UNIVERSITY OF CALIFORNIA SAN DIEGO

The Imperfect Present: Stoic Physics of Time

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Philosophy

in

Philosophy

by

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Chair

University of California, San Diego
2018

DEDICATION

To my family, for their love and support, and for believing in me even when I told them I wanted to pursue a Ph.D. in ancient philosophy.

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LIST OF ABBREIVATIONS

Author		**Title**	
Aristotle	Arist.	*De Caelo* *De Interpretatione* *Physics*	*DC* *DI* *Phys.*
Diogenes Laertius	DL	*Lives of the Eminent Philosophers*	*
Dionysius Thrax	DT	*Ars Grammatica*	*
Galen	Gal.	*Quod Qualitates Incorporeae Sint*	*Qual. Inc.*
Marcus Aurelius	---	*Meditations*	*Med.*
Plutarch	Plut.	*Against the Stoics on Common Conceptions* *On Stoic Self-Refutations*	*Comm. Not.* *St. Rep.*
Proclus	---	*On Plato's Timaeus* *On Euclid's Elements*	*In Tim.* *In. Eucl.*
Seneca	---	*Moral Epistles to Lucilius*	*Ep.*
Simplicius	Simp.	*On Aristotle's Categories* *On Aristotle's' Physics*	*In Cat.* *In Phys.*
Stobaeus	---	*Eclogae*	*Ec.*
Sextus Empiricus	S.E.	*Outlines of Pyrrhonism* *Against the Dogmatists*	*PH* *M*
Liddell, Scott and Jones	LSJ	A Greek-English Lexicon	*
Long and Sedley	LS	*The Hellenistic Philosophers*	*
Von Arnim	---	*Stoicorum Veterum Fragmenta*	SVF

*This work is referred to by the abbreviation of the author's name.

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ABSTRACT OF THE DISSERTATION

The Imperfect Present: Stoic Physics of Time

by

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This dissertation addresses a set of problems in the Stoic physics of time. It begins by investigating the ontology of time as an incorporeal in Stoic physics. I show that time is constructed as a deliberate parallel to two of the other incorporeals – place and void. Time is defined as the "*diastēma*" of motion, and much of the debate over the Stoic theory of time has centered on the definition of this term "*diastēma,"* which may mean interval, extension, or dimension. I argue that only the reading of "dimension" makes sense in the context of

Stoic physics. Place turns out to have three dimensions, measuring the height, depth, and breadth of bodies, while time adds a fourth dimension of motion that measures fast and slow of bodies in motion.

The second half of the dissertation addresses the vexed problem of the present in Stoicism. Multiple sources tell us that the present has a different status from the past and future – the past and future merely "subsist" while the present "is real." However, this account is complicated by strong evidence that the Stoic present is *composed* of past and future. Furthermore, Stoic accounts of divisibility leave the length of the present apparently indefinite. If the present is ontologically privileged, it seems that it cannot be of indefinite length. If the present is real but the past and future are not, it seems that the present cannot be composed of past and future.

I resolve these problems by arguing that the Stoics had two interrelated definitions of the present, and that the apparently conflicting pieces of evidence refer to different kinds of present. The first present is called "precise" or "narrow" and corresponds to a point of zero duration. As it has no duration, it is not a continuum, and as it is not a continuum it is not, technically, a time. A secondary "broad" present, composed of past and future times, is present in virtue of containing this present. It derives a special ontology from its relationship to the strict present, despite being composed of past and future.

Introduction

There are many points of ancient physics which are now treated as matters of settled science rather than philosophical debate. We no longer debate the shape of the earth or its position in the solar system, the causes of retrograde planetary motion, or why bodies travel down towards the center of the earth rather than up towards the stars. There is, perhaps, a tendency to treat questions of physics as settled, except when we can bundle them off under the heading of "metaphysics" – a term not invented until later in the history of philosophy, by later ancient editors cataloguing Aristotle's works. It is not clear, however, that we can handle questions of the physics of time in either way; in the same vein that we might ask what space or matter are, there is a serious question of what time is and how it functions as part of a physical universe. And, although there have been great scientific breakthroughs in our thinking about time, and we have data unimagined by ancient philosophers,[1] in many ways the nature of time remains a conceptual and philosophical problem. The question of what time is, and how people throughout history thought about time, is a rich vein of philosophical and historical inquiry. Inquiry into ancient thinking about time offers the opportunity to question our working assumptions about to time and to explore different – even if flawed – models of the physical universe. This work looks at time in the ancient philosophical school of Stoicism and works to reconstruct a coherent and robust model of Stoic thinking about time.

[1] Aristotle, for example, would doubtless be disturbed by the revelation that time moves at different speeds at sea level and in the mountains, in direct contradiction of his claim that there is only one time, which is the same for all (*Phys*. IV.10.218a).

The goal of this project is specifically to investigate time as a part of Stoic physics; I will not directly engage with questions of the ethical implications of time or the epistemology of time. This is not because I do not consider those questions valuable. Rather, my position is that it is crucial to first understand time as a phenomenon in physics before engaging in an extended inquiry into time in the rest of Stoic philosophy. Certainly, the Stoics themselves seemed to see physics as central to a working philosophical system; Diogenes Laertius preserves three colorful Stoic metaphors for the parts of philosophy, with physics at the center of each:

> The Stoics represent philosophy as an animal, comparing Logic to the bones and sinews, Ethics to the flesh, and Physics to the soul. Or, again, they represent it as an egg: for the outside is Logic, the middle is Ethics, and the center is Physics. Or it is like a fertile field: Logic is the surrounding fence, Ethics the fruit, Physics the earth or the trees.[2]

Physics is the soul of the philosophical animal, the yolk of the philosophical egg, and the soil and trees of the philosophical field. Questions in Stoic Physics sit at the heart – or perhaps the soul – of Stoic philosophy. Before we can ask how humans interact with time we must have some grasp of what time *is*.

There has been surprisingly little scholarship to date on this difficult question. Stoicism has been a subject of renewed interest in recent years, with excellent work produced on many topics in Stoic physics. Time, however, has not received much direct or extended treatment. Victor Goldschmidt's *Le Système Stoïcien et l'idée de temps* (1953) is the most recent monograph dedicated to the subject, and nothing similar has ever been attempted in English. Some shorter works on Stoic time specifically do exist: J. M. Rist's

[2] DL VII.40. All translations mine unless otherwise indicated.

(1969) book *Stoic Philosophy* contains a chapter focused entirely on time, and Malcom Schofield's "The Retrenchable Present" (1988) and Michael Papazian's "Stoic Ontology and the Reality of Time" (1999) look at the Stoic present specifically. The broader story, however, is one of a lacuna in need of scholarly attention.

Modern scholarly work on Stoic physics of time has largely – though not entirely – been as a part of larger explanations of Stoic physics or investigation of some related subject.[3] Even texts dedicated to Stoic physics do not always have much to say about time. David Hahm's *The Origins of Stoic Cosmology* (1977) does not discuss time at all, a fact acknowledged in a footnote in the introduction.[4] Eduard Zeller's massive work on Greek philosophy devotes only a few words to the subject of Stoics and time, and only to dismiss it: "The Stoics affirm the infinite divisibility of time, but do not appear to have instituted any deep researches into the point."[5] That sentiment seems to have marked the bulk of inquiry into time in Stoicism for decades to come.

S. Sambursky gives the subject of Stoic time more attention in *Physics of the Stoics* (1959) and even, briefly, in *The Physical World of the Greeks* (1956). He offers valuable suggestions on several key fragments about time but does not offer an in-depth investigation of time or deal with arguments against his readings. David Sedley's chapters on Stoic Physics in *The Cambridge History of Hellenistic Philosophy* (1999) also offers valuable discussion of time – although it is not an independent topic: Sedley discusses time under the headings of both continua and incorporeals. Michael White and Jacques Brunschwig's

[3] One significant exception is Richard Sorabji's *Time, Eternity, and the Continuum* (1983), which deals broadly with time in antiquity and includes some discussion of the Stoics on time, though not as a major focus.
[4] Hahm (1977): xix, ftnt. 12.
[5] "Tiefergehende Untersuchungen scheinen sie aber über diese Gegenstände nicht angestellt zu haben." Zeller (1902): 182; *trans*. Reichel (1962): 197.

chapters in the *Cambridge Companion to the Stoics* (2003), on Stoic Natural Philosophy and Stoic Metaphysics respectively, also both include short but useful discussions of time as a physical phenomenon. Time also comes up as a topic in some writings on Stoic epistemology and language. Stoic definitions of *kataleptic* appearances make use of language that parallels Stoic explanations of the present,[6] and thus scholarship into *kataleptic* appearances sometimes includes some analysis of the Stoic present.[7] The same language is present in Stoic discussions of truth, and the same key passage on the Stoic present is analyzed in some works on Stoic truth and language.[8] There is also a natural overlap between discussions of Stoic cosmic cycles and time, and scholars such as Jonathan Barnes (1978) and A. A. Long (2006) have debated whether the evidence on cosmic cycles suggests that time must be circular, and if so whether eternal recurrence is coherent. While all these discussions are valuable and will be considered in the following work, they are not a substitute for a thoroughgoing analysis of time as a complete system in Stoicism.

Doubtless a driving reason behind the comparative lack of scholarship is the textual difficulty of the subject. There are no extant Stoic texts dealing with the subject; all the work must be done on fragments and secondhand reports. Some of these fragments are from Chrysippus and Zeno, original founders of the school, but many are from later figures such as Posidonius (1st century BCE) and Apollodorus (2nd century BCE), and it is not always clear when these later figures are following the doctrines of earlier Stoic leaders and when they are proposing their own theories. There have even been questions as to whether these

[6] Specifically language utilizing the verb *huparchein*.
[7] See, e.g., Michael Frede 2003.
[8] E.g. Michael White (1983) writing on alethic bivalence in antiquity, Lloyd (1971) on the relationship between activities and propositional truths.

later figures should be thought of as doctrinaire Stoics – there is some tradition of reading Posidonius as more Neoplatonist than Stoic, though this impulse appears to be a purely modern one.[9] Certainly all the authors I discuss are referred to as Stoics in our ancient sources and seem to have been considered such without controversy at the time. I have chosen to use these later figures as representatives of a generally unified school of Stoic thought insofar as what they say seems to be modeled on earlier Stoic language and ideas; there may not be a single, unchanging thing that constitutes Stoicism throughout the ages, but there are undoubtedly important commonalities and shared beliefs. In the case of time, the points of common ground turn out to be quite strong, as the core Stoic definition of time persists through even our latest texts. Insofar as all the evidence points in the direction of a shared set of ideas about time I think there is value in bringing texts from different eras together and looking for a reading that accommodates as much of the data as possible.

Beyond the fact that the evidence is limited and fragmentary, most of it comes from polemical sources hostile to the Stoic project. The three main sources from antiquity are Stobaeus the Anthologizer (5th century CE), Plutarch (1st century CE), and Sextus Empiricus (2nd–3rd century CE). Of these three, only Stobaeus makes any claim to neutrality. Stobaeus comes with his own dangers as a source; he does not comment on the original sources he presents, and in the case of the Stoics on time he provides short summaries of Stoic positions which are themselves apparently drawn from another secondary source.[10] Plutarch is overtly

[9] See Edelstein (1936) for an in-depth discussion of Posidonius and his philosophy, including a clear endorsement of Posidonius as Stoic, albeit one influenced by Plato and Aristotle and with original ideas in his system (322).

[10] Stobaeus' selections on the Stoic theories of time are attributed by Diels (1879) to a lost philosopher known as Aëtius, who is himself likely from the first or second century CE. For more on Aëtius and ancient doxography, see Mansfeld (2016).

hostile to the Stoics; I will be citing extensively from his *Against the Stoics on Common Conceptions* (*Comm. Not.*), a work dedicated entirely to finding inconsistencies, problems, and points of divergence from common beliefs in Stoicism. This work includes a section dedicated to the Stoic treatment of time, and specifically the present. Plutarch does include several apparent quotations from Stoics, but the bulk of the work is his own interpretation and mocking commentary. Sextus Empiricus, while not as hostile to the Stoics specifically, is engaged in a skeptical project of discrediting dogmatic philosophical views of all kinds. Sextus' works *Against the Dogmatists* (*M*) and *Outlines of Pyrrhonism* (*PH*) both include a section arguing against the possible reality of time, but Sextus engages the Stoics – among others – on other relevant topics as well, such as place, void, knowledge and appearances, logical deduction, and truth. Sextus tends, thankfully, to present his interpretations of school doctrines separately from his critiques of said doctrine, but we still have to trust his charity and ability to correctly understand and represent a huge swathe of philosophical opinions in an inherently polemical work.

Despite the difficulties inherent in the sources, an investigation of the available fragments yields a tantalizing picture. Our position is not as bad as one might expect; we have multiple different sources reporting a Stoic definition of time, and these sources all agree on key points. We also have multiple sources on the Stoic view of the present, from multiple different Stoics, and these share similar language and similar ideas. The reports in Stobaeus of Chrysippus and Zeno's definition of time are the same that we find in, for instance, Simplicius, and even in Sextus Empiricus. The Stoic claims about the present lampooned by Plutarch are also reported in a more neutral way by Stobaeus, and attributed (with slight variations) to Chrysippus, Apollodorus, and Posidonius. And there is good

reason to have faith in Plutarch and Sextus as accurate sources; there are many points of philosophical doctrine on which it is easier to crosscheck original sources and verify that they do generally report other views faithfully. There is, therefore, a small but valuable pool of information on the Stoic theory of time that covers valuable topics including definitions of time, accounts of the present, discussions of the divisibility of time as a continuum, and the ontological classification of time as an incorporeal.

The first aim of this project is to put this material together in a coherent and philosophically meaningful way. Because the material is so scattered and fragmentary, interpretations may easily suffer from reading texts in isolation. I look at multiple fragments on time in connection with Stoic texts on other subjects in physics and philosophy generally. It is my contention that there is a coherent and philosophically interesting theory of time in Stoicism, and that we can reconstruct and analyze this theory with a little work. I cannot, of course, answer every possible question for the Stoic theory of time, and in some places I have contented myself with offering possible conjectures where no clear evidence suggests itself. Nevertheless, I hope that this work will offer a starting point for further inquiry. Because of the nature of the material and the relative scarcity of scholarly work on the topic, my work focuses on primary source texts, using ancient sources as commentary where possible in order to embark on a reconstructive as well as evaluative project. I have included the original Greek (and occasional Latin) along with English translations of primary source texts, in order to facilitate my own and my reader's investigation of these texts.

Why should one be interested in the Stoic theory of time? Is there value in looking at this subject in depth? Of course, the subject is fascinating in its own right and well worth study as one area of Stoic physics and ancient philosophy in general. If that, however, is not

sufficient motivation, it is also true that the Stoic theory of time has implications for the rest of Stoic philosophy, ancient philosophy generally, and the history of philosophical thought about time. It is a small but important piece of the larger puzzle that fits together Stoic philosophy and its place in history.

The most direct implications are in Stoic physics. Time is one of only four canonical "incorporeals" – mysterious entities which are "something" in Stoic physics without being bodies and true existents. The other three incorporeals – place, void, and *lekta* (sayables) – have received more attention than time in the past few years, but there are still many as yet unanswered questions about the nature of incorporeals, their relation to bodies, what their non-existent subsistence amounts to, and what – if anything – they all have in common. Examining the case of time can help us understand this mysterious category better, and I will argue that place, void, and time, at the very least, are closely connected indeed. Time also turns out, unsurprisingly, to be related to Stoic theories of causation – by looking at time and causation together, we will be able to better understand aspects of Stoicism such as divination and eternal recurrence which involve fixed future events.

There are also broad implications for Stoic philosophy as a whole, including important features of Stoic ethics, epistemology, and logic. Understanding time and the present allows us to understand and even validate Seneca's advice to not feel anxiety about the future, for "*Fortasse erit, fortasse non erit; interim non est*."[11] Likewise, Marcus Aurelius' injunction to not fear death because "τὸ γὰρ παρὸν πᾶσιν ἴσον"[12] and the present is all that anyone can possess turns out to be literally true and physically significant, even

[11] "Perhaps it will be, perhaps it will not be, meanwhile it is not." Seneca *Ep.* 13.11.
[12] "The present is equal for all." Marcus Aurelius *Med.* II.14.1.

before the ethical significance is added. In epistemology, we find that there can only be *kataleptic* appearances of things which are "*huparchon*" or "real" – and this turns out to be only a property of the present, and not the past or future. Theorizing about the scope of the present and present objects has direct consequences for the scope of *kataleptic* appearances and thus all human knowledge. Even the area of Stoic logic has connections to the topic of time, as the Stoics set limits on certain kinds of relations between propositions based on their temporal status. The relationship between sign and thing signified, for instance, can only be a present sign of a present thing. There is no such thing as a present sign indicating a past or future event – except through conversion into a present event. Facts about the Stoic theory of time can explain why this is the case.

Understanding Stoic theory of time also allows us to better understand popular ideas in ancient Greek and philosophy of time as a whole by giving us insight into which ideas were common territory among the popular schools of antiquity, and which were considered idiosyncratic. The Stoics follow a strong trend in ancient philosophy of defining time in terms of motion, rather than vice versa. Motion is the more independent phenomenon, while time is a feature or measure or something such of motion. We can also see this way of thinking about time in both Plato and Aristotle.

The exact relationship between time and motion is unclear in Plato, but if we believe the claim in the *Timaeus* that the universe was in motion before the creation of time along with the heavens, then time is not fundamentally dependent on motion.[13] Rather, time is a

[13] See, especially, the description of the pre-cosmic receptacle in *Tim.* 52-32; see also Vlastos (1939) for a defense of a non-metaphorical reading of the passages.

"moving image of eternity."[14] Past and future (and perhaps time itself) are referred to as "motions,"[15] and planetary and stellar "wanderings" are identified with time.[16] While Platonic motion can apparently occur without time, Platonic time seems to be dependent on the concept of motion.

In Aristotle, time is "the number of motion in respect of before and after,"[17] and only exists when there is soul present to "count" the relevant feature of motion. The Stoic definition of time is strikingly similar in that it defines time in terms of a feature of motion, but they eschew number talk and instead define time as the "*diastēma* of motion." When we read the Stoics against Aristotle, we can see how they avoid a problem that plagued Aristotle's system: both Aristotle and the Stoics claim that time is continuous,[18] but numbers are discrete. The later Peripatetic Strato made exactly this complaint against Aristotle, claiming that numbers cannot represent continuous activity, especially continuous coming to be and passing away.[19] The Stoic definition of time as a *diastēma* suggests – despite ambiguities in the term that will be discussed at length in Chapter 2 – a conception of time as a continuous extension or dimension, much like space, another shared Peripatetic and Stoic continuum.

