness can be observed in them, and as far as the arts are concerned they are thick-witted, and neither subtle nor sharp. But where the land is bare, waterless, rough, oppressed by winter's storms and burnt by the sun, there you will see men who are hard, lean, well-articulated, well-braced, and hairy; such natures will be found energetic, vigilant, stubborn and independent in character and in temper, wild rather than tame, of more than average sharpness and intelligence in the arts, and in war of more than average courage.
>
> (*Aer.* 24; trans. Potter 2022)

Aristotle shows every sign of thinking within the same conceptual framework. The similarity between the Hippocratic text and Aristotle's *Hist. an.* is hard to miss:[29] "In general, the animals differ according to localities. For just as in some places certain animals do not occur at all, so in certain places they do occur but are smaller and shorter-lived and do not thrive." (*Hist. an.* 7.28.605b22–25). After a large number of examples Aristotle adds, "The cause is said to be the food (αἰτιῶνται δὲ τὰς τροφάς), in that it is abundant for some but scanty for others", and finally, "In many places the climate too is a cause" (πολλαχοῦ δὲ καὶ ἡ κρᾶσις αἰτία; *Hist. an.* 7.28.606a26-b6). The *krâsis* (blend) proper to an animal is strongly related to the *krâsis* (climate)[30] of the surrounding context and is also connected to the food an animal ingests: "their food differs chiefly according to the matter out of which they are constituted. For each one's growth comes naturally out of the same matter"[31] (namely, of which it is constituted; αἱ δὲ τροφαὶ διαφέρουσι μάλιστα κατὰ τὴν ὕλην ἐξ οἵας συνεστήκασιν. ἡ γὰρ αὔξησις ἑκάστοις γίνεται κατὰ φύσιν ἐκ τῆς αὐτῆς; *Hist. an.* 7.1.589a6–8; trans. Balme 1991 modified).

Although the Hippocratic author is writing exclusively for physicians, Aristotle is clear that the same principle must apply to any living being.[32] Differences between species and between members of the same species living in different areas are not limited to material characteristics such as the size or the kind of horns, but behavioral dispositions are also affected:[33] "In general the wild animals are wilder in Asia (Ὅλως δὲ τὰ μὲν ἄγρια ἀγριώτερα ἐν τῇ Ἀσίᾳ), but all those in Europe are braver, while those in Libya are the most varied in form (πολυμορφότατα)" (*Hist. an.* 7.28.606b17–19). Some lines afterward Aristotle says: "Localities also produce differences in character" (Ποιοῦσι δ' οἱ τόποι διαφέροντα καὶ τὰ ἤθη); for example, mountainous and rough regions produce characters different from those in level and soft places.[34]

Environmental Factors in Reproduction

The Hippocratic author of *Airs, Waters, Places* believes that geographical factors affect human reproduction in various ways: the frequency of

sterility or barrenness as well as of monstrosities or, on the contrary, well-grown babies, increases according to the environmental conditions.[35] The *Aphorisms* also includes remarks on the possible miscarrying or birth of weak or unhealthy babies due to the seasons.[36]

Besides the remarkable consequences of temper and behavior, it is also said in *Hist. an.*: "we must not forget that as in the case of plants and quadrupeds' differences of locality exert much diversity (αἱ χῶραι ποιοῦσι διαφορὰν) of influence, not only upon general physical well-being but also upon the frequency of copulation and breeding" (οὐ μόνον πρὸς τὴν ἄλλην τοῦ σώματος εὐημερίαν ἀλλὰ καὶ πρὸς τὸ πλεονάκις ὀχεύεσθαι καὶ γεννᾶν). (*Hist. an.* 5.11.543b24–27; trans. Peck 2002).

Once again, the case of human beings deserves some attention. In *Hist. an.* 9.4.584b7–11, Aristotle claims that "around Egypt and in certain places where the women are good at bringing to birth, and bear and deliver many with ease" (ὅπου εὐέκφοροιαί γυναῖκες καὶ φέρουσίτε πολλὰ ῥᾳδίως καὶ τίκτουσι, καὶ γενόμενα), premature babies of eight months or deformed ones (τερατώδη) have better chances to survive than those born in places such as Greece (ἐν δὲ τοῖς περὶ τὴν Ἑλλάδα τόποις), where most of them perish.[37] The remark on Egyptian women's aptness for generation is found also in *Gen. an.* 4.4.770a33, where they are said to be more prolific.[38] No justification for these claims is offered immediately. Later, Aristotle expresses the cause of the aptness of women from some latitudes and this explanation is unrelated to the weather,[39] but connected with their way of life. Laborious women and those who are used to physical activities (ἐν οἷς ἔθνεσι πονητικὸς ὁ τῶν γυναικῶ βίος; e.g., to carry heavy loads) are used to hold and control their breath, in opposition to those ones who are not constantly engaged in physical exercise or have a more sedentary life (ἑδραῖαι). This determines an easier or more painful parturition according to Aristotle.[40] Thereby, delivering at ease is explained but not the promptness to engender or the tendency to multiple birth. Those last features, and others such as the sex of the embryos, I will argue, are related not to social habits but to weather conditions.

Multiple birth is considered by Aristotle as a kind of monstrosity in some animals, but not in all of them.[41] In the following passage, the production of twins is stated not as an impairment, but as the result of favorable conditions:

> The production of twin lambs and goats may occur because of good pasturage or because the ram or he-goat, or the dam, is a twin-producer. Some give birth to females, others to males, and the difference is due to the waters they drink (some water are productive of females, some of males) and to the sires in the same way. If copulation takes place while north winds are blowing, they tend to produce males; if south winds,

> females. Female-bearing animals may change over to become male-bearing: they must face north during their intercourse.
>
> (*Hist. an.* 6.19.573b31–574a2)

Is this merely reported folklore on Aristotle's part, or does he conceive these reports as part of this science? When this sort of text is read without bearing in mind the environment's importance for Aristotle, it is understandable to attribute folkloric thought or pre-scientific reasoning to them. Nevertheless, Aristotle should be taken seriously in such affirmations. Three important factors appear in this passage: pasturage, water, and wind. Pasturage means a diet that will be transformed into spermatic residues if the amount and quality of the food are convenient for the kind of animal to which multiple births are natural. We have an explanation for the overabundance of residue which can become a twin producer. In this case, both male and female parents are concerned. Pasturage is naturally related to climatic issues.

Winds and Waters, Factors in Sex Determination

Sex differentiation is due to the other two factors: waters and winds. The importance of the environmental context is described as equivalent to that of the sire. The quality of the waters of each region will make the masculine begetter prone to produce females or males.[42] In this respect, the Hippocratic treatise *Airs, Waters, Places* is an important background, since the author describes how the kind of water can be distinguished and its many consequences.[43] Aristotle's commitment to this theory appears also in *Gen. an.*, precisely when describing the importance of the external factors:

> Also, one country differs from another in these respects, and one water from another, on account of the same causes, for the quality of the nourishment especially and of the bodily condition of a person depends upon the blend of the surrounding air and of the foods which the body takes up, and especially upon the nourishment supplied by the water. . . . Hence hard, cold water in some cases causes barrenness, in others the birth of females.
>
> (*Gen. an.* 4.2.767a29–35; trans. Peck 2000)

Coldness is one of the elementary properties continuously used by Aristotle to describe the feminine.[44] It makes sense in that context to see it applied to the waters which can produce females. Considering that water is also found in solid food, the composition of the former will affect the quality of the seed.

But the most intriguing part of *Hist. an.* 574 (see earlier) appears in the lines following the mention of the waters being equally important for sex determination to the sire: the relevance of the wind. The *Gen. an.* passage just quoted also mentions the importance of the "blend of the surrounding air," but is easier to make sense of because it points to a more stable or permanent condition that can affect the animal as a whole. The striking part in the *Hist. an.* passage comes from the immediacy of the action of the winds: "If copulation takes place while north winds are blowing, they tend to produce males; if south winds, females. Female-bearing animals may change over to become male-bearing: they must face north during their intercourse." Aristotle is not talking about the usual air of a place but of the precise winds blowing exactly while the couple is mating. Even if this might sound a bit folkloric, it is not the only place where Aristotle explicitly links sex determination to the winds. *Gen. an.* 766 mentions the same idea along with an explanation:

> Young parents and those who are older too, tend to produce female offspring rather than parents which are in their prime; the reason being that in the young their heat is not yet perfected, in the older, it is failing. Also, parents which have more humidity in their bodies and are more feminine tend to produce females; this is true also of fluid semen as opposed to that which has "set"; all these things are due to a deficiency of natural heat. Also, the fact that when the wind is in the north male offspring tend to be engendered rather than when it is in the south <because animals' bodies are more fluid when the wind is in the south> so that they are more abundant in residue as well.[45] And the more residue there is, the more difficulty they have in concocting it; hence the semen of the males and the menstrual discharge of the women is more fluid.
>
> (*Gen. an.* 4.2.766b28–767a2; trans. Peck 2000 with modifications)

Nevertheless, the passage's accuracy has been taken to be compromised since some lines afterward Aristotle seems to report what shepherds say and not directly Aristotle's own opinion:

> Shepherds say that it makes a difference so far as the generation of males and females is concerned not only whether copulation occurs when the wind is in the north or in the south, but also whether the animals face north or south while they are copulating: such a small thing thrown in on one side or the other acts as the cause of heat and cold, and these in turn act as the cause of generation.
>
> (*Gen. an.*4.2.767a10–14; trans. Peck 2000 with modifications)

The explanation might seem dubious, but in fact, Aristotle does not reject it. Both passages seem to agree on the main cause: heat and cold are the chief factors when it comes to embryology and sex determination. Winds, depending on their direction, bring higher or lower temperatures. Even facing them or not might have some impact on the animal.

Besides coldness, the other elementary property which Aristotle attributes to female animals is humidity. In general, things not thoroughly concocted are humid and less informed.[46] Parents who are defective or not in their prime, as described by Aristotle, lack natural heat and this will produce a weaker seed "obviously" resulting in a female.[47] But once again, an internal cause of heat (or lack of it) is immediately linked to external factors: a second cause ("also") for sex determination will lie in the wind. If there is a north wind, warmer weather is expected and male embryos are likely to be generated. South winds, on the other hand, are related to humidity and the generation of females: the seed is affected by diet and climatic conditions.

This idea is anew repeated, surprisingly, in the *Politics*. The context is a normative one. Proper season and wind direction should be observed for the sake of generation.

> As to the proper times in respect of the season we may accept what is customary with most people, who have rightly decided even as it is to procreate in winter. And people should also study for themselves, when their time comes, the teachings of doctors and natural philosophers on the subject of the procreation of children; the suitable bodily seasons are adequately discussed by the doctors, and the question of winds by the natural philosophers, who say that north winds are more favorable than south.
>
> (*Pol.* 7.14.1335a35-b2; trans. Rackham 1932 with modifications)

No further explanations are offered in the text, as this is not the central discussion, but it is clear that people should not engage in reproductive processes without considering suitable seasons. And the meteorological background behind Aristotle's remark on the winds is coherent with his biological works. But this passage contains an important authoritative nuance: it is not shepherds who should be consulted, but doctors (οἵ ἰατροὶ) as well as natural philosophers (οἱ φυσικοί).

Pol. 7.14.1335a14–15 also spells out the connection between young parents and weak small babies and the begetting of females including human beings. The deviation of the baby might even include intellectual infirmity:

> For the offspring of too elderly parents, as those of too young ones, are born imperfect both in body and mind (ἀτελῆ γίνεται καὶ τοῖς σώμασι καὶ

> ταῖς διανοίαις), and the children of those that have arrived at old age are weaklings. Therefore, the period must be limited to correspond with the mental prime (διανοίας ἀκμήν).
>
> (*Pol.* 7.14.1335b30–33; trans. Rackham 1932)

Influence of Immediate Conditions

Therefore Aristotle should not be taken as referring to folkloric thought on this topic. Unfortunately, it is hard to know precisely which natural philosophers he is referring to, but we do have in the Hippocratic corpus as well as in the biological works references on the subject. This matter leads to an even narrower scope of the influence of external conditions on generation.

It is useful to bear in mind a passage of the *Airs, Waters, Places* in which the author believes that strong changes in weather affect reproduction and

> cause the coagulation of the seed to vary, and not to be the same in the same person in summer as in winter, nor in rain as in drought. . . . For more corruptions arise in the coagulation of the seed when the changes in weather are frequent than when they are close and similar. (αἱ γὰρ φθοραὶ πλείονες ἐγγίνονται τοῦ γόνου ἐν τῇ συμπήξει ἐν τῇσι μεταλλαγῇσι τῶν ὡρέων πυκνῇσιν ἐούσῃσιν ἢ ἐν τῇσι παραπλησίῃσι καὶ ὁμοίῃσι)
>
> (*Aer.* 23; trans. after Potter 2022 with modifications)

The author of the *Aer.* links change in weather not only to the external or acquired characteristics of the animals but to the production of the seed itself. The process of coagulation (συμπήξει) will determine the features of the embryo and the process will suffer "corruptions" (φθοραὶ) when fathers are exposed to violent weather variation. The nuance seems to be a negative one: it is not only a modification of the seed but a deviation from the normal process. Note that the context and the term "γόνου" refer to the father's seed.

Even if Aristotle has a different spermatic theory than the Hippocratic author, a similar idea is developed in *Gen. an.* as well as in *Hist. an.*: external conditions modify the generative process as they affect the animal as a whole, including its spermatic residues. Since these last ones are, according to Aristotle, the ultimate stage of concocted blood resulting from the nutrition of the animal, it is easily understandable that differences arise in the residues, according to the animal's usual diet, water, and surrounding weather. What is more surprising is that Aristotle admits an influence of "immediate" external conditions, such as the direction of the wind at the very moment of coupling. Far from being folkloric or even magical beliefs,

which would have been too quickly admitted by Aristotle, these peculiar elements fit in a consistent theory:

> As far as the animals with external testes are concerned, as the penis is set in movement and gets heated, the semen first collects itself together, and then advances: it is not ready as soon as contact is established, as it is in fishes.
>
> (*Gen. an.* 1.5.717b24–27; trans. Peck 2000)

In fishes and in serpents, *goné* is already concocted when copulation occurs.[48] But this is not the case in most viviparous; it is only when the couple is mating that the very last *pepsis* which increases the amount of *pneuma* and gives a "higher" quality to the semen takes place.[49] Were the spermatic residue completely "done" beforehand, concomitant surrounding circumstances would be considerably less important. As in the Hippocratic text, the description fits only the masculine residue. The feminine one is not at stake,[50] that is *katamenia* are not as susceptible to suffer an immediate change as *goné*.[51]

The Material Nature of the Seed

But if such is the case, a new and far more problematic issue arises: it is generally accepted that, for Aristotle, the female principle provides the matter while the masculine one gives the form; but the texts presented exhibit that the material component of the male's residue itself may affect the qualities and characteristics of the offspring. The common interpretation of Aristotle's theory of generation, exemplified by the binomial "the mother provides matter, the father gives the form", proves insufficient. This oversimplified reading tends to underestimate the role of the material component in the male principle because Aristotle states explicitly that it takes no part in the embryo, qua matter:

> There is no necessity for any substance to pass from the male, and if any does pass, this does not mean that the offspring is formed from it as from something situated within itself during the process, but as from that which has imparted movement to it, or that which is its form.
>
> (*Gen. an.* 1.21.729b19–22; trans. Peck 2000)

> This physical part of the semen, being fluid and watery, dissolves and evaporates, and on that account, we should not always be trying to detect it leaving the female externally, or to find it as an ingredient of the gestation when that has set and taken shape.
>
> (*Gen. an.* 2.3.737a12–15; trans. Peck 2000)

How can one reconcile those two apparently contradictory claims of Aristotle? First, that nothing material from the male passes into the embryo; second, that the material component of the male's residue, modified by the environmental factors, affects the characteristics of the offspring? It is, of course, absurd to believe that the modifications of the material substratum, under the influence of environmental changes, will have an effect on the form itself. But it is perfectly reasonable to assume that the quality of the semen (determined at least partly, as has been seen, by diet, waters, and winds) will affect the power and the capacity of its movements. In other words, the material substratum by which the form is transmitted (i.e., the semen itself, as a material substance) determines not what is transmitted (the form itself) but its capacity to master the resistance of the feminine matter.

One can then understand how the material quality of the male residue can impact and modify the embryological process, even if on the one hand, the residue does not act as matter of the being, and on the other hand, its quality does not influence the form transmitted. The frequency of emissions[52] as well as other anatomical details[53] attests to the importance of such material perspective. *Goné* is highly vulnerable, as has been demonstrated, to various external conditions, first of all, to heat and cooling factors. The careful analysis that Aristotle puts forward to describe the material aspect of the *goné*, even relating it to its fertility, should not be dismissed:[54]

> the fact that it [semen] has been concocted means that it has been set and compacted, and the more compacted semen is, the more fertile it is.
> (*Gen. an.* 4.1.765b2–5; trans. Peck 2000 with modifications)

Masculine seed of quadrupeds and human beings[55] is also described at times as "thin" (λεπτὰ), which signals it is infertile, and at times as "granular" (χαλαζώδη), which shows it is fertile and tends to produce males; "thin" and "not clotted" (λεπτὰ καὶ μὴ θρομβώδη) seed tends to produce females (*Hist. an.* 9.1.582a30–33). The language used to describe the seed as well as its fertile capacities already implies the importance of its material aspect and thus, the possibility for it to be affected by weather conditions.

Conclusion

In the previous sections, I stressed the relevance of the external factors in the generative process as a whole. Concerning the misreading of some interpretations which disregard the influence of weather conditions in this process, I began from the broader causes of generation which rely on the

celestial bodies. Their continuous and necessary rotation sets in movement the meteorological realm in cycles which impact the animals first in yearly seasons and secondly in monthly periods. Both measures affect the animal's life including mainly its generative process: Nature's teleological tendency benefits the survival of the species. Pregnancy length and the best timing for the offspring to be born determine the mating season for each one. Nevertheless, when possible, Aristotle finds a proclivity to happen at the same time of the year. The monthly period of the moon, through its direct heating and cooling of the days and nights, explains the menstrual cycles and thus the pregnancy disposition of the females. Therefore the movements of the celestial bodies generate an overarching tendency to measure and produce regular conditions in the sublunary world which affect every living being.

Besides yearly and monthly dispositions, the local environment and even regional landscapes are considered to influence the stature, shape, and even temper of their inhabitants. This can be comprehended within a larger theory that argues that the spermatic residues from which the new living beings come, are influenced by the diet and waters the parents drink. Even the quality of the surrounding air will have a notorious effect on the generators. But there are also intriguing passages in which Aristotle could be taken as non-scientific or repeating folkloric ideas regarding the winds and their possibility to affect procreation. Provided that Aristotle has a theory in which north and south winds bring specific weather characteristics to the region, conception turns out to be modified depending on the winds blowing when the couple is mating. One can make sense of such claims bearing in mind that Aristotle, as other authors, notoriously the Hippocratic one of the *Airs, Winds, Places*, held the conviction that the environmental factors even the immediate ones affect the production of the seed itself. In the case of Aristotle, a last concoction takes place, at least in viviparous animals, in which the *goné* suffers a last aeration and thus is susceptible to being affected by the immediate factors. Even when the species-form will not be modified, significative characteristics of the animals such as sex determination will depend on those factors. It is then clear that beyond hair texture or the color of the skin, Aristotle poses a meaningful causality in the weather and environmental factors on generation. But, if this is the case, the material aspect of the *goné* should not be considered as an accessory part of the generative theory, but one that in fact affects fertility and also the capacities of the movements which once in contact with the *katamenia* will create a new living being. The masculine contribution to the embryo, even when transmitting the most necessary form is also the more vulnerable to contingent environmental aspects.

Notes

1 I would like to express my gratitude to Douglas Hutchinson for his kind reading and useful corrections and suggestions to this chapter, and to David Lévystone, with whom I discussed previous versions of the text.

2 The transmission of the intellectual faculty of human beings poses difficult issues. *Gen. an.* 2.3.736b28–29 has motivated profuse literature. I will not deal with that subject in this chapter. For a review on the subject see Charlton (1987, 412–413).

3 That a successful generation aims to produce a copy of the sire is found in Balme (1987, 292). A different reading can be found in Cooper (1988). A moderate position can be found in Connell (2016), Gelber (2010), and Henry (2006). Significative arguments have been put forward more recently to understand the feminine capacity to also transmit some of the mother's particular traits or her ascendants to the embryo. See Salmieri (2018).

4 See Connell (2016, 358–373). Although this seems to be the case, Aristotle is not always consistent with this idea and in fact includes also human beings as affected by environmental factors. Connell's argument is that lower animals are colder and so are weaker and more affected by external conditions.

5 Precision must be made. Throughout this chapter, I will focus on the generative process altogether and not on two other interesting and related topics: the discussion on hereditary and acquired traits, and the accidental features resulting from environmental factors such as the texture of the hair, the color of the skin or eyes and so on. See Gelber (2010, 183–212); Connell (2016, 369–370). I will deal with sexual differentiation, provided it is a "propriate differentiae" and not a simple accident. Multiparity is proper to the generative process, too, and will be also tackled here. Some attempts to grasp and distinguish material accidents from those attributes proper to an animal have been discussed in Deslauriers (1998, 138–167); Lloyd (1990).

6 See Connell (2016, 368).

7 In the metaphysical and in the physical contexts: *Gen. corr.* 2.10.336b26–37a1; *Met.* 12.5.1071a11–17; 12.6.1072a7–18.

8 The impact of the heavenly bodies in other animal activities besides generation is clear too. *Hist. an.* 5.22.553b27–31 presents a fine example of the relation between bees' doings and the stars: "The comb is made from flowers; the material for sealing they fetch in from the gum of trees; the honey is what falls from the air, especially at the rising of the stars and when the rainbow descends; on the whole there is no honey before the morning rising of the Pleiad" (trans. Peck 2002).

9 *Gen. an.* 2.6.743a26–35; 3.11.761b24ff.

10 For example, the concoction of some eggs may be due to the external heat and not to the incubation of the parents, but sometimes the same solar heat can be the cause of the spoiling of the eggs. *Gen. an.* 3.2.752b29ff; 3.2.753a5–20.

11 Take for example the case of the tuna: "the first breeding occurs in *Poseidon* before the solstice, the second one in spring" (*Hist. an.* 5.9.543a9–10; trans. Peck 2002). References of this kind are found all over the biological treatises, but they are meant to show at what time something usually happens in some regions. It is also worth noting that the stars to which Aristotle constantly alludes are Arcturus, the Pleiades, and the Dog Star. There were specific dates for the rising and setting of each of them every year, depending if it is their

"early morning rising", "evening rising"; "early morning setting" and "evening setting". For a guide to understanding the dates of these events, The Appendix "A" of the *Historia Animalium* prepared by Peck in the Loeb edition is still a wonderfully useful resource. Peck (2002, 383–408). [*Pr.*] 1.3 includes also Orion.

12 I oppose absolute necessity to the "coercive" necessity as well as to the "conditional" necessity. Cf. *Part. An.* 1.1.639b25; 1.1642a2ff; *Met.* 5.5.1015a20-b15.

13 I would like to stress the fact that the influence exercised on sublunary beings is a "mechanical" or "material" one, and not a "sympathetic" or "antipathetic" one, as that proposed by some Stoics, and which was criticized later on by authors such as Soranus. See Lloyd (1999, 178).

14 A final remark on the connection between weather and reproduction can be mentioned, though its relevance is indirect. Even when the causal relationship goes from celestial bodies to sublunar living beings mediated by the environmental context, *Hist. an.* presents, clearly with a folkloric touch, a different connection. That is, cattle pregnancy can be a sign of what kind of weather there will be: "When large numbers of cows are pregnant and submit to copulation, it is held to be a sure sign of stormy and rainy weather" (δοκεῖ σημεῖον εἶναι καὶ χειμῶνος καὶ ἐπομβρίας; *Hist. an.* 6.21.575b18–19; trans. Peck 2002). The causes are not stated explicitly. Pregnancy plus engaging in sexual activity could be considered a sign of animal humidity that in turn could be related to weather humidity. In any case, and even if Aristotle doesn't seem to embrace the idea, just to relate pregnancy to weather conditions is a sign of the deep relationship between these two phenomena, not only for Aristotle but also for a wider population.

15 By pointing to this general tendency, I am not committed to an anthropocentric order of the world, nor to a goal-directed process in the celestial movements or the seasons. Cf. Gelber (2015, 271); Sedley (1991).

16 *Gen. an.* shows the connection between climate and gestational period in the case of asses. Since they are cold by nature, and their gestational period lasts for a year, people should be careful not to pair that kind of animal in cold regions such as Scythia in cold times: "For this reason they do not put the jack-asses to the females at the equinox, as is done with horses, but at the time of the summer solstice, so that the asses' foals may be born when the weather is warm" (*Gen. an.* 2.8.748a28–30; trans. Peck 2000).

17 Besides the gestational period proper to them, it must also be considered how often an animal can breed, for example. Some of them can beget young only once per year, while others will have offspring continuously, and others will take long periods before engaging again in reproductive activities once they have given birth.

18 Cf. *Hist. an.* 3.19.521a26; 6.18.572b30; 9.1.582b30. Aristotle thought that only warm-blooded viviparous females discharged the menstrual residue and therefore was noticeable, but that most females produced it, even if it stayed in an internal non-observable way. See *Gen. an.* 1.19.727a21–25. Nowadays we know that in fact there are very few animal species that actually have periods. There are ten primate species, the spiny mice, the elephant shrew, and four different types of bats.

19 The connection between the moon's cycle and menstrual discharge was widely spread in Greek literature. Hippocratic treatises mention it in different places. For example, *Oct.* (L 460, Potter 2010, 101); Soranus, the famous Methodist doctor, disagrees with such belief and refers to some authorities on the matter: "Some women menstruate one day, others, two days, still others, even a week

or more, but the majority, three or four days. This occurs monthly, not with precision in all cases, but broadly speaking, for sometimes it is advanced or retarded a few days. For each woman it occurs at a stated time characteristic for her, and it does not <seize> all women at the same <period> as Diocles <said>, nor, as Empedocles said, when the light of the moon is waning (*Gyn*. 1.4.21; Soranus 1956, 18; trans. Temkin).

20 Feminist literature has rightly pointed out the unequal generative status given to the feminine and masculine spermatic residues in Greek antiquity reflected in their names. Referring to the male contribution as a "seed" or *goné* clearly suggests its capacity for generation, whereas the female one is named after its periodicity and not on behalf of any generative capacity. See Dean-Jones (1989).

21 "ὁρμὴ" conveys the idea of the beginning of something either unpleasant or rapid, even violent. It is also the word to establish the beginning of the winds in *Mete*. 2.6.364b7, as well as in *Rep*. 6.511b. Cf. *LSJ*, s.v. ὁρμὴ, III.

22 As Balme (1991, n. 425) explains, the waning of the month should be taken as the "last eight days before the new moon at which each month theoretically began."

23 See *Ti*. 38c–39d, in which the first purpose of the heavenly bodies is to create cycles of time.

24 Although environmental factors explain the timing of the menstrual period, physiological factors are nevertheless also at work, such as the quantity of the material that needs to be discharged. Cf. *Gen. an*. 2.4.737b25ff.

25 Soranus was aware of the belief that the full moon was the most fertile time: "Thus the time of the waxing of the moon has been considered propitious. For things on the earth are believed to be in sympathy with those up above; and just as most animals living in the sea are said to thrive with the waxing moon, but to waste away with the waning moon, and as in house mice the lobes of the liver are supposed to increase with the waxing moon but to decrease with the waning moon, the generative faculties in ourselves as well as in other animals are said to increase with the waxing moon but to decrease with the waning moon" (*Gyn*. 1. 10. 41, Soranus 1956, 39), but he strongly criticized this idea. Although he thinks the belief sounds plausible, it should be considered false, since no such changes have been really attested in human beings.

26 For an interesting explanation of why this is the case in the Red Sea urchins but not of the Mediterranean Sea urchins, see Peck's (1991, 328) note.

27 Another example of Aristotle being open to lunar influence on sublunary events is found in *Hist. an*. 8.12.588a11, where it is said that some ailments from babies get worst during the full moon (ἐν ταῖς πανσελήνοις). Cf. also [*Pr*.] 1.6.

28 ἡ μεταλλᾶγή means change but it can also have a negative connotation, like to ruin, *LSJ*, s.v. μεταλλᾶγή I.

29 Cf. Byl (1980).

30 The classic reference for the use of *krâsis* translated here as climate is found in the Hippocratic text *Acut*. I. 35, where the ideal "blend" for an intelligent soul is at stake. In Aristotle's biological treatises *krâsis* is found mostly in the sense of a particular blend internal or proper to different animals (*Part. an*. 2.4.650b29–30; 2.7.652b35; 3.6.669a10–13; 3.12.673b30; 4.10.686a10; we also find *eukrasia* in *Gen. an*. 2.6.744a30, and in *Hist. an*. we find the necessity to match the blend and feeding of the animal and its habitat, especially in 7.2.589a14–590a18). *Prob*. 1.3 also has such a meaning. Nevertheless, there are a few passages like the one in *Hist. an*. 606 just quoted, in which the blend is referred not to the internal composition of the animal, but to the surrounding

context. Such a nuance seems impossible to render in a different way than "climate" (*Gen. an.* 3.2.752b30; 4.2.767a30; 4.10.777b7; 5.2.781a33).

31 See Lennox (2010) for a strong connection between the "material constitution of the food source" and the location proper to an animal. For a different perspective on the kind of food an animal should consume and its blend, See Gotthelf (1987, 167–198).

32 The author of the *Epinomis* shows also an extended idea of the application of the same principles when he links the medical skill as a kind of assistance for excessive cold or heat affecting the animals (cf. *Epin.* 976).

33 By saying that there is a deep connection between landscape and behavior I don't mean to say that it is a completely deterministic connection, but only one among others that affect conception and as a result, the animal's temper as well. Leunissen (2012) has argued for a deterministic relation between external conditions and animals' *ethos*, more specifically in the *Politics*.

34 "Even in their look they are wilder and fiercer" (*Hist. an.* 7.29.607a9–11; trans. Balme 1991).

35 See *Aer.* 3–5, 7, 12, 19, 21–23.

36 "But if the winter proves southerly, rainy and calm, and the spring dry and northerly, women whose confinement is due in the spring suffer abortion on the slightest provocation, or, if they do bear children, have weak and unhealthy offspring, so that they either die at once or live with puny and unhealthy bodies" (*Aph.* 3.12; trans. Jones 1931). Also, some treatments for pregnant women should vary according to seasons, like the purges in *Aph.* 4. The Hippocratic text *Acut.* 1.2 is also aware of the importance of environmental factors, although it is not focused on generation.

37 The same idea is found with almost the same exact wording in *Hist. an.* 9.4.584b31–32.

38 The context of both remarks is the production of twins and some monstrosities. The connection with the place is clear in the context: (ἐπεὶ καὶ τούτων ἐν οἷς τόποις πολύγονοι αἱ γυναῖκές εἰσι τοῦτο συμβαίνει μᾶλλον, οἷον περὶ Αἴγυπτον). *Gen. an.* 4.4.770a33–35. For an interesting analysis of the multiparity, cf. Connell (2018, 207–223).

39 *Aer.* 12 can be read as suggesting that females from Egypt and Libya are fertile due to environmental conditions. Nevertheless, the text is corrupted and it is impossible to affirm that the characteristics displayed to describe the Asiatic apply equally to Egyptian and Libyan women.

40 Cf. *Gen. an.* 4.6.775a27–b2.

41 *Gen. an.* 4.4.771a17–773a17.

42 The importance of the quality of the water is also stated in *Pol.* 7.10.1330b1ff.

43 *Aer.* 3–10. In 7, for example, we read: "Now such waters as are marshy, standing and stagnant must in summer be hot, thick and odorous, inasmuch as they have no outflow, but are constantly being added to by fresh rain water, and heated by the sun: these must be of bad color, troublesome and bilious. In winter they must be frosty, cold and turbid through the snow and ice, so as to be very conducive to phlegm and sore throats" (trans. Potter 2022). See also *Prob.* 1.13–16.

44 See Althoff (1992, 277). However, this is not an exclusive Aristotelian association. In addition to cold, women have traditionally been linked to moist, even, and left, for example. Cf. Deslauriers (2022, 24–31).

45 (Καὶ τὸ βορείοις ἀρρενοτοκεῖν μᾶλλον ἢ νοτίοις <ὑγρότερα γὰρ τὰ σώματα νοτίοις,> ὥστε καὶ περιττωματικώτερα). According to Lulofs' text (2018) who accepts Nic. Damasc. reading.

46 See *Mete*. 4.2.379b18–380a10, especially useful is the definition and description of concoction (*pepsis*). The relation of humidity with the age of the people is found in other texts. E.g., *Mem*. 1.450b5–7.
47 See Gelber (2018, 171–187).
48 *Gen. an*. 1.6.718a5, 2.4.739a10ff.
49 The aeration process of the spermatic residues happens mainly in the heart, so both masculine and feminine residues most have a share of it. Nevertheless, since the masculine concocting process in the heart is stronger, his residues contain larger amounts of *pneuma*. See *Gen. an*. 2.2735b34–736a1. Also, Coles (1995, 59–67, 81–88).
50 Recall *Hist. an*. 6.19.573b31–574a2.
51 The female menses are not aerated in the uterus (as has been noted by Boylan (1982, 111–112), while the male semen does undergo a final aerating change in the gonads.
52 *Gen. an*. 2.4.739a10ff: The most part of the menstrual discharge is useless, being fluid, just as the most fluid portion of the male semen is, and in most cases, the earlier discharge during any one emission is less fertile than the latter, because it has less soul-heat owing to its being undercooked, whereas that which has been concocted is thicker and has more body in it.
53 *Gen. an*. 1.7.718 a 23–25: "This does in fact happen with those who have a large penis: they are less fertile than those who have a moderately large one, because the semen gets cooled off by being transported too great a distance, and cold semen is not generative". (trans. Peck 2000 with modifications). In his translation, Peck interprets that Aristotle is referring to some human beings. Nevertheless, the context implies a species differentia, not an individual one.
54 The careful description that Aristotle puts forward to explain the *goné's* peculiar performance compared to other liquids might be the first "chemical" text in Greek Antiquity (*Gen. an*. 2.2.735a30ff). But the scholars dealing with the subject have largely focused on its *pneumatic* component and its relation to the heart and have downplayed the other material aspects of semen. See Coles (1995); for a different material explanation of the semen, see Rashed (2018).
55 Cf. *Hist. an*. 9.1.582a17–19: "the offspring of young men and young women are small and imperfect, as in most other animals too"; *Hist. an*. 5.13.544b15–18: "The earliest secretion in the young of all animals is infertile, or even if it is fertile, the offspring tend to be weak and small (very clear in human beings, but in quadrupeds and other animals too)"; *Hist. an*. 9.6.585b11–16: "sometimes both wives and husbands are female-producing or male-producing when they are with each other, but become the opposite when apart. And they change also with age: some generate females with each other when young, males when older; in others, the opposite happens in this respect too."

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9 Aristotle's Causes and the Problem of the Necessity of Our Actions

Carlo Natali

The problem of determinism in Aristotle has many aspects. According to some scholars, in Aristotle's problem of determinism we can distinguish (1) a logical determinism, the necessary connection between premises and conclusions of a valid argument; (2) a physical determinism, the necessary connection of cause and effect; (3) an ethical determinism, the dependence of human actions on our character; and (4) a teleological determinism, the idea that everything has a purpose. But, in the passage most closely devoted to logical determinism, *De interpretatione* 9, Aristotle also discusses the problem of deliberation, which is related to ethics. Thus it remains uncertain that there is such a clear distinction in Aristotle; in particular, Broadie (1986, 439) has argued that, in each case, the various types of determinism imply an ontological, or *de re*, position. In the limited space of this paper, I will devote myself only to the question of causes and the expression *to eph'hêmin*, "that which depends on us."

There is dissent among scholars about Aristotle's position concerning the problem of determinism and what depends on us. Some have described Aristotle as a libertarian, while others more recently have described him as a compatibilist, and the expression *eph'hêmin* is at the heart of studies on the problem of determinism and ancient compatibilism. Bobzien, in an important volume on Stoicism, has already addressed in a few pages the meaning of this expression in Chrysippus and other Hellenistic authors (Bobzien 1998b, 276–290); a more extensive contribution can be found in Eliasson's volume, which reconstructs the history of the philosophical debate on this expression from Aristotle to Plotinus (Eliasson 2008); and finally it was the subject of a large collective volume edited by Destrée, Salles, and Zingano (Destrée et al. 2014).

This expression, *eph'hêmin*, is crucial for the imperial-age philosophical debate on determinism and *free will*, for instance in Plotinus; Aristotle uses it extensively, but some doubt that it already has a technical meaning for him.[1] In other words, some scholars think that in Aristotle, *eph'hêmin* is an expression of common language, and would not have come to qualify as a

DOI: 10.4324/9781003306450-10

technical notion, such as *ousia* or *energeia*. Let us see how things stand and try to understand for what reasons Aristotle introduced this expression in the philosophical debate.

The expression *eph'hêmin*, composed by *epi* + the dative of the personal pronoun, first-person plural, can have two main meanings. In a local, proper, or figurative sense, it indicates something that is on our side, or coming toward us or against us, or generally affects us. Examples of this usage can be found in many authors from the fifth and fourth centuries BCE, such as Thucydides, Euripides, Isocrates, Sophocles, Isaeus, and Demosthenes.[2]

In the potestative sense, on the other hand, it indicates something that depends on us, as opposed to what depends on others, that is, what is in our power, especially in the case of war (e.g., victory, a prisoner, the enemy, booty). In this second sense, the expression *eph'hêmin* indicates a "two-sided potestative concept of depending on someone" (Bobzien 1998b, 281) and expresses the fact that if an action *x* depends on someone, then non-*x* also depends on him. From this viewpoint, if Cicero's phrase, *De fato* 40, *in nostra potestae*, is intended to translate *eph'hêmin*, his choice seems correct to me. Examples of this sense are found in Sophocles, Xenophon, Hippocrates, Demosthenes, Alcidamas, and in the *Rhet. ad Alex*.[3] In this sense, the phrase has a stronger meaning than the simple concept of "spontaneous," as an act performed without coercion, or with the simple idea that the agent has various options to choose from.

The interpretation of *eph'hêmin* as a "*potestative concept*" is correct: *eph'hêmin* indicates that something is in our power or dominion, that we have taken possession of it, and that we are its *kurioi*, lords, and masters. It does not merely indicate a possibility; it indicates a power.

A very interesting use is one which concerns the choices that we have in our power to make. For instance, in one of his orations, Isaeus stated the following:

> **1.** Previously, when it depended on us to take revenge on Dikaiogenes and to take away his goods, we did not want to take anything he possessed, but it was enough for us to recover what was ours (*De Dikaiogenes* 30, 5).[4]

It is difficult to believe that here Isaeus meant that the action of not punishing Dicaeogenes is up to us, but the choice to not do so is not up to us; rather he wants to contrast the equanimity of the relatives with the greed of Dicaeogenes.

Even more interesting is what a character in Euripides' *Helen* states. The priestess Theonoe, sister of the king of Egypt Theoclymenus, claims that it is in her power to determine the fate of Helen and her husband Menelaus,

choosing between the solution proposed by Hera and the one proposed by Aphrodite:

> **2.** The gods are arguing, they will gather around the throne of Zeus this very day, to deliberate on your case . . . the outcome depends on me: either, as Cypris wants, I tell my brother that you are in the country and I make you die, or I go over to the side of Hera, and I save your life . . . which of you will go and let my brother know that this man is there? So I don't risk getting into trouble (*Hel.* 878–893).[5]

Both texts talk quite clearly about choices, of forms of decision (*krisis*) that consist of wanting or not wanting, to do or not to do something, that put an end to a clash of opposing divine wills. The choice, in the case of Dicaeogenes' relatives, is motivated by love for family members, and in the case of Theonoe, is motivated, in a tragicomic way, by the fact that the priestess is afraid, and therefore, puts an end (*telos*) to a dispute that has given rise even to the council of all the gods, looking above all to her own interest, which is not to quarrel with her brother. It is not a matter of choices à la Sartre, made without being subjected to any determination by established influences and values, of choices expressive of that total freedom which would be both the nature and the condemnation of man. These are choices made with good reason.

It is interesting to note that the expression *eph'hêmin* was used by Plato only once, in *Resp.* III, 398b5, a passage in which Adeimantus uses it to indicate something that it is up to us to do or not to do. It is not proper even to the legal lexicon of ancient Greece, where the main opposition is between what is done *ex pronoias*, with forethought, and what is done *akon*, involuntarily (*Law of Draco*, I.G. I^3 104, ll. 11 and 16–18; Dem. *Adv. Meidias*, 43). *Pronoia* involves planning (*epiboulê kai proboulê*, Antiph. *Nov.* 3). Impulsive actions (*thumôi, dia thumon*) are considered as involuntary (*ouk ethelôn, akôn*, Hom. *Il.* XXIII, 87–8 and Euripides, *Herakles*, 1363–4).[6]

On the contrary, the expression *eph'hêmin* is frequent in Aristotle, who chooses it as a typical phrase to indicate what is voluntary and that for what we are responsible. Aristotle inserts an ordinary expression used mostly, but not solely, in military language into the argument on the responsibility of our actions. With this choice, he seems to introduce a very strong condition to establish what is voluntary, a condition that overturns the legal distinctions of the time; in fact, based on it, impulsive actions are transferred from the field of *akon* to that of *ekousion*, meaning that which is done voluntarily (NE 1111a22–5).[7]

The investigation of the use of *eph'hêmin* in Aristotle has been done several times, and there is no reason to repeat it all over again here. It will

suffice to summarize some shared results. With *eph'hêmin*, Aristotle wants to indicate the fact that the agent has control over his own actions, which are a subcategory of "what can also happen otherwise" (EE 1226a20–31), that is, of the contingent. Thus to say that something "depends on us" does imply that it falls within the realm of the contingent, but it is not the existence of the contingent that Aristotle wants to demonstrate: the expression *eph'hêmin* describes above all the realm of our responsibility (Sauvé Meyer 2014, 77 and 81–82; Echenique 2014, 97), of what we are masters of doing or not doing.

Aristotle uses the expression *eph'hêmin* in ethics to denote the things of which we are masters; for this purpose, he names the expression with the neuter plural article: *ta eph'hêmin*, the things that depend on us.[8] These are everything whose *archê*, the principle of generation, is in us, such as the objects of choices, deliberations, will, relations with friends, actions, moral qualities such as virtue and vice, and in general habitual states and, also, things like certain diseases of the body resulting from our disordered life or the value of money, while the rest, such as natural gifts, does not depend on us. (EE II 6, 1223a; 1225a31, 26a3, 24, 28, 30, 31, 33, b15, 1235a2–3; EN 1111b30, 33, 12a31, 13a10–11, b6–7, 9–11, 13, 21, 27, 1114a29, 31, b29, 1115a2, 1133a31, 1179b22.). That which is *eph'hêmin* is voluntary, under certain conditions, since being *eph'hêmin* is a necessary, but not sufficient condition of being voluntary. What I have just added is a list of obvious cases, not necessarily exhaustive of all that can be said to depend on us.

Some argue that, according to Aristotle, what depends on us does so only at the generic level, as a *type* of action, but not at the specific level: even if the type *z* of actions depends on us (e.g., tying one's shoes), it does not follow from this that doing so depends on individual Y at time *t*, considering his character *c* and the situation *s*. In this interpretation, Y does not have a dual path to take before him but will necessarily tie his shoes. This seems that the necessary consequence of saying that the action of tying one's shoes is contingent at the generic level but is not contingent as an individual act. This interpretation is an old one and has been argued for from the beginning of the 20th century and into our century by various authors.[9]

Many scholars have argued that for an action to "depend on us" it is not necessary that the agent could act otherwise; it is sufficient that the action depends on him on some sense, and that there is no external coercion. According to these scholars, for Aristotle, we are not masters of the *choices* we make, but only of the *actions* we take, and in fact, he never places choices in the list of things that depend on us. In fact, choices would depend on character, and once a certain character is acquired, the choice would become necessary, even if the action has us as its efficient cause.

This interpretation seems to have support in the text of the *Nicomachean Ethics* itself, especially in the following text:

> **3.** It is absurd to think that he who acts unjustly does not wish to be unjust, or he who acts intemperately does not wish to be intemperate . . . the wish (*ean boulêtai*) is not enough for the unjust man to cease to be so and be just, any more than the sick man can recover his health, although it may happen that he is ill voluntarily, if he leads an intemperate life and disobeys his doctors. At first it was in his power to avoid illness, but once he has let himself go, it is no longer possible. It is like someone who has thrown a stone, he is no longer able to catch it; but yet it depended on him to pick it up and throw it, since the principle resided in him. So it is with the unjust and the intemperate: they also had at the beginning the faculty of not becoming this kind of individual, and that is why they are it willingly, but now that they have become it, they no longer have the possibility of not being it (1114a11–21, cf. V, 1137a6–9).[10]

This thesis is to be connected with the statement in the following text:

> **4.** Our actions and our habitual states are not voluntary in the same way: indeed we are masters of our actions from beginning to end, when we know the particular circumstances of them; on the other hand, as regards our habitual states, we control their beginnings, but the particular conditions which are added to them later escape us, as in the case of diseases. However, because it depended on us to make use of them or not to make use of them, for this reason our habitual states are voluntary (1114b30–1115a2).[11]

Text **4** says that we are masters of our characters in the beginning, but then they no longer depend on us, which seems to lead Aristotle's thesis to a determinist conclusion: it is not possible for someone with a given character to choose otherwise than he does, so an unjust person cannot but choose to act unjustly, and a just person justly. It is the determinism of character on which, according to a large proportion of interpreters, the nondeterministic interpretation of Aristotle's thought falls.[12] Otherwise, one would have to admit that, without any cause, in situation *x*, a person, say Socrates, would be the master of the choice between staying in prison and drinking the hemlock, or not doing so and escaping. However, in reality, Socrates, being Socrates, would necessarily choose to stay in prison and drink the hemlock.

Some then argue that for Aristotle, character depends on the education we receive, so in reality we are only masters of choosing what we do as children, until character is formed, but once character, whether good or

bad, is formed, we can only act according to our character: necessarily, the brave will choose brave things and the cowardly, cowardly things. They also refer to a passage in NE II, in which Aristotle states the following:

> **5.** It is not a negligible thing to acquire this or that habit from birth, but rather it is of decisive, or rather total, importance (1103b23–25).[13]

Hence, it is argued that we are free to choose whether to do just or unjust things only before we have a stable configuration of our character, but that once we become adults, we can no longer do so (Gastaldi 2019, 154, and others). This is countered by the fact that in other passages Aristotle hints that character formation is not limited to the childhood period, but continues even for adults, for example, listening to musical performances, cf. *Pol.* VII 5:

> **6.** We must investigate whether this result is not accidental . . . and to see whether in some way it contributes to the character and soul. This would be clear if we become of a certain quality in our characters on account of the music, but that we do become of a certain quality is evident (1339b42–1340a8, transl. Lord).[14]

The argument that excludes choices from *ta eph'hêmin* is an *ex silentio* one: it is observed that Aristotle never explicitly includes our choices in the list of things that depend on us, while others, such as Epictetus or Alexander of Aphrodisias later, do so. One might object, however, that while Aristotle does not claim that our choices are *eph'hêmin*, neither does he deny it. There is no linguistic argument to deny that the expression *eph'hêmin* can be applied to choices, for, as we have seen, it happens in Isaeus and Euripides, texts **1** and **2**. Aristotle simply does not mention this usage, and one might think that he does not state it because he takes it for granted. Let us take a closer look at this issue.

All studies of the notion of *eph'hêmin* in Aristotle have focused on passages in the *Nicomachean Ethics*, especially chapters NE III 1–7. But seldom have scholars analyzed Aristotle's type of argument and proceeding manners; instead, they have focused on the problem of whether Aristotle's position is *libertarian* or *compatibilist* or something else. However, the context of various passages is important.

The section of NE running from 1109b30 to 1115a3 is very rich in *verba dicendi*, references to opinions and expressions of doubts and *aporiai*, as can be seen from the following list:

> **7**. *dokei* 1110a1, *amphisbêtêsin echei*, a9, *ei de tis phaiê* b9, 1111b21, *eoikên* b15, b 25, 1112b3, 31, 1113a34, b 15, *doxeien an* 1111a23,

> *ou kalôs legetai* a25, *dokei* a31, b5, *phainetai*, b7, 1113b19, 1112b21, *hoi de legontes* b10, *orthôs legein* b12, *phainomenon* b20, *dokoiê* b21, *legei oudei*s 1112a1, *dokousi* a8, a32 *potera . . . ê* a18–9, *dokei de tois men . . . tois de* 1113a15–6, *ei dê tauta mê areskei* a22–3, *to de legein hôs* b 13, *amphisbêtêteon* b 17, *ou phateon* b17, *marthureisthai* b b22, *all'isôs alla* 1114a3–4, *ei dê tis legoi. alla* a31–2, *ei dê taut'estin alethê* b12, *hosper legetai* b22.

From the point of view of the method, we find in these chapters a series of *aporiai*: (1) Are the actions that are undertaken to avoid worse evils voluntary or not?, 1110a4–19, with confirmations of the solution at 1110a19-b9. (2) Is deliberation over all things or not? 1112a18–34, with confirmations and clarifications at a34–1113a9. (3) Does *boulêsis* concern the good or the apparent good? 1113a15-b2. Aristotle resolves this, as is customary, by means of qualifying the apparently contradictory terms as opposing positions. Moreover, much of these chapters is devoted to refuting others' theses: (4) the beautiful and the good are constraining things, 1110b9; (5) all ignorance is a cause of involuntariness, 1110b18; (6) acts done by impulse are involuntary, 1111a25–6; (7) choice is a kind of desire, or impulse, or will or opinion, 1111b10–11; (8) someone is involuntarily bad, 1113b14. Aristotle seems to be participating in a debate current in his day. The method of this section is thus clearly dialectical (cf. Gastaldi 2019, 138 and 153, and many others).

Aristotle's position in these pages should be taken as his response to a number of possible objections. This is not to say, in my view, that he does not believe what he says, but that the precise formulation of what he says depends on the dialectical context, and must be considered not only in itself, but in comparison with other passages. In fact, for the purpose of refutation, Aristotle may, within a certain debate, highlight some aspects of his position and place others in a lesser light. Moreover, in these kinds of contexts, it is not legitimate to infer anything from silence on certain points: if Aristotle in a dialectical context does not say x, one cannot deduce that non-x is true for him.

The thesis that our choices do not depend on us seems strange at first glance, as our actions derive from our choices, and if the choices we make do not depend on us, it is not clear how, within Aristotle's philosophy, our actions can depend on us. In EN VI he states, distinguishing between efficient cause and final cause:

> **8.** Thus, choice is the principle of action, in the sense of the point of origin of the movement, not its goal, while the principle of choice is the desire and reasoning that tends towards a goal (1139a31–3).[15]

In the *Metaphysics*, he sharply says that "what is accomplished and what is chosen is the same thing" (*to auto gar to prakton kai proaireton*, 1025b24).

As I have said, Aristotle never claims that the assumption of a certain character does not depend on us; on the contrary, he seems to say the opposite, namely, that we are partly responsible, *sunaitioi*, with our characters, 1114b23: "in fact we are *sunaitioi* in a certain way for our habitual states." Since what does not depend on us, according to Aristotle, is only that to whose generation we do not contribute at all (1110a2–3), then for him character is something that depends on us. Text **3** is perplexing only if one does not consider that it is just a dialectical stance, that is, a response to an objection of an opponent who claimed:

> **9.** Such a man is made in such a way that he is unable to concern himself [with the just and the unjust] (1114a3–4).[16]

Aristotle discusses the thesis according to which someone can be such a person that they do not care to know what things are good and bad, that they ignore laws and moral norms (1114a3–4). The answer is:

> **10.** But men are personally responsible for having become such, by leading a slack life, and also for being unjust or intemperate, in the first case by perpetrating misdeeds and in the second by spending their lives drinking or committing similar excesses: indeed it is the particular activities in which they indulge that make them such (1114a4–7).[17]

This is an ad hoc argument, the formulation of which is somewhat dependent on the context and the objection to which Aristotle undertakes to respond. What is important is that the whole discussion of NE III 1–5 is dialectical and raises the suspicion of a debate within the Academy, in which Aristotle is participating. I cannot expand on this point now; I will do so on another occasion.[18]

Furthermore, does character necessarily determine action for Aristotle? There are in the Aristotelian *corpus* seemingly contradictory statements on this point. In NE V 1, Aristotle states that from a *hexis* one can only act in one way:

> **11.** A habitual state, which is an opposite, does not entail opposites: thus, health does not entail actions contrary to itself, but only healthy actions (1129a14–16).[19]

In contrast, in the *Topics*, IV 5, Aristotle states the contrary. One can do base actions even if he is good:

> **12.** Even a god and a good man are capable of doing evil; but they are not evil, for those who are evil by choice are called evil (126a34–6, cf. NE 1137a6–25).[20]

In the *Politics*, he maintains:

> **13.** Animals live by following nature, a few also follow their habits, but man also follows reason. For he alone has the ability to reason . . . men do many things against their habits and nature, if they are persuaded that it is better to behave otherwise (1332b3–8).[21]

Here the idea of 'persuasion' is important and I will go back to it. I do not have time now to stop and investigate further the relationship between texts **11** and **12–13**. I would like to limit myself to saying that in my opinion, text **3** has been loaded with excessive meanings, and to propose a reading of it that is, so to speak, deflationary. In text **3**, Aristotle intends to oppose those who claim that the evil person is not guilty of what he does, because such an individual is incapable of considering justice. Aristotle is of the opinion that the criterion of volition which he found for passions and actions – that the efficient cause be in us and that the action be done with knowledge of the relevant circumstances (i.e., that 'it doesn't happen accidentally) – also solves the problem of the responsibility for our character. He makes no claim that someone who has a particular moral character inevitably will act on a way determined by it, nor that he will not be able to modify his moral status by executing acts that are opposed to his current habitual condition.[22] In fact, in text **3** itself the idea of a character change is implicitly included. Besides, elsewhere Aristotle admits of a character change and describes the way in which it can happen:

> **14.** It is possible for the healthy to fall sick and for the white to become black and the hot cold; and it is possible to become bad instead of good or good instead of bad. For the bad man, if led into better ways of living and talking, would progress, if only a little, towards being better. And if he once made even a little progress it is clear that he might either change completely or make really great progress. For however slight the progress he made to begin with, he becomes ever more able to change towards virtue, so that he is likely to make still more progress; and when this keeps happening it brings him over completely into the contrary state (*Categ.* 10, 13a21–31, trans. Ackrill, modified).[23]

I would also like to consider the general consequences of the prevailing interpretation, according to which when you have a character of a certain kind, you necessarily act according to your character and so on. In the context of the discussion of *De int.* 9, one consequence of the fact that it is not possible for everything to happen out of necessity is that there are contingent individual events, for example, that this coat here may be cut in two, or it may not, because it may wear out first (19a12–17). Now, Aristotle also cites as evidence of the contingency of individual events the fact that it depends from our deliberation what will happen in the future in the realm of our actions:

> **15.** There will be no need for deliberation (*bouleuesthai*) or trouble in the belief that if we do such and such a thing, such and such a thing will happen, and that if we do not do such and such a thing, such and such a thing will not happen (*De int.* 9,18b30–3).[24]

> "We see that there is a principle (*archê*) of future things from the fact that we deliberate (*bouleuesthai*) and do a certain action, and that in general in what is not always in act there is the possibility of being and not being, and by consequence also to become and not become (19a7–11)."[25]

However, if, as we saw before, what we deliberate on and what depends on us were contingent only on a generic level but not on an individual level, the fact that we deliberate on what depends on us would not be a good example of the contingency of single events. At time t it would be possible to say with truth that at time t′, say tomorrow, there will be a naval battle, since, for example, Melissus, being a brave admiral, will inevitably fight when he meets Pericles' fleet in 441/40 BCE (Plut., Pericles, 26.2–3). This would correspond to saying that, in general, coats are things that can be cut or uncut, but that this specific coat will necessarily be cut or uncut, which does not support the conclusion Aristotle wants to reach in *De in.* 9. It seems difficult to attribute to Aristotle this nonsense.