Aristotle and the Stoics both struggle with the present; the present is defined as a point and junction of past and future in Aristotle's *Physics*, while it seems to be an extended continuum in Stoicism – but these distinction blur when we see that there is also a sense in

[14] *Tim.* 37d.
[15] *Tim.* 38a.
[16] *Tim.* 39d.
[17] *Phys*. IV.11.220a24-25: "ὁ χρόνος ἀριθμός ἐστιν κινήσεως κατὰ τὸ πρότερον καὶ ὕστερον".
[18] *Phys*. IV.11.220a26.
[19] Simp. *In Phys.* I.788.36-789.16.

which the present (or at least present activities) *is* something extended in Aristotle, for we speak without paradox of "the present year," and that there is some evidence in Stoicism for a punctate present. Reading these authors together, along with skeptical arguments from the likes of Sextus Empiricus, helps us understand the kinds of problems and paradoxes these ancient authors faced, and how their systems include built in solutions to the popular theoretical concerns of their days.

There are even points of interest for philosophers interested in the concept of time in modern philosophy or the general history of philosophy of physics. I argue that the Stoics are four-dimensionalists, who make time a fourth dimensional parallel to the three dimensions of space. If so, the Stoics may well be the earliest four-dimensional theorists in Western thought. Given the prevalence of four-dimensional theories of time in modern philosophy and physics, it is worth asking which working assumptions we share with the Stoics and where the Stoic ideas diverge from us. The Stoic theory of the present shares important features with what is today called the "specious present,"[20] where the present as a time is in fact composed of past and future times that are perceived as present. Yet the Stoics deal with this extended "specious" present in distinctively Stoic ways, bringing in doctrines of infinite divisibility while still affirming some special status for the present. The Stoic theories of time have tantalizingly modern features and serve as an interesting foil for modern ideas of time.

I approach the topic of time in Stoicism from three broad angles. First, I ask what place time has in Stoic ontology. Time is categorized as an incorporeal, along with place,

[20] See William James (1893) for the origin of the term.

void, and *lekta* (sayables). Given that in Stoic ontology only corporeal bodies technically exist (*einai*) or have causal agency and patiency, we must ask what it means for time to be an incorporeal and to what extent time qualifies as real in the Stoic system. In Chapter 1 I argue that time is an incorporeal in a way that directly parallels place and void; it is a dimension of bodies that contains (but is not identified with or a property of) the motions of bodies. We must not identify time with events in time, including cycles of days and nights and months, which are ultimately physical phenomena. However, this does not make time unreal, any more than place is unreal. Time is still a something, despite not being a corporeal something.

I also begin the difficult process of examining the Stoic notion of the present in an ontological light. If, as I argue, time is space-like dimension, one might imagine that the present does not occupy a special ontological place in their time, any more than the spatial "here" does in a theory of place. Modern four-dimensional theories of time tend to embrace this aspect and to treat "now" as a mere indexical, which simply refers to the time at which it is employed but does not pick out a special property of that time.[21] In this view, there is nothing special about the now, no unique present from the perspective of physics and the universe at large. "It is now the present" is as much an empty tautology as "I am me" or "this place is here." The Stoics, however, do not appear to take this view; Chrysippus and subsequent Stoics claim that the present alone is "*huparchon*," or real, while the past and the future "subsist" (*huphestanai*) but are not "real" (*huparchon*). In the second half of Chapter 1, I argue that the Stoics really do reserve a special ontological status for the present, and

[21] See. Kaplan (1989) for a key work on now as an indexical term.

that this status corresponds to what is the really case. Only what is present is involved in how things really are, while what is past and future are merely how things were or will be. This is not just a fact about the relation to a speaker or subject, but a fact about the physical state of reality.

In Chapter 2, I examine the Stoic definitions of time. Time is invariably described by the Stoics as a "*diastēma* of motion," though there are some variations in further aspects of the definition. Zeno allegedly defined time as "the *diastēma* of all motion," while Chrysippus altered the definition to "the *diastēma* of the motion of the *cosmos*," while other Stoics texts offered no qualification or elaboration regarding the relevant motion at all.

The first task is to determine what the Stoics mean by "*diastēma*." I build upon the work of Chapter 1 and argue that *diastēma* is best translated as dimension and understood as parallel to the dimensions of void and place and the dimensionality of bodies. This translation allows us to understand the common reference in Stoic definitions of time as "a measure or criterion of fast and slow" – time acts as measure of duration and speech in the same way that place acts as a measure of height or breadth or depth as the locus of extended bodies, allowing a comparison of bodily extensions along the relevant axis. Finally, I argue that the Chrysippan and Zenonian definitions of time are functionally identical, and that the formulation from Chrysippus is merely a clarification of the definition put forward by Zeno. The Stoic conception of the *cosmos* includes all bodies as an interconnected entity, and the motion of the cosmos thus ends up being the motion of all bodies taken as a set, not of any specific subset of privileged bodies.

Chapters 3 and 4 I investigate my third topic: the nature and character of the present. While Chapter 1 looks at the present in terms of ontology, Chapters 3 and 4 ask more

detailed questions about the length of the present, its composition, and its relation to the past and future. Chapter 3 sets out several ways the Stoic present has been understood in ancient and modern commentaries and explains the strengths and weaknesses of each of them. This project shows what a Stoic theory of the present needs to include, and why it is difficult to construct a definition of the present that meets all of the conceptual and textual desiderata. In Chapter 4, I attempt to construct such a theory, guided by Stoic commitments in physics, extant Stoic descriptions of the present, and analogies with place. I argue that we should see the Stoics as having a two-tiered theory of the present, with a "strict" present that acts as a punctate junction of past and future and a second, "broad" present constructed out of past and future times and containing the strict present. This broad present derives its presentness from its relationship to the strict present and to ongoing activities and processes.

Chapter 1: The Ontology of Time and of the Present

1. Chapter I Introduction

Time occupies an interesting place in Stoic philosophy as one of four (or perhaps five) reported incorporeals. Stoic ontology has a strong bias towards corporeal entities – most objects in their ontology can be described as corporeals, only corporeals, strictly speaking "exist" (corresponding to use of the verb *einai*), and only corporeals can causally interact as agents or patients.[22] Incorporeals carry on a strange "subsistence" as real entities – "somethings," to use the Stoic categorization – which do not entirely "exist." This has led some commentators, both ancient and modern,[23] to the conclusion that time either has no reality at all for the Stoics, or only has reality in thought. I will argue against this conclusion and show that the Stoics' idea of time is compatible with time having some degree of mind-independent existence and occupying a place in Stoic physics rather than merely in Stoic psychology.

I will begin this chapter with a discussion of the ontology of time as a whole and look at its place within Stoic physics. I will give a quick overview of Stoic ontology, including the category occupied by time: the class of incorporeals. I will argue against the idea that time is not a real subject of physical inquiry for the Stoics, or that it is only a mental phenomenon. From there, I will return to a discussion of time as an incorporeal and suggest an explanation for why the Stoics may have resisted the move to further solidify time as a corporeal by treating it as identical to temporal phenomena. I will argue that time

[22] See e.g. Plut. *Comm. Not.* 1037e; LS Chapter 45 (272-274).
[23] Most notably Proclus (*In Tim.* III.95); more recently, A. C. Lloyd (1971) offers an account of time in Stoicism as a product of language rather than physics.

is closely analogous to place in Stoicism, and the reasons for treating each as an incorporeal are likewise parallel.

In the subsequent section, I will move from a focus on the ontological status of time to the ontological status of the present and examine the question of whether the present has a special ontology distinct from either past or future. I will argue that this is the case, and that the present is, in fact, the only "real" time. Lastly, I will discuss how we should view the present as a special part of time: namely, it is the time when states of affairs fully obtain, and events and motions can be present in virtue of obtaining in the present, despite being constituted by past and future parts.

2. The Ontology of Time

2.1 A Brief Introduction to Stoic Ontology

In order to examine the ontological status of time as an incorporeal, and to understand what it means for time to be an incorporeal, it may be helpful to briefly to review the general shape of Stoic ontology. Stoic ontology appears to posit a superclass of something (*ti*), which suggests the tantalizing possibility of a contrary class of not-something.[24] The genus of something contains bodies, which are the Stoic class of existent, and non-bodies, or incorporeals, which have subsistence as somethings but do not have true existence (*ousia*) as bodies.[25] Universals are almost certainly absent from the list of

[24] I am following the ontological divisions from Long and Sedley (1987): 162-166. The existence of a class of not-somethings is not as textually well supported as the class of somethings; it is generally but not universally accepted. See Caston (1999) for an argument against, and Brunschwig (1988) and (2003) for a case for, including a reply to Caston (Brunschwig 2003: 225-227).

[25] Fictional entities may be another class of somethings which are non-existents. See Seneca *Ep.* 58.13-15 (=LS 27B; SVF II.332) and discussion in LS Chapter 27 (162-166).

somethings,[26] strongly suggesting that all true somethings must be particulars. Another troubled class of purported objects is "concepts" (*ennoēmata)*, which are not somethings but, at best, quasi-somethings or something-like.[27]

The Stoic claim that only bodies can be causal agents or patients; causality is exclusively the business of the corporeal. The Stoics also accept the ontological suggestion of the Eleatic Stranger in Plato's *Sophist*; to exist is to have casual agency or patiency, and vice versa.[28] As only bodies possess causal powers, only bodies truly exist. The verb associated with this kind of existence is *einai*, the most general Greek verb of being. In Stoicism, this verb and its associated terms are restricted to bodies in technical usage. In order to mark this important distinction in Stoicism, I will translate the Greek verb *einai* as "exist," the participle *on* as "existent" or "existing," and the noun *ousia* as "existence."

The class of incorporeals is more mysterious than their corporeal counterparts; fortunately, we have a list of known Stoic incorporeals: time, place void, and sayables (*lekta*).[29] As time is appears on this list, the class of incorporeals is of particular interest for any project interested in the Stoic theory of time. Incorporeals are, definitionally, not bodies, and thus they lack casual powers. It is inappropriate to speak of incorporeals as existing – *einai* – as existence is the sole province of the bodily and causal. Instead, the verb of being appropriate to incorporeals is the generic *huphestanai*. [30] The prefix "*hupo*-" means "under",

[26] See LS Chapter 30: 179-183
[27] DLVII.60-67 (=LS 30C); Stobaeus *Ec.* I.12.3 (=LS 30A; SVF I.65). For discussion, see again Caston (1999) for a defense of concepts as non-existent somethings and Brunschwig (2003) for a reply to Caston.
[28] *Sophist* 247d-e.
[29] There are some sources suggesting that limits constitute a fifth class of incorporeal. See LS Chapter 50 (297-304) for an overview of some of these sources; see White (1999) and Ju (2009) for more discussion of limits in Stoicism.
[30] Brunschwig (2003): "the distinction between 'somethings' which are 'existents' and 'somethings' which are not was paralleled by the verbs and nouns the Stoics used for designating their respective ontological status. In contrast with *eiani* and *ousia*, *huphistanai* and *hupostasis* were usually reserved for non-existent (i.e. merely

and the stem is the verb "to stand." As this verb is generally translated by the English Latinate equivalent, "subsist," I will translate verb *huphestanai* as "subsist," the participle *huphistanton* as "subsistent" or "subsisting," and the noun *hupostasis* as "subsistence."

The class of incorporeals is quite limited; it contains four or, at most, five items. There is a reason for the relative scarcity of incorporeals; Stoics have a strong tendency to re-describe apparently incorporeal entities as bodies. The special role of bodies in Stoicism gives them a powerful motivating reason to "corporealize" whatever they can, as incorporeal entities are stripped of all potential for causal interaction. One notable instance is the Stoic claim that moral virtues are bodies. It would doubtless pose a problem for Stoic ethics if there were no way to bring about justice in the soul (because justice could not be a causal patient), or if possessing justice did nothing to improve one's life (because justice could not be a causal agent). Justice must have causal agency and patiency, and thus justice must have true existence as a body. Fortunately, they have a general explanation of how this can be the case that allows them to corporealize a wide swathe of otherwise incorporeal seeming entities. The Stoics ask us to consider a body as something which will be qualified or disposed in a variety of different ways.[31] These disposed bodies are not something different from the bodies themselves, nor are they second bodies over and above bodies. Rather, they are the same bodies in a certain state with certain dispositions, and those states and dispositions can be understood as bodies themselves insofar as they constitute a body disposed in just that way. To borrow an example from Brunschwig:

'subsistent') 'somethings'" (213). Sedley (1999) has a similar analysis: "'Subsistence [*hupostasis*]' is the technical ontological status of the incorporeals, one which falls short of actual being" (397). LS Chapter 27 (162-166) contains relevant fragments and discussion on existence and subsistence.

[31] See LS Chapters 27-29 (162-179) for sources and discussion, including an analysis of possible distinctions between the qualified (*poion*) and disposed (*pōs echon*).

> Consider the fist, a typical example for the Stoics. What is a fist? Neither exactly the same thing as a hand, which is a body, nor a completely different thing, but a hand disposed in a certain way; hence, a body itself (if one grants that a body disposed in a certain way *is* a body).[32]

It would be strange to say that a fist is not a body; it has a definite potential for causal interaction and does not seem to be some mystical or insubstantial property floating above my hand. Neither is my fist a second body over and above my hand. The fist is a body, because the hand is a body and the fist just is the hand disposed in a certain way and in a certain state. If one grants that the soul is a body (as the Stoics must, since it has the potential for causal interaction), then justice is a body, because justice just is a certain disposition of the soul. Justice is to the soul as the fist is to the hand. Thus, justice has true existence and causal power. It can be brought about in the soul and can effect changes in the relevant agent. Seneca walks us through this reasoning in Epistle 113:

> It is clear that the soul (*animum*) is an animal, since it itself brings about that we are animals, since the name animal is derived from *animum*. Moreover, virtue is nothing other than the soul disposed in a certain way; therefore it is an animal.
>
> *Animum constat animal esse, cum ipse efficiat, ut simus animalia, cum ab illo animalia nomen hoc traxerint. virtus autem nihil aliud est quam animus quodammodo se habens; ergo animal est.* [33]

This strategy generalizes broadly, bringing a vast number of objects into the bodily realm of Stoic ontology. Plutarch complains that sneezing and spitting must be bodies and animals for the Stoics, as these are just bodies and animals disposed in certain ways, and presumably

[32] Brunschwig (2003): 212
[33] Seneca *Ep.* 113.2 (=LS 29B; SVF III.307):

he is correct.[34] If the Stoics cast themselves in the role of Plato's materialist giants, they made certain that there was plenty for them to grasp, even when restricted to bodies alone.

2.2 The Reality of Time

Before we move on to the ontology and physics of time, we ought to pause and ask whether time has any independent reality in the world, or whether it is a mere mental construct or human concept.[35] To put it another way: is time a fit subject for physics as a feature of the external world, or is it better studied under the aegis of human psychology or epistemology as a feature of human experience without external reality?[36] This is a particularly pressing question because, as mentioned above, concepts (*ennoēmata*) are likely not true somethings for the Stoics and would thus not be appropriate subjects of physical investigation. On the other hand, if time turned out to be something that only existed in thought without being a concept, then it might exist as a body – but it would be constituted by the soul of the thinker and she would be the relevant body, not the *cosmos* at large. Time would not be a subject of physics in that case either, but only one type of thought among many. Does time have a place in Stoic physics as a feature of the world outside of human thought? I am convinced that the answer is "yes", but there are a few countervailing points worth consideration.

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[34] Plut. *Comm. Not.* 1084c.
[35] See, for example, the analysis of time in book XI of Augustine's *Confessions* (especially chapter 20), which may be plausibly read as arguing that the reality of time is confined to human experience.
[36] The first option need not require complete mind independence; the Aristotelian definition of time, for example, depends upon the existence of a mind to "count" time, but what is being counted is still a feature of the world. Aristotelian time could not exist without a mind, but neither is its reality confined solely to a mind (*Phys*. IV.14.223a16-29).

Time does not appear on any of the lists of topics in Stoic physics given in Diogenes Laertius' biography of Zeno of Citium. There are two such lists – one specific (*eidikōs*), one generic (*genikōs*)[37] and it is on the specific list we would expect to see time. However, it is absent:

> Regarding the subject of physics, they divided it into topics on bodies and on principles and elements and limits and place and void. The specific topics were thus.
>
> Τὸν δὲ φυσικὸν λόγον διαιροῦσιν εἵς τε τὸν περὶ σωμάτων τόπον καὶ περὶ ἀρχῶν καὶ στοιχείων καὶ θεῶν καὶ περάτων καὶ τόπου καὶ κενοῦ. καὶ οὕτω μὲν εἰδικῶς.[38]

This is not, however, strong evidence against the existence of time as a subject of Stoic physics. This specific list, as offered, is missing many topics discussed by Stoics, such as the general heading of incorporeals, Fate, causation,[39] topics in astronomy, and even the topic of motion. This cannot mean that these are not topics in Stoic physics; it is much more likely that they are omitted for brevity or implicitly included under headings present on the list. Motion is likely conceptualized under the heading bodies or place; astronomy and cosmic cycles under the study of the *cosmos*, and so forth. I suspect that "place and void" are representatives of the study of incorporeals generally, which would account for the absence of time and *lekta* (the two missing incorporeals). As I will argue in later, time and place are closely connected for the Stoics and defined in similar ways; a subject heading of "place and void"[40] could very well have included the discussion of motion and time.[41]

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[37] Generic here is meant in the sense of "by kind" (*genos*), rather than by specific subject headings.
[38] DL 7.132.
[39] Inquiry into causes is on the second, general list that follows, but not this first specific one.
[40] Or even "limits, place, and void", which Brunschwig (2003: 207) groups together into a single category.
[41] Plutarch quotes a discussion of the present from Chrysippus' work *On the Void*; this tells us that Chrysippus thought that a work discussing void (whether he himself gave it that title or it was a later description) was an appropriate place to discuss time.

The "generic" list of topics in physics, given right after the specific list, also omits time – but as this list includes only three general subjects the omission is hardly surprising.

> Generically, there are three topics, one regarding the *cosmos*, one regarding elements, and one regarding inquiry into causes.
>
> γενικῶς δ᾽ εἰς τρεῖς τόπους, τόν τε περὶ κόσμου καὶ τὸν περὶ τῶν στοιχείων καὶ τρίτον τὸν αἰτιολογικόν.[42]

In this generic division time almost certainly falls under the topic heading regarding the *cosmos*. The definitions of time attributed to Chrysippus includes the *cosmos*; time is the dimension (or extension, or interval), accompanying the motion of the *cosmos*.[43] In short, although time is not present on either list this should not force us to the conclusion that time was not considered a proper subject for physics. Rather, the specific list seems to give examples of the kinds of things studies in physics, rather than an itemized list of each particular thing studied, while the generic list just gives general headings that could easily include time.