Moreover, it would not make sense to exhort someone to do something if the individual choice does not depend on him. Yet Aristotle seems to think otherwise, at least in the *Rhetoric* when he states what follows:

> **16.** We must, therefore, first of all, understand the nature of the goods and evils on which the counsellor advises, since he does not advise on all things but only on those which may or may not occur; on the other hand, on everything which is or will necessarily be, or on everything which cannot be or occur, there will be no advice on that. Nor is it possible to give advice on absolutely every possible thing, for among the things that may or may not happen, there are a small number of goods that happen either naturally or by chance, and on which it is useless to

> give advice. It is clear that advice is given only on what is open to deliberation, that is, things which by nature are imputable to us, that is, those whose principle of existence depends on us . . . to give about them, as far as possible, definitions in accordance with the truth, is a search which is not necessary now, because it does not belong to the art of rhetoric but to a more instructive and truthful art (1359a30-b5).[26]

In this passage, the orator is suggested to distinguish carefully which things to give his advice on: he can advise on the contingent, but not on the necessary or the impossible, nor on what happens by nature or chance. Moreover, he can do so only on a subsection of the contingent, that is, on things that have their causal origin in us, that of which we are the principle of their future. Since we always advise on particular choices, and never on general things, here Aristotle must be thinking, for instance, of advising someone whether or not to fight a naval battle tomorrow. It would not be successful for an orator to tell his audience that doing a naval battle is in itself a contingent action; however, considering the situation and the character of the admiral, the battle will certainly take place tomorrow. Indeed, if this were the case, there would be no point in advising and attempting to persuade. The simplest understanding of the passage, in my opinion, is that the deliberation here is about something, which the orator's audience can choose to do or not to do, and is based on persuasion. It should also be noted that this passage is not the exposition of a remarkable opinion or an ad hoc thesis, but is a summary of Aristotle's official thesis, and indeed the philosopher at the end of the passage refers all these distinctions to his works specifically devoted to these things: what is said here briefly summarizes the content of chapter NE III 5. Thus individual action, and probably also the choice of whether to do it or not to do it, are things that depend on us, and of which we are the masters.

The reason why many interpreters are not ready to admit that, for Aristotle, choice depends on us seems to be that they understand this as admitting that, given certain causes antecedent to choice, causes that include both the given situation and the character of the agent, the agent can choose *x* or non-*x* without any reason, by an act of absolute and totally uncaused freedom.

But this is not Aristotle's position, and to tell the truth not even Alexander of Aphrodisias admits that choice is a causeless event (*De fato* 15). However, it is necessary to agree on what "cause" means and, when speaking of Aristotle, it is appropriate to use the concept of cause in the sense in which he uses it. From this viewpoint, choice is never gratuitous, but always tends toward an end, which is the cause, in the sense of "that for

which," that is, in the sense of the final cause. But the final cause is not a coercive cause, as Aristotle states in NE:

> **17.** Of what kinds of action must it be said that they are forced? In general, they are not those whose cause is external and to which the agent contributes nothing? . . . but if anyone should claim that pleasant things and good things are forced, because they constrain us while being external to us, all actions will be forced for him, for it is with a view to these things that we perform all our actions (1110b1–12).[27]

Here *biaion* indicates what is not *eph'hêmin*, which does not depend on us and for which we are not *kurioi*, we are not masters. The reasoning is ad absurdum: if **X** then **B**, but **B** is absurd, therefore non-**X**.[28] If pleasant and good things are something that necessarily propels us externally, then everything is forced. But it is absurd that everything is forced, so pleasant and good things do not necessarily propel us by an external force. The good and pleasant are ends, so final causes are not necessary causes. In this passage, the end is the endpoint of the action, that which is generated, and as such, cannot efficiently produce the action, but is itself a cause, since the action depends on it. In reconstructing the causal chain leading to action, in addition to considering dispositions, desires, and deliberations, the content of desire, which is a not necessary cause, must also be considered. The form of desire, which is the representation of the end, is not given by character but by the practical intellect and/or the faculty of imagination, as Aristotle states in *De an*. III 10, and as he repeats in text **8**.

Therefore the fact that choice is in our power for Aristotle does not imply that it becomes a completely gratuitous act, à la Sartre, but neither does it imply that it is necessarily determined by the end. The final cause is not necessitating, and in this sense Sorabji was right to separate the notion of final cause from the notion of necessity in Aristotle (Sorabji 1980, 232).

To summarize, Aristotle introduces, in the debate on the responsibility of our actions and coherently with his theory of causes, the notion of "what depends on us" in the strong sense of "what we are masters of doing and not doing." The idea of "what depends on us" is the translation, in ethical terms, of the notion of efficient cause, and expresses the idea that the agent, for Aristotle, is the first efficient cause of his actions. The reason why he acts is a final cause, and for that reason not constrictive. Human actions are not causeless, but are guided toward ends, so the efficient cause depends on a final cause, but the final cause is not necessitating. There is no reason to believe that Aristotle ever thought that our choices do not depend on us, that our character necessarily conditions us, and that it depends on the education we had as children. Not even Plato goes that far, and in the

Timaeus the responsibility for becoming bad is attributed only primarily to parents and educators, and not entirely. In fact an educational program is offered to prevent these outcomes (86e1–87b8). In the passages on the moral education of citizens (NE X 10, *Pol.* VII 15–VIII), he hints at the possibility of a continuing influence of the city on the citizens' character, particularly by means of laws, music, and spectacles.

Since our actions depend on us, in the sense that we are masters of them, in the *De interpretatione* our actions can be used as one of the most suitable examples of the argument that not everything is necessary, but many things are contingent and illustrate the idea that logical theses that arrive at the consequence that everything happens out of necessity arrive to an absurd conclusion.

Returning to the views of the critics, in my opinion, it is correct that Aristotle does not oppose causal determinism, which in his time had not yet been formulated; he discusses the question whether the evil acts voluntarily. His two most important moves are (1) to put good and evil action on similar footing, stating that both depend on us, and not one does and the other does not (1114b12–4); to indicate this, (2) to adapt to the analysis of human action a phrase from common language, *eph'hêmin*, to indicate that man is the master of his actions. He then uses human action – and in my view also the choice from which the action derives – as a particularly striking example of a not necessary event, in the logical domain, in *De interpretatione*. From this to using *eph'hêmin* as an argument against determinism, there is but a step, and after the publication of the Aristotelian treatises various schools made use of it in their polemics against the Stoics. In my opinion, this creative use of Aristotle's thought respects its fundamental inspiration.

From today's viewpoint, the interest of Aristotle's thought in the determinism debate consists both in his conception of movement as the actuation of the capacities of a substance (cf. Broadie 1991, 130) and in his broad and unrestricted conception of causality, which makes it possible to deny necessity without affirming that there is causeless movement. Indeed, as Ricoeur observed several years ago (1990, 96–97), the current notion of causality must be revised to account adequately for human action.

Notes

1 Sauvé Meyer (2014, 77 n. 8); more positively Eliasson (2008, 53 and 61) and M. Frede (2014, 351).
2 Thuc. I 40, 6; III 13, 4; Eur. *Med.,* 694; *Rhes.,* 578; Soph. *Phil.* 139; *OC* 414; Isoc. 18, 68, 3; Is., *De hagnia,* 8, 6; Dem. *Adv. Aristocrates* 137.
3 Soph., *El.,* 85; Xenophon, *Anabasis* III 1, 5; V 5, 20; *Cyropaedia* IV 2, 19; IV 5, 15; Hippocr., *De officina medici,* 3, 4; Dem., *Phil.* III 7, 8; Alcidamas fr. 15, 11; *Rhetorica ad Alexandrum* I 12; XIV 3.

4 καὶ γὰρ πρότερον ὅτ' ἐφ' ἡμῖν ἐγένετο Δικαιογένην τιμωρήσασθαι καὶ ἀφελέσθαι ἃ εἶχεν, οὐκ ἐβουλήθημεν τῶν τούτου κτήσασθαι οὐδέν, ἀλλὰ τὰ ἡμέτερα μόνον κομίσασθαι ἐξήρκει ἡμῖν

5 ἔρις γὰρ ἐν θεοῖς σύλλογός τε σοῦ πέρι ἔσται πάρεδρος Ζηνὶ τῶιδ' ἐν ἤματι. . . . τέλος δ' ἐφ' ἡμῖν εἴθ', ἃ βούλεται Κύπρις, λέξασ' ἀδελφῶι σ'ἐνθάδ' ὄντα διολέσω εἴτ' αὖ μεθ' Ἥρας στᾶσα σὸν σώσω βίον, . . . τίς εἶσ' ἀδελφῶι τόνδε σημανῶν ἐμῶι παρόνθ', ὅπως ἂν τοὐμὸν ἀσφαλῶς ἔχηι.

6 Cf. Cantarella (2019, 44–47): "Oggi l'azione commessa per impetuosità è volontaria, Al più si potrà dire che non è premeditata. Ma per i Greci . . . era volontaria solo l'azione compiuta razionalmente."

7 A glance in the *Thesaurus Linguae Graecae* shows that most of the attestations of the phrase *eph'hêmin* in the fourth century BCE are found in Aristotle and his school; a few rare examples are found in Demosthenes, Aeschines, Alcidamas, and in the *Rhetoric to Alexander*.

8 But there is at least a passage in which he uses the expression *to d'auton* to refer to the human actions, at 1114b31.

9 Loening (1903, 130–167); Sharples (1975, 260–262); Bobzien (1998a, 144).

10 ἔτι δ' ἄλογον τὸν ἀδικοῦντα μὴ βούλεσθαι ἄδικον εἶναι ἢ τὸν ἀκολασταίνοντα ἀκόλαστον. . . . οὐ μὴν ἐάν γε βούληται, ἄδικος ὢν παύσεται καὶ ἔσται δίκαιος. οὐδὲ γὰρ ὁ νοσῶν ὑγιής. καὶ εἰ οὕτως ἔτυχεν, ἑκὼν νοσεῖ, ἀκρατῶς βιοτεύων καὶ ἀπειθῶν τοῖς ἰατροῖς. τότε μὲν οὖν ἐξῆν αὐτῷ μὴ νοσεῖν, προεμένῳ δ' οὐκέτι, ὥσπερ οὐδ' ἀφέντι λίθον ἔτ' αὐτὸν δυνατὸν ἀναλαβεῖν· ἀλλ' ὅμως ἐπ' αὐτῷ τὸ βαλεῖν καὶ ῥῖψαι· ἡ γὰρ ἀρχὴ ἐν αὐτῷ. οὕτω δὲ καὶ τῷ ἀδίκῳ καὶ τῷ ἀκολάστῳ ἐξ ἀρχῆς μὲν ἐξῆν τοιούτοις μὴ γενέσθαι, διὸ ἑκόντες εἰσίν· γενομένοις δ' οὐκέτι ἔστι μὴ εἶναι.

11 οὐχ ὁμοίως δὲ αἱ πράξεις ἑκούσιοί εἰσι καὶ αἱ ἕξεις· τῶν μὲν γὰρ πράξεων ἀπ' ἀρχῆς μέχρι τοῦ τέλους κύριοί ἐσμεν, εἰδότες τὰ καθ' ἕκαστα, τῶν ἕξεων δὲ τῆς ἀρχῆς, καθ' ἕκαστα δὲ ἡ πρόσθεσις οὐ γνώριμος, ὥσπερ ἐπὶ τῶν ἀρρωστιῶν· ἀλλ' ὅτι ἐφ' ἡμῖν ἦν οὕτως ἢ μὴ οὕτω ἡσασθαι, χρήσασθαι διὰ τοῦτο ἑκούσιοι.

12 M. Frede (2014, 357); a more nuanced position in D. Frede (2014, 53–54), for whom at least the choice of means continues to depend on us.

13 οὐ μικρὸν οὖν διαφέρει τὸ οὕτως ἢ οὕτως εὐθὺς ἐκ νέων ἐθίζεσθαι, ἀλλὰ πάμπολυ, μᾶλλον δὲ τὸ πᾶν.

14 οὐ μὴν ἀλλὰ ζητητέον μή ποτε τοῦτο μὲν συμβέβηκε . . . ἀλλ' ὁρᾶν εἴ πῃ καὶ πρὸς τὸ ἦθος συντείνει καὶ πρὸς τὴν ψυχήν. τοῦτο δ' ἂν εἴη δῆλον, εἰ ποιοί τινες τὰ ἤθη γιγνόμεθα δι' αὐτῆς. Cf. Destrée (2011, 300–307) and Chen (2019).

15 πράξεως μὲν οὖν ἀρχὴ προαίρεσις-ὅθεν ἡ κίνησις ἀλλ' οὐχ οὗ ἕνεκα-προαιρέσεως δὲ ὄρεξις καὶ λόγος ὁ ἕνεκά τινος.

16 ἀλλ' ἴσως τοιοῦτός ἐστιν ὥστε μὴ ἐπιμεληθῆναι.

17 ἀλλὰ τοῦ τοιούτους γενέσθαι αὐτοὶ αἴτιοι ζῶντες ἀνειμένως, καὶ τοῦ ἀδίκους ἢ ἀκολάστους εἶναι, οἳ μὲν κακουργοῦντες, οἳ δὲ ἐν πότοις καὶ τοῖς τοιούτοις διάγοντες· αἱ γὰρ περὶ ἕκαστα ἐνέργειαι τοιούτους ποιοῦσιν.

18 I plan to discuss this point more diffusely and with particular attention to *NE* III 5, in a forthcoming article titled "L'expression 'ce qui dépend de nous' chez Aristote. Origine et importance," to be published in the *Revue de philosophie ancienne*, 2023.

19 ἕξις δ' ἡ ἐναντία τῶν ἐναντίων οὗ, οἷον ἀπὸ τῆς ὑγιείας οὐ πράττεται τὰ ἐναντία, ἀλλὰ τὰ ὑγιεινὰ μόνον.

20 δύναται μὲν γὰρ καὶ ὁ θεὸς καὶ ὁ σπουδαῖος τὰ φαῦλα δρᾶν, ἀλλ' οὐκ εἰσὶ τοιοῦτοι· πάντες γὰρ οἱ φαῦλοι κατὰ προαίρεσιν λέγονται. This passage was indicated to me by C. Viano, whom I thank.

21 τὰ μὲν οὖν ἄλλα τῶν ζῴων μάλιστα μὲν τῇ φύσει ζῇ, μικρὰ δ' ἔνια καὶ τοῖς ἔθεσιν, ἄνθρωπος δὲ καὶ λόγῳ· μόνος γὰρ ἔχει λόγον· . . . πολλὰ γὰρ παρὰ τοὺς ἐθισμοὺς καὶ τὴν φύσιν πράττουσι διὰ τὸν λόγον, ἐὰν πεισθῶσιν ἄλλως ἔχειν βέλτιον.

22 Donini (2010, 108), speaks of a "strong conditioning imposed by the habits" on those who act, but not of a necessary imposition of this or that determinate action, see the whole of chapter 4 of the volume, and Donini (2014, 92).

23 καὶ γὰρ τὸ ὑγιαῖνον δυνατὸν νοσῆσαι καὶ τὸ λευκὸν μέλαν γενέσθαι καὶ τὸ ψυχρὸν θερμόν, καὶ ἐκ σπουδαίου γε φαῦλον καὶ ἐκ φαύλου σπουδαῖον δυνατὸν γενέσθαι· -ό γὰρ φαῦλος εἰς βελτίους διατριβὰς ἀγόμενος καὶ λόγους κἂν μικρόν γέ τι ἐπιδοίη εἰς τὸ βελτίω εἶναι· ἐὰν δὲ ἅπαξ κἂν μικρὰν ἐπίδοσιν λάβῃ, φανερὸν ὅτι ἢ τελείως ἂν μεταβάλοι ἢ πάνυ πολλὴν ἂν ἐπίδοσιν λάβοι· ἀεὶ γὰρ εὐκινητότερος πρὸς ἀρετὴν γίγνεται, κἂν ἡντινοῦν ἐπίδοσιν εἰληφὼς ἐξ ἀρχῆς ᾖ, ὥστε καὶ πλείω εἰκὸς ἐπίδοσιν λαμβάνειν· καὶ τοῦτο ἀεὶ γιγνόμενον τελείως εἰς τὴν ἐναντίαν ἕξιν ἀποκαθίστησιν.

24 οὔτε βουλεύεσθαι δέοι ἂν οὔτε πραγματεύεσθαι, ὡς ἐὰν μὲν τοδὶ ποιήσωμεν, ἔσται τοδί, ἐὰν δὲ μὴ τοδί, οὐκ ἔσται.

25 ὁρῶμεν γὰρ ὅτι ἔστιν ἀρχὴ τῶν ἐσομένων καὶ ἀπὸ τοῦ βουλεύεσθαι καὶ ἀπὸ τοῦ πρᾶξαί τι, καὶ ὅτι ὅλως ἔστιν ἐν τοῖς μὴ ἀεὶ ἐνεργοῦσι τὸ δυνατὸν εἶναι καὶ μή, ἐν οἷς ἄμφω ἐνδέχεται καὶ τὸ εἶναι καὶ τὸ μὴ εἶναι, ὥστε καὶ τὸ γενέσθαι καὶ τὸ μὴ γενέσθαι.

26 Πρῶτον μὲν οὖν ληπτέον περὶ ποῖα ἀγαθὰ ἢ κακὰ συμβουλεύων συμβουλεύει, ἐπειδὴ οὐ περὶ ἅπαντα ἀλλ' ὅσα ἐνδέχεται καὶ γενέσθαι καὶ μή, ὅσα δὲ ἐξ ἀνάγκης ἢ ἔστιν ἢ ἔσται, ἢ ἀδύνατον ἢ εἶναι ἢ γενέσθαι, περὶ δὲ τούτων οὐκ ἔστι συμβουλή. οὐδὲ δὴ περὶ τῶν ἐνδεχομένων ἁπάντων· ἔστιν γὰρ καὶ φύσει ἔνια καὶ ἀπὸ τύχης γινόμενα ἀγαθὰ τῶν ἐνδεχομένων καὶ γίγνεσθαι καὶ μή, περὶ ὧν οὐδὲν πρὸ ἔργου τὸ συμβουλεύειν· ἀλλὰ δῆλον ὅτι περὶ ὅσων ἐστὶν τὸ βουλεύεσθαι. τοιαῦτα δ' ἐστὶν ὅσα πέφυκεν ἀνάγεσθαι εἰς ἡμᾶς, καὶ ὧν ἡ ἀρχὴ τῆς γενέσεως ἐφ' ἡμῖν ἐστιν . . . δ' ὅσον ἐνδέχεται περὶ αὐτῶν διορίσαι κατὰ τὴν ἀλήθειαν, οὐ δεῖ κατὰ τὸν παρόντα καιρὸν ζητεῖν διὰ τὸ μήτε τῆς ῥητορικῆς εἶναι τέχνης, ἀλλ' ἐμφρονεστέρας καὶ μᾶλλον ἀληθινῆς.

27 τὰ δὴ ποῖα φατέον βίαια; ἢ ἁπλῶς μέν, ὁπότ' ἂν ἡ αἰτία ἐν τοῖς ἐκτὸς ᾖ καὶ ὁ πράττων μηδὲν συμβάλληται . . . εἰ δέ τις τὰ ἡδέα καὶ τὰ καλὰ φαίη βίαια εἶναι (ἀναγκάζειν γὰρ ἔξω ὄντα), πάντα ἂν εἴη αὐτῷ βίαια· τούτων γὰρ χάριν πάντες πάντα πράττουσιν.

28 The same type of argument is found in *De int*. 9 and in *Metaph*. E 3. On this point, I cannot stop now, but allow myself to direct the reader to an earlier paper of mine (2012, 199–217).

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10 Theories of Causation in Early Stoicism

Daniel Vázquez

Introduction

Scholarship on the Stoic theory of causation often highlights its internal cohesion and explanatory power. It presents it as a carefully constructed and systematic doctrine. These efforts respond to unfair accusations, uncharitable readings, and the need for a careful reconstruction of the surviving evidence. Although the secondary literature has shown the caliber and importance of the Stoics' contribution to the history of philosophy and science, it often focuses on the common features and agreements among members of the Stoa. This, at times, presents early Stoicism as if it were a homogeneous philosophical school.[1]

More problematically, scholars sometimes evaluate the textual evidence from the assumption that there is a fixed and 'genuine' Stoic doctrine.[2] This runs the risk of deeming any deviation from the norm as a distortion or contamination instead of a development, response, or improvement of previous contributions. Although it is true that one should be alert to possible misinterpretations and distortions, especially given the nature of some sources, this assumption cannot be our starting point. It begs the question on two fronts: first, on whether the later Stoics disagreed, challenged or improved each other's arguments; and second, on whether it was an accepted practice to read widely and adopt conceptual apparatus from philosophers outside the Stoa. Put in a different way, from a methodological point of view, we should, if possible and as the starting point, approach the Stoics less as a closed-minded religious cult and more like a dynamic, open-minded, and responsive philosophical community.[3]

There is another problematic assumption. When scholars highlight the Stoics' originality and innovations, they often overstate their anti-Platonic agenda. This has shaped how we understand the Stoics' references and allusions to Plato's dialogues. The Stoics certainly rejected Platonic forms and denied any causal efficacy and ontological priority to incorporeal things. They made no effort to defend Plato or present Stoicism as compatible with his dialogues. But many scholars assume that Plato's impact

DOI: 10.4324/9781003306450-11

on Stoicisms can be reduced to simple piecemeal borrowings or appropriations.[4] A closer inspection to the evidence shows, however, that they were diligent students of Plato's works, and, more importantly, that they engaged with the philosophical problems discussed in his dialogues and adopted many of his methodological strategies.[5]

This proposed change of approach will allow us to see that perhaps the early Stoics did not have a single and unified doctrine of causation. Instead, they could have developed a variety of proposals with family resemblance. Although these proposals may share their basic tenets and often build on each other's arguments, there is no need to assume, in addition, that they were engaged in adversarial partisan apologetics or the construction of a single genuine Stoic system. Most of the evidence for the latter assumptions come from how hostile sources present the Stoics. But perhaps we have been too ready to believe them.

The surviving evidence allows us to distinguish, at least, three main moments in the early Stoic discussion of causation. Although the discussion could be understood as a process of refinement of an initial theory, the different stages are not necessarily coherent and consistent with each other. The distinctions, taxonomy, and emphasis change.

In what follows, I reconstruct the main developments in the early Stoic theories of causation. First, I discuss Zeno's and Chrysippus' contributions, their common ground and their differences. I will also include and discuss some relevant passages attributed to Aristo of Chios and Cleanthes. Then, I discuss another early – but most probably post-Chrysippean – theory of causation that survives in some of our sources. Next, I discuss how the Stoics proposed interesting conceptual distinctions and developed sophisticated typologies of causes. Finally, I discuss the relationship between the early Stoic theories of causation and their views about fate and moral responsibility.

Focusing on the development of these theories will offer three main outcomes. First, it will uncover how closely Zeno engaged with Plato's discussion of causes and how later Stoics became more independent from the Platonic tradition. Second, it will also become easier to differentiate Chrysippus' contribution from previous and later developments. Finally, my analysis will help to clarify how the Stoics establish the number of relata they attribute to the causal relation and how their theories understand and assign moral responsibility.

Causes From Zeno to Chrysippus

The Common Ground

At a cosmic level, the Stoics maintain that God is the only source of active capacity (and thus of causal power), and it is only through being mixed

with him that other bodies have an active capacity. The way the active power gets expressed in each body, however, depends on the nature of the specific body. Seneca calls God the cause (*causa*),[6] but early Stoics refer to causes in a more general way. Stobaeus preserves a summary of Zeno's and Chrysippus' views:

> Zeno says that cause (αἴτιον) is 'that because of which' (δι' ὅ); while that of which it is a cause is a consequence (συμβεβηκός). And he says that the cause is a body, while that of which it is a cause is a charge (κατηγόρημα).[7] It is impossible, then, for the cause to exist, yet that of which it is a cause not to be produced. What he says has this force: a cause is that because of which something takes place, for instance, because of prudence 'being prudent' takes place, because of soul 'being alive' takes place, and because of moderation 'being moderate' takes place.[8] Since it is impossible for something to have moderation [and] not being moderate, or [for it to have] soul [and] not being alive, or [for it to have] prudence [and] not being prudent.
>
> Chrysippus says that the cause is 'that because of which'. And, on the one hand, he says that the cause is a being and a body, <while that of which it is a cause is not a being nor a body;>[9] He also says that a cause is a 'because' (ὅτι), whereas that of which it is a cause is a 'because-of-something' (διά τι).[10] A causal account (αἰτία) is the λόγος of the cause, or the λόγος concerning the cause as cause.[11]

Zeno and Chrysippus agree on two basic points. Both describe cause (αἴτιον) in the same way, and they also agree that only bodies can be causes – something also clear from the way they define bodies. Since for them every cause is a body, this establishes a Corporeal Closure Principle:

> For any x, if x is a cause, x is a body.

Notice, however, that this does not hold conversely. For instance, matter – the passive principle – although a body, it is completely passive and never causes anything. Even if matter is the only exception, it means that being a cause is not part of the definition of bodies.

Despite the Stoic's commitment to materialism (or more precisely, corporealism),[12] notice how much their causal accounts recall some Platonic passages. Zeno and Chrysippus describe causes the same way Plato does in *Cratylus* 413a3–4 when Socrates says he learnt – from a doctrine amazingly similar to the Stoic physics – that δι' ὃ γὰρ γίγνεται, τοῦτ' ἔστι τὸ αἴτιον ('for that by which [something] comes to be is the cause').[13] Moreover, the cases offered to explain Zeno's account look structurally similar to Socrates' safest answer in *Phaedo* (100c3–e4)[14] and are the same examples

used by the Eleatic Stranger in Plato's *Sophist* 246e5–247a9.[15] Finally, Chrysippus' distinction between αἴτιον ('cause') and αἰτία (often translated as 'cause' or 'causal account'), has often recalled Plato's use of these terms in *Phaedo*.[16] All this suggests that the early Stoic discussions of causality develop from a Platonic background.[17]

Zeno's Theory of Causation

Stobaeus' report also shows that Zeno and Chrysippus hold two distinct accounts of causality. Despite their agreements, in Zeno's account, we have a conceptual distinction not mentioned by Chrysippus. Zeno distinguishes between causes (αἴτιον), and consequences (συμβεβηκός), as two of the relata of the causal relation. For Zeno, these relata are correlative terms: a cause is that thing *because of* which a consequence takes place, whereas a consequence is that thing *of* which something is a cause. This description also makes clear the direction of fit of the causal relation. A cause produces a consequence and not vice versa.[18] Zeno adds that the cause is a body whereas the consequence is a charge (κατηγόρημα; often translated as 'predicate').

Zeno proposes a thesis of causal sufficiency, which establishes that something cannot become a cause without producing the corresponding consequence. This could be explained with the general formula:

> For any *X*, and *Y*, if *X* causes *Y*, then whenever *X* occurs, *Y* occurs.[19]

According to the structure of two of the three examples in the fragment, we can substitute *Y* for 'being *X*', and understand that the effect occurs 'in something', which, if consistent with the Stoic physics, must be a body. Therefore we can express Zeno's thesis as follows:

> For any bodies *X* and *Z*, if *X* is a cause of the consequence 'being *X*', it is necessary that if *X* exists in *Z*, then 'being *X*' takes place in *Z*.

There is no cause without consequence. Stobaeus offers two instantiations of this principle. They can be spelt out as follows:

1. Since prudence causes 'being prudent', it is necessary that if prudence exists in a soul, 'being prudent' takes place in that soul.[20]
2. Since moderation causes 'being moderate', it is necessary that if moderation exists in a soul, 'being moderate' takes place in that soul.

In these two examples, the causal relation preserves synonymity between the relata. *F* causes the consequence 'being *F*'. Zeno's account preserves

synonymity in a similar way than Socrates' 'safest answers' in the *Phaedo* (e.g., a beautiful thing is beautiful because of the Beautiful). Zeno, of course, uses a corporealist framework. But even Zeno's turn to corporealism was the result of his engagement and response to Plato's *gigantomachia* in the *Sophist*.[21] The third example seems different, though. The consequence does not preserve the name of the cause:

3. Since the soul causes 'being alive', it is necessary that if the soul exists in a body, 'being alive' takes place in that body.

This example assumes that we know that 'being ensouled' always implies 'being alive'. This not only mirrors the 'sophisticated answers' explained by Socrates in the *Phaedo* (105b6–c7)[22] but also reminds the discussion in *Sophist* 246e5–247a9 (quoted in footnote 15).