Another source that might give us pause in our inquiry into the physics of time is Proclus, who reports on the relative unreality of time as a mere concept or thought in Stoicism:

> The Stoics establish that time is in mere thought (*kata epinoian psilen*), feeble and nearly non-existent (*engus tou mē ontos*) (for according to them time is among the incorporeals, which they disdain as powerless and non-existent (*ouk onta*) and subsisting in mere thought).
>
> οἳ μὲν κατ᾽ ἐπίνοιαν ψιλὴν αὐτὸν συνιστάντες ἀμενηνὸν καὶ ἔγγιστα τοῦ μὴ ὄντος (ἓν γὰρ ἦν τῶν παρ᾽ αὐτοῖς ἀσωμάτων ὁ χρόνος, ἃ δὴ καταπεφρόνηται παρ᾽ αὐτοῖς ὡς ἀδρανῆ καὶ οὐκ ὄντα καὶ ἐν ἐπινοίαις ὑφιστάμενα ψιλαῖς).[44]

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[42] DL 7.132.
[43] See Stobaeus *Ec.* I.8.42.25-29.
[44] Proclus *In Tim.* III.95.10-14 (= SVF II.521).

Proclus asserts here that, for the Stoics, time is a mere mental construct or thought, not an entity with reality in the world outside the mind, and that it has an ephemeral and weak near non-existence. If Proclus is right that time only has reality in human thought, then it would almost certainly be a non-something and unreal (i.e. a concept). At best, it would be real as a state of an observer's soul, and but not as a part of the external workings of the world.

However, as Proclus immediately gives us his reasons for believing this is the case, it seems clear that we should not take him too seriously. He claims that because time is an incorporeal, time is unreal and merely in thought. This is not a careful and convincing exegesis of the Stoic theory of incorporeals; Proclus appears to simply reject the whole idea of a category of incorporeals. Stoics clearly treat incorporeals as somethings, and not as mere objects of thought. Proclus' analysis would also make place a mere thought, something with no mind-independent reality – but this is even more implausible. While Proclus is right that incorporeals are in some sense "non-existent" for Stoics, this is because existence is a technical term only appropriate to bodies, not because non-existents like incorporeals are completely unreal and in the mind alone. Proclus' analysis accordingly should not be granted much weight as an exegesis of Stoic metaphysics.

Other sources make it clear that time has physical reality for the Stoics. When Sextus Empiricus argues against the reality of time in *Against the Dogmatists* X, he includes a Stoic view as one of the views to be argued against. The mere fact that the Stoics have a definition of time – as will be discussed at length in the next chapter – strongly suggests that time is not wholly unreal in their physics. The Stoic definition of time makes no reference to thought or human agents; in fact, the Stoic definition is even further divorced from human agents than the definition given by Aristotle (who himself clearly thought that time had a

reality as a legitimate subject of physical inquiry). The Stoics and Aristotle both define time in relation to motion, but for Aristotle time is "the number of the before and after in motion,"[45] while the Stoics define it as "the dimension (*diastēma*) of motion." Aristotle makes it clear that his definition of time as a number makes the existence of time dependent on the presence of a soul that counts that number; there is no such implication present in the Stoic definition of time as a *diastēma*.[46] The Stoics define time as an incorporeal entity that is connected to motion and the *cosmos*, and there is no suggestion in the extant treatment of time by Stoics that it is a mere conceptual or experiential product of the mind without external being.

2.3 Corporeal Time

Nevertheless, at first glance it is perhaps surprising that time is an incorporeal in Stoicism. As briefly mentioned above, the Stoics had a habit of treating apparently non-corporeal entities – like virtues – as bodies. It does not seem that this would have been difficult to do with time; time is associated with a host of physical phenomena, such as the motions of stars, planets, the sun, the moon, the varied seasons, and so forth. In fact, there is a tantalizing reference in Plutarch's *Against the Stoics on Common Conceptions* to a text where Chrysippus seems to make the relevant move. Plutarch claims that Chrysippus argues in this manner in his work *Natural Questions*:

> It is not the case that the night is a body, but the evening and the dawn and the middle of the night are not bodies, nor is it the case that the day is not a body, but the first day and the tenth and the fifteenth and the thirtieth and the month and the summer and the autumn and the year are bodies.

[45] *Phys.* IV.11.219b1-3.
[46] If the Stoics were aware of the Aristotelian definition, as they might plausibly have been – see Sandbach (1985): 50-51 for detailed discussion of this point and important caveats – they may even have deliberately moved in a more objective direction when choosing the terms of their definition.

> οὐχ ἡ μὲν νὺξ σῶμ᾽ ἐστίν, ἡ δ᾽ ἑσπέρα καὶ ὁ ὅρθρος καὶ τὸ μέσον τῆς νυκτὸς σώματ᾽ οὔκ ἐστιν· οὐδ᾽ ἡ μὲν ἡμέρα σῶμ᾽ ἐστὶν οὐχὶ δὲ καὶ ἡ νουμηνία σῶμα καὶ ἡ δεκάτη καὶ πεντεκαιδεκάτη καὶ ἡ τριακὰς καὶ ὁ μὴν σῶμ᾽ ἐστὶ καὶ τὸ θέρος καὶ τὸ φθινόπωρον καὶ ὁ ἐνιαυτός.[47]

Plutarch quotes this argument in the context of his complaint that the Stoics turn entities such as virtues and vices and physical states (like walking) into bodies and, indeed, into animals themselves, by redescribing them as bodies (and animals) disposed in certain ways. By extension, he says, things like sneezing and spitting will also be animals. He uses the example above as an example of Chrysippus arguing in a similar way, "*kata mikron*," i.e. from something small.

Brunschwig briefly discusses this passage, and correctly notes that given just this short quote the argument could be interpreted either as an argument by *modus ponens* to the conclusion that years and seasons are bodies, or a *modus tollens reductio ad absurdum* argument to the conclusion that the night and day are not bodies.[48] However, given the surrounding context, it is much more likely to be the *modus ponens* argument. Plutarch introduces this quote in order to bolster his own argument about the many strange entities Stoics must admit as bodies, in order to show that Chrysippus argued the same way he did: "little by little" (*kata mikron*); this point would be dulled if the example argument was actually a refutation. Furthermore, it does not seem much odder to say that years are bodies than to say that days and night are. If I accept that days and night are bodies, why would I be bothered by the further conclusions about years and seasons? The results are not absurd

[47] Plut. *Comm. Not.* 1084d1-6.
[48] Brunschwig (2003): 216.

enough for a *reductio ad absurdum*, given the rest of what the Stoics believe. Surely it is no stranger to say that a year is a body than that justice is an animal.

A passage from Sextus Empiricus' discussion of time in *Against the Dogmatists* Book X shows how the argument that the day and night are bodies might have gone. Sextus is discussing a possible Epicurean theory of time as a "day-type or night-type" appearance (*phantasma*), but the general point is still instructive for our discussion of the days and nights as bodies:

> Indeed, day is spoken of in two ways, as a single turning (*tropon*) constituted by twelve hours, or as the air lit up by the sun.
>
> καὶ μὴν ἡμέρα λέγεται διχῶς, καθ' ἕνα μὲν τρόπον ἡ ἐκ τῶν δώδεκα ὡρῶν συνεστῶσα, καθ' ἕτερον δὲ ὁ πεφωτισμένος ἐξ ἡλίου ἀήρ.[49]

One sense of "day" is given in terms of hours, or times; the other is in terms of physical phenomena. In this second sense, day is described as a state of "air lit up by the sun" and night as a darkening of the air from the absence of the sun, or by the relative positions of earth and sun, the visibility of the stars, and so forth. These are all states of physical bodies – the air, the earth, the sun, the stars. Viewed in this way, night just is the physical cosmos disposed in a certain way. Night would therefore be a body, and the same for day.

If we add the premise that whatever is wholly composed of bodies is itself a body, then it follows that weeks and years and seasons will be bodies as well. This is not really any stranger than saying that days are bodies; a week can be described in purely physical terms by repetitions of lightening and darkening, or by changes in the relative position of the earth, sun, moon, and stars. Months can be described in the same way, or by cycles of the moon.

[49] *M* X.185.1-3.

These are all states of bodies, and so qualify as bodies in the Stoic's special sense of the term.

That much explains why Chrysippus might think that days and weeks and years are bodies. Is it consistent, then, for the Stoics to say that time is an incorporeal? Why would they not embrace this explanation of time as a body?

2.4 Incorporeal Time

While we do not have a direct explanation in the text, the answer seems to be that while days and nights and weeks and years are bodies in one sense, these bodies are not identified with time within Stoic physics. In fact, it is important for the Stoics to differentiate between these periods defined as bodies and time itself. Sextus Empiricus provides the seeds of an argument why time must be different from days understood as bodies when he responds to the Epicurean position quoted above. He complains that if we understand day and night as times and say that time is an appearance of days and nights, then time is an appearance of time(s) – an unhelpful circular definition. Epicurus will have successfully listed a set of times, but not told us what time *is*.[50] But if time is the appearance of days and nights understood as physical phenomena, such as air being lit by the sun, then time is equivalent to the appearance of an event that happens *in* time:

> Neither is time the appearance of air lit up by the sun; for this occurs in time, and therefore if time is our appearance of this kind of day, this day will occur in our appearance.
>
> καὶ μὴν οὐδὲ τὸ τῆς ὡς πεφωτισμένου ἀέρος ἡμέρας φάντασμα· αὕτη γὰρ ἐν χρόνῳ γίνεται, καὶ διὰ τοῦτο εἰ χρόνος ἐστὶ τὸ ταύτης τῆς ἡμέρας ἡμέτερον φάντασμα, ἐν τῷ ἡμετέρῳ φαντάσματι γενήσεται ἡ τοιαύτη ἡμέρα.[51]

[50] *M* X.186-187.
[51] *M* X.187.4-8.

When we considered the day as the atmosphere being lit by the sun, what we actually had in mind was an *event*, not a time. Events occur *in* time, but are not identical with time. To use more Stoic language, the lightening of air or the changing cycle of the moon is a motion. The same aspect of days and night and months that makes it possible to talk about them as bodies turns them into motions. The standard Stoic definition of time as a "*diastēma* of motion" maintains a distinction between motion and time. Time is not motion itself; time is the *diastēma*, or dimension, of motion. Consequently, days and weeks and years, understood as repetitions of light and darkness, cycles of the moon, and passing of the seasons and stars, are not time. They are motions within time and make for convenient *markers* of time, but they are not appropriately identified with time. If these motions were time, then they would not happen in time. This would be an odd conclusion, and one the Stoics do not appear inclined to accept.

By way of comparison, consider place and void. These, like time, are incorporeals, and are defined by reference to bodies (or "existents") without being bodies themselves. The Stoic definition of void and place reported in Sextus Empiricus defines them in terms of occupation by bodies and, in the case of void, subsistence as a "*diastēma*" (interval or dimension) – the same word used in the common Stoic definition of time as a "*diastēma* of motion."

> And the Stoics say that void (*kenon*) is that which can be occupied by an existent, but is not occupied, or a *diastēma* empty of body, or a *diastēma* unoccupied by body, and place (*topos*) is that which is occupied by an existent, and is itself coextensive with the thing occupying it (now, by existent they mean body, and this is evident from the transference of names); and they say that room (*chōra*) is a *diastēma* in some respect occupied by body, and in some unoccupied.

> καὶ οἱ Στωικοὶ δὲ κενὸν μὲν εἶναί φασι τὸ οἷόν τε ὑπὸ ὄντος κατέχεσθαι μὴ κατεχόμενον δέ, ἢ διάστημα ἔρημον σώματος, ἢ διάστημα ἀκαθεκτούμενον ὑπὸ σώματος, τόπον δὲ τὸν ὑπὸ ὄντος κατεχόμενον καὶ ἐξισαζόμενον τῷ κατέχοντι αὐτόν, (νῦν ὃν καλοῦντες τὸ σῶμα, καθὼς καὶ ἐκ τῆς μεταλήψεως τῶν ὀνομάτων ἐστὶ συμφανές)· χώραν δέ φασιν εἶναι διάστημα κατὰ μέν τι κατεχόμενον ὑπὸ σώματος, κατὰ δέ τι ἀκαθεκτούμενον.[52]

Void is a *diastēma* empty of any bodily existent – place, by direct analogy, is a *diastēma* occupied by a bodily existent. Both of these are defined in reference to bodies and are definitionally posterior to bodies, but are explicitly not bodies themselves.

We might just as easily ask why place is not a body in Stoicism; we might easily think of places as not merely coextensive with occupant bodies, but identical to them. For example, in at least one sense of the term, the city of San Diego is a place. The city is composed of buildings, streets, people, and other physical objects. It is a set of bodies arranged in a specific way. Hence, it is appropriate to describe San Diego itself as body in the Stoic sense. If I spent a whole day in an apartment in San Diego, it would be reasonable for me to say that I had stayed in one place all day.

In another sense, however, it would also be true to say that the entire city, with me in it, has moved to a different place over the course of the day as the Earth turns and moves through the solar system. When I talk about place in this sense, I do not have a body in mind. What I am instead thinking of is a location on an absolute spatial manifold (if I am a space theorist), or a complex set of relations between bodies (if I am a place theorist). San Diego used to be in one place in the universe, and now it is in another and something else is in the place where it once was. Similarly, we can imagine hypothetical situations where aliens pick up the entire city, buildings people and all, and move it to a different place on

[52] *M* X.3.1-4.1.

earth. The place where it was does not move with it. However, it is difficult to think or talk about this abstract sort of place without also talking about the objects that exist within it. I cannot "see" pure, incorporeal place, because by its very nature there is nothing about it that my senses can interact with. What I *can* see are the bodies in place, and I can talk about that place in relation to those bodies.

Days and night and weeks, when viewed as bodies, are the temporal equivalents of the city of San Diego. Air growing light or dark is not time. What it *is* is a regular occurrence within time that makes it easy to divide the abstract and incorporeal temporal continuum. Place must exist in order for spatially extended bodies to occupy it. Likewise time must exist for temporally extended events to occur, such as air growing light, the sun setting, the moon changing phase, and crops beginning to ripen. These are no more identical with time in the Stoic view than San Diego is identical with place, or Socrates is identical with the place where he is sitting (which may subsequently be occupied by Plato).[53] The connection we feel between these events and time is easily explained by their usefulness in measuring time. In a cave deep underground with no view of the sun or the moon, it would be difficult to tell how much time had passed. There is a possible sense in which a day is a part of time, but this is not the sense in which it is also a body. If, as Sextus Empiricus

[53] Aristotle gives an account of place that allows the "same place" to be occupied by different bodies at different times while still being a body (or the surface of a body) itself (*Phys.* IV.4) – such an option was thus available to the Stoics, but they clearly did not find it satisfactory (given the categorization of place as an incorporeal). One reason might be that this leaves void without any existence, as void lacks bodily boundaries (which constitute place in Aristotle's system). Aristotle denied the existence of void, but the Stoics accept an extra-cosmic void, expanding into infinity outside the cosmos. Insofar as place and void share a definition – they are both *diastēmai* (dimensions) that may be occupied by body; void is empty and place is full – it would be inelegant and perhaps even contradictory to declare that place is a body but void is not.

suggests, we think of a day as a unit of twelve hours, then it is time but is not a body. If we think of a day as the air being lit by the sun, it is a body but it is not time.

Another strong reason the Stoics must identify time as an incorporeal is their doctrine that whatever is corporeal is limited – only the incorporeal can be unlimited.[54] Our sources are clear that time is infinite for the Stoics, both into the past and into the future.[55] If we defined time in terms of cosmic events – sunrises, sunsets, light and darkness, phases of the moon and positions of the stars – these would all be limited, at the very least by the cycles of the *cosmos* in which these objects perish. There would likewise have to be some first and last motion to act as the limits of past and future respectively, and Stoicism, with its infinite cycles, does not have room for such a doctrine.[56]

Interpreting the Stoic concept of time as the extended incorporeal "dimension" that motions occupy, just as place is the extended incorporeal that dimension bodies occupy, has several distinct advantages. First, it allows us to define three of the four incorporeals in a parallel way, explaining why they might share the same categorization. Place is what is occupied by body. Void is what could be occupied by body but is not. Time is what is occupied by the motions of bodies (which are themselves a kind of body).[57] Second, as I

[54] Stobaeus *Ec.* I.18.4d.11-16 (=SVF II.503). Time and void are explicitly listed as two unlimited incorporeals. Although place is an incorporeal, it is finite – this is because place is definitionally occupied by and coextensive with body, and body is necessarily finite. Void, however, is infinite, and thus the room, the composite of place and void, is presumably as infinite as void.
[55] Stobaeus *Ec.* I.8.42 attributes the view that time is infinite to each of the three Stoics whose views on time are discussed there: Chrysippus, Apollodorus, and Posidonius. There is no mention of the infinity of time at *Ec.* I.8.40e where Zeno's view of time is recorded, but the passage is generally shorter (barely over four lines) and less detailed than the other three (the shortest of which is Apollodorus, coming in at nine lines).
[56] The Stoics were in good company regarding the infinity of time; according to Aristotle (*Phys.* VIII 251b), Plato was the only philosopher who posited beginning and creation of time (see *Timaeus* 37d).
[57] David Sedley (1999) offers a somewhat similar interpretation of these three incorporeals, with time, place, and void as objective structural preconditions for bodies and motion, and theorizes that *lekta* play a similar role for meaning (401-402). "We can conjecture that the Stoic list of incorporeals is designed to include only those items which, albeit not bodies, are an ineliminable part of the world's objective structure" (402).

have just discussed, this explains why time is an incorporeal and not a corporeal. The Stoics want to be able to draw the same distinction between motions and time that they do between bodies and place, thus avoiding the arguments made against theories that collapse time and motion into a single concept. Third, it gives us some insight into the Stoic definition of time as a *diastēma* – that is, an interval, extension, or, as I will argue, dimension – of motion. This definition is decidedly opaque, but if we keep firmly in mind the idea that time is an incorporeal and resist any reading the renders time corporeal in the Stoic sense, it becomes much clearer what this Stoic definition must mean. The explication of the Stoic categorization of time I have given in this section strongly suggests an account of time as a coequal dimension along with place and the three spatial dimensions. There are further reasons to embrace this dimensional reading of the Stoic theory, and I will discuss those in the next chapter when I examine Stoic definitions of time in detail.