But there might be a more interesting difference between examples (1–2) and (3). The last example talks about two different bodies that can blend and form a living animal. The animal's body is alive when it is blended with its soul. But the case of prudence and moderation seems different. These virtues are nothing else but the soul qualified or disposed in a certain way. There seems to be only one body. The reason why a soul becomes prudent or moderate is that it is a soul disposed in a virtuous way. Now, Zeno defends the unity of virtue, which means that prudence and moderation refer to the same soul disposed in the same way (virtuously) but concerning different sorts of actions. Then, when Zeno claims that prudence causes 'being prudent' in a soul, it means that the αἴτιον of a soul's 'being prudent' is the soul physically disposed in a virtuously way concerning actions in a specific domain. The corporeal disposition of the soul brings about a certain state of affairs. These examples establish the direction of fit of the causal process. But the synonymic relation gets determined not only by the soul's virtue but by the type of external effects it produces. A virtuous soul is always virtuous but only when it is in relation to certain actions that we can say it is being prudent. Only in certain moments, a virtuous soul becomes the cause of prudent actions. If no one can be prudent or moderate if his soul has no prudence or moderation, it means that the source of prudence or moderation is not a person's actions but the quality or disposition of her soul. It is the condition of the soul which determines the evaluation of the actions, and not vice versa. This, which might sound extreme, fits perfectly with the Stoic conception of virtue and the image of the wise.

Finally, the examples suggest that, for Zeno, bodies can produce consequences not only in other bodies but also in themselves. A prudent soul causes the consequence 'being prudent' in the soul, but this means that the soul is at a certain moment behaving and affecting other bodies in a prudent way. Being prudent consists in causing certain types of consequences in the world.

Before moving to Chrysippus, it is worth mentioning Zeno's disciple, Aristo of Chios. Aristo agrees with Zeno's preservation of synonymity in the causal relation. In a passage in Clement we read:

> Virtue is single in power, but the fact is that when it is realized in one form of action it is called practical wisdom, in another, disciplined moderation, in others, courage or justice. . . . It is in this way that when one and the same coin is given to a sea-captain we speak of money to pay for passage, to a tax-collector, tax, to the property owner, rent, to the teacher, tuition, to the salesperson, deposit. Each virtue, each truth, while carrying a common name, is responsible solely for the result that accords with its character. A life of blessedness results from a blend of these (Do not imagine that blessedness depends on words!), when we apply the word 'blessed' to an upright life and to the person who has ordered his soul in accordance with virtue.[23]

Plutarch points out the similarity between Zeno and Aristo:

> Aristo of Chios also made virtue essentially one thing, which he called 'health'. It was by relativity that he made the virtues in a way different and plural, just as if someone wanted to call our vision 'white-seeing' when it apprehended white things, 'black-seeing' when it apprehended black things, and so on . . . as the knife, while being one thing, cuts different things on different occasions, and fire acts on different materials although its nature is one and the same. Zeno of Citium also in a way seems to be drifting in this direction when he defines prudence in matters requiring distribution as justice, in matters requiring choice as moderation, and in matters requiring endurance as courage.[24]

Chrysippus' Theory of Causation

Chrysippus introduces some modifications to Zeno's theory. According to Stobaeus, his account keeps Zeno's notion of cause, adding that it is a 'because' (ὅτι). But instead of using 'consequence' (συμβεβηκός) Chrysippus calls the other relatum in the causal process a 'because-of-something' (διά τι). While for Zeno, an effect or 'consequence' (συμβεβηκός) is a 'charge' or 'accusation' (κατηγόρημα), Chrysippus distinguishes the effect or 'because-of-something' (διά τι) from the αἰτία, a term that, like κατηγόρημα, can mean 'charge' or 'accusation'.[25] Chrysippus' analysis, then, includes four different elements:

1. The cause (αἴτιον), which is a body.
2. The effect (διά τι), something that happens to a body.

3. The causal account (αἰτία), the λόγος of the cause or the λόγος concerning the cause qua cause.
4. The affected body in which the effect takes place.

A standard example of a causal account (3), then, would be to state that '(1) a scalpel (2) cuts (4) the flesh'. What acts and what is affected are bodies, while the effect and the causal account itself are incorporeal. This is, at least, the standard interpretation of Chrysippus' distinction between αἴτιον and αἰτία.[26] Notice that the effect is not identical to the causal account. We can know an effect without knowing its cause (e.g., an unidentified body cut the flesh of this body), and the effect could be correctly identified and still a given causal account, false.

Bobzien (1998, 51–53; 1999, 198–202), however, thinks there are good reasons to reject this interpretation. One of the problems is the lack of any other fragment or report where Chrysippus uses αἰτία as a propositional item.[27] Moreover, there is some evidence to the contrary. Bobzien refers to a report in Stobaeus (*Eclogae* 1.79.5–12) which she translates as follows: 'Fate is the Reason of the universe . . . and instead of Reason he uses "truth", "αἰτία", "nature", and "necessity", and adds other terms'. Here Chrysippus uses the word αἰτία at the (macro)cosmic level, where he considers it coextensive with λόγος. But here λόγος consists in pneuma (πνεῦμα), the active body which pervades the universe and everything in it. Αἰτία, therefore, refers to the same substance (pneuma) but from a different perspective than λόγος.[28]

Although this is said at a cosmic level (the cosmic-λόγος and the cosmic-αἰτία), it can be applied to individual cases of causation if we have in mind that every single body in the cosmos is mixed through and through with pneuma. Bobzien's suggestion is, then, to understand Chrysippus' αἰτία as referring to the portion of pneuma in a body that makes it the αἴτιον of a specific effect (as opposed to a portion of pneuma that makes something else). Identifying the αἰτία of the αἴτιον, then, is indispensable to understanding how the αἴτιον could produce its effect. The term αἰτία, in this interpretation, is the active element that moves a body to produce an effect. The relation between cosmic-αἰτία and individual αἰτία also explains why the Stoics think that all causes are interconnected.

Moreover, Bobzien's interpretation would mean that Chrysippus can offer a more nuanced description of the causal process. A causal account in the standard interpretation includes the cause, the effect, and the predicate that connects them. For example, 'The scalpel cut the flesh'. However, if we read the passage with Bobzien, we can explain that it is the pneuma – the air and fire tensed in a way that makes the scalpel sharp – what allows the scalpel to cut the flesh. This becomes even more important when describing human actions. A causal account of a prudent action will not only involve

a prudent person but also the reference to the person's active element in the soul, which, tensed in a certain way, allows her to produce a given effect. Chrysippus' analysis of causation, then, would have the same four elements than before, but in this interpretation three of them are corporeal and only the effect is incorporeal. Nothing prevents us, however, to say that a causal explanation using these elements will be a propositional item distinct from the effect, it is just that Chrysippus did not call it an αἰτία or refer to it in the surviving evidence. Whatever the case, Chrysippus' distinction between αἴτιον and αἰτία seems to disappear in later Stoic accounts.

Stoic Causes in Other Sources

Various sources report an account of the Stoic doctrine on causality, which seems to modify or develop from Chrysippus' version. We find this account, for example, in Sextus Empiricus:

> <The> Stoics say that every cause (αἴτιον) is a body which becomes the cause (αἴτιον) of something incorporeal for a body, for instance, a scalpel, a body, becomes the cause (αἴτιον) for the flesh, another body, of the incorporeal charge 'to be cut'. And in turn, a fire, a body, becomes the cause (αἴτιον) for the wood, another body, of the incorporeal charge 'to be set on fire'.[29]

According to Sextus, these Stoics explicitly establish that a cause has a double relation. One is the action performed by the cause, what we may call the effect, and the other is the body receiving the action. The account fits the original legal sense of the word αἴτιον (lit. 'the culprit'). We have a culprit, a charge, and a victim. The Stoics mark off the difference by saying that the cause is a cause *of* something (the effect) and *for* something (a body).[30] Thus the two examples in Sextus' report map out in the following way:

Culprit (body)	*Victim (body)*	*Charge (incorporeal)*[31]
Scalpel	Flesh	To be cut
Fire	Wood	To be set on fire

A body becomes a cause by acting on another body and thus producing an effect on that body. The cause is the agent in the causal relation.[32] The Stoic notion of cause, then, could be expressed as follows:

> *x* is a cause if *x* is a body, and *x* becomes the agent of an incorporeal *y*,[33] for a body *z*.

The sense in which a cause is a body, then, correspond to what the Stoics call the fourth genus of bodies, namely, a body relatively disposed: 'Well then, the cause, they say, belongs to what is relative; for it is a cause of something and <for something>, for instance, on the one side, the scalpel is the cause of something like the cutting, on the other side, [it is the cause] for something like the flesh'.[34]

The sources make two further annotations to the Stoic doctrine of causality. First, not every 'that because of which' (δι' ὅ) counts as a cause. This doctrine, then, either modifies Zeno's and Chrysippus' definition of cause, or it means that it was never intended as a definition. Clement's report explains the difference with an example about Medea's murder of his children: many things count as 'that because of which' Medea killed her sons, but only Medea caused their death since she was the agent of their death in a strict sense. Only she is responsible and guilty for the death of her sons, since someone else in the same situation but with a different character would have acted differently. So in a strict sense, a body causes something if the body actively produces the effect.[35] This distinction derives in the Stoic analysis of different types of causes, but I will get back to that in the next section.

The second thing to note is that the Stoics think that the passive body in the causal interaction needs to have certain fitness or aptitude (ἐπιτηδειότης) for the specific effect to take place.[36] The example they give to explain this is with fire and wood. If the wood is wet, the fire will not burn the wood (although it could make it fit for something else). The wood needs to be dry for the active capacity of the fire to burn the wood. But the fact that the passive body needs to be fit does not subtract any responsibility from the cause, nor does it make the passive body a cause in a strict sense (because it is not active). So when Clement reports that the scalpel is the cause to the flesh of being cut, and the flesh is the cause to the scalpel of cutting, the flesh is not the cause in an active strict sense, but only insofar as it is in a fit disposition to be cut. This means that the Stoic causation in Cement's report is triadic, and not, as Totschnig (2013, 122–123) suggests, tetradic.[37]

Types of Causes in Chrysippus and Other Reports

According to Cicero, Chrysippus distinguishes two types of causes (*causae*): the 'perfect and primary' (*perfectae et principales*), which are contemporary to their effects; and the 'auxiliary/accessory and proximate' (*adiuvantes et proximae*), which precede their effect.[38] The first type refers to cohesive causes that can fully determine their effect. The second type refers to antecedent causes that initiate movements or changes but are not sufficient to determine the effects in a causal process. The example in Cicero's report is that of pushing either a cylinder or a cone. The pushing is the proximate cause; the nature of the object – what determines if the object rotates in a straight line or circles – is the primary cause. If the effect is 'rotates in a circle', then

referring to the initial push does not point out the principal cause. For that, we need to refer to the nature of the cone. In turn, referring to the nature of cones can fully explain the effect in the sense that, if someone asks, 'Why does the cone rotate in a circle when I push it?', I only need to refer to the nature of the cone to fully explain the effect. I do not need to explain or add anything else. (I come back to this example in the next section.)[39]

The typology in Clement's report differs from that of Chrysippus', but at the same time, it seems a development from it. According to Clement, the Stoics distinguished between two main senses of the word cause. In a legitimate or proper (κυρίως) sense, a cause is a body whose activity produces an incorporeal for another body. This is called the sustaining (συνεκτικόν) cause. This type of cause is also described as perfect (αὐτοτελῆ), active (ποιητικός), and self-sufficient to produce its effect. The sustaining cause, then, corresponds to what Chrysippus calls 'primary' cause.[40] This is the sense in which only Medea is responsible for the killing of her children, even if many other factors lead to the killing. Her character explains why, given the circumstances, she became a child-murderer. The legitimate use of the term 'cause' signals who or what in the causal process is responsible for the effect. This is important in a moral or legal context because, no matter how complex the causal process is, it allows the Stoics to point out unambiguously who or what is to blame for each thing. Other elements may be part of the explanation of the causal process and might play a crucial part for one's understanding of *how* the cause produced its effect, but the legitimate cause will tell us who or what is to blame. To understand *why* a sustaining cause produces its effect, however, a better understanding of its nature will be needed.

In a looser or improper sense (καταχρηστικῶς), the Stoics recognise that other elements could also be called causes. Here the Stoics include what is 'preliminary' (προκαταρκτικόν), 'auxiliary/accessory' (συνεργόν), 'concause' (συναίτιον) for the effect, and the necessary conditions. Based on Clement's and Pseudo-Galen's report,[41] we have information about how the Stoics understood these other elements as causes in an improper sense. The texts focus on three of these elements: the preliminary, the auxiliary, and the concause.

A *preliminary* cause is that which, primarily, offers the starting point for the generation or destruction of something else. Thus it is antecedent to the effect, and, if once the effect has been produced it is eliminated, the effect remains. The preliminary cause, however, does not always generate its effect; it is a necessary condition, then, but not a sufficient one. An example is learning, where the father of the pupil is the preliminary cause of learning. In this case, it is clearer that, *ceteris paribus*, the father's death will not eliminate the pupil's learning. However, his fathering of the pupil is necessary for the pupil's existence and, thus, her learning. The example also clarifies that the preliminary cause should not be identified with the (Aristotelian) proximate cause. The father is not the most proximate cause of the pupil's learning but is qualitatively the most important.

An *auxiliary* cause is described as something that collaborates or aids the sustaining cause and makes a difference in terms of the intensity or power of the effect. By itself, however, it is incapable of producing the effect. The auxiliary cause, however, is similar to the sustaining cause in the sense that it needs to be contemporaneous with the effect to make a difference, and if it is eliminated, the added power or intensity disappears. Notice, however, that according to Cicero, Chrysippus considers the auxiliary αἴτιον an antecedent cause of the effect.

There are two different versions of the concause (συναίτιον). Both agree that this is an active cause that produces its effect in conjunction with another thing or things. This means that when all the concauses needed to produce the effect are present, there is no need for a sustaining cause. But in Clement's version, a concause is not self-sufficient to produce its effect without its partner and we learn that this type of cause is sometimes called reciprocal (ἀλλήλων).[42] The text offers the example of a teacher and a pupil who are reciprocal causes of the predicate 'making progress'. Without either the teacher or the pupil, the effect does not take place.

In Pseudo-Galen, however, we have a different version. There, a Stoic concause is capable of producing its effect by itself, just like a sustaining cause, but there is another concause which is also capable of producing the same effect, and if both are present, they are said to jointly produce the effect. Pseudo-Galen's version, then, is a case of over-determination. The example he gives is that of a stone in the bladder and inflammation as causes of retention of urine. These two things, he explains, can each alone cause retention of urine, but they can also both be present and be concause for the effect. Notice that this sense of concause assumes that an effect could have two completely different causes, something that is not assumed in the other senses of cause. In the following table I summarize this Stoic classification and characterization of causes:

Senses	*Type*	*Time in Relation to the Effect*	*Role Concerning the Effect*	*Necessity/ Sufficiency*[43]
Strict	Sustaining	Contemporaneous	Active	Not necessary, sufficient
Improper	Preliminary	Antecedent	Passive	Necessary, not sufficient
	Necessary conditions	Antecedent and/or contemporaneous	Passive	
	Auxiliary		Passive	Not necessary, not sufficient
	Concause (reciprocal)		Active or passive	Necessary, not sufficient
	Concause (overdetermination)			Not necessary, sufficient

According to this, a causal process involves some necessary and optional elements. Any causal process involves, necessarily four elements: (1) antecedent causes (necessary conditions, including one preliminary cause); (2) active cause(s) (either a sustaining self-sufficient cause or sufficient concause); (3) an incorporeal effect; (4) a patient(s) receiving the effect. Optionally, it can also involve (5) auxiliary causes (either antecedent, contemporaneous with the event, or both). But we have to remember that only the active causes track responsibility, namely the sustaining and the concause (reciprocal), and in the case of a concause the responsibility is shared between the participants. In terms of their formal properties, these causes have one difference. The active and preliminary causes seem to be intransitive, but the necessary conditions are transitive.

Fate and Moral Responsibility

Zeno and Chrysippus

The Stoics, at least from Chrysippus onwards, argue that there is an unalterable concatenation of causes that includes all events and states[44] in the cosmos – what they call fate (εἱμαρμένη). This thesis goes hand in hand with the Stoic idea that the cosmos is a living rational animal; for them, the cosmos is a continuous body whose parts *hold together*, and are directed by the cosmic pneuma which permeates everything.[45] But not only that, the Stoics establish two causal laws: (1) everything has a preliminary cause, and (2) all causal relations are necessary.[46] These two laws amount to a strong causal determinism. The Stoics, however, are also compatibilists.[47] They think that their determinism is compatible with moral responsibility. How many of these ideas are already present in the first generations of Stoics is difficult to know.

According to Hippolytus, Zeno (and Chrysippus) affirmed that 'everything is fated' (καθ᾽εἱμαρμένην εἶναι πάντα), and explained this by an analogy of a dog tied to a cart.[48] If the dog wants to follow the cart, its action coincides with necessity, but if it does not want to follow it, the cart will compel it anyway. And the same can be said of human beings. Even when they do not want to do something, they will be compelled to do what is destined.[49]

Long and Sedley (1987, vol. 1, 392–394) suggest that Zeno and the first generation of Stoics probably held a notion of fate closer to the traditional Greek version – where fate is predicated over big life-changing events – than the one developed by Chrysippus. So, even if Zeno claimed that everything is fated, he may have just meant that the external events in one's life are so, but not things like one's attitudes. The analogy of the dog and the cart, then, does not necessarily imply a deterministic position (if, for instance, the cart stands not for any possible event but only for those that are completely beyond the control of the dog). So even if all external events

are fated, agents may still have control over how to take those events, which could very well be the main point of the analogy.[50] Zeno, then, may not be committed to determinism. But he certainly does not deny it either, leaving the door open for Chrysippus' more explicit doctrine.

Zeno was, however, committed to the idea that fate is a concatenation of all the causes in the cosmos – an idea not necessarily implied in a traditional conception of fate. According to Eusebius, Zeno explained his doctrine of the eternal return in the following way:

> Then, [Zeno] also affirms that the whole cosmos is subject to conflagration (ἐκπυροῦσθαι) according to certain fated intervals, and then is again, reordered anew. Indeed, he says that the primary fire is exactly as a seed, which has (ἔχον) the λόγος of all things and the causes (τὰς αἰτίας) of what happened, what happens, and what will happen. And the concatenation and succession of these things is fate, knowledge, truth, and it is an inevitable and inescapable law of what exists. In this way, everything in the cosmos is excellently administered, as in a well-ordered city.[51]

Apart from the theses of the conflagration and eternal return,[52] there are four claims relevant for the Stoic doctrine of causality. The first one establishes an analogy between the primary fire and a seed. The primary fire is to the λόγος and causes of past, present, and future events of the cosmos, as the seed is to the leaves and branches of a full-grown plant. To spell out the analogy: a seed has (ἔχον) the information to generate all its leaves and branches and the causes of every state of development of a plant, in the same way the primary fire has the λόγος of all things and the causes of past, present, and future events.

Two features seem important about the use of the verb ἔχον. First, it is an organic, natural way of having something; and second, it is used in two senses. Seed and the primary fire – what Zeno calls λόγος[53] – have in actuality the information to generate their outcomes (leaves and branches, and each thing, respectively). In a potential sense, however, they *have* the causes: the seed and the fire will produce the causes over time (remember that something becomes the αἴτιον of an effect in a specific moment). We have to remember that the αἴτια are bodies. The analogy says that the primary fire already has the information to generate all things, and it has the natural capacity to produce all the causes of past, present, and future events; just as the seed has the information to generate all of its leaves and branches, and it has the natural capacity to produce all the causes of its events and states.

Zeno's second claim is that the λόγος and causes are concatenated and form a succession that he calls fate, knowledge, and truth. He calls it fate

since it determines past, present, and future events. He also calls it knowledge because by understanding the concatenation and succession one gets universal knowledge, and by the same token it is the source of truth. But this is only explained by a third claim. The concatenation and succession of causes are considered a law of nature with an inescapable and inevitable force. The necessity of fate is what makes it a source of knowledge, in the sense of secure, unalterable knowledge, and of necessary truth.

The last claim of the passage, which affirms that everything in the cosmos is excellently ordered, could make us think that Zeno is committed to causal determinism. But again, it is unclear what is the scope of πάντα, and how deterministic this law is. It may only order the cosmos at some general level, allowing certain indetermination as part of the general administration of the cosmos.

Chrysippus, however, defends a full-fledged and explicit causal determinism, which seems to build upon Zeno's doctrine. For Chrysippus, all things – all states and events – come about through fate by antecedent causes, which in his case are the auxiliary and precedent (preliminary) causes.[54] Following Zeno's notion very closely, for him fate is 'a certain natural everlasting organisation (σύνταξις) of the whole: some things follow on and destroy others, and the concatenation is unalterable'.[55] Fate is, then, the necessary concatenation of causes, the nexus and succession of all things and the causes of past, present, and future events.[56] By calling it a σύνταξις, Chrysippus seems to recognize that fate is not a linear concatenation of causes but a complex arrangement or composition.

According to Plutarch's report,[57] Chrysippus says that, although the preliminary cause is weaker than the perfect one (because it is not sufficient to bring about its effect), fate is an invincible (ἀνίκητον), unhindered (ἀκώλυτον), and inflexible (ἄτρεπτον) cause. This means that for Chrysippus, the organisation of antecedent causes as a whole is inescapable. This is explained by the thesis that every effect has a cause and every effect is necessitated by antecedent causes.[58] If there is a movement without antecedent cause, the whole cosmos would collapse,[59] so nothing is causeless[60] or in the positive; everything has an antecedent cause.[61] Note, however, that this is not to say that the chain of antecedent causes alone determines the effect *simpliciter*. What is determined is that if there is an antecedent cause, there is going to be *an* effect (otherwise the cause would not be an antecedent of anything). It is possible to infer this from the fact that cause and effect are two correlative terms. If there is one of them, that, by definition, implies the other. But the fate as the law of nature does not tell us what the effect would be, it only tells us that every effect has some antecedent cause. For Chrysippus, the preliminary cause is not sufficient to bring about the effect in the sense that it is not sufficient to bring about a specific effect. The specificity of the effect depends on the active cause. To know

what exactly the effect of a preliminary cause will be, we also need to know what the active cause at play is.

As we saw in the previous section, Chrysippus explains this with the famous example of the cylinder and the cone:[62] these objects cannot start moving by their own, since they need an external push. But once this happens, each object moves in virtue of its nature: the cylinder moves in a straight line whereas the cone moves in a circle. Therefore Chrysippus concludes, the external push gives these objects the beginning of their movement, their antecedent cause, but not their specific rolling capacity. The rolling capacity is the sustaining cause of the circular movement of the cone, and the straight movement of the cylinder. So the responsibility for the way they move lies in each body's specific nature (which in turn is specified by its portion of pneuma). Chrysippus uses this example to explain how humans are accountable for their actions. For him, we are not externally determined, even if our actions are a result of impressions since impressions are only the preliminary cause. It is a person's commanding faculty that determines whether she will assent or not to the impression (and more specifically, the disposition of the commanding faculty). And that, Chrysippus argues, is in the person's control. This, of course, does not contradict Chrysippus' deterministic commitments.[63]

According to Stoic psychology, to act, a person receives an impression from a body, which constitutes the preliminary cause of the action. But the impression requires an act of assent or dissent, which is entirely up to the agent. The assent is what leads to an impulse that has as an outcome an action.[64] The concatenation of preliminary causes and its necessity is never broken. It just includes the internal life of the person, which for the Stoics is, of course, something they explain in corporeal terms. The Stoics, in this way, can both maintain their causal determinism and claim that agents are responsible for their assents or dissents, and therefore, for their actions.[65]

Conclusions

The surviving evidence on early Stoicism allows us to distinguish at least three different theories of causation. As I have shown, Zeno's theory, although corporealist, looks structurally close to the safe and safest answers in Plato's *Phaedo*, and his examples remind us of the cross-examination of the materialists in the *Sophist*. Zeno distinguishes three different elements in the causal relation: causes, consequences, and affected bodies. An analysis of the examples in Stobaeus' summary shows that Zeno distinguishes two types of causal process. In one of them, a body causes a consequence in another body while blended with it. When a soul is mixed with an organic body, it causes the consequence 'being alive'. But in other

cases, the examples mention only one body. Prudence, which is the soul disposed in a certain way, causes the consequence 'being prudent' in the soul. A virtuous soul causes prudent actions and behaviour when it enters certain circumstances. Therefore causes in Zeno produce consequences not only in other bodies but also in themselves.

Chrysippus made slight changes in the terminology and distinguishes four elements in a causal process: causes, effects, affected bodies and αἰτίαι, which depending on the interpretation one chooses are either causal explanations or the portions of pneuma that played the active role in producing a given effect. He also distinguishes two types of causes. One of them is contemporaneous with the effect, capable of fully specifying the effect and tracking responsibility (perfect and primary). The other type of causes are antecedent and necessary for the effect but do not determine its content (auxiliary/accessory and proximate).

A third Stoic theory of causation makes explicit that causes hold a two-fold relation, one with the bodies affected and another with the effect they produce. Like Zeno's, this theory distinguishes three causal elements: causes, effects, and affected bodies. However, it recognizes other relevant elements in a full account of the causal process. First, it recognizes that the affected bodies require certain fitness or aptitude and distinguish between causes in a strict sense, namely the sustaining causes that track responsibility, and other causes used in an improper sense.

Finally, in the last section, I showed why it is difficult to establish if Zeno was committed to determinism. At the same time, Chrysippus' commitment to determinism and his interest in defending its compatibility with moral responsibility might have been the reason why the Stoic theories of causation developed into complex accounts and distinguished various types of causes.

My reconstruction, of course, inevitably leaves some loose ends. Perhaps the most puzzling is why the Stoics after Chrysippus did not use his distinction between αἰτία and αἴτιον, regardless of how we interpret it. A related question is whether we can date and attribute to someone the theory that we find in Clement, Pseudo-Galen, and Sextus Empiricus. Finally, we may wonder what, if any, other early Stoics contributed to this topic. For now, however, I leave these questions open.

Notes

1 This is the impression one might sometimes get from overviews on Stoic causation. See, for example, Hankinson (1998, 238–255) and Boeri and Salles (2014, 347–360). See also Meyer (2009). To be fair, though, part of the problem arises from the sheer lack of textual evidence and the need to summarize fragments from a wide variety of origins.

2 For an example see Gourinat (2018).

3 Other scholars distinguish between orthodox and unorthodox Stoic doctrines. See, for instance, Inwood (1985), Sellars (2006), and Meyer (2009). But, to my mind, that still risks sending the wrong message: that Stoicism is more like a closed and dogmatic ideology than a philosophical tradition.
4 See, for example, Vogt (2009) and Sedley (2007, 205–230).
5 See Vazquez Hernandez (2015).
6 See Seneca, *Ep*. 65.2.
7 The terms συμβεβηκός and κατηγόρημα are normally translated here as 'attribute' and 'predicate,' respectively. This helps understand how these terms are used in Stoic semantics. The Stoics' use of κατηγόρημα as 'predicate' is often traced back to Clinomachus of Thurium, a member of the dialectical school (see DL 2.112). Here, however, I translate these terms as 'consequence' and 'charge' (and later also 'accusation') to remind the reader that for the Stoics they also bring a causal component and have a juridical origin. What is important, though, is to know that συμβεβηκός refers to the result of a cause and κατηγόρημα to something ascribed to a body.
8 Note that prudence, soul, and moderation are bodies that produce (are the causes [αἴτια] of) the incorporeals 'being prudent', 'being alive', and 'being moderate', a predicate that takes place to another body (soul, human body, soul, respectively).
9 Add. Wachsmuth coll. 139.
10 In the codd. it says διατί. LS has διὰ τί ('why', 'because of which'). A reason to accept this suggestion is found in the discussion about incomplete *lekta* (sayables) in DL 7.63. However, here I follow Boeri and Salles, who accept Heeren proposal to read διά τι. What matters for the present discussion is that the expression refers to the effects of causes.
11 Stobaeus, *Eclogae* 1.138, 14–139, 8. Stoic fragments and testimonies taken from Arnim (1964), Long and Sedley (1987), or Boeri and Salles (2014).
12 See Gourinat (2009).
13 For a detail discussion of the impact Plato's *Cratylus* had on Stoicism see Ademollo (2011, 201–223).
14 'Then consider', he said, 'if the next point seems to you as it does to me. It appears to me that if anything is beautiful other than the Beautiful itself, it is beautiful on account of nothing other than its having a share of that Beautiful. And that is what I say about them all. Do you accept that sort of cause?' 'I do', he said. 'Well then,' he said, 'I no longer understand those other wise causes, and I can't recognise them either. Suppose someone tells me why something or other is beautiful, and says that it is because it has a vivid colour or shape, or some other such thing. I ignore those other explanations, because I am confused when they are all around me, and I keep the following at my side, in my straightforward, amateurish and perhaps simple-minded way: nothing makes it beautiful other than that Beautiful's presence, or association, or whatever its mode and means of accruing may be. For I don't go so far as to insist on this, but only that it is because of the beautiful that all beautiful things are beautiful. For I think that it is safest to give this reply both to myself and to another, and I believe that if I cling to this I could never fall, but that it is safe to reply both to myself and to anyone else that it is because of the beautiful that beautiful things come to be beautiful. Don't you think so too?' 'I do'. All translations from the *Phaedo* taken from Sedley and Long (2011).
15 'Eleatic Stranger [ES]: And they [the materialists] agree that a mortal animal is an ensouled body? Theaetetus [Th.]: Of course. ES: And so they're placing soul among the beings? Th.: Yes. ES: What then? Do they say that this soul is

just and that soul is unjust, and that this one's prudent and that one isn't? Th: Of course. ES: But isn't a soul just by the possession and presence of justice, and isn't another soul contrary to it by the possession and presence of the contrary? Th: Yes, they agree with that.' Transl. White (1997), with minor modifications. For another possible point of contact between the Stoics and the *Sophist*, in specific 261e–262a, see Gourniat (2018, 92). For the Stoic reception of Plato's *Sophist*, see Brunschwig (1988), Caston (1999), Vogt (2009), and Sellars (2010). But see also Vázquez (2018), where I explain that the dialectic in the gigantomachia passage is much more complex than these Stoic scholars will have us believe.