3. The Ontology of the Present

3.1 To Exist, to Subsist, and to Be Real: Time and Verbs of Being

Now that we have established the way in which time as a whole "exists" – or more properly, subsists – as an incorporeal dimension of motion, we must turn to another significant ontological question connected to time. Namely: does the present have an ontology distinct from the ontology of the past and future? Or to put it another way: does the present have a privileged reality? The suggestion above – which will be fleshed out in greater detail in the next chapter – that time is a dimension analogous to space might prima

facie seem to suggest that the present is not ontologically privileged, any more than "here" is ontologically privileged in space.[58]

However, there is powerful evidence that the present *is* privileged, attributed to Chrysippus himself:

> Chrysippus, wishing to practice art regarding the division,[59] in *On the Void* and other places said that the past and future of time are not real (*ouch huparchein*), but they subsist (*huphestēkenai*), and only the present (*to enestēkos*) is real (*huarchein*).
>
> Χρύσιππος δὲ βουλόμενος φιλοτεχνεῖν περὶ τὴν διαίρεσιν ἐν μὲν τῷ περὶ τοῦ Κενοῦ καὶ ἄλλοις τισὶ τὸ μὲν παρῳχημένον τοῦ χρόνου καὶ τὸ μέλλον οὐχ ὑπάρχειν ἀλλ' ὑφεστηκέναι φησί, μόνον δ' ὑπάρχειν τὸ ἐνεστηκός.[60]

While the source for the quote is Plutarch's polemical *Against the Stoics on Common Conceptions*, Plutarch represents himself here as merely quoting from a text by Chrysippus. The polemical arguments come later, and Plutarch is generally a reputable source. The same idea is repeated with almost identical language in Stobaeus:

> <Chrysippus> says that only the present (*ton enestōta*) is real (*huparchein*), and the past and the future subsist (*huphestanai*) but are not at all real, unless as properties also are said to be real only as predicates, like "to walk" is real for me when I am walking, but when I am lying down or sitting it is not real […][61]
>
> μόνον δὲ ὑπάρχειν φησὶ τὸν ἐνεστῶτα, τὸν δὲ παρῳχημένον καὶ τὸν μέλλοντα ὑφεστάναι μέν, ὑπάρχειν δὲ οὐδαμῶς, εἰ μὴ ὡς καὶ κατηγορήματα ὑπάρχειν λέγεται μόνα τὰ συμβεβηκότα, οἷον τὸ περιπατεῖν ὑπάρχει μοι ὅτε περιπατῶ, ὅτε δὲ κατακέκλιμαι ἢ κάθημαι οὐχ ὑπάρχει [...][62]

[58] While this point is generally taken for granted among modern philosophers, it is much less clear in antiquity. There may in fact be privileged directions and locations in ancient thought, such as the center of the cosmos or the Aristotelian analysis of absolute up and down (see e.g. *DC* IV.1).
[59] i.e. the division of time and times.
[60] Plut. *Comm. Not.* 1081f3-1082a1.
[61] The ellipsis represent a likely lacuna in the text; it is not clear whether the sentence is complete.
[62] Stobaeus *Ec.* I.8.42.38-43.

This fragment ends with a tantalizing suggestion of further clarification, but the passage lapses into an apparent lacuna with the explanation incomplete. We will return to the final point about properties later, but first we must focus on the wider claim about the parts of time.

Both fragments draw an explicit contrast between past and future on the one hand and present on the other. This contrast is represented by two different verbs: the present is associated with the verb *huparchein*, while the past and future are explicitly denied whatever status this verb connotes. The past and future are associated instead with the verb *huphestanai* – and no mention is made in either fragment of whether this verb also applies to the present. The focus of these fragments is instead on the fact that the present alone is *huparchon*,[63] while the past and future are not.

As we saw earlier in this chapter, Stoic ontology includes careful regimentation of its verbs of being. Corporeals exist – *einai*. Incorporeals do *not* exist in this sense; they instead subsist – *huphestanai*. This second verb is the one we see here attached to the past and future. This is unsurprising; time is an incorporeal, and thus we would expect it to subsist. The past and future are, likewise, times in their own right. It follows that the past and future are incorproeals and subsist – *huphestanai*.

It is more surprising that this word is not directly applied to the present – even if it is not explicitly denied either. *Huphestanai* is used as a part of the contrast between past and future on the one hand and present on the other, at least suggesting that it is more appropriately applied to past and future than to present. This is not enough to prove that the

[63] The participial adjectival form of *huparchein.*

present is not an incorporeal and thus not a time – though it is suggestive of it – but it does tell us that something else is going on with the present above and beyond what we would expect from the average incorporeal.

Given the careful regimentation of verbs of being in Stoic ontology, we must ask what the role of the verb *huparchein* is, and what it suggests about the ontological status of the present. *Huparchein* shares the "*hupo-*"[64] prefix with *huphestanai,* but the Chrysippus passages in Stobaeus and Plutarch makes it very clear that they are not synonyms and stand in contrast with each other. Yet neither should we assume *huparchein* is the same as *einai*, or that the contrast between *huparchein* and *huphestanai* is the same as the *einai–hupestanai* contrast; the "*hupo-*" prefix of *huparchein* suggests (though it does not mandate) some form of subordination to the unqualified existence of corporeals. We cannot infer that the present is a corporeal merely because it comes with an unexpected verb of existence.

Huparchein is, famously, a word with widely varied usage and application.[65] It may mean: to begin, to be, to preexist, to subsist as a predicate, to really be the case, and so forth. It could even mean "to be present" – although as Michael White notes, saying that the present alone is present seems redundant.[66] Moreover, our sources use a different verb – *enestanai* – to signify being temporally present. I have chosen to translate *huparchein* as "is real" throughout, in order to distinguish it from both *einai* and *huphestanai,* but more is required to show what precisely that means. In order to narrow down possible usage and

[64] Meaning "under"; equivalent to the Latin prefix" "sub-".
[65] For some discussion of *huparchein* as a term in Stoicism and further speculation about the distinction between *huphestanai* and *huparchein* in the passage on time, see Long (1971): 89-95; Goldschmidt (1972); Hadot (1969).
[66] White (1983) translates *huparchein* as "obtain" or "be actual" in this passage (47). I see that translation as consistent with my own – what is real is whatever obtains at a given time. I have chosen "is real" instead for easier application to nouns and objects as well as adjectives and predicates.

elucidate the meaning, I suggest we examine another topic in Stoic philosophy where we find this verb playing an important role: Stoic epistemology.[67]

3.2 The Real and the Phantasmic: *To Huparchon* in *Kataleptic* Appearances

A core component of Stoic epistemology is the *kataleptic*, or "grasping" appearance.[68] *Kataleptic* appearances are supposed to produce automatic assent and to provide a stable ground for knowledge. Crucially, *kataleptic* appearances have to be true – that is, they have to correctly provide information about the world in order to provide foundation for knowledge.[69] The word "*huparchon*" – the participial form of *huparchein* – appears repeatedly in the definition of *kataleptic* impressions found in Sextus Empiricus. As a definition, we can safely assume that the terms are being used in a precise and technical sense (a priority for the Stoics in such situations).

> A *kataleptic* <appearance> is one from something real (*apo huparchontos*), stamped and impressed in accordance with that real thing (*kat' auto to huparchon*), and of such a sort as would not have come about from something not real (*apo mē huparchontos*).
>
> καταληπτικὴ δέ ἐστιν ἡ ἀπὸ ὑπάρχοντος καὶ κατ᾽ αὐτὸ τὸ ὑπάρχον ἐναπομεμαγμένη καὶ ἐναπεσφραγισμένη, ὁποία οὐκ ἂν γένοιτο ἀπὸ μὴ ὑπάρχοντος.[70]

The subsequent discussion contains a useful example of an appearance that fails to be *kataleptic* by meeting the first condition ("from something real") but not meeting the second

[67] All index references in the *Stoicorum Veterum Fragmenta* to either *huparchō* or *huprachon* refer either to passages on *kataleptic* impressions or to passages on time (SVF vol. IV p. 149).
[68] The phrase "*kataleptike phantasiai"* is a difficult one to translate. *Phantasia*, which I have rendered as "appearance", is regularly translated as "impression". Michael Frede (1999) translates the phrase as "cognitive impression"; Richard Bett uses "apprehensive appearance" in his translations of Sextus Empiricus.
[69] For a recent synopsis of issues concerning *kataleptic* appearances, see the *Stanford Encyclopedia of Philosophy* entry on Stoicism, by Dirk Baltzly (2018), where they are called "cognitive impressions."
[70] Sextus Empiricus, *M* VII.248.1-4.

condition ("stamped and impressed in according with the real thing"). Orestes, having been driven mad by the gods as retribution for killing his mother, perceives his sister Electra as a Fury. The appearance of Electra-as-Fury is "*apo huparchontos*" because it comes from something real – namely Electra. Electra is real, and she really is Electra. Insofar as Orestes is having a perception of Electra and that arises from Electra, the appearance is from something real. But insofar as Orestes perceives Electra *as* a Fury he is not perceiving the real Electra in accordance with how she is as a real object. She really is Electra, and she is not really a Fury. Thus, Orestes' impression of her is not "*kat' auto to huparchon*" ("in accordance with that real thing").[71]

In each case, the *huparchon* refers to what is really there and how it really is. It is not just that Electra exists and is corporeal – it is that she has a definite reality as one kind of thing (Electra) and not as another (a Fury). The Fury is not non-existent in the broadest sense (the impression of the Fury is coming from a real existent object), but it is not really there as a Fury nor what the real object being perceived (Electra) really is. The perception is veridical in so far as it picks out what is real and how it really is.[72] Thus in Stoicism

[71] Michael Frede (1999) translates "*apo huparchontos*" in this passage as "from the fact" and offers the following understanding of *huparchon* in reference to *kataleptic* impressions: "For an impression that A is F to be cognitive it must have its origin in the fact that A is F" (302). I find this interpretation somewhat puzzling; Orestes' impression of Electra is from Electra herself, not from a fact about Electra. Indeed, he is not perceiving her as Electra at all – no Electra-based facts are getting through to him. Frede gives as evidence for his reading the case discussed at *M* VII.405 of Heracles misperceiving his children as his enemy's children: "Heracles' impression that his children are those of Eurythus is treated as an impression from what is not, though Sextus at the same time emphasizes that the impression had its origin in Heracles' children which stand in front of him. So there is a real thing which gives rise to the impression, namely Heracles children; nevertheless the impression is not counted as one from what is" (302-303). However there is no trace of the word *huprachon* or *huparchein* in the Heracles passage at *M* VII.405, and no denial that the perception is from something real or "*apo huparchontos*." Instead, the focus is on the way Heracles acts from the false (and therefore non-*kataleptic*) impression. The same reading holds good for Heracles as for Orestes; though the appearance of the enemy's children *is* from something real (Heracles' children), it is not in accordance with how those real things really are (they really are his children and are not really his enemies).

[72] The impression of Electra-as-Fury ends up being both true and false, for exactly parallel reasons. It is true insofar as it is a perception of Electra, who really is there and being perceived. It is false insofar as it is a

huparchein appears to denote what is real and what is really the case, as opposed to what is a mere appearance without reality.

3.3 The Reality of the Present

How can we apply this understanding of *huparchein* to the use of it in reference to time and the present? The sense seems to be that the present is what is really the case; things really are as they really are only *when* they really are such – namely, in the present. Less obscurely, the present is the exact moment at which states of affairs are true, or the case. The conditions for an appearance being true are closely related to the conditions for a state of affairs being *huparchon*, or real – the case of Orestes and Electra is given as an example for both terms in Sextus Empiricus' explanation of Stoic epistemology. Orestes' impression of Electra-as-Fury is described as both true – in so far as it is a perception of Electra, who is really there – and false – in so far as it is a perception of a Fury, which is not really there (or how the object that is really there really is). This is exactly parallel to the reasons that the Electra-as-Fury impression failed to be *kataleptic*, because despite being "from a real thing" (the condition that both made the impression partly true and allowed it to meet the first criterion for a *kataleptic* impression), nevertheless it was not "in accordance with that real thing" (the condition that both makes the impression partly false and disqualifies the impression from being *kataleptic*). These two concepts – the true and the *huparchon* – are closely interrelated.[73] But there is a different emphasis in the case of *huparchon* that is

perception of a Fury, who is not really there and not being perceived (*M* VII.245). Appearances may be true, false, both true and false (as the Electra-as-Fury appearance is), or neither true nor false (*M* VII.244).

[73] At *M* VIII.85-86, Sextus uses this close connection between the true and the *huparchon* to accuse the Stoics of circularity and explanation of the obscure by the more obscure: "For in order for us to learn of what is real, they refer us to an apprehensive appearance, saying that a real thing is what activates an apprehensive appearance. But in order for us to gain knowledge of the apprehensive appearances, they refer us back to what

brought out only when we examine the passages on time: "*huparchon"* is only correctly applied to the present, whereas this temporal restriction presumably does not apply to "true." This must be because *huparchon* is not just about how things really are timelessly, but about how things really are *now*.

This is made even clearer when we examine the rest of the fragment from Stobaeus on Chrysippus on the status of the present:

> <Chrysippus> says that only the present (*ton enestōta*) is real (*huparchein*), and the past and the future subsist (*huphestanai*) but are not at all real, unless as properties also are said to be real only as predicates, like "to walk" is real for me when I am walking, but when I am lying down or sitting it is not real […]
>
> μόνον δὲ ὑπάρχειν φησὶ τὸν ἐνεστῶτα, τὸν δὲ παρῳχημένον καὶ τὸν μέλλοντα ὑφεστάναι μέν, ὑπάρχειν δὲ οὐδαμῶς, εἰ μὴ ὡς καὶ κατηγορήματα ὑπάρχειν λέγεται μόνα τὰ συμβεβηκότα, οἷον τὸ περιπατεῖν ὑπάρχει μοι ὅτε περιπατῶ, ὅτε δὲ κατακέκλιμαι ἢ κάθημαι οὐχ ὑπάρχει [...][74]

We are now in a position to make sense of the end of this passage, despite the frustrating lacuna. While I am walking – that is, when I am walking *now*, in the present – "to walk" is real for me. We might rephrase this as follows: "is walking" is true of me when, and only when, I am walking. The infinitive here represents timeless action, the property of walking as an activity. That property is only realized in a present action of walking and for the duration of the present activity. But once the activity has ceased and therefore has ceased to be present, the timeless property fails to apply and to be real for the relevant agent. When I am instead lying or sitting down and am no longer walking, or have not yet begun to walk,

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is real. So, not knowing the latter or the former, nor will we understand the true and false proposition that is taught from them" (*M* VII.86, *trans*. Bett).

[74] Stobaeus *Ec.* I.8.42.38-43.

"to walk" is no longer real for me. It was real while I was walking, and while my walking was a present "I walk" rather than a perfect "I have walked," but is no longer. When I am done walking it will be true of me that I *was* walking, but the walking itself is no longer real as a predicate for me. Real predications and states of affairs are of the present, and it is in the present that they are really the case. This makes the present ontologically special and gives it a status that the past and future lack.

There is, however, a further important distinction in this passage. The clause I have been discussing begins with an "unless" (*ei mē*). The past and future are not real and only subsist, *except* in the way in which properties like "to walk" are real. This both suggests that there is a way in which past and future can be *huparchon(ta)*, and that properties are at least sometimes true in this same way. What can this possibly mean, and is it consistent with the reading I just gave under which such properties much be grounded in the present?

The key to understanding this qualification lies in the relation between the present and motion. A familiar skeptical *aporia* runs roughly as follows:[75] The present is the point of time when states of affairs are true. To be x just is to be x in the present. The present is also the point of time when things *happen*. If S moves, then S moves in the present. However, all motions involve more than one non-identical state. To change from red to green involves both being red and being green. For an object to be red it must be red in the present. For an object to become green it must become green and not red in the present. Thus the present is both the time at which the apple must really be red and the time at which the apple ceases to be red and becomes green instead. How can the present be both the time

[75] See Sextus Empiricus PH III.144 for a highly condensed version of this argument aimed specifically at "partless times." Paradoxes of present motion will be further discussed in Chapter 3.

of being red and the time of not being red? How can any motion occur in the present, when motion involves a change of state and the present is the time of being a state?[76]

There is a suggestion in the above Chrysippus passage of a Stoic answer. When "I walk" is true, it is because I am presently walking. But my walking is not contained by a single instant or minimal present. Instead, my walking has temporal parts. Five minutes into my twenty-minute walk I have been walking for five minutes and will walk for fifteen more. It is still also true that I am, presently, walking. Activities have temporal extension, and the predicate corresponding to the activity may be presently true even though some parts of the activity are in the past and some are in the future. This account still prioritizes the present, because "I walk" is only true while I am, presently, walking. But the full activity of walking cannot be constituted by a single strict present, because that is simply not the kind of activity walking is. For "I walk" to be true of me now I must be engaged in an activity that has past and future temporal parts.

This gives my past and future walking a kind of derivative presentness and therefore a derivative reality. Because I am walking now, and my walking now consists in part of having walked and being about to walk, the past and future walking are bound up in my present activity. This is not the case for a walk I – now sitting – took an hour ago and am no longer engaged in. It is wholly in the past, and not bound up in a present real predicate.

This discussion of the status of the present is difficult to separate from a number of related questions about the identity of the present. While attempting to clarify the ontology

[76] This is particularly true of the punctate present, which can definitionally only accommodate one state, or the atomic present, which cannot have discrete parts (containing discrete states). Yet the problem persists even for extended and divisible presents, because parts of the present containing different states will either be simultaneous, and thus involve both being x and not being x at the same time, or non-simultaneous, in which case one will be past and one will be future relative to the other, rather than both being present.

and status of the present we have stumbled headfirst into questions about the character of the present and its relation to the past and future. Just how long is the present? Is it really an instantaneous moment, a world slice surrounded by past and future? Is my whole walk really present? If not, which parts? Is my whole life present, because living is an activity? How do past and future fit into this picture, and where do they end and the present begin? In Chapters 3 and 4 I will tackle the questions related to the length and scope of the present, before returning – hopefully better armed – to the vexed and fascinating question of the relation between past and future and present, and the relation of the parts to the whole of time. But first, I must ask my reader to return to the question of time as a whole in order to investigate the general definition of time in Chapter 2.

Chapter 2: The Stoic Definition of Time

4. Chapter 2 Introduction

In this chapter, I will examine the Stoic definition of time in more detail. Each of the extant Stoic definitions utilizes the term *diastēma*, which I have left untranslated in order to leave it open a variety of interpretations that will be analyzed and evaluated later in this chapter. I discussed this term briefly in the previous chapter; it may be defined as an interval, extension, or dimension. I will argue that only the last of these is a plausible interpretation.

Although no original texts from either Zeno or Chrysippus survive, several sources offer us a definition of time from each of them, as well as sources for the later Stoics Apollodorus of Seleucia (2nd century BCE) and Posidonius (1st century BCE). Simplicius (6th century CE) gives this definition in his commentary on Aristotle's *Categories*:

> Of the Stoics, Zeno said time is the *diastēma* of all motion simply (*haplōs*), Chrysippus that it is the dimension of the motion of the *cosmos*.
>
> τῶν δὲ Στωικῶν Ζήνων μὲν πάσης ἁπλῶς κινήσεως διάστημα τὸν χρόνον εἶπεν, Χρύσιππος δὲ διάστημα τῆς τοῦ κόσμου κινήσεως.[77]

Stobaeus gives similar, but more extensive, reports on Zeno and Chrysippus; Zeno says that time is the *diastēma* of motion (without further qualifiers), while Chrysippus says either that it is the *diastēma* of motion or the *diastēma* accompanying the motion of the *cosmos*.

> Of Zeno: Zeno said that time is the *diastēma* of motion and the measure and criterion of fast and slow, in whatever way <each thing> has it. All things which come about and perish come about, and all things which are are, in accordance with time.
> […]

[77] Simp. *in Cat*. 350.15-16.

> Of Chrysippus: Chrysippus <said> that time is the *diastēma* of motion, according to which measure fast and slow are spoken of; or the *diastēma* accompanying the motion of the cosmos, and in accordance with which each thing both moves and is.
>
> Ζήνωνος. Ζήνων ἔφησε χρόνον εἶναι κινήσεως διάστημα, τοῦτο δὲ καὶ μέτρον καὶ κριτήριον τάχους τε καὶ βραδύτητος, ὅπως ἔχει <ἕκαστα>. Κατὰ τοῦτον δὲ γίνεσθαι τὰ γινόμενα καὶ τὰ περαινόμενα ἅπαντα καὶ τὰ ὄντα εἶναι.
> […]
> Χρυσίππου. Ὁ δὲ Χρύσιππος χρόνον εἶναι κινήσεως διάστημα, καθ' ὃ ποτὲ λέγεται μέτρον τάχους τε καὶ βραδύτητος· ἢ τὸ παρακολουθοῦν διάστημα τῇ τοῦ κόσμου κινήσει, καὶ κατὰ μὲν τὸν χρόνον κινεῖσθαί τε ἕκαστα καὶ εἶναι[78]

Two other Stoics – Apollodorus and Posidonius – also have entries on time in Stobaeus.

Both figures use the same *diastēma* language; Apollodorus also uses the "of the cosmos"

language found in Chrysippus, while Posidonius omits it:

> Of Apollodorus: Apollodorus, in his work on physics, defines time thus: Time is the *diastēma* of the motion of the cosmos; and thus it is unlimited as the whole of number is said to be unlimited; for there is the past part of time, the present, and the future.
> […]
> Of Posidonius: Some things are unlimited in all respects, like the whole of time together; others only in some respects, like the past and future of time, for each of these is limited by the present alone. And he defines time thus: The *diastēma* of motion or the measure of fast and slow, insofar as this is conceived.[79]
>
> Ἀπολλοδώρου. Ἀπολλόδωρος δ' ἐν τῇ Φυσικῇ τέχνῃ οὕτως ὁρίζεται τὸν χρόνον· Χρόνος δ' ἐστὶ τῆς τοῦ κόσμου κινήσεως διάστημα· οὕτως δ' ἐστὶν ἄπειρος, ὡς ὁ πᾶς ἀριθμὸς ἄπειρος λέγεται εἶναι· τὸ μὲν γάρ ἐστιν αὐτοῦ παρεληλυθός, τὸ δὲ ἐνεστηκός, τὸ δὲ μέλλον.
> […]
> Ποσειδωνίου. Τὰ μέν ἐστι κατὰ πᾶν ἄπειρα, ὡς ὁ σύμπας χρόνος· τὰ δὲ κατά τι, ὡς ὁ παρεληλυθὼς χρόνος καὶ ὁ μέλλων· κατὰ γὰρ τὸν παρόντα μόνον ἑκάτερος πεπέρανται. Τὸν δὲ χρόνον οὕτως ὁρίζεται· διάστημα κινήσεως ἢ μέτρον τάχους τε καὶ βραδύτητος, ὅπως ἔχει τὸ ἐπινοούμενον.[80]

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[78] Stobaeus *Ec.* I.8.40e.2-6; I.8.42.25-29.
[79] The last part of this statement – "ὅπως ἔχει τὸ ἐπινοούμενον" – is grammatically confused and likely corrupt. Kidd (2004) has a detailed discussion of textual and interpretational options in his commentary on Posidonius (v.II.1, pp 398-400).
[80] Stobaeus *Ec.* I.8.42.1-4; I.8.42.11-16.

Sextus reports a view using exactly the same language but fails it to attribute it to any school at all. Given that the Stoics are regular targets of Sextus' skeptical attacks and that he does not attribute *any* view on time to them by name, it is reasonable to suppose that he too is reporting a Stoic view:

> Some, indeed, say that time is the *diastēma* of the motion of the *cosmos*, others that it is the motion of the cosmos itself.
>
> καὶ δή τινές φασι χρόνον εἶναι διάστημα τῆς τοῦ κόσμου κινήσεως, οἱ δὲ αὐτὴν τὴν τοῦ κόσμου κίνησιν. [81]

The theory that time is the motion of the *cosmos* itself is a separate view, despite Sextus presenting the two views together. It may be attributable to either Plato[82] or Heraclitus.[83] But if Simplicius and Stobaeus are right, the first view, that time is the *diastēma* of the motion of the *cosmos*, belongs to the Stoics generally and to Chrysippus specifically.

Hence, the basic definition of time in Stoicism appears to be that time is a *diastēma* of motion (either of all motion generally or of the motion of the *cosmos* specifically), or a measure of fast and slow. I will divide this definition into three elements, each of which I will examine in turn.

First, there is the question of what is meant by calling time a "*diastēma* of motion." *Diastēma* is an ambiguous term, which is why I have left it untranslated; possible meanings of *diastēma* include interval, radius, distance, difference, ratio, extension, and dimension. Some of these can be immediately excluded from our discssion based on context, but a serious question of interpretation remains. Is time an interval of motion? An extension? A

[81] *M* X 170.1-3.
[82] I am inclined to think that this is *not* in fact Plato's view, but it may have been read as such by ancient commentators.
[83] See Bobzien (2015): 297-99 for discussion of Sextus' doxography in this section and the origin of this view specifically.

dimension? What exactly is at stake in each reading? I will defend a reading of *diastēma* as "dimension," consistent with my arguments in Chapter 1, but the other views deserve consideration first. In section 5.1 I will present a brief overview of the possible meanings of *diastēma*, and in 5.2 I will review interpretations of time as a *diastēma* of motion offered by other scholars. These views cover readings of *diastēma* as interval and extension. In 5.3 I will return to the dimensional reading and explain why I believe it is correct.

Second, there is the latter half of the definition: "or a measure of fast and slow." In section 6.1, I will argue that this is not a new definition of time, but rather a clarification of the *diastēma* definition consistent with the dimensional reading that I offer. Time is a comparative measure of fast and slow motions because we can compare the durations of similar motions along the temporal dimension, just as we can compare the height, width, or depth of bodies along the three spatial dimensions.

Third, there is the difference in definition between Zeno and Chrysippus. This difference appears in how motion is qualified – Zeno claims that time is the *diastēma* of all motion, while Chrysippus defines it as the *diastēma* of the motion of the cosmos. In section 6.2 I will consider possible implications of that difference, and ultimately argue that the alteration in Chrysippus' definition is merely clarificatory rather than the sign of a genuinely different theory.

5. *Diastēma* Defined

5.1 Readings of *Diastēma*

The first order of business in interpreting the Stoic definition of time is an analysis of the Greek term *diastēma* (διάστημα), as this is what time is said to be. The term is rendered

differently by different translators. The three most plausible candidate translations are "interval," "extension," and "dimension," and each of these gives a different meaning to the Stoic definition.

If we translate *diastēma* as "interval," that seems to imply some kind of repetitive and likely cyclical pattern. The Stoics have exactly such a pattern at hand in the doctrine of *ekpyrōsis*, or *cosmic* conflagration. This doctrine holds that the world periodically burns up in a universe-consuming flame, and then begins again according to exactly the same template, and with the same (or similar) events as the cycle before.[84] When Chrysippus says that time is the *diastēma* of the motion of the *cosmos*, he may mean that time is the period between cosmic cycles, from one conflagration to the next. Sambursky assumes this translation and explanation in his book *The Physics of the Stoics* (1959), and he draws a parallel between the shorter cycle of the "great year" and the longer cycle of world persistence and destruction.

"Extension" as a translation could capture the idea that time measures some extended aspect of motion, which is a feature of time stressed by Aristotle and suggested by a view attributed to Chrysippus by Stobaeus that time is the standard for measurement of "swiftness and slowness." It's not clear *what* would be extended in this model however, and any version of this interpretation would have to substantially develop that. On some interpretations, this translation seems to collapse into the dimension view.

"Dimension" is the perhaps most modern sounding of the options, as it immediately evokes the idea of later four-dimensional theories of time, versions of which are discussed in

[84] What exactly "same" means in this context, and whether future cycles events are truly same or merely similar, is a fraught issue I do not intend to resolve in this work; see Long (2006) for analysis.

contemporary philosophy of physics. While we must exercise caution in order to avoid anachronism, this is the translation I find most compelling. Translating *diastēma* as "dimension" draws a connection between time and space and allows analogies between the two. There are good reasons to think that the Stoics would have welcomed these comparisons, including the fact that time, place, and void are all included in the Stoic class of incorporeals, [85] and the fact that words related to *diastēma* are commonly used in clearly spatial contexts in Stoicism, such as the definition of void and of physical bodies. Under this reading, the Stoics would see time as a dimension not directly of bodies, as length, breadth and height are, but of a special aspect of bodies: their motion. This would give time something to distinguish it from the spatial dimensions while also unifying the account of time with the accounts of space and motion. There is, furthermore, already a tradition linking time with space going back at least to Aristotle and his spatialized grounding of temporal priority and posteriority,[86] so the Stoics would not have been single-handedly breaking new philosophical ground by bringing time and space closer together.

5.2 Intervals and Extensions: Readings From Other Scholars

J. M. Rist is one of the few authors writing in English to examine the Stoic theory of time in detail. He devotes an entire chapter of his book *Stoic Philosophy* (1969) to the subject of time. Rist's analysis of the Zenonian and Chrysippan definition of time as "the *diastēma* of motion" or "a *diastēma* accompanying motion" focuses heavily on the spatial aspect of motion.

[85] See e.g. DL 7.1.140-141.
[86] *Phys.* IV.11 218b.

> In its fullest form [Zeno's definition] seems to have been that time is not just the extension of movement but, more specifically, that it is the extension of any movement. We can, Zeno seems to be saying, recognize the concept of time by reflecting that objects move in space, that the same material object cannot be in Oxford at the same time as we are holding it in Cambridge. In order to travel between Cambridge and Oxford it must pass through a series of intermediate points, and, while this process is going on, other events may be completed. Furthermore, if two men set off from Cambridge to drive to Oxford, one might reach Oxford, turn round and meet the other still on his outward journey. We use terms like 'fast' and 'slow,' 'faster' and 'slower' to explain this situation. We say that one man has driven faster than another. The man who has driven from Cambridge to Oxford to Bicester has driven 'faster' than the man who has driven from Cambridge to Bicester. If we want a general word to describe the sequence of events, and to allude to the fact that it is of interest that the man who has reached Oxford and returned as far as Bicester has traveled faster than his rival, we say that he has covered more ground in the same amount of time.[87]

Rist's reading seems to be that time is identical to or otherwise defined by the spatial path a motion follows. In the imagined journey from Cambridge to Oxford, time is defined by the points that the traveler covers on his journey, including the starting and endpoints. What is meant by *diastēma* is something like "extended spatial coverage." Whether or not this is precisely what Rist meant, it is an interpretation worth considering. Time and space are often closely connected in ancient philosophy, and I have already discussed some reasons to believe that they are specially related in Stoicism.

There are, however, some strange results if we interpret *diastēma* as spatial extension or coverage. To borrow an example from Aristotle, let us imagine Callicles on his way from his house to the agora. The journey has a set starting point and a set ending point, but multiple different spatial paths could get him there. Suppose that there are two different paths from Callicles's house to the marketplace, one bending towards the North and the

[87] Rist (1969): 274.

other towards the South. These two paths cover almost entirely different territory, and both usually take an hour to traverse.

Callicles sets out from his house at 6pm, takes the northern path, and arrives at the agora at 7pm. But what if he had taken the southern path? That also would have had him start at 6pm and arrive at the agora at 7pm. Indeed, it seems that either trip would have occurred in the exact *same* period of time. It is not just that either trip would take an hour; they would take the *same* hour. But the paths themselves are not the same, and Callicles' motion would involve thoroughly distinct spatial extensions. If that is the case, how can time be identified with the spatial extension of a motion?

Consider another possibility: Callicles takes the northern road and, due to heavy traffic, the journey takes him twice as long. He starts at 6pm and arrives at 8pm. The spatial extension of his movement, however, is exactly the same as in the original case where he arrived at 7pm. Does that mean that the one-hour journey and the two-hour journey would involve the exact same period of time? Surely not. But if the spatial extension is the same, and time is identical with the spatial extension of a movement, then they should be the same. Indeed, time is meant to be a "measure of speed and slowness," as Rist correctly points out. One journey was faster than the other, and time should be able to tell us this fact, not to obscure it.

If this is not yet decisive, we can also ask how this model treats motions other than locomotion. In the case of change of place, it is easy to mark out a spatial path tracking the motion. But what about something like change of quality – say, color? If an apple changes from green to red over the course of a few days without changing location, is the time of that color change the same as that single location? What about a similar change that takes a few

minutes instead? That change occurs "over" the identical spatially extended area but takes a completely different span of time. It appears, then, that we must reject the idea that time is to be identified with the spatial extension of a motion or motions generally.

In *Physics of the Stoics* (1959), Sambursky offers a different interpretation, suggesting that *diastēma* is meant to refer to an interval of world cycles, from the period of total cosmic conflagration (*ekpyrōsis*) through the entire duration of the world to the next conflagration.[88] He takes *diastēma* to be a reference to circular repetition, building off of the idea of circular motion as the most basic and enduring type of motion in Aristotle. His evidence for this reading rests largely on a reference to what he translates as "a greater cycle" in a fragment of the Stoic Apollodorus. This, he claims, "is obviously nothing else but the greatest of cosmic periods, the Great Year whose length the Stoics reckoned from one state of the universe to the next identical one recurring after the world had passed through the stage of *ekpyrōsis*."[89] This interpretation would also make sense of the point in Chrysippus' definition that time is the *diastēma* of the motions of the *cosmos*. Chrysippus may have specifically mentioned the motions of the cosmos to bring out the fact that time is an interval of the cosmic cycle, defined by reference to this motion in a unique way.

It is not entirely clear what it would mean for time to be the interval of cosmic cycles. One possibility is that it refers to the duration of a cosmic cycle, or the events within it. There is some period between the end of one cosmic conflagration and the beginning of the next – or perhaps end of conflagration to end of conflagration – that constitutes the

[88] Sambursky (1959): 106-107.
[89] Sambursky (1959): 106.

length of one total world cycle. It is analogous to a year, in the sense that it represents a movement through one period of cosmic motion that then repeats itself.

This interpretation would be problematic, for several reasons. The first is that I have already argued that repeating periods such as days and months and years cannot be time; instead, they are events in time. The same seems to be true of cosmic cycles, merely on a larger scale. Duration is itself a temporal concept, and insofar as time is meant to be a "measure or criterion" of duration, along with fast and slow, then time cannot be identified with any particular duration. The events of the cosmic cycle are all states of bodies, and thus bodies themselves, which are measured by time but do not constitute it.

More problematic yet is the fact that time is infinite, and the fragment from Apollodorus Sambursky references reiterates this fact.[90] The duration of one world cycle is long, but ultimately finite. A year is a cyclical phenomenon, but the duration of one year is still only one year, no matter how many times it is repeated. An infinite series of years would not render the duration of any one of them a second longer. Sambursky realizes that Stoic time must be infinite; he wants to capture the possibility of infinite repetition in the idea of circular motion. But time is not a motion – motions are bodies (as they are states of bodies), and time is an incorporeal. Circular motion may be potentially infinite, but the circumference of the circle is itself of finite length. If time just is this circuit, corresponding to one world cycle, it will be finite.

Could it be something more like circular motion, with infinite repetitions of times along the same close circuit? In this model, although time is infinite it is infinite by

[90] The fragment is located at Stobaeus *Ec.* I.8.42.2-10, and will be discussed in greater depth later in this chapter in section 6.2.

repetition. This would fit with the idea of infinite recurrence, particularly infinite recurrence of numerically identical individual and events across world cycles; in every cycle, the same events occur, featuring the same individuals and objects. Jonathan Barnes (1978) has argued that if recurrence involves numerically identical individuals and events, then the *times* of these events must be the same because there is nothing to differentiate them – and the Stoics are committed to the identity of indiscernibles. But this description, as Barnes points out, does not give us an infinite series of world cycles; instead, it gives us one *single* world cycle that cannot truly be said to repeat – since repetition must involve the same thing happening at a different time. In Barnes' suggested model, that same thing happens at the *same* time – not repetition and reccurrence, but simple occurrence.[91] Barnes uses this point to argue against the coherence of the doctrine of eternal recurrence with other points of Stoic doctrine. But if he right, then it poses problems for the idea of time as identified with the repetition of world cycles as well.

A. A. Long (2006), responding to Barnes, originally suggested the idea of time as a closed loop that does genuinely repeat – the same thing happens at the "same" time – meaning the same temporal location on the closed circuit – but on a different cycle.[92] However, this is not satisfactory either. According to Chrysippus and others, time is specifically infinite and unlimited in the way "the whole of number is unlimited"[93] – a fact Long points out in the revised version of his argument.[94] The idea seems to be that time extends infinitely in the same way the series of real numbers does, without an end or

[91] Barnes (1978): 437
[92] Long (2006): 277.
[93] Stobaeus *Ec* .I.8.42.4-5. Apollodorus also claims that time is infinite, but his section in Stobaeus does not contain the specific comparison to number.
[94] Long (2006): 277.

repetition. Posidonius, also using the language that time is unlimited as the whole of number, specifies that the analogy means that the past and the future are limited only qualifiedly and in one direction.[95] The past and future are each limited by the present just as the series of positive integers is limited by zero, but each continues infinitely in the other direction, just as the series of positive integers continues towards infinity without ever reaching a final greatest number. Chrysippus also specifically says that the past and future are infinite – it is not just time abstractly that is infinite, but the past and the future specifically. The infinity of circular motion is not infinite in this sense; the past and the future would each be limited twice, once at the point of the present, and once either again at the present or at some other point in the circle where they meet.[96] The differentiation between past and future becomes decidedly unclear – in the linear model, the past is everything prior to the present while the future is everything posterior, but in the circular model they must either be identical or overlap, because every point on a circle is both to the left and to the right of any given point, including the present – or both prior and posterior to any given point, if we include a directionality. This does not make the circular model incoherent, but it does raise problems for the Stoics who do seem to treat past and future as separate entities and claim that each is infinite.[97]

For all these reasons it seems extremely unlikely that time is to be identified with either a single world cycle or with the identical motion through repeating world cycles.