16 See Frede (1980, 222–223), Sedley (1998), and Vázquez (2020, 83).

17 This is no surprise, considering that Zeno studied in the Academy when Polemo was the head of the school. See DL 7.2, and Cicero, *Academica post*. 1.35. For Polemo's influence in Stoicism, see Sedley (2002).

18 See Cicero, *Acad*. 1.39.

19 See Hankinson (1998, 242).

20 For Zeno's definition of prudence, see Plutarch *VM* 440E–441D.

21 The Stoic engagement with the arguments in Plato's *Sophist* is well documented. See Brunschwig (1988), Caston (1999), and Vogt (2009). For a more cautious approach, see Sellars (2010).

22 'Then tell me again from the start', he said. 'And don't give as your answer whatever I say in my question, but follow my example. I say this because, besides that safe answer I gave at first, I see another kind of safety, thanks to what we are saying now. For if you were to ask me what it is that, when it comes to be present in anything's body, makes the thing hot, I will not give that safe, ignorant answer – namely that it is hotness – but, thanks to what we now say, a more ingenious one: that it is fire. And if you ask what it is that, when it comes to be present in any body, makes the body ill, I will not say that it is illness, but that it is fever. And if asked what it is that, when it comes to be present in any number, makes the number odd, I will not say that it is oddness, but that it is oneness, and so on for the rest. Well, see if you now understand well enough what I want.'

23 Clement's *Stom*. I p. 376 Pott; 97(3), 98(1–2). Transl. Ferguson (1991). The passage is attributed to Aristo by von Arnim and listed as *SVF* 1, 376.

24 Plutarch, *De virtute morali* 2 (440e–441d) = LS61B2–5 = SVF 1, 375. Trans. Long and Sedley (1987).

25 Chrysippus in fact understands συμβεβηκός, and κατηγόρημα in a specific way. See Stobaeus, *Eclogae* 1.106, 5–23.

26 M. Frede (1980, 222), Long and Sedley (1987, vol. 1, 333), and more recently Boeri and Salles (2014, 357–358).

27 To support the idea that an αἰτία is a propositional item, Frede (1980, 222) refers to a fragment of Diocles of Carystus (*ap*. Galen, *Alim. fac*. 1.1, K6, 455–6; fr. 112 Wellman) – a Greek physician who flourished about the same time as Aristotle– who uses ' "the account about the *aition*" interchangeably with "the *aitia*" in the sense of "the reason" or "the explanation." ' But as Bobzien (1999, 199) points out, this passage is 'insufficient to establish that *for Chrysippus* αἰτία was a propositional item or a kind of causal explanation.' The issue is not easily settled, though. Cicero seems to support Frede's interpretation when he writes, '*Ratio igitur eventus aperit causam*' (*De Fato* 37).

28 Bobzien also offers Seneca *Ep*. 65.2 as evidence for this view. A similar view was proposed by Mansfeld (1978).

29 Sextus Empiricus, *Math*. 9.211–212.

30 Clement preserves a similar version where a cause (αἴτιον) is 'of something' (the effect) and 'in relation with something' (a fitting body). Note, however, that a body can act in itself. See Clement *Stromata* 8.9, 25.1.1–27, 5.3; 32.1, quoted together in Boeri and Salles as text 14.11 (=SVF 2.334–351; LS55C-D, I; FDS 763–764, 766, 768–770). For convenience, in what follows I refer to this passage just as Clement's report. Clement's *Stromata* 8 is also available in a new edition and translation by Havrda (2017).
31 The Stoics disagreed about what exactly constituted the charge. Some of them talk about a predicate, others of a complete sayable, and some others about a name (the verb).
32 In Clement's report, this is expressed in different ways, terms and expressions: ἐνεργητικῶς; ἐν τῷ δρᾶν; ἐνεργοῦν; ποιητικόν; δραστήριον.
33 In Zeno's and Chrysippus' terminology this becomes '*x* becomes at some time t_1, the agent *by which* an incorporeal *y* is produced for a body *z*'.
34 Sextus Empiricus *Math*. 9.207–208.
35 See Boeri and Salles (2014, 350).
36 Sextus Empiricus *Math*. 9.237–245, and Clement's report.
37 See also Boeri and Salles (2014, 350–351) who point out to DL 7.63. For more criticisms to Totschnig's interpretation, see Gourinat (2018, 99–100).
38 See Cicero *Fat*. 41–45. See also Plutarch *SR* 1056C. These perfect and primary causes seem to correspond to συνεργά and προκαταρτικά. See Long and Sedley (1987, vol. 1, 342) and Frede (1980, 240–241). Plutarch seems to add that the perfect cause is stronger than the others, but it is not clear in which sense. See Plutarch *SR* 1056C.
39 For a slightly different interpretation see Bobzien (1999). She argues that Chrysippus never meant these distinctions as a technical taxonomy with mutually exclusive classes of causes. She argues that the main distinction is between causes of states and causes of changes. Causes of states are cohesive and perfect (self-sufficient in bringing about their effect), whereas causes of changes are never perfect and require two causal factors: one antecedent cause to get the change started, and the primary cause, which is the nature of the body which receives the action of the antecedent cause. However, this cannot be right because for Chrysippus every effect has a cause and every effect is necessitated by antecedent causes.
40 See also Boeri and Salles (2014, 352) who argue that with *principales* Cicero may be translating the Greek κυριώτατον, which refers to the αἴτιον in a strict sense.
41 Pseudo-Galen, *Introductio sive Medicu*s, 14.691, 13–692, 13.
42 Clement also reports that 'reciprocal cause' has also other senses. Cf. Clement's report.
43 I mean the normal contemporary sense of these terms. The Stoics have their own modal terminology, which differs from this one. See DL 7.75–76.
44 Here I agree with Salles (2005, 3–9), that for the Stoics events are reducible to states. For a different view see Bobzien (1998).
45 See DL 7.142–3; Sextus Empiricus, *Math*. 9.78–80. See also Hierocles, *Elementa Ethica*, 3.56–4.36.
46 For a detailed analysis see Salles (2005).
47 For the discussion on determinism and compatibilism, see Sorabji (1980), Botros (1985); Sharples (1986); Boeri (1997a, 1997b, 2000); Bobzien (1998, 2005); Salles (2005, 2007).
48 Cleanthes' hymn has also many lines where he assumes that fate is inescapable.

49 Hippolytus, *Ref*. 1.21.2. The authority of this report, however, is contested. Bobzien (1998, 345–357) argues that Hippolytus report has been overestimated in its value as a testimony for early Stoic determinism, and she argues that the analogy cannot be ascribed to Zeno or Chrysippus. See, however, Sharples (2006), and Boeri and Salles (2014, 703, 708). See also Cleanthes *ap*. Epictetus, *Ench*. 53; Seneca *Ep*. 107.11.
50 For the discussion in Chrysippus' case, see Bobzien (1998, 354) and Boeri and Salles (2014, 703).
51 Eusebius, *Praep. evang*. 15.14.2. Cf. Plato, *Republic* 508b6–8.
52 See Alexander Lycopolis 19, 2–4. See also Salles (2009).
53 It is also what contains the λόγοι σπερματικοί. See Aetius 1.7.33; DL 7.135–6. Cf. Eusebius, *Praep. evang*. 15.19.1–2.
54 See Cicero, *Fat*. 39–43.
55 Gellius 7.2.3.
56 See Aetius 1.28.4; Stobaeus, *Eclogae* 1.79.1–12; Cicero *On divination*, 1.125–6. See also Sauvé Meyer (2009).
57 Plutarch, *SR* 1056C.
58 See Plutarch, *SR* 1049F–1050B, 1056C, 1056D–E; Stobaeus, *Eclogae* 1.138, 14–139, 8; Sextus Empiricus, *Math*. 9.237–245; Galen, *Adv. Jul*. 18.279, 12–280, 4.
59 See Alexander, *Fat*. 191, 30–192, 14; Aristocles *apud* Eusebius, *Praep. Evang*. 1.5.14.2.
60 See Alexander, *Fat*. 191,30–192, 28.
61 This is based on the principle of bivalence: Simplicius, *In Cat*. 406, 34–407, 5; Cicero *Fat*. 20. Explicitly used to argue that everything has a cause: Cicero, *Fat*. 26.
62 Cicero, *Fat*. 39–43.
63 See Nemesius (*N* 105, 6–14; 106, 1–4, and 106, 10–11), and Alexander (181, 14–23). See also Salles (2005, 52–54, 74).
64 See Stobaeus, *Eclogae* 2.88, 8–99, 13. If the assent does not take place, like in the case of an involuntary reaction, there was no agency from the rational part of the soul, and therefore the person cannot be held responsible for the action. For my views on Stoic moral psychology, see Vázquez (2020).
65 See Clement, *Stromata* 1.17.82.1–6.

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11 The Scientific Epistemology of al-Naẓẓām

Michael Chase

The early Muʿtazilite theologian Abū Isḥāq Ibrāhīm al-Naẓẓām (ca. 760–ca. 845 CE) is usually neglected in histories of Islamic philosophy. This is a pity, for although he was later widely dismissed as a heretic, including by members of his own school, his thought is important in several ways. Although he was more of a theologian than a philosopher, he, like other representatives of the early Kalām, had a fully developed ontology, physics, and epistemology, which are interesting both in their own right and because such early Islamic philosophers as al-Kindī were, I believe, to some extent reacting to the debates within the Muʿtazila between Naẓẓām, his uncle Abū l-Huḏayl, and their predecessors and contemporaries. The circle of al-Kindī, in turn, was responsible for what is known as the *Neoplatonica arabica*,[1] those pseudonymous works such as the *Theology of Aristotle*, one of the most influential works of all of subsequent Islamic philosophy, and the *Liber de Causis*, which so strongly influenced medieval Latin thought, for instance in Albertus Magnus and Thomas Aquinas. The study of the thought of al-Naẓẓām, is, therefore, crucial for understanding medieval Arabic and Latin philosophy and theology. I do not believe this fact has been given the attention it deserves in the secondary literature.

Here I will restrict myself to examining a few aspects of Naẓẓām's thought on ontology and physics in order to see whether we can extract from the fragmentary remains of his writings some principles that characterize what I wish to call his scientific epistemology.

Naẓẓām on Latency and Manifestation (*al-kumūn wa l-ẓuhūr*)

The cornerstone of Naẓẓām's thought about the natural world is his doctrine of latency and manifestation (*al-kumūn wa l-ẓuhūr*). According to this theory, all things were first created, once and for all, by God, in a state of mutual interpenetration and total mixture (*mudāḫala*), out of which individual, identifiable persons, things, and events gradually emerged over time.[2] Adam and his descendants, for instance, were all created at

DOI: 10.4324/9781003306450-12

once, but the successive generations of these descendants emerged into a manifest state over the course of history. At the dawn of creation, God imprinted within each thing – within each of the four elements, for instance, but also within rocks and every other compound substance – its own nature (Arabic *ṭabʿ*, *ṭabīʿa*, *ḫilqa*),[3] such that phenomena in the natural world now occur in a lawlike manner, in accordance with that imprinted nature. Not even God, Naẓẓām seems to have claimed, can make a natural substance do something contrary to its nature.[4] Like the Presocratic philosopher Anaxagoras, from whom I believe he largely derived these ideas, probably by way of Porphyry's *Philosophical History*, Naẓẓām thus believes that the natural world functions according to laws of its own. Although God is the ultimate creator of the world and everything in it, there is no need to have recourse to Him to explain natural phenomena. Nature is autonomous, and we can infer the causes of its regular, lawlike behavior by observing its effects, forming hypotheses and, to a certain extent, confirming our hypotheses by experiment.[5] However, appearances can sometimes be deceiving: the truth about reality is often not evident from mere observation by the senses, but it may be necessary to make use of rational or analogical thought to infer the true nature of reality.[6] Here again, as in most other aspects of his philosophy, Naẓẓām remains faithful to Anaxagoras, who famously claimed that *opsis tôn adêlôn ta phainomena*: the phenomena, or the things that we perceive around us in the everyday world are an indication of that which cannot be seen (i.e., of true reality).[7]

To illustrate Naẓẓām's doctrine of latency and manifestation, let's consider what happens, according to him, in the process of burning. When a piece of wood catches fire, it is not that something extraneous happens to the wood, but that the fire already pre-contained in the wood in a hidden or latent state (*kumūn*) gradually becomes manifest (*ẓuhūr*). Under normal circumstances the wood, like everything else in the world, consists of a mixture of an indefinite number of properties in a state of mutual permeation or interpenetration (*mudāḫala*), such that the fiery components within it are balanced or held in check, not just by the contrary qualities it contains such as cold and wet, but by *all* its non-fiery components or ingredients.[8] Combustion takes place when the fiery components within the wood are activated or awakened by the approach of an external fire or by friction: thus fortified, these fiery ingredients become strong enough to overcome their impediments and emerge from latency into manifestation.[9] To burn a piece of wood, then, is not to impose or introduce fire into it from without, but merely to allow its inherent fiery components to emerge from their state of latency. Thus Naẓẓām's definition of combustion is "the manifestation of fire on the occasion of the withdrawal of its obstacles or impediments".[10]

Let's take another example, apparently just as simple but in reality extremely complex and controversial within Islamic thought. What happens when I throw a stone up in the air? Several later reports[11] give Naẓẓām's answer: man can produce motion only within himself.[12] In other words, human beings are directly responsible only for phenomena that take place within their own body. The basis of this idea is the religious belief that only God can create bodies, not man:[13] but according to Naẓẓām, all such things as colors, tastes, smells, hot and cold, noises and pains (i.e., what we would call secondary qualities) are bodies. This leads him to assert that "what occurs elsewhere than in the domain of man[14] is an act of God through necessitation by the nature of a thing".

This odd-sounding claim has led some, such as Daniel Gimaret, to speak of Naẓẓām's determinism, and to claim that for him, man has no actual influence (*aucune prise*) on reality. In fact, however, what Naẓẓām means is that at the dawn of creation, God instilled or imprinted within the stone, and within everything else in the world, a nature (*ḫilqa*) such that if a human being throws the stone, then it flies away from his hand, and describes a sloping curve through space: it rises when one throws it upwards, and falls toward the earth when one drops it. Naẓẓām's point is, I think, is something akin to what the Hellenistic Greco-Roman philosophers taught: the domain of man's direct responsibility (*to eph' hêmin*) extends only as far as the borders of his own body. Only our thoughts and actions are "up to us" in the strict sense of the term. My decision to throw a stone is entirely up to me, as is my action when I move my hand and arm in such a way as to throw it. What happens from then on, however, no longer depends on me, but is up to the "natures" God has instilled in things. In other words, I can initiate an act, but how that act actually unfolds (i.e., its results) depends on the lawlike behavior of Nature. If there is determinism or necessitation here, it is a necessity of a hypothetical kind: God has created each thing in the world to be endowed with a nature such that, if I do *x* to it, it will necessarily respond by doing *y*, and *z*, and so on. Thus if God can be said to be the cause of all acts in the natural world, He is so only by proxy or by secondary causation, insofar as He was the one who created the world to have the kind of natures it has. In the day-to-day functioning of the natural world, however, God no longer has to intervene directly. God, on this view, is almost analogous to a computer programmer. When He created the world, God supplied each thing in the world with a presumably infinite set of instructions: if *x* occurs, then do *y*; if *y* occurs, then do *z*; and so on. To this extent, it is true that the world is ruled by determinism: its behavior is lawlike, regular, and hence predictable. Note, however, that as in the likewise materialist doctrine of Greco-Roman Stoicism, there is space that is left for human free will on this view of reality:[15] although I am not directly responsible for what happens to the stone once it leaves my hand – that is not

"up to me", as the Stoics would say, but it depends on the natures God has instilled within things – I *am*, it seems, directly responsible for my decision to throw the stone and for my action in doing so.

The Proto-occasionalist Reaction

Let us compare and contrast Naẓẓām's views on these subjects with those of a thinker who was his contemporary, and perhaps his student, Ṣāliḥ Qubba (d. ca. 860 CE).[16] For Ṣāliḥ, when a person throws a stone, it is God who originates the stone's motion by creation *ex nihilo* (*ibtadaʾa*), just as it is God who causes wood to burn when it comes into contact with fire:[17]

> Ṣāliḥ Qubba taught as follows: man acts only in himself (*anna al-insān lā yafʿalu illā fī nafsihi*).[18] Whatever occurs on the occasion of his action (*mā ḥadaṯa inda fiʿlihī*), as a stone moves when it is pushed (*ka-ḏahāb al-ḥajar ʿinda al-dafʿa*), and firewood ignites when it is joined with fire (*wa-l-iḥtirāq al-ḥaṭab ʿinda mujāmaʿa al-nār*), or pain <becomes perceptible> on the occasion of a blow (*wa-l-alam ʿinda al-ḍarba*), God creates that (*fa-Allāh subhānahū al-ḫāliq la-hū*) and in this sense is its originator (*wa-ka-ḏālika al-mubtadiʾ la-hū*).

According to Ṣāliḥ, then, there is no necessary link between what we think is a cause and what we think is an effect, merely an arbitrary divine decision.[19] If God so chose, He could make a stone remain hovering in the air for an indefinite period of time, and bring it about that fire could be united with wood without any combustion taking place. Likewise, God could prevent us from seeing, even if our eyes were open and our eyesight was healthy.[20]

Similar views had been stated slightly earlier by Naẓẓām's uncle, the great Muʿtazilite Abū l-Huḏayl (d. 842 CE):

> <God could> maintain a heavy stone for many moments in the air (*fa-ammā al-jamʿ bayna al-ḥajar al-ṯaqīl wa l-jaww awqātan kaṯīratan*) . . . but could bring about rest (*bal yuḥdiṯu sukūnan*), or that He could bring together fire and cotton (*wa l-jamʿ bayna al-nār wa l-quṭn*), without bringing about combustion (*min ġayri an yuḥdiṯa iḥtirāqan*), but instead could bring about the contrary of that (*bal yuḥdiṯu ḍidd ḏālika*): this was allowed by Abū l-Huḏayl and Jubbāʾī and many <other> theologians (*fa-qad jawwaza ḏālika Abū l-Huḏayl wa al-Jubbāʾī wa-kaṯīr min ahl al-kalām*).

Like Ṣāliḥ Qubba, Abū l-Huḏayl also claimed God could keep a heavy stone hovering in the air for several moments, and could bring together

fire and cotton without there being any combustion (*min ġayri an yuḥdiṯa iḥtirāqan*).[21] Since, moreover, all perception is caused directly by God,[22] it could perfectly well happen that a person with healthy vision might open his eyes and yet still fail to see an object directly in front of him.[23]

These views of Abū l-Huḏayl and of Ṣāliḥ Qubba thus set the stage for the doctrine of al-Aš'arī (c. 874–936), for whom everything that happens is the result of a direct, free act of God:

> He (al-Aš'arī) said that all acts of coming-into-being are innovated by God – be He exalted – *in principio* and *ex nihilo*, without there being any reason that necessitates them or cause that generates them (*wa-kāna yaqūl inna al-ḥawādiṯ kullahā muḥtara'atun li-llāh ta'ālā ibtidā'an wa-ibtidā'an min ġayri sababin yūjibuhā wa-lā 'illatin tuwalliduhā*).[24]

Naẓẓām's Objections to Proto-occasionalism

Here again, as we see, the principles of causality and of the lawlike regularity of Nature's acts are done away with, in order to safeguard God's complete autonomy and omnipotence. This world view was anathema to Naẓẓām. Arguing against the similar view by the slightly earlier theologian Ḍirār ibn 'Amr (ca. 728–796 CE),[25] Naẓẓām does not mince his words:[26]

> He who claims that the confession of unicity (*al-tawḥīd*) is only in order if there is no blood in man, if fire does not necessitate burning (*wa-illā bi-anna takūna al-nāru lā tūjibu al-iḥrāqa*), and if healthy eyesight does not necessitate perception (*wa-al-baṣaru al-ṣaḥīḥu lā yūjibu al-idrāka*),[27] has indicated that he is in the utmost <state of> inadequacy and ignorance (*wa-qad dalla 'alā annahū fī ġāyat al-naqṣ wa-l-ġabāwa*), or the utmost denial and obstinacy (*aw fī ġāya al-takḏīb wa-l-mu'ānada*).

Much to Naẓẓām's disgust, Ḍirār ibn 'Amr, like Abū l-Huḏayl and Ṣāliḥ Qubba after him, had also denied that healthy eyesight, open eyes, and the presence of a visible object automatically entail that one will actually see that object. Ḍirār must have reasoned that God, in his omnipotence, can always intervene and prevent vision from taking place. The reference to the presence of blood in man is explained by what al-Jāḥiẓ, who transmits this fragment, says immediately before this text, where he reports that Naẓẓām had associated these views of Ḍirār with those of the heterodox thinker Jahm ibn Ṣafwān (d. ca. 746 CE):[28]

> Naẓẓām claims that Ḍirār b. 'Amr unites disbelief and obstinacy when he denies the doctrine of latency (*wa-kāna Abū Isḥāq ya'zumu anna Ḍirār ibn 'Amr qad jama'a fī inkārihi al-qawla bi-kumūni al-kafrata*

wa-l-muʿānadata), for Ḍirār had claimed that the confession of unicity was only valid if one denies latency at the same time (*li-annahū kāna yaʿzumu anna al-tawḥīda lā yaṣiḥḥu [illā] maʿa inkār al-kumūn*), and that the thesis of *kumūn* is only valid if there is blood within man (*wa-anna al-qawla bi-l-kumūn lā yaṣiḥḥu illā bi-an yakūn fī al-insām damun*). But this is only something that's created when one looks at it (*wa-innamā huwa šayʾun yuḫlaqu*[29] *ʿinda al-ruʾya*).[30] According to Naẓẓām, Ḍirār was perfectly aware that there must be blood inside man (*qāla wa-huwa qad kāna yaʿlamu yaqīnan anna jawfa al-insāni lā yaḫlū min dam*). He said: whoever claims some animal can live without blood or something similar to blood (*qāla: wa-man zaʿama anna šayʾan min al-ḥayawān yuʿīšu bi-ġayri al-dami aw šayʾin yušbihū al-dama*), is obliged to deny natures (*fa-wājibun ʿalayhi an yaqūla bi-inkār al-ṭabāʾiʿ*) and must reject realities (*wa yadfaʿa al-ḥaqāʾiq*), as Jahm did with regard to the heating power of fire and the cooling power of snow (*bi-qawlin Jahm fī tasḫīn al-nār wa-tabrīd al-ṯalj*), and with regard to perception and the senses (*wa-fī al-idrāk wa-l-ḥissi*), and food and poisoning (*wa-l-ġiḏāʾ wa-l-summi*).

This text is interesting in several respects. It shows that Naẓẓām was already reacting against opponents to whom he ascribed opinions very similar to those of Ṣāliḥ Qubba and Abū l-Huḏayl. He attributes these proto-occasionalist views to Ḍirār ibn Amr, active about a generation before him, and here we can catch a glimpse of what his opponents found objectionable about Naẓẓām's theory of *kumūn*. Ḍirār seems to have argued that this theory is incompatible with *tawḥīd*, the affirmation of divine unicity: if there are natural phenomena in the world that are autonomous – if Nature or natures can produce effects all by themselves, without direct divine intervention – then God has a competitor in the management of world affairs, which is not permissible. Naẓẓām, in turn, accuses Ḍirār of "denying natures and reality", and he means this literally: for Naẓẓām, his opponents' beliefs amount to denying the objective existence of reality.

Also interesting is the fact that Naẓẓām associates Ḍirār's views with those of Jahm ibn Ṣafwān,[31] the notorious Determinist who, in his concern to ensure God's absolute transcendence, had maintained that God, not man, is the author of all acts of will, decisions, and actions. For Jahm, God is the true author of all natural phenomena. When we say that a tree moves, that the celestial sphere rotates, or that the sun rises and sets, this is true only metaphorically (*ʿalā al-majāz*): in reality, it is God who causes all these phenomena.[32] The same holds true when we say that water flows or that a stone moves: all these acts are in fact created by God.[33] In Jahm's world view, where God is the only true agent, no one acts in the true sense of the word except God alone, and He is the Agent (*lā fiʿl li-aḥad fī*

al-ḥaqīqa illā Allāh waḥdahū wa-annahū huwa al-fāʿil).[34] Here again, there can be no room for any autonomy of nature.

Elsewhere, Naẓẓām argues against opponents who claimed that whenever change occurs in the sensible world and new phenomena appear, we have to do with an instance of coming-into-being following upon previous non-existence (i.e., *creatio ex nihilo*; in Arabic, *ḥudūṯ*).[35] Naẓẓām's opponents argued[36] that in the process of burning, fire and smoke are incipient (*ḥādiṯ*): that is, they come into being after not having existed. If they are consistent, Naẓẓām continues, they must claim that in the process of breadmaking, wheat is annihilated (*baṭala*) and flour comes into existence *ex nihilo* (*anna al-daqīqa ḥādiṯun*); that butter comes into existence (*ḥādiṯ*) when milk is churned; and that cheese likewise comes into existence (*ḥādiṯ*) out of milk. Similarly, they must hold that when a grain is split into two, two fully new halves come into existence while the original grain ceases to exist; and the same coming-into-being occurs at each stage in the cycle of transformations from food preparation to digestion and plant growth: when meal comes into existence from grain, dough from meal, bread from dough, excrement from bread, plants from excrement, and so on.[37] Although Naẓẓām does not name his adversaries here, they clearly include partisans of Ḍirār, whom, as we have seen, Naẓẓām accuses of maintaining that oil is created *ex nihilo* when an olive is pressed, and blood in human veins is likewise created instantaneously at the moment when the flesh is cut.[38]

When taken to its natural conclusion, Naẓẓām continues, his opponents' view leads them to a kind of radical solipsism. If what they say is true, there will be no continuity or persistence of identity of objects throughout change: a man who is sitting will not be the same as a man who is standing.[39] Perhaps most importantly, not only properties, but even such substances as the sun, the moon, and the stars, will not exist until and unless they are perceived:[40]

> Whoever denies this [sc. the doctrine of *kumūn*] must claim that there is no oil in the sesame, and no olive oil in the olive (*annahū yalzamu man ankara ḏālika an yazʿuma an laysa fī al-simsim duhnun wa-lā fī al-zaytūn zaytun*). He who says such a thing must also say there is no blood in the body (*wa-man qāla ḏālika lazimahū an yaqūla an laysa fī insān damun*), and that blood is first created by an incision, and that pus is first created in the wound (*wa-anna al-dama innamā yuḫlaqu <ʿinda l-šarṭ wa-anna al-ṣadīd innamā yuḫlaqu> ʿinda al-baṭṭ*) . . . he must hold that the blackness of a black cloak, the whiteness of snow, the redness of safflower, the yellow of gold, the green of plants are not brought into existence until man looks at them (*fa-yaʿzamu anna al-sawād al-sabbaj, wa-bayāḍa al-ṯalji, wa-ḥumrata al-ʿuṣfūr, wa-ṣufra al-ḏahab, wa-ḫudrata al-baql innamā yaḥduṯa ʿinda ruʿya al-insān <la-hū>*). . . .