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[95] Stobaeus *Ec.* I.8.42.11-14.

[96] It is likewise unclear on this view how past and future would be differentiated. Even if the present represents one point of division, a circular model of time would guarantee that past and future meet or mingle at some second point on the circle – unless they are in fact identical.

[97] Surely Plutarch, who includes a long section on Stoic affronts to common sense on the topic of time in *Comm. Not.*, would have at least mentioned such a strange doctrine as the identification of past and future rather than focusing almost exclusively on the Stoic theory of the present.

Perhaps time is the interval of the infinite series of world cycles? This seems to capture the intuition of time being infinite better. But it is no longer clear what the idea of circularity is contributing. Even if each world cycle is qualitatively identical[98] and perfectly cyclical, the series of world cycles would stretch in a linear fashion into the future and past. One world cycle would begin and end, and a new world cycle future relative to that cycle would begin; Cycle 1 is past and Cycle 2 is present, with another Cycle 3 in the future, a linear ordering of events. The events may cycle, but it does not follow that the times themselves do – and if the cycles are past and future relative to each other, then it seems the times in those cycles cannot be identical. We would still need a more robust account of what time *is*, beyond noting that it merely contains the infinite series of world cycles.

Given the difficulties with the identification of time with cosmic cycles, I propose the interpretation should be rejected if the evidence Sambursky offers can be read in a different light. I read the evidence from Apollodorus quite differently from Sambursky and disagree that it is best read as a reference to world cycles and cosmic conflagration. Sambursky's translation of the relevant passage reads:

> Time is the interval of movement of the cosmos ... and the whole time is passing just as we say that the year passes, on a larger circuit.
>
> Ἐνεστάναι δὲ τὸν πάντα χρόνον ὡς τὸν ἐνιαυτὸν ἐνεστηκέναι λέγομεν κατὰ μείζονα περιγραφήν.[99]

The final word, *perigraphen*, could perhaps be translated as circuit or cycle, but it is a much more generic term – something like an outline, or circumscribed section. Quite literally, it

[98] A contentious point in itself; Chrysippus appears to suggest the possibility but not necessarily to commit to it. See Long (2006): 256.
[99] Sambursky (1969) 106; translation of Stobaeus *Ec.* I.8.42.2;6-8.

means “drawn around.” Moreover, the verb “*enestanai*,”[100] which Sambursky translates as “is passing,” might be more aptly translated as “is present”; the Stoics frequently use a noun form of this verb as their word for the present, and Apollodorus himself uses “*to enestēkos*,” the perfect active participle of *enestanai,* to refer to the present in this very passage.[101] While it may be strange to say that all of time is present, that really does appear to be what Apollodorus means to convey.[102] Here is my own translation of the complete passage:

> Of Apollodorus: Apollodorus, in his work on physics, defines time thus: Time is the *diastēma* of the motion of the cosmos; and thus it is unlimited as the whole of number is said to be unlimited; for there is the past part of time, the present, and the future. And we say that the whole of time is present, as the year is present: according the larger circuit; and the whole of time is said to be real, although it is not precisely real in any of its parts.
>
> Ἀπολλοδώρου. Ἀπολλόδωρος δ’ ἐν τῇ Φυσικῇ τέχνῃ οὕτως ὁρίζεται τὸν χρόνον· Χρόνος δ’ ἐστὶ τῆς τοῦ κόσμου κινήσεως διάστημα· οὕτως δ’ ἐστὶν ἄπειρος, ὡς ὁ πᾶς ἀριθμὸς ἄπειρος λέγεται εἶναι· τὸ μὲν γάρ ἐστιν αὐτοῦ παρεληλυθός, τὸ δὲ ἐνεστηκός, τὸ δὲ μέλλον. Ἐνεστάναι δὲ τὸν πάντα χρόνον ὡς τὸν ἐνιαυτὸν ἐνεστηκέναι λέγομεν κατὰ μείζονα περιγραφήν· καὶ ὑπάρχειν ὁ πᾶς χρόνος λέγεται, οὐδενὸς αὐτοῦ τῶν μερῶν ὑπάρχοντος ἀπαρτιζόντως.[103]

In the relevant section of the passage, Apollodorus seems to be making a general statement about what it means to call a time present. If I refer to the present hour, I am picking out something that genuinely exists. However, the hour itself is not wholly present; that would be absurd. In fact, some of the hour is past, and some is future. The same thing is true of “the present day.” At 12:01am, almost all of the present day is future, and one minute or so

[100] *Enestainai* (ἐνεστάναι) is the perfect infinitive form of the verb; the present first person singular is enistēmi (ἐνίστημι). The perfect form is generally used in discussion of time and thus is how I will refer to the verb in this text.
[101] That usage is very clearly a reference to the present, as it is presented as the middle item in list including “*to paralēluthos*” (the past) and “*to mellon*” (the future).
[102] I will discuss this claim more in Chapters 3 and 4, and defend a reading in which in one sense the whole of time can be present while still preserving distinct parts of time and a privileged present.
[103] Stobaeus *Ec.* I.8.42.2-10.

is past. At 11:59 pm, almost all of the present day is past and only a tiny sliver is future. There is some element of the present hour or present day that truly *is* present, but it will be a tiny fraction of whatever we refer to as "the present time" – it may even be a durationless instant that is not a part of time at all.[104] It does not follow that there is no such thing as "the present hour." Instead, the present hour really is the present hour because the present is contained within it. The present hour is the "greater period" of interest. The present year contains the present day, which contains the present hour, which in turn contains the present minute, the present second, and so on. We refer to these greater periods because the true present is ephemeral and human concerns take place on much greater time scales. We could refer to the present cosmic cycle as *a* "greater period" containing the present, but there is no reason to suppose it is a more important period from the perspective of temporal definition than any other.[105] There is, therefore, no textual or philosophical necessity for the view that Stoic time is the interval of a cosmic cycle or of a series of cosmic cycles.

Susanne Bobzien has also offered some possible interpretations of the "*diastēma* of motion" definition, in the context of Sextus Empiricus' writings about time. Sextus discusses an unattributed dogmatic view that time is "the *diastēma* of the motion of the *cosmos*"[106] or "the *diastēma* of the motion of the whole."[107] Although Sextus himself does not attribute this view to any named school, the obvious parallel is to the Stoics, and specifically the formulation attributed to Chrysippus. For our purposes here it does not

[104] The length and status of the present will be discussed at greater length in Chapters 3 and 4.
[105] See Chapter 4 for further explication of this view of the present.
[106] *M* X.170.1-2: "διάστημα τῆς τοῦ κόσμου κινήσεως".
[107] *PH* III.136.4-5: "διάστημα τῆς τοῦ ὅλου κινήσεως".

matter whether Sextus has the Stoics in mind, as the general question applies to any definition using the same language.

Bobzien herself is not working to explicate a Stoic theory of time in this section; she remains deliberately aporetic about the target of the definition as it appears in Sextus.[108] Still, her discussion provides a useful range of alternatives meanings, which can be considered as candidate interpretations for the Stoic school specifically. Many of the issues I discuss below only apply to interpretations of time as a *diastēma* in a Stoic context, and would not apply, say, to a Platonist who used a similar definition. Bobzien considers three possible translations of "*diastēma*" in this context: interval, extension, and dimension. I'd like to look at each of these options in detail, starting with the interval option:

> (i) The translation 'interval' makes sense for the following cases: suppose the motion in the account is a particular motion of an object that starts at t_1 and ends at t_2. For reasons of simplicity, also suppose that the sun moves around the earth in one day and that its motion is cyclical. Then time, as an interval of a motion, could be (a) for example the portion of the motion of the sun that started today at midnight and ends tomorrow at midnight. Or (b) the particular period from midnight today until midnight tomorrow in which this motion took place, and which we may call "this Tuesday". Or (c) the length or duration of this particular period, which we may call a "day", and which is obtained as the result of an abstraction from (a) or from (b). This duration could be used as a temporal unit or yardstick to measure the length of other motions (two days long, one quarter of a day long, etc. using division, addition, multiplication, as required). In the case of cyclical motion, abstraction would be aided by the fact that the next motion of the same kind, from t_2 to t_3, say, would be of the same length. Thus time understood as (a), (b) or (c) would in each case provide a basis for our ability to measure periods of time, but manifesting different levels of abstraction.[109]

The first thing to note about Bobzien's "interval" reading is that it invokes several temporal concepts in what is supposed to be a definition of time. Even terms as apparently

[108] Bobzien (2015): 301*ff*.
[109] Bobzien (2015): 300.

innocuous as "t_1" and "t_2" become ambiguous when time itself is the *definiendum*. One might charitably read this as an attempt to only define *measured* time – that is, it is a definition of regular and repeatable *times* like days and hours and weeks rather than a generic category of time itself. This would explain why Bobzien focuses towards the end on the idea that these "intervals" could allow us to measure temporal periods. There is precedent for this sort of theory; it may well be what Plato is doing in the *Timaeus* when he has the demiurge create cosmic motion in order to simultaneously (as it were) introduce time and the heavenly instruments of measured time.[110]

Let us dig a little deeper into the extension options Bobzien gives and examine these one by one, starting with i.a. We will suppose a geocentric universe where the sun travels once around the earth per day, and for the sake of simplicity assume that the earth remains in place and does not move:

> Then time, as an interval of a motion, could be (a) e.g. the portion of the motion of the sun that started today at midnight and ends tomorrow at midnight.[111]

In this first case, Bobzien imagines that we can pick out a pair of times – midnight tonight and midnight tomorrow night – and describe the time between them (i.e. today) in terms of the sun's motion once around the Earth. At midnight tonight the sun will be (or would be, if this model in any way resembled reality) at some location p_1. Because the sun's motion is cyclical, by midnight tomorrow the sun will have returned to p_1, having completed a full cycle around the (stationary) Earth. While Bobzien does not include any talk of spatial points, I find them helpful in conceptualizing the cycle in question. I assume that this is what

[110] See especially *Tim.* 37d-e and 47d*ff.*
[111] Bobzien (2015): 300.

Bobzien means when she talks about "the portion of the motion of the sun that started today at midnight and ends tomorrow at midnight." The sun's motion is, if not infinite, at least continuous over a very long period of time, so by marking out temporal points at midnight tonight and midnight tomorrow we manage to isolate one single day-length cycle. Perhaps this sort of "interval" is what the Stoics think time is.

There are a few problems with this theory. The first, as I mentioned above, is that in order to mark out this cycle Bobzien already invoked a concept of time. Midnight tonight and midnight tomorrow are times themselves, and it is unsettling to have them (or other specific times) included in a definition of time itself. But as we saw in Chapter 1, the Stoics may have a model in which specific times like "midnight" can be described as physical states of the cosmos rather than as times *per se*. It might not be circular to define time as an incorporeal by referring to the corporeal sorts of "times." Another way to try to avoid circularity would be to change Bobzien's definition to remove temporal start and endpoints as markers. Instead, in this case we could use physical location p_1 as our marker – one cycle is one journey from p_1 back to p_1. Time might be an interval of a motion from one point back to that same point, or even between two distinct points. With non-cyclical motion – say Achilles running a race – we could use two locations as markers, one at the beginning of the race and one at the finish line, as in Rist's interpretation.

An even more troubling problem is that it is not clear what it means to say that "a portion of a motion" is time. One thing it might mean is that the motion of the sun itself actually constitutes time, but as Bobzien herself points out, this would make the theory one

in which time just is motion.[112] Why add the qualifier of *diastēma*? We know from Aristotle and from Sextus that there were theories that identified time with motion,[113] and if the Stoics had wished to advance such a theory they might have done so much more simply by avoiding the *diastēma* language entirely. Moreover, the motion of the sun is an entirely physical process constituted by states of a body. If the Stoics made time identical with the motion of bodies, it would follow that time is also corporeal under their definition of the term. But we know that they consider time an *incorporeal*, and hence time cannot be identified as the motion of any body.

If not the motion of the sun, perhaps time is the physical path traced by the sun's movement from p_1 back to p_1? This would collapse the interval theory back into the model I already discussed in conjunction with Rist, which postulates that time is spatial extension, in which case all the concerns I discussed in that section equally apply here. Both of these options are unattractive as interpretations of the Stoic view.

Let's move on then to option i.b, where Bobzien considers interpreting interval as: "the particular period from midnight today until midnight tomorrow in which this motion took place, and which we may call 'this Tuesday.'"

What could "period" mean in this definition? The obvious contender is a *temporal* period. But if that is the case, then the definition is that time is some period of time associated with a movement. Tuesday is the time that passed on Tuesday. This may be tautologically true, but it is an unsatisfying account at best. At worst, it is actively circular. This may be a good account of this Tuesday – the time it took for the sun to travel around

[112] Bobzien (2015): 301.
[113] *Phys.* IV.10.218b; *M* X.170-175.

the earth once (in the geocentric universe of our example), from midnight this Tuesday morning to midnight this Wednesday morning – but even as an account of this Tuesday it requires some prior idea of what a temporal period is or what it means for a motion to "take time." Once we know what time is we can isolate periods of time as particular times, but surely this is not the answer to the definitional question for time itself.

This leaves us with option i.c, that the interval in question is "the length or duration of this particular period, which we may call a "day", and which is obtained as the result of an abstraction from (a) or from (b)." Length and duration are again, apparently temporal concepts, and this abstraction option relies on the viability of either i.a or i.b. If it is unclear what a "period" is on this Tuesday, how can I abstract it out to a period that is any day? If the sun's motion is corporeal today, why would a generalization of that same motion no longer be a corporeal phenomenon? In fact, this generalization option sounds almost exactly like my characterization in Chapter 1 of the argument from Chrysippus regarding how one could describe hours, days, weeks, months and years as bodies. I argued that this is separate argument from their official definition of time, according to which time is an incorporeal.[114]

For all these reasons, I find the interval account as described by Bobzien unsatisfying when considering the Stoic definition of time. Interpretation i.c is the most attractive of the lot, because it at least purports to explain general temporal units rather than specific temporal periods. It is more metaphysically interesting to have an account of the definition

[114] Furthermore, depending on how the abstraction process works, it also the runs the risk of turning time into a universal. Universals are not incorporeals – indeed, they probably are not even somethings. Somethings, whether corporeal or incorporeal, are all particulars, while universals seem to call under the category of non-somethings. See Chapter 1, section 2.1 for sources on Universals as somethings or non-somethings.

of "day" than of this Tuesday. But even there we run into problems with clarity or Stoic doctrine. Let us move on, therefore, to the extension option:

> (ii) The translation 'extension' makes sense for cases in which time is understood as the extension of *any* motion, without any specific period of time or duration being associated with it. Thus all particular motions would be alike in that they have an extension from some t_n to some t_m. The motions manifest an earlier and a later, or – alternatively – are manifested in something that has an earlier and a later. Either way, the specific duration of the extension of each motion may differ. The point of accounts of time along these lines would be to state that an object's motion (or at least locomotion) has, in addition to the three spatial extensions length, width and height, an extension involving an earlier and a later, or a duration. In this understanding, time does not provide a unit and cannot serve as a yardstick.[115]

Bobzien asks us to imagine a motion (specifically a locomotion) – let us use the old standby of Achilles running a race. At time t_n, Achilles is at the starting line. At time t_m, he is at the finish line. In the intermediate times he is somewhere in the course of his race. Now what does it mean for this motion for have "an extension involving earlier and later" and well as a "length, width, and height"?

For one possible interpretation, consider Achilles' motion, from start to finish running the race, as a time-space worm consisting in all of the physical locations Achilles occupied at every moment during the race stacked together into a tube-like shape from the starting line to the finish line. This would perhaps satisfy the condition that Achilles' motion have a "length, width, and height." At the very least the Achilles-time-space-worm would have a volume calculated from length, width, and height. But suppose that at one point during the race Achilles hunched over (for maximum aerodynamic speed), while at another he stood his full height (sighting victory and swelling with pride). Which of these is the

[115] Bobzien (2015): 300.

"height" of the motion? Is it an average of the highest and lowest heights, or perhaps the median height? Even if we can agree about how to assign spatial qualities to the entirety of an extended motion, what about the temporal properties of earlier and later? The race as a whole is neither earlier nor later than itself. It may be earlier than other motions – e.g. the destruction of Troy – and later than others – e.g. Achilles' birth. But the motion *itself* does not stand in an earlier or later relation to itself. Instead, the parts of it stand in earlier and later relations to each other. If I divide the race in half, one half is now earlier than the other half. Is this what Bobzien means by "duration" – that there are parts of the motion that stand in earlier and later relations to each other, just as parts of a body can stand in upper or lower relationships to each other if they are extended vertically in space?

At this point we are no longer looking at the motion taken as a unified whole but at its parts. What are its parts? Presumably Achilles in different states. There is a part of the race where he's at the starting line, a part where he's taken the first step beyond it, a part where he hits the one-quarter mark, and so forth. At each of these stages Achilles' physical body has a certain extension in space – he is a body with a clear length, width, and height – and he also has an earlier-later relationship with other states his body has been in while running the race. One-quarter-mark-Achilles is earlier than one-half-mark-Achilles but later than starting-point-Achilles. The first analysis I gave focused on the extensions of the motion viewed as a complete whole over space and time; this second analysis takes the body in motion throughout that motion as the locus of extension.

The problem with this body-centric analysis is that once again it makes time a property of bodies. Achilles' body has vertical extension in space as a property, and so his height is a corporeal entity. Likewise, if Achilles' body in motion has earlier-later extension

in time as a property, his "time" is a corporeal entity. This disqualifies it from being an incorporeal. The same is true in a more roundabout way of the analysis of the motion as a whole. Aside from the difficulties in assigning extension, whether spatial or temporal, to a motion as a whole, analysis of a motion still reduces down to states of bodies. When I construct the "Achilles time-space worm" I do so by mapping different positions of Achilles' body at different times and places. Without these bodily states there is no way to construct a motion with four-dimensional extension. Thus motion in the analysis is a kind of body as well – rather than being "a" state of a body, it is many states of a body captured in sequence. This is why Plutarch accuses the Stoics of making motions like sneezing and spitting into bodies and animals.[116] If time is a property or state of this kind of motion, it still ends up being a corporeal entity in turn – which we know cannot be the case.

The last translation option Bobzien gives is "dimension." This is the option I find most attractive, not only by elimination but also for independent positive reasons. Here is her explanation of the reading:

> (iii) The translation 'dimension' makes sense in cases in which either *all* motion or motion *in general* is at issue. Accounts of time as the dimension of all motion (or of motion in general) can be seen as contrasting time with the dimensions of space, which cover left-right, front-back and up-down (say). The dimension of time adds the directionality of the earlier-later to the three spatial dimensions. Again, motion can be seen as being a necessary condition for there to be such a dimension (relationalism with regard to time), or such a dimension can be seen as a necessary condition for motion (absolutism with regard to time).[117]

[116] Plut. *Comm. Not.* 1084c.
[117] Bobzien (2015): 301.

In this interpretation, time is a space-like fourth dimension in which motions occur. In the following section, I will give a positive defense of roughly this account, as I believe it is the correct reading for the Stoics.

5.3 The Dimension Reading

There are three dimensions in which bodies exist – a fact that is built into the Stoic definition of body as that which is "thrice extended" or "*trichē diastaton*" and has resistance.[118] The word "*diastaton*" is the adjectival form of the noun "*diastēma*." For an object to be "*trichē diastaton*," there must be three *diastēmai* for it to be extended *in*. In this context that obviously means three spatial dimensions, and the use of the word "*diastaton*" strongly suggests an association between the related term "*diastēma*" and the translation "dimension" for Stoic physics. It seems reasonable to assume that this association would carry over to time, especially since place and time share the same ontological status as incorporeals.

According to the dimensional reading, in addition to these three spatial dimensions in which bodies are extended, there is an additional fourth temporal dimension through which the motions of bodies are extended. Let us go back to the example of Achilles running a race. At the beginning of the race he is at the starting line. His body occupies a certain area of space in three dimensions. In the next moment, his right foot lifts off the ground. Achilles' body now occupies a slightly different area of space. As he runs the race, his body is in progressively different sets of states and occupies different spatial areas. The act of running the race itself consists of this set of states and positions. If we take any one state it

[118] See DL 7.135 (attributed to the Stoic Apollodorus) and Galen *Qual. inc*. 19.483 13-16.

does not constitute a race; rather, like Zeno's arrow,[119] it is a still, three-dimensional snapshot of a four-dimensional motion. This set of motions has a spatial element because each motion occurs in space, but it also must have a temporal element in which the different parts of the set are arranged sequentially.

This dimension reading has a great deal in common with the extension reading as I interpreted it, but it differs in the crucial respect that in the extension account, time is an extension *of* bodies and their motions. In the dimension account, time is the dimension *in which* this extension occurs, and is thus not a property of bodies or bodily motion. The states of Achilles running the race are extended serially in this dimension just as the height of his body at any motion is extended upward in the up/down spatial dimension. This saves the dimension reading from the criticism I levied against both the interval and extension accounts regarding time being ultimately turned into a body by being a state or property of bodies. The temporal dimension is defined by reference to bodies and is thus not fully independent from them. This is what we would expect from an incorporeal and its derivative rather than *per se* existence – it is related to bodies as locus or condition of true bodily existence without becoming a property of bodies in a way that renders it corporeal. This alone is a powerful argument in favor of the dimension reading.

The dimension reading relies on a strong analogy between time on the one hand and place or void on the other. The fact that these all share the exclusive category of incorporeal – indeed, are the only things at all in this category besides *lekta* and perhaps limits – is a good sign that there are similarities between them. To go deeper, we will need to consider

[119] See *Phys.* VI.9.239b30-33.

the Stoic use of the terms *diastēma* with void, place, and room, all three of which are spatial terms.[120] Sextus Empiricus gives us the following Stoic definitions:

> And the Stoics say that void (*kenon*) is that which can be occupied by an existent, but is not occupied, or a *diastēma* empty of body, or a *diastēma* unoccupied by body, and place (*topos*) is that which is occupied by an existent, and is itself coextensive with the thing occupying it, (now, by existent they mean body, and this is evident from the transference of names); and they say that room (*chōra*) is a *diastēma* in some respect occupied by body, and in some unoccupied.
>
> καὶ οἱ Στωικοὶ δὲ κενὸν μὲν εἶναί φασι τὸ οἷόν τε ὑπὸ ὄντος κατέχεσθαι μὴ κατεχόμενον δέ, ἢ διάστημα ἔρημον σώματος, ἢ διάστημα ἀκαθεκτούμενον ὑπὸ σώματος, τόπον δὲ τὸν ὑπὸ ὄντος κατεχόμενον καὶ ἐξισαζόμενον τῷ κατέχοντι αὐτόν, (νῦν ὂν καλοῦντες τὸ σῶμα, καθὼς καὶ ἐκ τῆς μεταλήψεως τῶν ὀνομάτων ἐστὶ συμφανές)· χώραν δέ φασιν εἶναι διάστημα κατὰ μέν τι κατεχόμενον ὑπὸ σώματος, κατὰ δέ τι ἀκαθεκτούμενον.[121]

Void is explicitly a *diastēma*, and a *diastēma* empty of bodies. In the case of void, *diastēma* clearly cannot be referring to some feature of a body, such as its extension, because there are no bodies in the void. It thus must be possible to be a *diastēma* without actually containing a body. Instead, the void is a *diastēma* because it *could* be occupied by a body, even though it is in fact not. On the other hand, room is a *diastēma* that *is* actually occupied, at least partially. Place does have to be occupied, but this is because place is always the place of something – i.e. a body. In the spatial case, *diastēma* seems to refer to a dimension that can be either full or empty and is capable of being occupied by three-dimensional (*trichē diastaton*) bodies.

Again, place, void, and time are all members of the limited category of incorporeals, and all are defined in relation to a body (or its motion) without being bodies themselves. We

[120] Room is presumably also incorporeal, but it is not anything metaphysically distinct from place and void combined together.
[121] *M* X.3.1-4.1.

have also seen that place and void have almost identical definitions – place is filled, and void is not, but otherwise they are the same – and that void is defined as a *diastēma*. This, combined with the difficulties with the alternate readings of *diastēma,* gives strong evidence for the conclusion that the Stoics defined time as analogous to the spatial concepts of place and void. In other words, time is to motion as place is to bodies. Time is filled by various states that together constitute a motion, while place is filled with various bodies that together constitute larger bodies. And just as we measure the height, width, and depth of bodies by how much of the relevant spatial dimension they fill, we may measure the speed and slowness of a motion by the temporal dimension.

6. A Dimension of Motion

6.1 The Measure of Speed and Slowness

This brings us to the second element of the Stoic definition of time. Time is not only a *diastēma* of motion, it is also a "measure of fast and slow." This definition is always found in conjunction with the *diastēma* of motion definition; while it is sometimes absent from recorded Stoic definitions of time, it never stands alone as the sole Stoic definition of time without the *diastēma* element.[122] Thus, I contend it is best understood as an addition to that definition rather than a substantive alternative definition in its own right. After all, while philosophers might profitably fight about whether time is properly understood as a *diastēma* in any sense, the idea of it being a measure of speed and slowness is hardly controversial.

[122] The definitions of time attributed to Zeno and Chrysippus by Simplicius include only the *diastēma* part of the definition (*in. Cat.* 350.15-16). In Stobaeus, the sections on Zeno (*Ec.* I.40e) and Posidonius and Chrysippus (*Ec*. I.8.42) all include both parts of the claim that time is a *diastēma* of motion or a measure of fast and slow. Only the Apollodorus section (*Ec.* I.8.42) differs; it includes the *diastēma* claim but not the measure claim.

Instead, the Stoics are elaborating on what it means for time to be a *diastēma*, and what kind of *diastēma* it is. By saying that time is "a *diastēma* of motion…*or* a measure of fast and slow," the statement following the "or" represents a clarification, not a genuine alternative.

The dimension reading of *diastēma* I have offered gives us an easy way to assimilate this language with the spatial analogy. As I have already noted, the Stoics define a physical body as "*to trichē diastaton*,"[123] which we might render as thrice-extended or three-dimensional. These three spatial dimensions are easy to understand; every object must have some height, width, and depth that correspond to extension along an up-down, left-right, or front-back spatial dimension. The qualities of the body are closely tied to these three dimensions, but not identical with them; the body and the dimension are two separate things, with the former inhabiting the latter and being measured by it. Time serves an analogous function for the motion of an object, and that motion will have some extension along this earlier-later dimension. If we want to compare the height of two objects, we say that object X is taller than object Y just in case X takes up more of the vertical dimension than Y does. This dimension serves as a measure of height.

Motion does not take up a spatial dimension, except derivatively in the sense that the object in motion occupies three-dimensional place at every point in the motion. Instead, motion exists along the temporal dimension. The length of a motion – or its duration – can be measured by how much of this temporal dimension the motion covers. One motion has a longer duration than another just in case it covers more of the temporal dimension.

[123] DL 7.135, from the Life of Zeno and attributed to Apollodorus: "Σῶμα δ᾽ ἐστίν, ὥς φησιν Ἀπολλόδωρος ἐν τῇ Φυσικῇ, τὸ τριχῇ διαστατόν, εἰς μῆκος, εἰς πλάτος, εἰς βάθος: τοῦτο δὲ καὶ στερεὸν σῶμα καλεῖται." ("Body is, as Apollodorus says in the Physics, that which is thrice-extended, in height, in width, in depth: this is also called 'solid body.'").

We might stop there, as modern philosophers and physicists of time often do. The Stoics, however, take one more step. It is not only the case that motions have different durations which can be compared. It is also the case that the same kind of motion can have a longer or shorter duration than another. Achilles and the tortoise can run the same race that covers the exact same stretch of ground. Achilles' race-running motion will, presumably, have a much shorter duration and cover much less of the temporal dimension than that of the tortoise. This not only licenses us to say something about relative duration, but also something about relative *speed*. To complete the same or similar actions in a shorter duration just is to be faster. To do so in a longer duration is to be slower. The temporal dimension gives us an easy way to compare not only duration but also speed, in a way that acknowledges the ways in which motions can be spatially similar but temporally distinct.

This understanding of time as a dimension which measures fast and slow allows us to capture the intuition Rist was interested in with his comparison of two cars driving from Cambridge to Oxford,[124] discussed earlier in this chapter, without identifying time with either the motions themselves or with their spatial extensions. The fact that two drives occur over similar spatial extensions is only relevant because it allows us to compare the two motions along the temporal dimensions; we could also make this same comparison for two cars travelling the same spatial distance along different routes and, indeed, with completely different start and end points and non-overlapping routes. For example, if two cars both drive 50 miles in opposite direction, but one car does so with less extension over the temporal dimension than the other, that first car travelled faster.

[124] Rist (1969): 274.

6.2 The Motion of What?

A final definitional question is, given that time is a *diastēma* motion, which motions is time the *diastēma* of? Does the definition range over all motions, or only some privileged subset? Does each motion have its own unique time, or is there some universal synchronized time that measure all motions? There is an intriguing difference between the formulations of the definition of time we see Zeno and in Chrysippus. Zeno says that time is the *diastēma* of *all* motion, or motion without any qualification, while Chrysippus – at least in some sources[125] – says that it is the *diastēma* of the motion of the *cosmos*. What is the significance of the reformulation by Chrysippus? Are these equivalent definitions with different phrasing, or do they truly represent different ideas? I will argue that they are essentially equivalent definitions, with Chrysippus' change representing a clarification rather than a truly different theory, but first let's look at some possible differences between the two definitions.

One possibility is that while Zeno truly meant that time is the *diastēma* of all motions, Chrysippus only wants to make time the *diastēma* of some special cosmic motion, and no other motions. This might include, for instance, the motion of the sun and the planets and the stars. These cosmic entities are thought to have a special relationship to time; after all, we tell time of day by the sun, of month by the moon, parts of the year by position of the stars, and so forth. Plato's analysis of time in the *Timaeus* ties the creation of time explicitly to these heavenly bodies.[126] This interpretation would be especially appealing if we invoked

[125] Simplicius flags this difference with a *men*/*de* ("on the one hand…on the other hand…") comparison between Zeno and Chrysippus; this suggests that Simplicius at least sees it as a genuine difference between the two worth grammatically flagging (*in. Cat.* 350.16-17). However, even if Simplicius is correct, a genuine difference of terminology need not automatically suggest a genuine difference of doctrine.
[126] *Tim.* 37d-e.

the reading of "interval" or "extension" for *diastēma*. While it is difficult to imagine a specific temporal dimension only existing for the sun and stars and closed off to other motions, it is easier to picture setting standards of time by intervals of, say, the circular motion of the stars.

Thus, my first reason for rejecting this reading is that I believe that the dimension reading is by far the strongest of the available options. Under the dimension reading it is implausible that among a simultaneous (as it were) set of motions some should exist along a temporal dimension while others do not. The dimension reading assumes that time is the dimension in which motion exists, and this must apply equally to all motion, as Zeno says in his definition.

Another problem is that there is a multiplicity of available cosmic motions. The motion of the stars is not the same as the motion of the sun, nor is it either the same as the motion of the moon. Mars does not move at the same rate as Venus. Which of these is the motion of the cosmos? Or is it something else entirely? Perhaps a superset of all these motions together? But then it would be considerably less clear what an "interval" or "extension" of these motions taken together could be. Even if we ignored the reasons for preferring the dimension reading, such an interpretation would introduce unnecessary confusion into the process.

A third problem is that this proposed reading of Chrysippus threatens to leave mundane earthly motions timeless, or at least less temporal than heavenly motions. Supposed I am sitting at home, reading a book. The motion of the sun can tell me that I have been reading for an hour, if I check it. But it seems that my reading has its own temporality, unconnected from the motion of the sun. The reading did not take an hour because of how

long the sun took to move; the sun moved that far in the time between me picking up my book and closing it because an hour had passed while I read my book. Why should I privilege the motion of the sun and its states over my reading of the book and its states? Both exist within time and both have a series of states arranged temporally.

A fourth consideration is that this reading would almost certainly leave the periods of cosmic conflagration *(ekyprosis)* timeless. This is the period in between cosmic cycles when the world converts into fire. There are no sun, moon, stars, planets, and so forth during this period. But if we want to say that the period of conflagration is long or short, or even just that it occurred for some (unspecified) period of time, we would need some other motions connected to time. This is true even if we deny the existence of hours and days and months without the heavenly bodies; any time at all, even unmeasured time, would be impossible during the conflagration. Perhaps this is the case; there are unquestionably strange features present in the doctrines of *ekpyrōsis* and cosmic recurrence, and the Stoics have a reputation for accepting odd metaphysical conclusions. However, given that physical causality still seems to be in play during the period of conflagration, and that the cosmic fire appears to go through stages where it fully consumes its fuel and then cools,[127] we would expect these to occur in time and to be measurable at least as fast or slow.

Finally, and relatedly, there is the problem of the finite existence of all heavenly bodies. Because of the process of cosmic conflagration, we may say that the existence of any heavenly body, and indeed the earth itself, is finite at both ends. They are created, destroyed,

[127] See Long (2006): 266; DL 7.135 (=LS 47B); Plut. *St. Rep*. 1053b (=LS 46F).

and new and equivalent bodies are created.[128] It is a clear point of Stoic physics, including from Chrysippus himself, that time is infinite in both directions.[129] The infinity of time makes it impossible for time to be defined by finite objects. If time is defined by the motion of the sun, then as soon as the sun is destroyed, time ends. If time is infinite, then time never ends. The two points are absolutely incompatible. I consider this last point decisive against this reading.

A second possible reading is the interpretation given by Sambursky, which I already discussed in the context of general definitions. Time is not the *diastēma* of all motions generally, but specifically the circular and repeating motions of world cycles and cosmic conflagration.[130] I have discussed several problems with this view, and I continue to find the arguments against it compelling. If time is the interval of one world cycle, it is finite, even if the series of world cycles is infinite. If time is the repeating series of cycles itself then it is a motion or event, and thus a body. If time is a dimension or container of all the world cycles sequentially, then the specification about world cycles is vacuous – time just is the dimension or container of everything that occurs, which happens to be a series of world cycles and all of the events within them. There would be nothing special about the fact of

[128] Under some theories these are in fact the same bodies in terms of strict identity. In that case their existence is at least interrupted and thus only questionably infinite. We might say the same of Socrates, although his period of non-existence lasts for most of the universe rather than vice versa for the sun. But surely Socrates does not live forever, even if there are multiple identical Socrates across world cycles.
[129] Stobaeus *Ec.* I.8.42.31-33: "And just as the void is completely unlimited in every direction, time also is completely unlimited in each direction; for the past and the future are unlimited." (Ὥσπερ δὲ τὸ κενὸν πᾶν ἄπειρον εἶναι πάντῃ καὶ τὸν χρόνον πάντα ἄπειρον εἶναι ἐφ' ἑκάτερα· καὶ γὰρ τὸν παρεληλυθότα καὶ τὸν μέλλοντα ἄπειρον εἶναι.).
[130] Sambusrky (1959): 106-107.

cosmic conflagration and cosmic repetition, because time would do the same work as a linear *diastēma* of motions with or without this cycling.[131]

If the "of the motion of the *cosmos*" emendation from Chrysippus does not mean either of these, what explanation is there for the change? It is possible that Chrysippus found Zeno's original "of all motion" too ambiguous. "Of all motion" could mean "of every motion taken together as a set" or "of every motion individually." The latter interpretation would be a disaster for the conception of time as an infinite and universal phenomenon. My motion of reading a book at home would have one *diastēma*, and thus one time, while Achilles' running his race outside my house would have another, and the motion of the sun while both these things happened would have yet a third. We would have to talk about a multiplicity of unsynchronized times, each of them finite and distinct from others. It would be impossible to talk about "simultaneous" motions, because no two motions would happen during the same time – rather each would happen during their own personal time. What we want to say is that there is one time that is the *diastēma* of my book reading, Achilles' running, and the motion of the sun *taken together*. In fact, we want more than that – we want every motion in the cosmos to be included together. I suspect that Chrysippus' "*diastēma* of

[131] Though I reject the idea that cosmic conflagration and eternal recurrence are definitional elements of time or must be understood in order to understand time, my reading of the Stoics on time does have some interesting consequences for the doctrines of *ekpyrōsis* and recurrence. For one, I have argued that we must reject the idea that time itself is a closed loop, and that Stoic time cannot itself repeat. This means that each cosmic cycle will be temporally distinct, and not a literal repetition of time (*contra* Barnes (1978)). Furthermore, it will be coherent to talk about earlier and later cycles, or cycles in the past and cycles in the future. Cycles may be compared as temporally distinct entities. There is room for the idea of differences with cycles, even if they are largely the same. Because celestial bodies will move in cyclical ways, we may compare points across cycles by reference to these (as Nemesius of Emesa does: "When the stars are moving again in the same way, each thing which occurred in the previous period will come to pass with no difference" (Nemesius, *Nat. Hom.* 309.5-311 (=LS 52C; SVF II.625), *trans*. Long), but this will not make the times themselves the same, just as two winters in different years will have repeating elements (e.g. visible stars and planets, weather patterns, calendar dates) but will be distinct times. The cyclically repeating elements of seasons, years, or cosmic cycles, are events, not times.

the motion of the *cosmos*" variant is meant to emphasize exactly that fact. The motion of the *cosmos* refers to every motion in the *cosmos* taken together as a unified whole. This allows there to be exactly one time, existing over (and due to) all motions together at once. This is the motion of the *cosmos* – a singular motion encompassing many.