> He said: If that Theologian reasons analogously . . . he enters into absurdities (*fa-qad daḥala fī bāb al-jahālāt*), and joins those who maintain there is no water in a vase, although they can tell by touch that it's heavy and full (*wa-laḥiqa bi-alladīna zaʿumū an al-qaraba laysa fī-hā māʾ, wa-in wajadūhā bi-l-lams ṯaqīlatan mazkūratan*), and that <this water> is only created when its strings are untied (*wa-innamā yuḫlaqu ʿinda ḥalli ribāṭihā*). They must therefore say the same thing about the sun, moon, stars, mountains, when they are concealed from their vision (*wa-kaḏālika fa-li-yaqūlūna fī al-šams wa-l-qamar, wa-l-kawākib wa-l-jabāl, iḏā ġābat ʿan abṣārihum*).

One is reminded of the debate in 20th-century science between Einstein and Bohr on the interpretation of quantum mechanics, with Naẓẓām representing Einsteinian realism. Abraham Pais reports that during one of their walks together, "Einstein suddenly stopped, turned to me and asked whether I really believed that the moon exists only when I look at it".[41] Einstein clearly intended this a rhetorical question: for him, there could be no doubt that the physical world exists as it is, regardless of whether someone is observing it or not. Consequently, any theory, such as the Copenhagen interpretation of quantum physics, which, in his view, cast doubt on the validity of this fundamental truth is to be rejected as false, or at the very least as incomplete.[42]

Naẓẓām thus adamantly rejects the world view of his opponents, which, he believes, amounts to a kind of capricious occasionalism and subjectivism. If God can create anything He wants, whenever He wants, out of whatever He wants,[43] then this amounts, as Naẓẓām complains repeatedly, to "abolishing nature and realities". Farmers are wasting their time when they carefully prepare their soil, choose and care for their seeds, and select the most propitious time for sowing them, if it is God who ultimately, and for reasons we cannot know, decides whether a crop will be abundant or not. If anything can come from anything – if, for instance, God could create fire just as well when a person rubs two pieces of talc together as when he rubs two sticks together[44] – then there can be no lawlike regularity or predictability in natural phenomena. The world will be a chaotic, unpredictable place, where anything can happen, and there will be no point in investigating nature, since it obeys no laws. Clearly, there can be no place for science, as we know it in the contemporary West, in such a world view.

Naẓẓām will have none of this. According to him, as we have seen, natural phenomena develop in a regular, predictable, lawlike manner, in accordance with the "nature" (Arabic *ṭabʿ*, *ṭabīʿa*, *ḫilqa*) which God instilled within them in pre-eternity. This is why, as we have seen, it is impossible for a substance to produce any effect that is not within the nature of its action; even God cannot make a thing do something contrary to its nature.

For Naẓẓām, then, the world is an orderly, predictable place. God, after having initially created the world, subsequently leaves its day-to-day functioning to the Natures He has instilled within each thing. This allows for, and indeed encourages, curiosity about the natural world, which is to be investigated by procedures we would acknowledge as at least the precursors of science. In this respect as well, Naẓẓām's attitude is comparable, *ceteris paribus*, to that of Anaxagoras, by whom he seems to have been deeply inspired.

Naẓẓām and Induction

If one had to select one key principle underlying Naẓẓam's scientific methodology, it might be the following: each class of natural phenomena has its characteristic effect.[45] This principle enables the inference of the nature of a cause from its effects:[46]

> a difference in effects indicates a difference in substances (*wa-innamā yadullu ʿalā iḫtilāfi al-jawāhiri iḫtilāfu al-aʿmāl*). Hence, through difference or agreement in the effects, you come to know the difference or agreement of bodies (*fa-bi-iḫtilāfi al-aʿmāli wa-ittifāqihā taʿrifu iḫtilāfa al-ajsām wa-ittifāqahā*).

The idea that the same causes always – or at least for the most part – produce the same effects is an indispensable theoretical justification for induction: given the repeated occurrence of the same effects, we are entitled to infer that the same, or at least a similar, cause is probably responsible for them.[47] Here, it seems to me, the foundation stone is laid for what we would call a scientific methodology.

Naẓẓām as a Precursor to Experimental Science

Although more than a millennium separates Naẓẓām from the Greek Presocratic philosopher Anaxagoras, both thinkers were fundamentally motivated by the belief that, at least in the everyday world of physical, phenomenal reality, nothing comes from nothing.[48] In addition, both thinkers seem to have wished to adopt a physics and an ontology that would allow for the possibility of what we could describe, at the risk of anachronism, as a "scientific" world view. For both, the phenomenal world, ruled by natural processes, is characterized by lawlike regularity and predictability: no divinity intervenes in its day-to-day workings. We know that Anaxagoras' fields of interest included what we would now call geology and meteorology:[49] he had views on the nature and causes of earthquakes, thunder and lightning, moonlight, and even embryology.[50] According to tradition,

his understanding of the workings of natural phenomena was said to have granted him astonishing powers of prediction: thus, he was said to have predicted the eclipse of 467 BCE and the fall of a meteorite at Aegospotami in around the same year.[51]

What one might describe as Anaxagoras' proto-scientific outlook can be illustrated by an anecdote recounted by Plutarch.[52] A one-horned ram was once brought before Pericles, and this portent was interpreted by a soothsayer as foretelling political developments. Anaxagoras, unimpressed, "had the skull cut open and showed that the brain had not completely filled its place but was drawn together in a point like an egg in the very spot in the entire cavity where the root of the horn had its origin".[53]

Although we have little evidence of any activity by al-Naẓẓām that we would recognize as "scientific" in the modern sense of the term, he too was interested in the explanation of natural phenomena, as can be seen throughout the texts in Van Ess' collection of fragments. Naẓẓām is aware, for instance,[54] that if the sun appears whitish-yellow at midday and reddish at sunset, this is not due to any change in the sun, but because in the evenings vapor (*al-baḫār*) and dust (*al-ġubār*) are interposed between the sun and an observer on earth.[55] This shows that Naẓẓām is perfectly aware that some changes in certain observable phenomena are due, not to any change in their objective, physical state, but to our perceptual apparatus. The stage is set for the so-called Copernican revolution, which presupposes the realization that what seems obvious to our senses – the fact that the sun resolves around the earth, for instance – does not necessarily correspond to reality, but is an artifact of our perception.[56] That Naẓẓām's fundamental approach was similar in spirit to that of Anaxagoras is suggested by an anecdote recounted by his student Jāḥiẓ.[57] Naẓẓām was present at a scholarly get-together at which his host – for reasons that are not transmitted – gave red-hot coals to an ostrich, which swallowed them without any apparent ill effects. Naẓẓām explained that coals are naturally easy to extinguish, and encouraged his host to give the unfortunate ostrich heated stones: it wolfed down three of them, and seemed to be no worse for wear. Evincing little concern for animal rights, Naẓẓām then convinced his host to heat pieces of iron in the fire and give them to the ostrich: he did so, and the ostrich promptly swallowed them as well. Naẓẓām's intent was, he said, to wait a couple of days until the ostrich had had time to digest, then kill it and examine its stomach to verify that, as he assumed, the ostrich would not have been able to digest the iron.[58]

Despite the cruelty involved in this abortive experiment, we can recognize in it the same proto-scientific empiricism that seems to have characterized Anaxagoras: rather that accepting legendary traditions, both men sought to verify a striking natural phenomenon through empirical means, and provide a scientific explanation for them. The kind of scientific world

view to which both philosophers adhered was perhaps more congruent with the Newtonian paradigm of science that reigned uncontested from, say, the time of Descartes until the late 20th century, but is now proving inadequate on scales of the very large and the very small: there seems to be no room, in the thought of either philosopher, for phenomena now explained by theories of chaos, emergence, and complexity. Yet it was this Newtonian world view that allowed many of the scientific and technological developments which, for better and/or for worse, made the world what it is today, and that is one reason why I believe the continued study of Anaxagoras, Naẓẓām, and his extraordinarily complex intellectual environment may prove to be highly rewarding.

Conclusion

Against the views of many of his predecessors, contemporaries, and successors, then, Naẓẓām denies that the phenomena of change we see around us in the natural world are to be explained by God's constant intervention and re-creation. Instead, Nature – or at least the God-created natures within things – is autonomous, regular, and henceforth largely predictable.

Unlike nature according to Naẓẓām, the history of philosophical and theological speculation – unfortunately for us historians of thought – seldom unfolds in a linear, law-abiding and predictable way. Nevertheless, to generalize very roughly and approximately, we can distinguish two very different strands in Islamic thought about the autonomy of nature.

One such current seems to begin with Jahm ibn Ṣafwān and Ḍirār, continuing through Abū l-Huḏayl and Ṣāliḥ Qubba, and culminating in al-Aš'arī, and later, of course, al-Ġazālī. On this view, nature has no autonomy and is not an independent source of causality. All phenomena in the natural world are caused directly by God.

Another current of thought is represented by thinkers such as Mu'ammar, Naẓẓām, Jāḥiẓ, and al-Ka'bī. On this view, nature, although created by God, is autonomous in the sense that natural processes and phenomena unfold in a lawlike, predictable manner on the basis of the natures God has instilled in things at the dawn of creation.

If there is any truth to this interpretive approach, it may be fruitful, following but expanding the intuitions of Peter Adamson, among others, to study the repercussions of this contrast *within the Mu'tazila* on subsequent Islamic philosophy, beginning with the circle of al-Kindī and the *Neoplatonica Arabica*. Rather than being simply a more or less orthodox Mu'tazilite, as Adamson suggests, was Kindī a Jahmite?[59] Was his doctrine of *ibdā'*, or instantaneous creation *ex nihilo*, partly inspired by this anti-autonomist tradition, particularly in the form it assumed in the thought of Abū al-Huḏayl? Can some aspects, at least, of Kindī's thought

be understood as a reaction to Naẓẓām's doctrine of *kumūn* and the resulting belief in the autonomy of Nature? Further studies will be needed to confirm or deny this hypothesis, which for the moment is hardly more than an impressionistic suggestion.

Notes

1 The literature on these words is vast. For initial orientations see, for instance, Chase (2021, 2023).
2 Naẓẓām, fr. 122 Van Ess = al-Ḫayyāṭ, *Intiṣār* 51, 17ff. Nyberg.
3 On the concept of nature in Naẓẓām, cf. Van Ess, *ThG*, III, 341.
4 Naẓẓām, fr. 116 Van Ess = al-Ḫayyāṭ, *Intiṣār* 47, 9ff: *annahū muḥāl an yaʿmala al-jawhar mā laysa fī ṭibāʿati ʿamalihi*.
5 Cf. Paret (1939). Van Ess, *ThG*, III, 308 is more hesitant: Naẓẓām may have sought to confirm some of his "exciting intuitions" (*zündenden Einfalls*) by experiment, but he did not confirm them by systematic repetition.
6 Van Ess *ThG* III, 335.
7 On this Anaxagorean principle, see Lloyd (1966, 338–341, 353–355).
8 Van Ess, *ThG* III, 366.
9 Van Ess 1967.
10 Naẓẓām, fr. 58 Van Ess = Jāḥiẓ, *Ḥayawān* V, 21, 7: *wa-l-iḥtirāq innamā huwa ẓuhūr al-nār ʿinda zawāl māniʿhā faqaṭ*. Burning is the reduction of a thing to its original elements (Van Ess 1967, 250).
11 Naẓẓām, fr. 152 Van Ess = Aš'arī, *Maqālāt* 403, 13ff. Parallel passages include ʿAbd al-Jabbār, *Muġnī* IX 11, 19–21; Šahrastānī, *Awsaṭ* § 144; Baġdādi, *Uṣūl* 139, 1–5.
12 Naẓẓām, fr. 152 Van Ess = Aš'arī, *Maqālāt* 403, 13ff: There is no human act other than motion (*lā fiʿla al-insān illā al-ḥaraka*), and he produces motion only in himself (*wa-annahū lā yafʿalu al-ḥarakata illā fī nafsihī*). By motion, Naẓẓām here means such acts of the human cognitive and motor system as knowledge, ignorance, speech, and silence, as well as prayer, fasting, and other religious duties. Elsewhere (fr. 21 Van Ess = Aš'arī, *Maqālāt* 324,12ff.) we read that Naẓẓām divided motion into two classes: motion as change of place (*ḥaraka nuqlatin*) and motion as force (*ḥaraka iʿtimādin*). It would seem, therefore, that knowledge, ignorance, speech, silence, as well as prayer, fasting, and other religious duties must come under the heading of motion by *iʿtimād*. On this notion in Naẓẓām, cf. Van Ess, *ThG*, III, 327–321.
13 A widespread view in the early Kalām, held for instance by Abū l-Huḏayl and Bišr ibn al-Muʿtamir, cf. Van Ess, *ThG*, III, p. 1187; V, XXI, Text 139–140.
14 *Mā ḥadaṯa fī ġayri ḥayyiz al-insān fa-huwa fiʿl Allāh subḥanahū bi-ījāb ḫilqa li-l-šayʾ*. Things that occur within the realm or domain of man are the so-called generated actions (*mutawallidāt*). On this doctrine of *tawallud* or *tawlīd* – all terms that derive from the Arabic root *w-l-d*, "to beget, generate, procreate" – cf. Van Ess, *ThG*, III, 116–121; Gimaret (1980, 25ff).
15 *Iḫtiyār*; cf. Gimaret 1980, 27.
16 On Ṣāliḥ, cf. Van Ess, *ThG*, III, 422ff.
17 Van Ess, *ThG,* VI, Text XXIII, 9 = Aš'arī, *Maqālāt*, 406, 6–8. Cf. Gimaret 1980, 26.
18 Compare Naẓẓām, Text XXII, 152 Van Ess, cited *supra*.
19 Gimaret (1980, 26).

20 Gimaret (1990, 26, n. 10).
21 Abū l-Huḏayl, Text 77 Van Ess = Aš'arī, *Maq*., 312, 10ff.
22 It is brought about by *iḫtirā'*; cf. Abū l-Huḏayl, Text 145 Van Ess = Qāḍī 'Abd al-Jabbār, *Muġnī* IX, 12, 13ff.
23 Van Ess, *ThG* III, 250, citing Abū l-Huḏayl, Text 145, b–c; 77, b.
24 Ibn Fūrak, *Mujarrad maqālāt al-Šayḫ Abī al-Ḥasan al-Aš'arī*, p. 121, 7–8; see Gimaret (1990, 404f).
25 On Ḍirār, see for instance Chase 2022.
26 Naẓẓām, Text 50 Van Ess = Jāḥiẓ, *Ḥayawān* V, 10, 2ff.
27 Cf. Ibn Sīnā, *Kitāb al-Šifā', al-Nafs*, III, 5, p. 123, 17–19 ed. Rahman: "We believe that when the air is transparent in act, and colors are colors in act, and sight is in good health, nothing else is requisite for vision to take place (*wa-ba'da ḏālika naẓunnu anna al-hawā' iḏā kāna šafāfan bi-l-fi'li wa-kānat al-alwān alwānan bi-l-fi'li wa-kāna al-baṣar salīman lam yataj ilā wujūd šay'in āḫar fī ḥuṣūl al-ibṣār*).
28 Jahm ibn Ṣafwān Fr. 50 = Jāḥiẓ, *Ḥayawān*, V, 10, 2ff.
29 *Yuḫlaqu* Van Ess: *taḫallaqa* Hārūn.
30 On this doctrine, cf. Ḍirār, Text 6 Van Ess = Ibn Ḥazm, *Fiṣal* IV 195, 12ff.: *wa-lā fī al-zaytūn zayt, wa-lā fī al-'urūq damm . . . kulluhā innamā yaḫluquhā Allāhu 'azza wa-jalla inda al-qaṭ' wa l-ḏawq wa l-'aṣr wa l-lams*. Van Ess assumes that Ibn Ḥazm derives his information from Jāḥiẓ here.
31 On Jahm, see for instance Chase 2022, 49–51.
32 Jahm, Text 6 Van Ess = Aš'arī, *Maq*., 279, 3ff. See Schöck (2004, 82f).
33 Al-Šahrastānī, *Milal*, p. 61 Cureton.
34 Aš'arī, *Maq*., 279, 3ff. This is the view of al-Kindī as well; see his *Treatise on the true, first and perfect agent, and on the deficient agent who an agent metaphorically* (*Risāla al-Kindī fī al-fā'il al-ḥaqq al-awwal al-tāmm wa-l-fā'il al-nāqiṣ allaḏī huwa bi-l-majāz*, ed. Jolivet-Rashed 1998, vol. II, p. 169–171. This literal parallel with Jahm (*bi-l-majāz*) seems to make Kindī's dependence on Jahm clear, although Van Ess (*ThG* II, p. 498) suggests the term may have been introduced by Aš'arī. *Pace* Frank 1965, 406, however, this parallel does not show that Jahm was a Neoplatonist – the parallel Frank alleges with Plotinus' view of the One as *dunamis pantôn* (*Ennead* 5.1.7.9) seems quite irrelevant, and Jahm's rigid determinism and predestinationism is utterly incompatible with Neoplatonism – but merely that, at least in this sense, Kindī is a Jahmian. Oddly, Peter Adamson makes no reference to Jahm in this context, either in his 2007 monograph on Kindī or in his 2012 translation, written with Peter Pormann, of Kindī's *Risāla*.
35 In the language of the *Kalām*, the word *ḥudūṯ* denotes the fact that a thing exists after not having existed, cf. Anawati (1986).
36 Naẓẓām, fr. 51 Van Ess = Jāḥiẓ, *Ḥayawān* V, 11, 8ff.
37 Ibid., where the doctrine of coming-into-being at each stage is attributed to Naẓẓam's contemporary Abū l-Jahja, on whom cf. Van Ess, *ThG*, III, 62ff.
38 Naẓẓām, fr. 49 Van Ess = Jāḥiẓ, *Ḥayawān*, V, 7, 10ff; fr. 50 = *Ḥayawān* V, 10, 2ff. A similar doctrine is attributed to Šu'ayb Ibn Zurāra (fl. ca. 833–842 CE; cf. Van Ess, *ThG*, III, p. 62). Cf. Ibn Mattawayh, *Taḏkira* 302, 9ff. "It was said of Šu'ayb Ibn Zurāra and a class of a few *Mutakallimūn* that they do not acknowledge the existence of heat in fire (*annahum lam yuṯbitū fī al-nār ḥarārata*), or of oil in an olive (*wa-lā fī al-zaytūn zaytun*), and <they claim> that fire comes into existence when we come close to it (*wa-anna al-ḥarāra taḥduṯu 'inda qurbnā minhā*), and oil comes into existence when it is pressed (*wa l-zaytu yaḥdaṯu 'inda al-'aṣr*)".

39 Naẓẓām, fr. 51 Van Ess = Jāḥiẓ, *Ḥayawān*, V, 11, 8ff.
40 Naẓẓām, fr. 49 Van Ess = Jāḥiẓ, *Ḥayawān*, V, 7, 10ff.
41 A. Pais, "Einstein and the Quantum Theory", Reviews of Modern Physics 51.4 (1979), 863–914, at p. 907. According to P. Jordan, an influential defender of the Copenhagen interpretation, "we ourselves produce the results of measurement" (Wir selber rufen die Tatbestände hervor), a position which M. Jammer (1974, 162) described as "an absolute renunciation of any realistic conception of nature".
42 The eminent physicist Bernard D'Espagnat enumerated nine varieties of realism, in which he distinguishes "*réalisme einsteinien*" from "*réalisme objectiviste*" (D'Espagnat 2002, 34–35). Both varieties share the two fundamental postulates of realism: (1) the notion of the existence of a reality per se, conceived as completely independent of our possibilities of coming to know it; and (2) the postulate that we have access to this reality, "at least in the sense that we can 'say something about it' " (ibid., p. 31).
43 Van Ess, *ThG* VI, 64. Compare Simplicius' interpretation (*In Phys*., 174, 24–26) of Anaxagoras: "Thus, *it is not the case that anything can derive from anything else*, nor can flesh or a brain arise out of water. Thus, Anaxagoras with escape all the objections raised against him" (*ὥστε οὐ τὰ τυχόντα ἀπὸ τῶν τυχόντων*, οὐδὲ ἐξ ὕδατος σὰρξ ἢ ἐγκέφαλος. καὶ οὕτως πάντα τὰ ἐπαχθέντα ἐγκλήματα διαφεύξεται Ἀναξαγόρας).
44 Naẓẓām, fr. 77 Van Ess = Jāḥiẓ, *Ḥayawān* V, 92, 2ff. Talc was notoriously non-flammable; cf. *Ġayāt al-ḥākim*, Faṣl 12, p. 282, 10 Ritter.
45 Naẓẓām (fr. 60 Van Ess = Jāḥiẓ, *Ḥayawān* V, 36, 10ff.) takes this principle so far that he denies that heating can cause water to evaporate: heat can cause only what is similar to it, namely heat, not dryness.
46 Naẓẓām, fr. 70 Van Ess = Jāḥiẓ, *Ḥayawān* V, 56, 14–15ff.
47 Induction from effect to cause is known as *analusis* in the Greek philosophical tradition; *resolutio* in Latin; *taḥlīl* in Arabic; see Chase (2015).
48 See already Horten (1909, 775). As a Muslim, Naẓẓām allowed for one exception to this axiom: God's one-time creation of the universe. But even here, there was a similarity to Anaxagoras, whom some Pagan Greeks treated as a creationist. Compare Anaxagoras, Diels-Kranz A64 = Simplicius, *In Ph*., p. 154, 29 Diels: "Anaxagoras said the universe came into existence all at once" (τὸν Ἀναξαγόραν λέγειν ἅπαξ γενόμενον τὸν κόσμον), with Porphyry, *Philosophical History* apud Šahrastānī (reporting on Anaxagoras), *Milal*, vol. II, p. 258, 12: "There was only one creation (*wa-innamā al-ibdāʿ wāḥid*)". This will have been an essential point for Naẓẓām, making him, even more than most other Presocratics, an ideal candidate for integration into a Muslim world view. Elsewhere, of course (*In Phys*., vol. X, p. 1121, 21f.), Simplicius qualifies his assertion: although Anaxagoras, like other Presocratics, seems to grant a temporal beginning to the universe, in fact he did so for teaching purposes only.
49 Gregory (2013, 167–168).
50 Curd (2019, §4.2); cf. Guthrie (1965, 304–318). On Anaxagorean astronomy, cf. Graham (2013a, 2013b).
51 Anaxagoras, fr. A12 D.-K. = P7 L.-M. = Plutarch, *Lysis*, 12. Pliny was sceptical of the story, cf. fr. A11, p. 9, 20–24 D.-K. (omitted by L.-M.); Curd (2007, 209–210).
52 On this anecdote, cf. Gregory (2013, 168–170).
53 Anaxagoras, fr. A16 D.-K.= Plutarch, *Pericles* 6, cited in the translation by McKirahan (2010, 197–198).
54 Naẓẓām, fr. 73 Van Ess = Jāḥiẓ, *Ḥayawān* V, 60, 12–13.

55 This is approximately correct, according to modern science: smoke and dust tend to block out photons at the blue end of the spectrum, allowing mainly the longer-wavelength red light to reach the observer's eyes.
56 We find a similar reversal of perspectives in Porphyry, *Commentary on the Parmenides*, III, vol. II, p. 72, 14ff. Hadot (1968): there is no real sunset, because this alleged "sunset" is a darkening of the light, but the sun is never darkened. Hence, what we call "sunset" is merely an affection of those who are on earth (*legoi an orthôs pathê<ma> legôn tôn epi tês gês tên dusin ibid*., lines 19–20).
57 Al-Jāḥiẓ, *Ḥayawān*, vol. IV, p. 102–106; studied by Paret (1939).
58 Naẓẓām's scientific intentions were foiled by one of the other guests, who gave the ostrich a red-hot knife to eat. The knife, predictably enough, got stuck in the ostrich's gullet, piercing its throat, and killing it.
59 In a passage of the *Theology of Aristotle* (p. 62, 4–5 Badawi, a work commissioned and edited by Kindī), which has no correspondence in Plotinus' Greek, we read "As to the first agent, He makes things without attribute, for there is no attribute within him at all". The denial of divine attributes was one of Jahm's most infamous theses. It reappears in the thought of Sijistānī, as cited by al-Tawḥīdī, *al-Muqābasāt*, 82, p. 289, 1–5 ed. al-Sanḏūbī, who defines *tawḥīd* as rejection of all attributes from the First Essence (*wa-nafā ʿanhū jamīʿ al-ṣifāt . . . ayy tajrīd tilka al-ḏāt ʿan jamīʿ al-kaṯirāt allatī tataʿallaqu ʿalā al-ḏawāt wa-tuḥīṭu bi-hā min al-ṣifāt*). The context of this passage of *Muqābasāt* is clearly Neoplatonic and probably Porphyrian. It is this same work by al-Tawḥīdī that preserves one of two versions known to me of the seldom-studied *Treatise on the soul* (*Maqāla fī-l-nafs*), attributed to Porphyry. Unlike the passages cited from Miskawayh, the *Treatise on the soul* was included, in a rather deficient English translation, in Andrew Smith's Teubner edition of the Fragments of Porphyry (fragment 436F, pp. 503–507); see Chase (in press).

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12 Recovering Causality? Ibn Taymiyya on the Creation of the World

Luis Xavier López-Farjeat

Most philosophical and theological conceptions of causality (*taʿlīl*) within the Islamic context are inevitably related to the issue of the creation of the world, a topic that has received much attention in the scholarly literature. In Arabic there are several terms for 'creation', each with its own nuanced meaning. The term *ḥudūth* indicates that something new has come into being in time; *khalq*, the term most commonly used in the Qurʾān, refers to creating from some material, for instance, clay, water, or smoke; *ibdāʿ* means the absolute creation of heaven and earth. This terminological distinction is important for understanding the different conceptions of creation among theologians (*mutakallimūn*) and philosophers (*falāsifa*). Most *mutakallimūn* defended *ḥudūth* or *creatio ex nihilo*, whereas philosophers tended to argue for an eternal creation and frequently used the term *ibdāʿ* – a notable exception being al-Kindī (d. 873). Given the enormous amount of literature that exists on the Islamic debate on causality, creation, and the nature of God as creator, here I do not intend to reconstruct in detail the arguments of Ibn Sīnā (Avicenna/d. 1037), al-Ghazālī (d. 1111), Ibn Rushd (Averroes/d. 1098), or Fakhr al-Dīn al-Rāzī (d. 1209). Nevertheless, I shall briefly revisit some of their views by way of introduction to the discussion I want to undertake, namely, the recovery of causality in the 14th-century religious thinker Ibn Taymiyya (d. 1328).

Ibn Taymiyya was a fierce opponent of both philosophy (*falsafa*) and theology (*kalām*). His aim was to revive traditional Islam, returning to the *salaf*, that is, the teachings of the earliest Muslims. Thus for Ibn Taymiyya, *falsafa* and *kalām* were two innovative disciplines that encroached upon traditional views of religion. Now, one would expect that someone engaged in reviving traditional Islam would advocate a temporal creation out of nothing. However, Ibn Taymiyya opposed both the *kalāmic* notion of temporal creation out of nothing and Avicenna's conception of eternal emanation. While Ibn Taymiyya had plenty of disagreements with the philosophers, he endorsed perpetual creation, an idea already found in both Avicenna and Averroes, according to which God perpetually creates

DOI: 10.4324/9781003306450-13

everything from eternity.[1] My aim in this chapter is to discuss to what extent Ibn Taymiyya takes up perpetual creation as understood by Averroes. While there are clear parallelisms between these two thinkers, I shall argue that Ibn Taymiyya breaks away from the Aristotelian/Averroist notion of causality – a relevant nuance if we want to delve into the similarities between two apparently antagonistic Muslim thinkers.

In the first section, I briefly review Avicenna's notion of causality and its relation to creation. Then in the second section, I summarize al-Ghazālī's criticism of Avicenna's philosophical notion of causality. In the third section, I present Averroes' recovery of the Aristotelian notion of causality in his response to both al-Ghazālī's work *The Incoherence of the Philosophers* (*Tahāfut al-Falāsifa*) and to Avicenna's Neoplatonic teaching on causality. But outside the philosophical context, it is striking that Ibn Taymiyya, who is usually identified as a radical anti-philosophical intellectual, could be interpreted as recovering a philosophical notion of causality after al-Ghazālī's criticism. Thus in the fourth and final section, I discuss Ibn Taymiyya's understanding of perpetual creation and his views on causality.

As is expected from a Muslim intellectual, Ibn Taymiyya deals with the subject of creation in many of his writings, but he does so primarily in two main works, *An Abridged Path of the Sunna of the Prophet* (*Minhāj al-sunna al-Nabawīya*) and *The Refutation of the Contradiction of Reason and Revelation* (*Darʾ taʿārud al ʿaql wa al-naql*).[2] Both are very long works edited in several volumes, and although several scholars have made relevant partial editions of these works among others, there is still much work to be done.[3] Given the limited scope of the present discussion, however, I have decided to go the minimalist route and focus on a much shorter, lesser-known treatise devoted specifically to creation, namely, the *Commentary to the ḥadīth of ʿImrān Ibn al-Ḥuṣayn* (*Sharḥ ḥadīth ʿImrān Ibn al-Ḥuṣayn*), whose aim is to clarify through 15 aspects the Islamic notion of creation.[4] In my view, this treatise contains valuable insights for the present discussion; however, I will also make a few references to other treatises where he reiterates his views.

Ibn Sīnā/Avicenna on Causality

Avicenna's conception of 'causality' is drawn mainly from Aristotle, Neoplatonic sources,[5] and late ancient commentators of Aristotle's *Physics* and *Metaphysics*. From Aristotle, Avicenna took the characterization of the four causes as an essential doctrine for understanding the natural world and the motion of the heavens. As is well-known, in *Physics* 2.3, Aristotle explains four ways in which the term 'cause' (Greek: *aitia*; Arabic: *ʿilla*) is used: (1) that out of which a thing comes to be and which persists; (2) the form or archetype that determines the essence of a thing; (3) the primary

source of change and rest; and (4) the end or that for the sake of which a thing is done. These four causes are respectively known as the material, formal, efficient, and final cause. Although Avicenna inherited this understanding of the four causes, he transformed Aristotle's understanding of causes, assimilating the Neoplatonic notion of primary causality, which was essential for arguing for the existence of a First Cause (*al-ʿilla al-ūlā*), responsible for the origin or creation of being.

In *Physics* 1.10[6] and *Metaphysics* 6.1[7] of his monumental work *The Healing*, Avicenna enumerates the same four causes as Aristotle. In *Physics* 1.2, Avicenna explains, following Aristotle's hylomorphism, that form and matter are inseparable intrinsic principles of natural bodies.[8] The formal cause is understood as the part of a subsisting thing whereby a thing is *what* it is in actuality; the material cause is defined as the part of a subsisting thing through which a thing is what it is in potency. In *Metaphysics* 2.4 and *Physics* 1.2, Avicenna points out that the relationship between matter and form is a causal one: form is the cause of matter acting in the compound but is not the cause of the existence of matter. The formal and material causes are different because matter is the cause of potentiality and receptive to the form, while the form is responsible for actuality. Matter is the cause of change and privation. While matter is receptive in character, the form must be prior because it is the cause of matter being something specific, not merely formless matter. Thus a piece of marble is the material cause of a sculpture, but what makes it a sculpture is its formal cause.

Avicenna understands the final cause as the purpose or the sake of which the existence of something has been realized. For Avicenna, God does not act solely as efficient cause but also as final cause.[9] Although the efficient and final causes are distinct, there is a connection between them: the final cause is prior to the efficient cause in terms of essence, but the efficient cause is prior to the final cause in terms of existence.[10] Avicenna's distinction between essence and existence is relevant even for establishing the connection between causes. The view that essence precedes existence means the final cause comes before the other causes, including efficient causality.

The efficient cause is that which brings about the existence of something that is essentially other than itself.[11] While Avicenna seems to define efficient cause in Aristotelian terms, in *Metaphysics* 6.1 he moves beyond Aristotle and argues that the 'efficient cause' should not be only understood as the principle of motion – which is how the naturalists understand it – but also as "the principle that gives existence, as in the case of God with respect to the world" (2005, 195). While indeed in his *Physics* Avicenna limits his explanation of the efficient cause to motion, that is, to the transition from potency into act (2009, 64), in his *Metaphysics* the efficient cause is understood as the cause of existence (*wujūd*). In fact, in his commentary on book *Lambda* of Aristotle's *Metaphysics*, he explicitly criticizes Aristotle's

commentators for only having mentioned that Aristotle had established God as the cause of motion and not as the principle of existence (Avicenna 2014, 48–51).

Avicenna's conception of efficient causality is aimed at showing that God is the primary or First Cause of the existence of the world. Consequently, in a Neoplatonic vein, in *Metaphysics* 9.3–5 Avicenna explains the origination of the world through an eternal emanation according to which a first intellect emanates from God. This first intellect mediately causes everything below it by knowing itself as necessary through another, as a possibility by itself, and by knowing the being from which it proceeds. When it knows itself as necessary by another, that is, by the First Cause, it generates the soul of the first sphere; next, when it knows itself as a possibility, the result is the body of the first sphere; and finally, when it knows the Necessary Being through which it proceeds, it generates a second intellect, from which in turn proceed a third intellect, its soul, and its body. All further emanations proceed according to this same process: from each intellect, another intellect emanates along with its own soul and body. The tenth and last link of the process is what Avicenna calls the agent intellect, from which the sublunary world proceeds.

According to Avicenna, God generates (*muḥdath*) the world through these ten emanative mediations. The First Cause, namely, God or the Necessary Being, gives existence to the world, to what he calls in *Metaphysics* 6.1 'possible beings', through the secondary or intermediate causes. Avicenna calls this process "absolute creation" (*ibdāʿ*), referring to a metaphysical, not a temporal, origin of the world.[12] In Avicenna's own words, absolute creation is "an act of bringing into existence that absolutely prevents nonexistence in things that bear perpetualness" (2005, 272). Creation takes place for Avicenna in the order of being. This means that while the world as a possible being has always existed, in itself it is non-existent because its being depends absolutely on God's action (2005, 198–199). Since God is eternal, his action must be eternal and, thus, God and the world are co-eternal. Put simply, creation is an eternal process through which the existence of possible beings is produced, a process that makes all possible beings ontologically dependent upon God. Although God is the Primary Cause, between God and creatures there is a multiplicity of efficient causes and effects.

Al-Ghazālī's Reaction to Avicenna

As is well-known, in his *Incoherence of the Philosophers* al-Ghazālī refutes several of al-Fārābī's and Avicenna's philosophical doctrines, among them the way in which both of these thinkers explain causality in relation to the origin of the world. Throughout the treatise, al-Ghazālī argues that God is

the sole agent who creates the world, thus targeting the role of causality as understood by philosophers. He places God's divine power to create above any necessary connection between cause and effect in natural events.[13] In the first two discussions of the *Incoherence*, al-Ghazālī refutes the views of the philosophers regarding the pre-eternity and post-eternity of the world, respectively. In the first discussion he argues that, although God's will to create is pre-eternal and has therefore always existed, God has chosen a specific moment to create the world. In approximately 40 pages al-Ghazālī sets up the refutation of the pre-eternity of the world providing arguments for temporal creation, for instance:

> The world [is such] that it is eternally possible for it to be temporally originated. No doubt, then, that there is no [single] moment of time but wherein its creation could not but be conceived; but, if it is supposed to exist eternally, then it would not be temporally originated. The factual, then, would not be in conformity with possibility, but contrary to it. This is similar to what you [philosophers] say about place – namely, that supposing it [to be] larger than it is or [that] creating a body above the world is possible, and likewise another on top of the latter, and so on ad infinitum. Thus, there is no limit to the possibility of increase. Despite this, the existence of filled space which is absolute, having no limit, is impossible. Similarly, an existence whose [temporal] end [in the past] is not finite is not possible. Rather, just as it is said that the possible is a body whose surface is finite, but whose measures in terms of largeness and smallness are not specified, so, too, [it is] for that whose creation in time is possible. The beginnings of existence are not specified with respect to priority and posteriority, but [it is only] the principle of being temporally created that is specified. For [the temporally created world alone] is the possible – no other.
>
> (al-Ghazālī 2000, 40)

The *Incoherence* is not the only writing where al-Ghazālī treats causality and the creation of the world; he deals with these matters, for instance, in *Moderation in Belief* (*al-Iqtiṣād fī al-Iʿtiqād*) and in his monumental work *The Revival of the Religious Sciences* (*Iḥyāʾ ʿulūm al-dīn*), just to mention two relevant works. The most common arguments by al-Ghazālī in all these works are very similar to the best known argument formulated by the late ancient Christian philosopher John Philoponus (d. ca. 570), the author of two treatises against the arguments of Proclus and Aristotle for the eternity of the world.[14] For Philoponus it is necessary for the world to have had a beginning in time because, as Aristotle himself argues in *Physics* 3.5, 204b5–204b6–10 and 8.5, 256a5ff, there cannot be infinite bodies, whether intelligible or sensible, and it is impossible to conceive an infinite

chain of past events. Put simply, the world cannot exist from eternity, as Aristotle thought, because he himself argues that an infinite chain of previous transformations or events would be impossible. In the same vein, al-Ghazālī argues that if the cause of the world were something that takes place in time, then we would need an infinite chain of causes; given that an infinite regress is not possible and it is even absurd, as Aristotle holds, we must arrive at something that is "anteriorly eternal," that is, something that is not preceded by nonexistence, and this is what is called "the Maker of the world" (al-Ghazālī 2013, 41 [1.2]).

The well-known conception of God as Maker or Creator of the world implies, for al-Ghazālī, not only giving existence to the world but also the capacity to act constantly within it. And this is what we can see in the famous 17th discussion of the *Incoherence*, perhaps one of the most commented passages of al-Ghazālī's works.[15] There he explains that fire is not the efficient cause of combustion. According to al-Ghazālī, fire itself is unable to burn unless an external cause, namely, God, intervenes in the process. Thus the true cause of combustion is God, and He can even prevent fire from burning. Evidently, the true cause of all natural processes for al-Ghazālī can only be God. It has been amply debated in the scholarly literature whether this implies an absolute rejection of natural causality or al-Ghazālī is rather arguing that causal processes cannot take place without divine agency.[16] Regardless of this debate, what is clear is that in the *Incoherence* he argues against Aristotle's views on causality. There, he thinks that assuming that there is intrinsic natural causality makes nature an independent agent, thereby limiting God's omnipotence. In the third discussion, he argues that the notion of 'agent' should not be identified with the notion of natural efficient cause, as philosophers have done.[17] Properly understood, a true agent acts according to its own will and is aware of its own actions and its consequences, according to al-Ghazālī.[18] Nature is unaware of its own actions and its consequences, so it cannot act unless an external agent, namely God, intervenes. Any form of causality, whether natural or even human free will, would conflict with divine omnipotence – a divine attribute very much present in the Qurʾān. God is responsible for all natural processes, and in the case of human beings, he is responsible for both human actions and the power to act.

We thus see that, for al-Ghazālī, nature cannot act on its own; rather, it needs a creator (*ṣāniʿ*) and an agent (*fāʿil*). It is one thing to claim that the world depends on an agent – as al-Ghazālī thinks philosophers claim – and another to say that this agent created the world. Avicenna does not deny that the world needs an agent; rather, he argues that the world has had an agent from eternity and that this agent acts through secondary or intermediate causes. Al-Ghazālī holds that God can act directly in the world and, if there are secondary causes, they absolutely depend on God

and He could intervene in them so that the natural causal processes could take place in a different way than they usually do. Although Avicenna and al-Ghazālī agree that God, the agent, is eternal, the disagreement hinges on al-Ghazālī's stance that the *world* is not eternal but had a beginning in time.

Averroes' Reaction to al-Ghazālī

In *The Incoherence of the Incoherence*, Averroes discusses both the arguments of al-Fārābī and Avicenna for the eternity of the world and al-Ghazālī's objections against them. In this dialectical treatise Averroes draws heavily on his commentaries on Aristotle's works, especially on *Physics* and *Metaphysics*, where he presents his definitive position on this and other matters. Hence, before moving on to *The Incoherence* it is worth briefly reviewing Averroes' arguments in his commentaries and the way he argues in which sense God is the final cause of everything that exists. In general terms, Averroes rejects Avicenna's Neoplatonic emanative cosmological model, and following Aristotle he argues for the existence of separate intellects that are moved by their desire for the prime mover, namely, God. Those intellects, in turn, move the celestial spheres, which in turn trigger the process of generation and corruption in the sublunary world; the celestial spheres are thus the efficient cause of sublunary entities.[19] Therefore a crucial difference between Avicenna and Averroes is that for the latter God is the First Cause or First Principle of motion, and not the *efficient* cause of forms or essences.

In the *Long Commentary on Physics* 8.1, Averroes formulates the succession argument, according to which before any motion there must be a previous motion, a change, or a mover (Averroes 1962, 338–340, 2020, 1–11). Inspired by Aristotle, Averroes argues that if the world had a beginning in time, this would imply that at some point the first mover was at rest, and then he started to move; if this were the case, it would be necessary to postulate a previous motion that caused the motion of the mover. And therefore, Averroes holds that given that it is impossible to accept an infinite regression, the only possible explanation for the motion of the universe would be eternal or continuous motion. In other words, motion has neither beginning nor end. And the same happens with time, which is not identical with motion but it is closely related to it. Without motion, as Aristotle himself argued, time would be imperceptible. In his commentary on *Physics* 8.4, Averroes argues that if motion is continuous and time is the measure of motion, then time is also continuous and it is not possible to postulate that the world had a beginning in time (1962, 346–347, 2020, 30–36). Now, since only physical bodies undergo motion, it follows that the prime matter from which these bodies are composed has always existed.

In his *Long Commentary on the Metaphysics* (*Tafsīr mā baʿd al-ṭabīʾa*), Averroes argues that God does not produce matter out of nothing (as al-Ghazālī and other *mutakallimūn* held), nor does he produce the forms or essences that exist in matter (as al-Fārābī and Ibn Sīnā thought). Rather, God continuously actualizes matter, bringing it from potency into act.[20] This actualization is what Averroes conceives as creation (*al-ikhtirā'*). Prime matter contains forms potentially within itself, and the actualization of these forms gives rise to composite bodies through an external agent, God. Like al-Ghazālī and Avicenna, Averroes accepts that God 'creates' the world. However, his understanding of 'creation' is different, given that for Averroes God's action consists in causing the union of matter and form, and this takes place through the perpetual motion of the celestial spheres. It is in this sense that God is the formal and final cause of the world.

Averroes identifies God as First Principle with Aristotle's unmoved mover, that is, an immaterial intellect that is always in actuality. God's eternal and continuous action causes first the motion of the first heaven or sphere of the fixed stars, and subsequently the rest of the celestial spheres. Like Aristotle, Averroes conceives that the first moved mover, the first heaven, is moved through its desire of the First Principle. The celestial spheres are simple, animate, eternal, and incorruptible, and they perpetually move in a circular motion, which is the only kind of continuous, eternal motion. The continuous motion of the celestial spheres – eight in number for Averroes – is the cause of natural processes in the sublunary world. The first material bodies that arise from the actualization of prime matter are the four elements. All other composite bodies are constituted by the mixture of the four elements and are matter-form composites. In sum, while God is the formal and final cause of the celestial motion, the celestial spheres are the efficient cause of the sublunary world. This means that God causes the world only indirectly. To explain how God causes the motion of the celestial spheres, Averroes introduces the existence of separate intellects that are below God but are co-eternal with God and responsible of the motion of the celestial spheres.[21]

Averroes' explanation of the motion of celestial spheres in association with the separate intellects is not entirely Aristotelian and is perhaps one of the most difficult issues in Averroes' philosophy, since it involves not only cosmological but also psychological explanations. To posit the existence of immaterial sperate intellects that are co-eternal with God is of course problematic since Averroes, unlike Aristotle, needs to explain God's supremacy as First Cause and, therefore, the difference between God and the other intellects. And Averroes' response could be puzzling since he holds that what makes them different is that the immaterial intellects have some sort of potency. At the risk of simplifying Averroes' sophisticated account of how there can be any potency in an immaterial intellect, it is necessary to

consider the explanation he provides in book 3 of his *Long Commentary on the De anima* (2009). There, Averroes explains that the separate intellects engage in self-thinking activity like God; and yet, unlike God, when they think about themselves, they also become aware of something external to them, namely, God. This accounts for the element of potency in the separate intellects: their intellectual activity is not exclusively directed toward themselves but toward something external and higher. This understanding of separate immaterial intellects has been amply discussed in the literature (Taylor 2011; Ogden 2022). However, for our purposes here suffice it to say that Averroes' aim is to ensure that God is the First or Primary Cause, and the final cause of motion. As he puts it in *The Incoherence*, "all the existents seek their end by their movement towards Him, and his movement by which they seek their end is the movement for the sake of which they are created" (Averroes 2008, 138).

When formulating arguments against al-Ghazālī's views in *The Incoherence of the Incoherence*, Averroes receives his inspiration from Aristotle. For instance, Averroes argues for the necessity of a substratum of change, namely prime matter;[22] he also argues that prime matter needs to be actualized and this actualization must come from an Artisan, namely, God. And, indeed, given that God is eternal, the effect of His creating act, that is, the world, must be eternal too. The world, thus, is eternal as it is related to God but not in itself (Averroes 2008, 37–63). This means that the world has been created from eternity through a continuous or perpetual process with no beginning or end, in which God creates all beings from a preexisting prime matter. In Averroes' own words:

> God never ceases to have power for action, and that it is impossible that anything should prevent His act from being eternally connected with His existence; and perhaps the opposite of this statement indicates the impossibility better still, namely, that He should have no power at one time, but power at another, and that He could be called powerful only at definite limited times, although He is an eternal and perpetual being. (2008, 100)

This argument leaves out the possibility that God did not exercise his creative power at some point.

The discussion on the eternity of the world reappears in one of Averroes' best-known works, a juridical book known as the *Decisive Treatise* (*Faṣl al-maqāl*). There, Averroes explains that the Ashʿarite *mutakallimūn* and Greek philosophers agree regarding three sorts of existing things. (1) The first kind of thing exists from something other than itself, namely, from an efficient cause and from matter, and is preceded by time; for example, the generation of water, air, earth, animals, and plants. The Greeks and the

Ashʿarites agree in calling these beings "generated" (*muḥdata*). (2) The second kind of thing is the extreme opposite, that is, a being that has not come into existence from something else or by something, and it is not preceded by time; again, both groups agree in calling this being "eternal" (*qadīm*), and this being is God, the Agent that has given existence to the universe. (3) The third kind of being is between the two other extremes, and it is a being that has not come into existence from something and is not preceded by time but comes into existence from an agent; and this is the world as a whole (Averroes 2001, 14–15). According to Averroes, the only disagreement between the two groups regarding this third kind of being has to do with past time and past existence: the *mutakallimūn* are of the opinion that the world has a limit, that is, it has a beginning. Averroes identifies the opinion of the *mutakallimūn* with Plato; the opposite doctrine, namely, the pre-eternity of the world, is Aristotelian.

Averroes confirms his Aristotelian views when distinguishing between the literal and apparent senses of the Law (2001, 16–17). There, he refers to Qurʾān 11:7 ("And He is the one Who created the heavens and the earth in six days, and His throne was on the water"), a passage that suggests the existence of the throne and water before any other existent and, thus, a time before the creation. Averroes explains that the time before creation is precisely the perpetual motion of the celestial spheres. He concludes, thus, that "generated" and "eternity" are not opposite terms. For Averroes, in its literal sense, this Qurʾānic passage stands for the same position supported by philosophy, that is, a perpetual creation from eternity from pre-existing matter.

So far, three different positions are involved in the Islamic debate on the origin of the world. (1) Avicenna argues for an eternal emanation understood as a perpetual process in which God is efficient and final cause acting through secondary or intermediate causes. (2) Al-Ghazālī and other *mutakallimūn* argue for temporal creation out of nothing, considering God as the sole Agent that originates the world. For al-Ghazālī, God is responsible for every occurrence in the world, and He freely decides when to create the world from absolutely nothing. (3) Finally, Averroes argues against al-Ghazālī's position. He agrees with Avicenna that the eternal action of God implies that its effect, that is the world, must also be eternal. Yet, he rejects Avicenna's Neoplatonic emanationist model and takes up Aristotle's philosophy of nature, concluding that the world has emerged from a perpetual process triggered by God as final cause.

Ibn Taymiyya's Reaction to the Debate on the Origin of the World

Ibn Taymiyya obviously knew in detail the discussion between philosophers and the *mutakallimūn* regarding the origin of the world. In fact,

as I mentioned in the introduction, he dealt with this matter in several writings. Among them, there is a short treatise in which he focuses on the correct teachings of the Islamic sources in this regard. As the title indicates, in the *Commentary to the ḥadīth of ʿImrān Ibn al-Ḥuṣayn*, Ibn Taymiyya scrutinizes and interprets a ḥadīth of ʿImrān Ibn al-Ḥuṣayn, included in Bukhārī's collection. The ḥadīth reproduces a passage mentioned previously, Qurʾān 11:7: "There was Allah and nothing else before Him and His Throne was over the water, and He then created the Heavens and the Earth and wrote everything in the Book." Ibn Taymiyya refers to several versions of the ḥadīth: " 'God was, and there was nothing before Him (*qablahu*)' – and in one wording, 'with Him' (*maʿahu*), and in another wording, 'other than Him (*ghayruhu*)' – 'And His Throne was on the water. And He wrote everything in the Reminder. And He created the heavens and the earth' – and in another wording, 'Then, He created the heavens and the earth' " (Ibn Taymiyya 2004, 300).

Evidently, the ḥadīth is referring to the origin of the world. In the previous sections we have discussed three positions in this regard. A fourth position can be added, namely, that of Fakhr al-Dīn al-Rāzī, a thinker who thoroughly examined the views of both, the *mutakallimūn* and the philosophers, and considered that the Qurʾān does not support either the *kalāmic* conception of creation out of nothing or the philosophical doctrine of the eternity of the world. However, according to Ibn Taymiyya, Fakhr al-Dīn was confused and remained hesitant regarding both of these positions. Indeed, Fakhr al-Dīn deals with the doctrine of the origin of the world in several works, such as for instance his *Great Commentary on the Qurʾān* (*Tafsīr al-Kabīr*)[23] or the *Sublime Issues* (*al-Maṭālib al-ʿāliyya*).[24] While he finds inconsistencies in both the *kalāmic* and the philosophical arguments, he thinks the *mutakallimūn* and the philosophers interpreted the Qurʾān metaphorically, holding legitimate positions whose consistency is open for debate. However, unlike Ibn Taymiyya, Fakhr al-Dīn keeps both positions as possibilities. For this reason, Ibn Taymiyya finds Fakhr al-Dīn's position (Ibn Taymiyya 2004, 314) to be guilty of indefiniteness. Thus throughout his treatise, Ibn Taymiyya provides several critical arguments to show that the *mutakallimūn* and the philosophers corrupt the Islamic doctrine on the origin of the world.

In a similar vein as scholars like al-Alousī (1968) and Hoover (2004), my view is that although Ibn Taymiyya was not a philosopher, his discussion of the creation of the world when interpreting the ḥadīth starts as an exegetical approach and gradually takes a philosophical turn. Therefore his position can be incorporated into the Islamic philosophical-theological debate. As I mentioned at the beginning, my approach to Ibn Taymiyya is focused on the role he gives to causality and to what extent he is influenced by Averroes. The similarities between these two thinkers have been noticed

by several scholars, among them ʿAbd al-Majīd Ṣaghīr (1985), who points especially to the idea of a perpetual creation from eternity. While I agree with Ṣaghīr's views, I think there are also some subtle differences between these two thinkers. I think it is important to heed Hoover's warning that the intellectual influence of Averroes on Ibn Taymiyya needs further research. Ben Ahmed (2019) has successfully shown that Ibn Taymiyya was acquainted with several of Averroes' works, which in fact shaped his thought in many respects. Among other treatises, Ben Ahmed presents textual evidence from those treatises that Ibn Taymiyya knew. Indeed, in several of them Averroes deals with the subject of the creation of the world, debating with al-Ghazālī and other *mutakallimūn*. As I have shown in the previous section, Averroes discussed this matter in the *Decisive Treatise*, *The Incoherence of the Incoherence*, and in another important work, *Unveiling Methods of Proof of the Beliefs of the Religious Community* (*Kashfʿal manāhij al-adilla fī ʿaqāʾid al-milla*).

Although Ibn Taymiyya criticizes Averroes in several places, he also holds him in high esteem and, as Ben Ahmed points out, he considers him one of the most skillful philosophers. While Ben Ahmed and Hoover are among those scholars who have emphasized the positive use that Ibn Taymiyya would have made of Averroes' philosophy, in a very recent article Jules Janssens (2023) has argued that this use was in function of Ibn Taymiyya's personal agenda and often involved disregarding the context of Averroes' affirmations. Evidently, Ibn Taymiyya's use of Averroes is also a matter of controversy. Independently of the scholarly debate, what is certain is that Ibn Taymiyya studied Averroes' works and used them in his own writings, in some cases explicitly and in others implicitly.

The *Commentary to the ḥadīth of ʿImrān Ibn al-Ḥuṣayn* is one of those treatises where we detect an implicit use of Averroes. Averroes is not mentioned within this work; but as Hoover (2022, 97–98) has pointed out, the parallels with Averroes are striking: both thinkers quote the same Qurʾānic passages (Qurʾān 11:7, 41:11), and their notions of perpetual creation seem to be very close to each other. Like Averroes, Ibn Taymiyya affirms that both the ḥadīth and some Qurʾānic passages literally say that the throne and the water already existed before God created the world. I mentioned earlier that in the *Decisive Treatise* Averroes explains that in this case the Qurʾān coincides with the philosophical notion of a perpetual creation from eternity. On his part, Ibn Taymiyya takes on the task of arguing that indeed the throne and the water were already existing before the creation of the world, but this does not mean that they are not created entities.

After quoting the different versions of the ḥadīth, Ibn Taymiyya discusses two rival interpretations: either God's activity has a beginning and nothing existed before that, or God creates the world after the throne, implying

that the throne eternally pre-existed with God. Here we find a dialectical discussion. If the throne and the water pre-existed with God before the creation of other beings, this means that the Qurʾān does not describe creation in time. Prima facie, it seems that the throne and the water were with God. Thus philosophers would be right in holding that the world is eternal. However, Ibn Taymiyya argues that if the world were co-eternal with God, then God would not be an Agent in the proper sense, because a real agent needs to precede its action. Thus he rejects Avicenna's position that the First Cause precedes its effect only in the order of essence but not in the temporal order, because the cause (God) and its effect (the world) exist from eternity. On the other hand, if it is assumed that the First Cause must temporally exist prior to its effect, it would follow that God created the world at some point in time, which is the view of the *mutakallimūn*. And if that were the case, that is, if God decided to create the world at a certain point in time, avoiding in this case an infinite regress, this would mean that prior to that God was not exercising his activity par excellence, namely, creating, and that would imply that at some point he lacked the power to create. If at some point God was not creating, God would be stripped of one of his attributes of perfection (*ṣifāt kamāl*), namely, the attribute of creation (*ṣifāt al-khalq*).

According to Ibn Taymiyya, most *salafi* interpretations of the Qurʾān hold that the throne existed before the creation of the heavens and the earth. Thus he formulates a proof to defend this statement. He starts by making a distinction between the temporal creation of the world and absolute creation. The ḥadīth speaks of the creation or the beginning of the heavens and the earth, but it does not say anything about an absolute creation in time. Hence, Ibn Taymiyya argues that the ḥadīth speaks of a sequence of beings: while the heavens and the earth started to exist, it seems that the throne and the water already existed before the creation of the heavens and the earth. To bolster this point, he refers to other Biblical and Qurʾānic passages:

> Similarly, it has been said at the beginning of [the Torah]: 'In the beginning of the matter (*fī awwal al-amr*), God created the heavens and the earth'. Some [scholars] interpret it, 'In the beginning (*badʾ*)' or 'At the start (*ibtidāʾ*), God created the heavens and the earth'. The point is that in [the Torah] there is information about the start of the creation of the heavens and the earth and that the water was covering over the earth and the wind was blowing over the water (Genesis 1.1–2). He informed that [215] at that time this was water, air, and dust, and He informed in the great Qurʾān that 'He created the heavens and the earth in six days, and His Throne was on the water' (Q. 11.7). In another verse, 'He rose over the heaven when it was smoke, and He said to it and to the earth,

> 'Come willingly or unwillingly'. They both said, 'We come, willingly' (Q. 41.11). And from the *salaf* have come traditions (*āthār*) to the effect that the heaven was created from water vapor, which is the smoke.
>
> (Ibn Taymiyya 2004, 304–305)

This collection of biblical and Qurʾānic passages suggests that before the creation of the world as we know it, some elements were already existing. As mentioned, the ḥadīth does not say anything about absolute creation, that is, something regarding the existence of those already existing entities. However, the first lines suggest that there was nothing before God. So it seems that there was a point in time when God started to create. But according to Ibn Taymiyya this is not the case, since most *salafi* interpreters agree that the next sentence in the ḥadīth is not connected by the preposition *thumma* (then) but by the particle *wa* (and): there was nothing before God "*and* His Throne was over the water, *and* He then (*thumma*) created the Heavens and the Earth," and so forth. Thus again, as Ibn Taymiyya affirms in Aspect 4, there is no information regarding the throne and the water, with the exception that both were already existing before the creation of the heavens and the earth. The wording indicates the being (*kawn*) and the existence (*wujūd*) of both the throne and the water, and then, the subsequent creation of the heavens and the earth. However, the ḥadīth also reports that there was nothing before God or with him or other than him. Indeed, this could be interpreted as saying that God was alone before he created things. It is unclear how to interpret the statement that 'there was nothing before God'. However, as we will see, by "nothing" (*ʿadam*), Ibn Taymiyya does not understand absolute nothingness; rather, he explains that the statement "there was nothing before God" indicates that there was no concrete entity existing before God.[25]

Again, recall the ḥadīth: "There was Allah and nothing else before Him and His Throne was over the water, and He then created the Heavens and the Earth." Ibn Taymiyya holds that it would be erroneous to allow for only two ways of understanding what the ḥadīth states regarding the creation of the world: the view of the *mutakallimūn*, who think that the ḥadīth describes the beginning of God's creative activity, rejecting the possibility of an infinite regress; and the view of the philosophers, who argue for the eternity of the world. Aspects 11 to 15 provide what I would call a "philosophical" refutation of these two positions, as well as Ibn Taymiyya's understanding of the origination of the world. In Aspect 11, he states that the ḥadīth has been interpreted as holding a temporal creation out of nothing, a position that has been associated with Muslims, Jews, and Christians. Furthermore, he mentions that this position is also found in most *kalāmic* books, considered blameworthy by the *salaf*. Ibn Taymiyya adds that some Muslims have mistakenly thought that whoever opposes

temporal creation out of nothing agrees with 'eternalist philosophers' (*falāsifa al-dahriyya*).

Ibn Taymiyya's discussion in this section raises several different questions. The reference he makes to the discussion on speech as a divine attribute is particularly relevant for our discussion. Ibn Taymiyya draws an analogy between the controversy on the eternal character of the Qurʾān and the debate on the origin of the world. Among the *mutakallimūn* there was a debate regarding the createdness or the eternity of the Qurʾān. While the more traditional Ḥanbalites held that the Qurʾān was eternal and uncreated, containing the word of God, the rationalist Muʿtazilites taught that the Qurʾān indeed was the word of God, but it was created in time.[26] Ibn Taymiyya's position throughout the treatise is that divine speech is certainly an eternal divine attribute, and thus God has been speaking from eternity, but the concretization of His speech, namely, the Qurʾān, is not eternal but created. The same is the case of creation: as God has spoken from eternity, He has also created from eternity; but the effects of both His speech and creative act, namely, the Qurʾān and the world, are created. Speech (*kalām*), power (*qudra*), and will (*irāda*) are concomitants to God's essence (*dhāt*). This means that just as speech is concomitant to the divine essence and is concretized in the letters and sounds that compose the Qurʾān, so the species of everything that exists are concomitant to the divine essence and they are concretized in the created entities.

For Ibn Taymiyya creation has been taking place from eternity, but that does not mean that created beings have existed from eternity, as Avicenna thought. He rejects Avicenna's emanationist model, according to which the celestial spheres are conjoined to God as First Cause, producing the world from eternity. Towards the end of Aspect 12, Ibn Taymiyya affirms that "the eternalist philosophers have no rational argument fundamentally for what they say about the eternity of the [celestial] spheres" (2004, 314). And in Aspect 13, Ibn Taymiyya argues that it is impossible to conceive that the celestial spheres have been conjoined with the First Agent, namely God, pre-eternally and post-eternally because "the Agent must inevitably precede His act" (2004, 314).[27] Furthermore, the ḥadīth clearly says that God created the heavens and the earth after they were not. He then immediately mentions those philosophers who have argued that God indeed created the being of the heavens and the earth, but they have co-existed with Him from eternity. And Avicenna is among those who held this opinion.[28] According to Ibn Taymiyya, there is a position even more corrupt than that of Avicenna, namely, that of Aristotle and his followers who, unlike Avicenna, did not conceive that the celestial spheres were caused by an efficient cause:

> [Aristotle] did not establish that the Lord is Originator (*mubdiʾ*) of the world, and he did not make Him an efficient cause (*ʿilla fāʿila*).

> Instead, what he established was that He is a final cause (*ʿilla ghāʾiyya*): the [celestial] sphere moves in order to assimilate itself to Him, like a beloved moving a lover.
>
> (Ibn Taymiyya 2004, 318)

Thus far, Ibn Taymiyya has rejected the positions of Aristotle, Avicenna, and the *mutakallimūn*. Ibn Taymiyya holds that God is without a doubt the cause of the world. He thinks, however, that God is not only the final cause, as Aristotle held; rather, as Avicenna thought, God is also the final and efficient cause of the world. Nevertheless, as I have shown, Ibn Taymiyya argues against Avicenna's emanationist model. Eternalist philosophers such as Avicenna are right in that they establish the perpetuity of agency (*dawām al-fāʿiliyya*), but in their case this implies co-eternality with other beings; however, as he argues in Aspect 13, this position strips away God's agency (Ibn Taymiyya 2004, 317). There could be nothing eternal in the world except God. Aspect 14 states that Muslims have learned from God and His Messengers that the world was created in six days, including the celestial spheres and the heavens and the earth, all created from pre-existing matter:

> The Messengers have informed about the creation of the [celestial] spheres and of the creation of time that is the measure of their movements. Besides that, they informed that they were created from matter before that and at a time before that time. He – Glory be to Him – indeed informed that He created the heavens and the earth in six days.
>
> (Ibn Taymiyya 2004, 322)

Ibn Taymiyya then states that those six days in which the heavens and the earth were created were of a different kind from the days we know, and thus those days were measured by the motion of bodies existing prior to the creation of the heavens and the earth.[29]

The pre-existing matter mentioned in the passage has certainly been created by God prior to the creation of the heavens and the earth. Ibn Taymiyya appeals to another ḥadīth, this time ḥadīth 4797 from the Ṣaḥīḥ Muslim collection: "God determined the determinations of created things fifty thousand years before He created the heavens and the earth, and His Throne was on the water." God has been powerful from eternity, and he has been always determining and creating what he wills, even before He created the world as we know it. God's perpetual creativity is well expressed in the following passage:

> [Now] pre-eternity is not something defined that reason can grasp. Rather, there is no extremity, to which positing an act eventually reaches, that would not be such that pre-eternity would be before it, without a

> definite extremity. Even if one posited the existence of cities many times [the number of] the cities of the earth, each city with as much mustard seed as to fill it, and [then] supposed that with each passing of a million years one grain of mustard seed disappeared, all the mustard seed would disappear and pre-eternity would not [yet] have ended. And if one supposed many, many times that, it would [still] not have ended. There is no time that might be posited that is not such that pre-eternity was before it. There is no time that might be posited that is not such that pre-eternity was before [239] it. There is also no time in which the act emanates that is not such that it was possible before that. Now, if it was possible, what is there to make it necessary to define the situation of acting by the creation, and not by what was before that, in what is infinite?
>
> (Ibn Taymiyya 2004, 325–326)

As I mentioned, the *kalāmic* position according to which at some point God was not creating and then He began to create, is unacceptable because this would imply some sort of potency in God. The challenge is thus how to harmonize God's perpetual agency with created beings as coming into being. As is evident from the previous passage, Ibn Taymiyya has no reservations in accepting an infinite regress of effects (*āthār*). In fact, the perpetuity of divine agency implies that God has been creating things one after another. Indeed, Ibn Taymiyya's resolution is at first glance like that of Averroes, insofar as both thinkers hold that God has been acting from eternity. However, both Avicenna and Averroes hold that since God's action is perpetual, its effect should be perpetual, too, and consequently the world must have existed from eternity, with no beginning or end. And this is not what Ibn Taymiyya thinks. Rather, he holds that while God's creative activity is perpetual, every created entity has a beginning in time. It is thus necessary to define what he means by 'creation', since his way of understanding creation is neither the temporal creation out of nothing of al-Ghazālī and the *mutakallimūn* nor that of Avicenna and the eternalist philosophers. By 'creation' Ibn Taymiyya means that God has been permanently producing an entity after another. God is perpetually active, but that does not mean that His effect is also pre-eternal with him. In Aspect 15, Ibn Taymiyya affirms that God has been doing and speaking what He wills from eternity.[30] In other words, both his power to create and his power to speak have been perpetually active:

> the meaning of pre-eternity (*azal*) is the lack of beginning (*awwaliyya*). Pre-eternity is not something delimited. So, our saying, 'He has been creating from eternity', is equivalent to saying, 'He is powerful perpetually (*dāʾiman*)', and His being powerful is a perpetual ascription having no start. Likewise, when it is said: 'He has been speaking from eternity

> when He wills' and 'He has been doing what He wills from eternity', [this] requires the perpetuity of His being, speaking, and acting by His will and His power. If someone is of the opinion that this requires the eternity of something with Him, that is due to his corrupt conception. Indeed, as He is Creator of everything, everything other than Him is created and preceded by nonexistence. So, with Him there is nothing eternal by virtue of His eternity. When it is said that He has been creating from eternity, its meaning is that He has been creating one created thing after another from eternity, just as He will be creating one created thing after another in post-eternity. That which we deny [i.e., eternity], we deny of originating events and movements, one after another. There is nothing in this except an ascription to Him of perpetuity of acting, not [an ascription] of one among the things [He has] done being with Him [eternally] in its concrete entity.
>
> (Ibn Taymiyya 2004, 326)

While Ibn Taymiyya agrees with both Avicenna and Averroes concerning the idea of perpetual agency, he rejects both the idea of concrete entities pre-existing with God from eternity and the idea of the pre-eternal motion of celestial spheres. Thus as I see it, Ibn Taymiyya does not exactly hold the same view as Averroes. Indeed, both argue for God's perpetual agency and, in this sense, for a perpetual creation and from pre-existing matter; both think that the Qurʾān does not contain any assertion that the world was created in time or that it emerged from an emanation. But despite these parallels, there are important differences between Averroes and Ibn Taymiyya. As is evident from the final lines of the previous passage, Ibn Taymiyya categorically affirms not only that there were no concrete entities existing with God, but also that they exist because God has been creating one entity after another. As I mentioned, God's creative act includes the creation of celestial spheres, the heavens, and the earth. While all concrete created entities had a beginning, neither revelation nor reason deny that the species (*nawʿ*) of created entities have been with God from eternity:

> The species, however, gets confused for many people with the concrete entity, just as this has become confused for many people concerning [God's] speech. They therefore do not differentiate between His speech being eternal in the sense that He has been speaking from eternity when He wills and the concretized speech being eternal. Similarly, they did not differentiate between the concretized act being eternal and the species of the concretized act being eternal, as with the [celestial] sphere, which is originated, created, and preceded by nonexistence. And, likewise for all that is other than Him.
>
> (Ibn Taymiyya 2004, 326–327)

Simply put, while the species of created entities had no beginning, each created entity has had a beginning, including the celestial spheres, the heavens, and the earth. Thus God perpetually creates the species of created entities from eternity, but not the concrete entities: while species are perpetual, concrete entities originate and perish.[31] At first glance, this position seems very close to Averroes. But Ibn Taymiyya's position is tricky, since while God's activity is perpetual, concrete entities, including the celestial spheres, have been created in time. This means that for Ibn Taymiyya, unlike Averroes, the motion of celestial spheres is not everlasting. And this is a relevant nuance that reveals that despite the affinities between Averroes and Ibn Taymiyya, their positions are different. By the end of Aspect 15, Ibn Taymiyya once again criticizes Aristotle and the eternalists. Although he explicitly refers to Aristotle and, no doubt, his target is Avicenna, as far as I can see his criticism applies to Averroes, too. And this leads us to suspect that, although Ibn Taymiyya agrees with Averroes on the idea of the perpetual creative activity of God, he does not understand it in the same way as do the followers of Aristotle:

> Among the things by which the source of the error of these two groups [the philosophers and the *mutakallimūn*] is known is their error concerning movement, origination, and what is so called. One group [i.e., the philosophers], like Aristotle and his followers, said that it is not reasonable that the genus of movement, time, and originating events originated, that the Principle (*mabdaʾ*) of every movement and originating event become an agent for these after it was not [one], and that time originated after it had not originated since a 'before' and an 'after' are only in a time. Now, all these propositions are only deemed true universally and are not deemed true when concretized. Moreover, they were of the opinion that the concretized movement, that is, the movement of the [celestial] sphere, is [242] the eternal and pre-eternal one and that its time is eternal. They clearly went astray and were in opposition to authentic tradition abundantly transmitted from the Prophets – God bless them and give them peace – in addition to their opposition to the clear reason to which the great majority of reasonable people – ancient and more recent – adhere.
>
> (Ibn Taymiyya 2004, 328)

Ibn Taymiyya rules out the view that perpetual action embraces the perpetual motion of the celestial spheres, as Aristotle, Avicenna, and Averroes thought. In the previous section, I explained that Averroes holds that God causes the motion of the first heaven or sphere of the fixed stars by way of desire, and then the motion of the rest of the celestial spheres. The perpetual motion of the celestial spheres is, in turn, the cause of the

processes in the sublunary world, consisting in the actualization of prime matter.[32] Creation for Averroes consists of the actualization of prime matter, bringing it from potency into act through the motion of the celestial spheres which, in turn, are moved by the separate intellects. I have mentioned how problematic it is for Averroes to explain God's supremacy over the separate intellects. By contrast, Ibn Taymiyya rejects the possibility of other entities pre-existing with God, with the exception of the species of things. And this position leads to another difference between Averroes and Ibn Taymiyya, which is related to the way in which each thinker understands causality. As I have shown, Ibn Taymiyya understands Aristotle as denying that God is the efficient cause and arguing only that He is the final cause of motion in the celestial spheres, which desire to be assimilated to God. Averroes indeed keeps this Aristotelian understanding of final cause, attributing efficient causality to the celestial spheres. And, again, this is not what Ibn Taymiyya holds. God's agency is prior to the creation of the celestial spheres, the heavens, and the earth, and thus it is not limited to causing the motion of celestial spheres. In fact, given that God has been perpetually creating, even before the existence of the celestial spheres, Ibn Taymiyya removes from his understanding of creation the active role of the celestial spheres. With this move, he posits God as the sole Creator of every existing entity.

In conclusion, although Averroes and Ibn Taymiyya hold in common the idea of a perpetual creation, their understanding of causality is different. While both defend the philosophical notion of causality from the criticisms of the *mutakallimūn*, the way they understand it is not identical. In fact, it is fair to say that, unlike Averroes, Ibn Taymiyya does not usually refer to God in philosophical terms. Nevertheless, if it were possible to translate his position into philosophical terminology, it could be said that his interpretation of the Islamic doctrine of creation places God as a direct and active efficient cause of all that exists.

Notes

1 Ibn Taymiyya's notion of perpetual creation has been explored mainly by Hoover (2004, 287–300, 2007, 87–95, 2010, 57–77, 2019, 118–123). See also Hoover (2022). For the eternity of the world in Islamic philosophy and philosophers see the two classical studies by Davidson (1987, 1992). For Averroes see Kogan (1985, 203–265).

2 For the *Minhāj al-sunna* see Ibn Taymiyya (1986). *Darʾ taʿārud al ʿaql wa al-naql* has been published in 11 volumes (see Ibn Taymiyya 1991). In this last case, the discussion on creation appears in several places in volumes 1, 2, 3, 5, 9, and 10. For a valuable study on *Darʾ*, see El-Tobgui (2020).

3 See Hallaq (1993), Hoover and Mahajneh (2018), and Ibn Taymiyya (1993, 1999, 2000), just to mention few examples.

4 I use Hoover's translation (2004), at times slightly modified.

5 Among the Neoplatonic sources that were influential for Avicenna, there is the *Theology of Aristotle* (modified extracts with explanatory glosses of some Plotinus' *Enneads*) (see Badawī, 'A. 1955. *Plotinus apud Arabes: Theologia Aristotelis et Fragmenta Quae Supersunt*. Cairo: Maktabat al-Nahḍah al-Miṣrīyah; Lewis, 1959; Vajda 1951; Zimmerman 1986; Aouad 1989; D'Ancona 1991, 2001, 2004, 2011, 2012, 2017; Rowson 1992; Adamson 2002, 2004; Chase 2021) and *The Book of the Pure Good* (portions of Proclus' *Elements of Theology*, known in the Latin tradition as the *Liber de causis*); see Endress (1973); D'Ancona (1992, 1995, 2000); Zimmerman (2008); Taylor (2020), and especially, Lizzini (2022) and Bertolacci (2022).

6 "[Proving] that there are existing causes for everything that is subject to generation and corruption or undergoes motion or is some composite of matter and form, and that these causes are only four [in number], is not something that natural philosophers undertake – [this] falls [instead] to the metaphysician; however, it is indispensable for the natural philosopher to affirm the essences of [the causes] and to indicate their states as a posit. So we say that the causes that are essential to natural things are four: the agent, matter, form, and end" (Avicenna 2009, 64).

7 "Causes, as you have heard, consist of form, element, agent, and purpose. We say: By the formal cause, we mean the cause which is part of the subsistence of the thing and in terms of which the thing is what it is in actuality. By the elemental [cause, we mean] the cause that is part of the subsistence of the thing, through which the thing is what it is in potency and in which the potentiality of its existence resides. By agent [we mean] the cause which bestows an existence that is other than itself (Avicenna 2005, 194).

8 "This natural body has certain principles *qua* natural body, as well as additional principles *qua* generable and corruptible or in general alterable. The principles by which it acquires its corporeality include whatever are parts of its existence as actually present in [the natural body] itself, and these are more appropriately called *principles*, according to [the natural philosopher]. They are two: one of them is like the wood of the bed, while the other is like the form or shape of the bed. What is like the wood of the bed is called *material*, *subject*, *matter*, *component*, and *element*, according to various considerations, whereas what is like the form of the bed is called *form*" (Avicenna 2009, 14). See Bertolacci (2002).

9 The centrality of the efficient causality in Ibn Sīnā's metaphysics has led most scholars to overlook his understanding of final causality. Wisnovsky has focused on this neglected issue, arguing that God does not operate solely as efficient cause, but also as final cause in Ibn Sīnā's metaphysics (1994, 97–99, 2002, 2003, 49–68).

10 "[T]he final cause in terms of 'thingness' is prior to the efficient and receptive causes, and, similarly, that it is prior to form inasmuch as form is a formal cause leading to it. Likewise, the final cause in its existence in the soul is prior to the other causes. As for its being in the soul of the agent, [this is the case] because it exists [there] first, [and] then—[along] with [the agent]—agency, the demand for a recipient, and the quality of the form are [thereafter] conceived" (Avicenna 2005, 229). For a valuable study in this regard see Druart (2001).

11 On the relevance of the efficient cause in Avicenna, see Gilson (1960); Marmura (1984); Wisnovsky (2002); Richardson (2013).

12 "This, then, is the meaning that, for the philosophers, is termed 'creation'. It is the giving of existence to a thing after absolute non-existence. For it belongs to the effect in itself to be non-existent and [then] to be, by its cause, existing.

That which belongs in the thing intrinsically is more prior in essence for the mind ([though] not in time) than that which belongs to it from another. Hence, every effect constitutes an existence after non-existence, in terms of essential posteriority" (Avicenna 2005, 203).

13 "The connection between what is habitually believed to be a cause and what is habitually believed to be an effect is not necessary, according to us. But [with] any two things, where 'this' is not 'that' and 'that' is not 'this' and where neither the affirmation of the one entails the affirmation of the other, nor the negation of the one entails negation of the other, it is not a necessity of the existence of the one that the other should exist, and it is not a necessity of the nonexistence of the one that the other should not exist – for example, the quenching of thirst and drinking, satiety and eating, burning and contact with fire, light and the appearance of the sun, death and decapitation, healing and the drinking of medicine, the purging of the bowels and the using of a purgative, and so on to [include] all [that is] observable among connected things in medicine, astronomy, arts, and crafts. Their connection is due to the prior decree of God, who creates them side by side, not to its being necessary in itself, incapable of separation. On the contrary, it is within [divine] power to create satiety without eating, to create death without decapitation, to continue life after decapitation, and so on to all connected things. The philosophers denied the possibility of [this] and claimed it to be impossible" (al-Ghazālī 2000, 166). See Lizzini (2013).

14 The best known argument by Philoponus against Aristotle is reported by Simplicius (d. ca. 560), in his *Commentary on the Physics*. There, in 8.1, Simplicius reports that Philoponus argued that it was impossible to conceive an infinite series of past events; thus, for him it was necessary to conclude that the world had a beginning (Simplicius 2012, 76–77 [1178, 1–35]). See Davidson (1969); Chase (2012).

15 "Let us, then, take a specific example – namely, the burning of cotton, for instance, when in contact with fire. For we allow the possibility of the occurrence of the contact without the burning, and we allow as possible the occurrence of the cotton's transformation into burnt ashes without contact with the fire. [The philosophers], however, deny the possibility of this. The discussion of this question involves three positions. The first position is for the opponent to claim that the agent of the burning is the fire alone, it being an agent by nature [and] not by choice – hence, incapable of refraining from [acting according to] what is in its nature after contacting a substratum receptive of it. And this is one of the things we deny. On the contrary, we say: The one who enacts the burning by creating blackness in the cotton, [causing] separation in its parts, and making it cinder or ashes is God, either through the mediation of His angels or without mediation" (2000, 166–177).

16 See Goodman (1978); Alon (1980); Abrahamov (1988); Riker (1996); Druart (2006); Griffel (2009, 147–173); Daiber (2021).

17 "We say: ' "Agent" is an expression [referring] to one from whom the act proceeds, together with the will to act by way of choice and the knowledge of what is willed.' But, according to you [philosophers], the world [proceeds] from God [exalted be He] as the effect from the cause, as a necessary consequence, inconceivable for God to prevent, in the way the shadow is the necessary consequence of the individual and light [the necessary consequence] of the sun. And this does not pertain to action in anything. Indeed, whoever says that the lamp enacts the light and the individual enacts the shadow has ventured excessively into metaphor and stretched it beyond [its] bound, being satisfied with

the occurrence of one common description between the expression borrowed for one thing and that from which it is borrowed, [as in this instance, where] the agent is cause in a general sense, whereas the lamp is the cause of illumination and the sun the cause of light. The agent, however, is not called an agent and a maker by simply being a cause, but by being a cause in a special respect – namely, by way of will and choice – so that if one were to say, 'The wall is not an agent; the stone is not an agent; the inanimate is not an agent, action being confined to animals,' this would not be denied and the statement would not be false" (al-Ghazālī 2000, 56).

18 Although this definition of agent could embrace human beings, al-Ghazālī, again following al-Ashʿarī, holds that God even creates every action for each human being. While it can be discussed whether this position is determinist and fails or not in defending free will, everything suggests al-Ghazālī's main concern was to defend God's omnipotence. In this regard see Abrahamov (1988); Rudolph and Perler (2000, 57–105); Lizzini (2002); McGinnis (2006); Druart (2006).

19 For analysis and discussion on Averroes' cosmology see Kogan (1985, 165–201) and Twetten (2016). See also Twetten (2023) for a novel interpretation.

20 "[T]he agent, in Aristotle, does not really unite two things, but makes them pass from potentiality into actuality, putting together, as it were, potentiality and actuality, I mean matter and form, by making potentiality become actuality, without suppressing the substratum which receives the potentiality. Two different things become a compound, namely matter and form; this is similar to production in the sense that that which was in potentiality becomes actual, and it is different from creation in that it (the agent) does not produce the form from non-form. So it bears a resemblance with the doctrine of concealment. All those who profess the doctrine of creation, or of concealment, or of union and separation tend towards this notion but stop short of it" (Averroes 1984, 109). For the Arabic, see Averroes (1986, 1497–1498).

21 "It appears in all clarity that these celestial bodies have souls and that of the powers of the soul, they have only the intellect and the faculty of desire, I mean (the faculty) that imparts to them local motion. This appears from what I say: it has been explained in the eighth book of the *Physics* that the mover of these celestial bodies is without matter and a separate form, and in the *De Anima* that the separate forms are intellect. It follows that this mover is an intellect and that it is a mover insofar as it is the agent of motion and the end of motion. This is distinct and multiple only in us, I mean that which moves us locally as efficient cause and that which moves us as final cause, because it has two modes of existence, one in the soul and one outside the soul. Insofar as it exists in the soul it is the efficient cause of motion, and insofar as it exists outside the soul, it is mover as end" (Averroes 1984, 149). For the Arabic, see Averroes (1986, 1593–1594).

22 "Matter, in so far as it is matter, does not become; for if it did it would need other matter and we should have an infinite regress. Matter only becomes insofar as it is combined with form. Everything that comes into being comes into being from something else, and this must either give rise to an infinite regress and lead directly to infinite matter which is impossible, even if we assume an eternal mover, for there is no actual infinite; or the forms must be interchangeable in the ingenerable and incorruptible substratum, eternally and in rotation. There must, therefore, be an eternal movement which produces this interchange in eternally transitory things. And therefore it is clear that the generation of the one in each pair of generated beings is the corruption of the other; otherwise a

thing could come into being from nothing, for the meaning of 'becoming' is the alteration of a thing and its change, from what it has potentially, into actuality. It is not possible that the privation itself should change into the existent, and it is not the privation of which it is said that it has become. There exists, therefore, a substratum for the contrary forms, and it is in this substratum that the forms interchange" (Averroes 2008, 59–60).

23 The *Tafsīr* is also known as *Mafāṭīḥ al-ghayb* (*The Keys to the Unknown*). See al-Rāzī (1981). See also Fitzgerald (1992).

24 See al-Rāzī (1987). And for an excellent analysis on Fakhr al-Dīn al-Rāzī on the eternity of the world, see İskenderoğlu (2002, 59–124). Iskenderoğlu holds that Fakhr al-Dīn understood the *kalāmic* and the philosophical views as inconsistent, but possible interpretations of the Qurʾān. He also thinks that Fakhr al-Dīn found more consistency in the philosophical arguments for the eternity of the world. Hassan (2021), however, has challenged these views.

25 "All created things have a beginning and are preceded by nothing. For 'nothing' it is understood here something perpetual until the genus of creation has existed. Otherwise, the intellect can envisage that every created being would be preceded by another created being that creates the being that follows it. But it must be noticed that the genus of creation has no beginning and no end" (1991, vol. 5, 38).

26 I have dealt with this discussion mainly from the perspectives of ʿAbd al-Jabbār and al-Ghazālī in López-Farjeat (2021).

27 In *Minhāj*, Ibn Taymiyya argues that Aristotle and his followers cannot explain the motion of the celestial spheres because they would need to appeal to a non-temporal cause (1986, 1, 176–178).

28 Avicenna is also targeted in *Minhāj*. There, Ibn Taymiyya argues that Avicenna not only holds that the celestial spheres are co-eternal with God, but he also makes them the source of every occurrence in the world by means of a perpetual emanation whose First Cause is God (1986, 1, 336–338).

29 "[W]hether it be said that those days were of the [same] measure as these days that are measured by the rising of the sun and its setting or whether it be said that they were longer than them – some people have indeed said that the measure of each day was one thousand years – there is no doubt that those days in which the heavens and the earth were created were different from these days and different from the time that is the measure of the movements of these [celestial] spheres. Those days were [in fact] measured by the movements of bodies existent before the creation of the heavens and the earth" (Hoover 2004, 323).

30 This is the same point Ibn Taymiyya argues for in *Minhāj*. See 1986, 1, 147–148.

31 See also Ibn Taymiyya (1986, 1, 232–233).

32 An interesting remark concerning "prime matter" appears in *Dar' ta'ārud al 'aql wa al-naql*. There, Ibn Taymiyya criticizes the notion of "prime matter" understood as a pre-existent matter. He thinks it is unnecessary, given that things come to be through the transformation of a substance in another substance. He strangely ascribes this kind of pattern to Plato and his followers, while he claims that Aristotle and his followers reject it (1991, 3, 405).

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