There are good textual reasons to accept my reading. For one, Stobaeus' report on Chrysippus' theory of time appears to support it. According to him:

> Chrysippus said that time is the *diastēma* of motion, according to which measure fast and slow are spoken of; or the *diastēma* accompanying the motion of the cosmos, and in accordance with which each thing both moves and is.
>
> Ὁ δὲ Χρύσιππος χρόνον εἶναι κινήσεως διάστημα, καθ' ὃ ποτὲ λέγεται μέτρον τάχους τε καὶ βραδύτητος· ἢ τὸ παρακολουθοῦν διάστημα τῇ τοῦ κόσμου κινήσει, καὶ κατὰ μὲν τὸν χρόνον κινεῖσθαί τε ἕκαστα καὶ εἶναι.[132]

The phrase "*kata chronon*," translated above as "in accordance with time," might also be translated as "over time" or "through time," suggesting again the idea of time as a dimension that motions occupy.[133] The subject "*ekasta*" or "each thing" in the phrase "each things both moves and is" strongly suggests that Chrysippus did not mean to pick out a specialized class of motions. Everything both moves and exists through time, not just the sun and stars and planets. No motion occurs outside of time, because time is the *diastēma* of a comprehensive cosmic motion consisting in every motion taken as a unified set.

The Stoic conception of the *cosmos* also suggests this kind of reading. "*Cosmos*" does not only refer to heavenly bodies; rather, the Stoics identify the cosmos with the whole (*to holon*), which in turn is contrasted with the all (*to pan*). The whole refers to the *cosmos*,

[132] Stobaeus *Ec.* I.8.40e.2-6; I.8.42.25-29.
[133] For *kata* + acc. with a verb of motion in this sense, see LSJ entry B I.2: **"**with or without signf. of motion, *on*, *over*, *throughout* a space."

which is a *plenum*,[134] while the all encompasses the both the cosmos and the infinite void beyond the boundaries of the cosmos.[135] One telling piece of evidence that the relevant sense of cosmos in the definition of time is the whole, and not merely the heavens, is that Sextus Empiricus treats the *cosmos* and the whole as equivalent when reporting the idea that time is a *diasēma* of motion. In the introduction to the discussion of time in *Against the Dogmatists*, the first view Sextus mentions is that some – presumably the Stoics – "say that time is the *diastēma* of the motion of the *cosmos*."[136] In an exactly parallel place in the *Outlines of Pyrrhonism*, as the first dogmatic definition given in the introduction to the section on time,[137] Sextus reports that: "some say that time is the *disatēma* of the motion of the whole, for they say that whole is the *cosmos*."[138] Sextus does not identify either of these explicitly as Stoic views, but the language is exactly what we would expect from a report of the Stoic theory of time. We know from our other sources that Stoics call time a *diastēma* of motion, and often specifically a *diastēma* of the motion of the *cosmos*, and we also know that in other contexts they identify the *cosmos* with the whole. Sextus' report fills in the last missing piece that time as the *diastēma* of the motion of the *cosmos* and time as the *diastēma* of the motion of the whole are the same; he treats the two views identically in the two different texts, and in the *Outlines of Pyrrhoniam* he even adds an explicit note that "the whole" in the definition of time as "the *diastēma* of the motion of the whole" refers to the *cosmos*.

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[134] i.e. fully occupied place, containing no internal void.
[135] *M* IX.322 (= SVF 2.524; LS 44A); Pseudo-Plutarch *Plac*. II.1.886c9-11 (=SVF 2.522).
[136] *M* X.170.1-2: "καὶ δή τινές φασι χρόνον εἶναι διάστημα τῆς τοῦ κόσμου κινήσεως".
[137] As a further parallel, in both texts this *diastēma* view is immediately contrasted with a view that time is the motion of the cosmos itself.
[138] *PH* III.136.4-5: "χρόνον γὰρ εἶναί φασιν οἱ μὲν διάστημα τῆς τοῦ ὅλου κινήσεως (ὅλον δὲ λέγω τὸν κόσμον)".

This Stoic cosmos as whole does not pick out only a certain class of objects, but instead takes the entirety of cosmic being as a composite whole. Chrysippus' definition of the *cosmos* explicitly includes not only the heavens, but also the earth and human life:

> Chrysippus said that the *cosmos* is composed from the heavens (*ouranos*) and earth (*gē*) and from the natures of these; or it is a composite of gods and humans and of things coming about account of them.
>
> Κόσμον δ' εἶναί φησιν ὁ Χρύσιππος σύστημα ἐξ οὐρανοῦ καὶ γῆς καὶ τῶν ἐν τούτοις φύσεων· ἢ τὸ ἐκ θεῶν καὶ ἀνθρώπων σύστημα καὶ ἐκ τῶν ἕνεκα τούτων γεγονότων.[139]

Identifying the cosmos with the heavenly bodies alone would be to mistake *ouranos* for *cosmos*, and to miss the holistic nature of the cosmos. Furthermore, the *cosmos* not only encompasses the earth itself as a body, but also individual persons and their activities and the objects concerned with them. If time is the *diastēma* of or accompanying the motion of the *cosmos*, the relevant motions will include the motions of the sun and the stars, but also all the motions of human activities and other objects found on earth and in the heavens.

In fact, it will also include the motions during the period of cosmic conflagration. One strong benefit of this reading is that it explains how time can be infinite while also being tied to the *cosmos*. While an individual *cosmos* in the sense of earth and heavenly bodies is finite, being composed of parts and thus subject to decay, the *cosmos* in the strict sense is immortal. The cosmic conflagration does not destroy the *cosmos*; rather, it transforms it. The *cosmos* changes, but survives this change, and continues on through all of the changes of the next world cycle. Chrysippus addressed this very issue and claimed that the soul of the *cosmos* is not separated from its matter, and thus "the cosmos must not be

[139] Stobaeus *Ec.* I.21.5.1-5 (=SVF 2.257).

said to die."[140] Even during cosmic conflagration there is a *cosmos* in motion for time to be the *diastēma* of, and that *cosmos* is as eternal as time and exists without interruption.

[140] Plutarch (reporting the view of Chrysippus) *St. Rep*. 1052c8-9: "οὐ ῥητέον ἀποθνήσκειν τὸν κόσμον."

Chapter 3: Puzzles for the Stoic Present

7. Chapter 3 Introduction

Now that we've investigated time as a whole and come to understand its ontology and definition, we must turn our attention to the various parts of time – and in particular, to the present. The status of the present is particularly contentious on several fronts. First, it is unclear whether the present is a part of time at all, or whether time is fully constituted by past and future. It is likewise unclear whether the present differs significantly from the past and future – a topic I examined in Chapter 1. Finally, there is controversy about what we might term the "character" of the present – what is its length, and is it divisible or indivisible?

Given my arguments in Chapter 2 that the Stoics view time as a dimension, analogous to the spatial dimensions, we might reasonably ask whether they view temporal "directions" and "locations" – e.g. specific times, past, present, and future – as roughly analogous to spatial directions and locations. No one – at least in contemporary circles – is tempted to say that left and right are metaphysically asymmetrical, with one more real than the other, or to say that "here" possess any ontological heft absent from "there." Past and future, on the other hand, are often taken to be asymmetrical, with the past somehow more real than the future because it has already occurred, and the future more open than the past because it has not yet occurred. "Now" is often taken to have a greater reality than "then," in virtue of now being present and then being either past or future. However, as we saw in Chapter 1, the Stoic present is explicitly given some sort of status that the past and future lack – the present is *huparchon,* while the past and the future are not – and I argued that this

status is best understood as a genuine ontological difference. The present seems to have a kind of reality that the past and future lack in virtue of being past and future.

This makes it all the more urgent that we define the scope and character of the present. Our fragments pull us in different and puzzling directions. Chrysippus tells us that the present, which is *huparchon*, is composed of the past and future, which are not *huparchon*. Archedemus[141] says that the present is a point, which would not be a time at all, let alone one composed of other times. And Apollodorus[142] tells us that although the past and future are not *huparchon*, in some sense the whole of time – presumably including all of the past and all of the future, as well as the present – is *huparchon*. What are we to with these apparently contradictory statements?

In the following chapter, I will discuss problems of the present in Stoicism with reference to three different possible models of the present. In one the present is a point of no duration, in another it is a distinct period between past and present, and in the third it is a period wholly composed of past and future. Each of these has some plausibility as the Stoic model, but also serious problems given the Stoic fragments about time and other Stoic commitments. This chapter will examine strengths and weaknesses of these various possible readings, in order to establish the exact problems and the status of the literature to date. In the next chapter, I will offer my own solution to the problem and show how it accords with the extant evidence.

[141] Archedemus of Tarsus, a Stoic of the 2nd century BCE.
[142] Apollodorus of Seleucia, likewise a Stoic of the 2nd century BCE.

8. Three Models of the Present

8.1 An Overview

There are several possible models of the present; for ease of discussion I will name and briefly describe three generic models relevant to the ancient debate over the present. My choice of these three models is inspired in part by Sextus Empiricus' problematization of the present in his sections on problems for any theory time in *Against the Dogmatists* and *Outlines of Pyrrhonism*.[143] There are a series of difficult questions that must be answered about the character of the present, including whether the present is divisible, and if so, divisible into what? What is the length of the present, and why? And just what is the relationship between the present and motion?

The first division is between models where the present is punctate and models where the present is extended. Of extended models, there are models in which the present is extended but atomic, and others in which the present is extended and divisible. If the present is extended and divisible, it can either be divided in parts that are all alike and all present, or into parts that are unalike and are past and future. I discuss three particularly important models: the junction model, the interruption model, and the combination model. These models are useful for understanding different options – and challenges – the Stoics face in defining and characterizing the present. I will define each in brief here, with a review of relevant challenges.

[143] The generic attacks on time (as opposed to attack on theories of time for specific schools) are at *PH* III.140-150 and *M* X.189-214. Attacks focused on the present can be found at *PH* III.144-146 and *M* X.197-202.

8.2 The Junction Model

Perhaps the simplest of the three models is what I am calling the Junction Model. In the junction model, the present is punctate and of zero extension. It is simultaneously the end of the past and the beginning of the future, and does not have a unique, non-overlapping period of existence. It is analogous to a geometrical zero-dimensional point on a one-dimensional line. The present both limits the past and future and is the point that joins them – hence the description of the present as a "junction." The present is analogous to the dividing point of two contiguous line segments. Picture a line segment ABC:



Figure 1: Line Segment ABC

Line segments AB and BC intersect at point B. Point B is the terminating point of AB and the starting point of BC. Point B is not some third entity over and above the two line segments; it just is the beginning of one and the end of the other. It seems reasonable to say that point B is constituted by the line segments. Take both of them away, and point B no longer exists (assuming that B is a point on a line and not in space). Point B also functions as a limit of each line segment. AB does not continue on to the right past B, nor does BC continue further to the left than B. Without point B there would only be one line segment, AC; with it, there are two.

Analogously, the present is the place where the past ends and the future begins. It is constituted by the past and future and is nothing in itself over and apart from the junction of past and future. In this diagram, the dotted line represents the place where past and future meet:

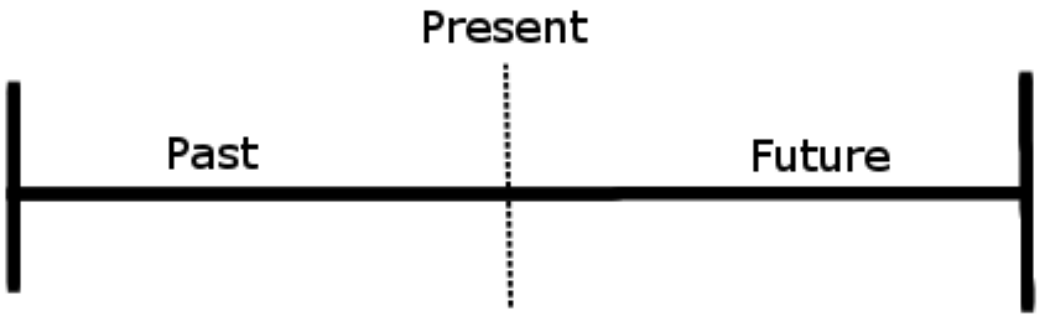


Figure 2: The Junction Model Present

The present is this point of junction between past and future. It is temporally punctate, just like point B in the line segment is spatially punctate. The whole of the present is connected both to the future and the past, because the present has no parts. It has no existence over and above the past and future themselves – it would be equally true to say that it is the last moment of the past and the first moment of the future. This is the model suggested by Aristotle in *Physics* IV: "The now is the link of time, as is said, for it links the time that is past to the time that is time come, and it is a limit of time, for it is the beginning of one, the end of the other."[144]

[144] *Phys.* IV.13 222a 10-12: Τὸ δὲ νῦν ἐστιν συνέχεια χρόνου, ὥσπερ ἐλέχθη· συνέχει γὰρ τὸν χρόνον τὸν παρεληλυθότα καὶ ἐσόμενον, καὶ πέρας χρόνου ἐστίν· ἔστι γὰρ τοῦ μὲν ἀρχή, τοῦ δὲ τελευτή.

This model has the advantage of giving a clear answer to the "how long?" question that does not appear ad hoc or arbitrary. The length of the present is zero, because it is a point and not a time with duration. If the present were any longer it would cease to be the exact meeting point of past and future. The present cannot be any shorter, because there is no extension left to remove. Another feature – for better or worse – of the junction model is that it strongly suggests that the present is not a time at all, but a mere limit or junction of times. The past and the future are times, an hour is a time, but the present, having no duration, is not a time.

The junction model is particularly vulnerable to skeptical arguments about motion, such as Zeno's paradox of the arrow.[145] If the present is an instant, it can only accommodate a single state at a time. Motion (or change) inherently involves more than one state; motion is the transition from one state to another. If the present is punctate, an object can never be in motion in the present: it can only be in one of the states involved in the motion, not actually in motion. If we add the intuitive premise that whatever happens must happen in the present, then it seems that there is no time when motion can occur; it cannot occur in the present, because the present is too short for motion to occur, but neither can it occur in the past or future.[146] These sorts of problems suggest that the present must be an extended time rather than a punctate instant.

[145] See Arist. *Phys.* VI.9.239b30-33.

[146] Two versions of this argument can be found in *PH* III.106-107 and III.144, where Sextus argues that nothing can change in a partless time. The first version at *PH* III.106-107 claims that as the present is the time of change and the present is presumably partless, motion is impossible. At PH III.144, the assumption that motion occurs and must occur in the present but could not occur in a partless time is used as an argument that the present must not be partless and must rather be divisible. The partless present could describe either a punctate present or an indivisible time atom, as found in the philosophy of Diodorus Cronus.

8.3 The Interruption Model

In the interruption model, the present is an extended period situated between the past and present, comprising its own unique part of time. The interruption model is likely the closest to a commonsense notion of the present – the present is a time, and it is distinct from past and future:



Figure 3: The Interruption Model Present

The present begins when the past ends, continues for some non-zero span of time, and then ends when the future begins.

As intuitively attractive as this model is, it is also vulnerable to several objections. First, what is the length of the present and why? For any given time, it seems that it might be either shorter or longer. What makes for a sharp boundary between present and past or present and future? Furthermore, this extended present is either divisible or atomic. If atomic, the problems of motion arise again. An indivisible atomic present cannot have parts with different states or with continuous motions, because it cannot have parts at *all*. The picture of motion becomes, if anything, even odder than in the junction model; every present period will hold in a single state for some extended period and then transition suddenly to a new one. We will all be teleporting about over discrete bits of space and travelling jerkily

forward through extended, but each individually static, periods of time.[147] Of course, even if the Stoics wished to accept these consequences, their opposition to atomism in all forms and their general commitments to continua would block them. We have, moreover, independent evidence that they opposed the idea of an atomic present.[148]

If the extended present is divisible but still uniquely present, it must be divided into parts that are all themselves present. Unfortunately, this is not a tenable position. Let us stipulate that the present lasts for one second. After half a second, what is the status of this present? Half of it has elapsed, and half of it has not yet occurred. The half-second that has elapsed is surely now in the past, because that is just what it means for a time to have elapsed. How can a time be wholly present but also already completely over? The half-second that has not yet occurred must be in the future, because the future just is time that has not occurred. To say that the elapsed half-second and the as-yet-unreached half-second are both fully and completely present and do not overlap with past or future seems like a misunderstanding of what past and future are. Of course we need not wait until the halfway point of our "present", nor pick out a punctate moment within it. From the perspective of any shorter period within the present, some of the present is past and some is future.[149]

[147] Diodorus Cronus, partisan of present time atoms, boldly maintained that there is no time at which motion *is* occurring, only times at which motion *has* occurred (*M* X.87-98).
[148] See Plut. *Comm. Not.* 1081c.
[149] This is one of Sextus Empiricus' arguments against the possible existence of the present, and thus against the existence of time (*M.* X.197-202).

8.4 The Combination Model

The collapse of the divisible interruption model takes us to the combination model. In the combination model, the present is extended and divisible – and it is divisible into past and future:[150]

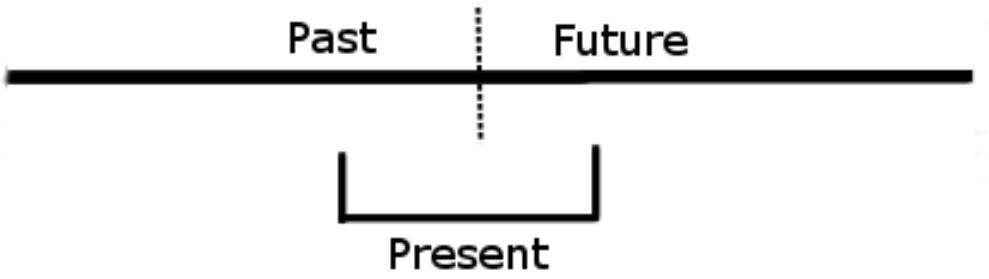


Figure 4: The Combination Model Present

This model allows us to account for how a present period could be divisible into earlier and later periods, and avoids committing one to an atomic or punctate present – but at the cost of a common sense idea of the present as a distinctive part of time. The combination model seems to abandon the idea that the present is unique and has its own characters. After all, the present is just the past and future. Plutarch accuses the Stoics of exactly this, along with other problems (as we shall soon see). The combination model also does not tell us exactly how long the present is – indeed, it may not even matter, given that the present just is a span of past and future. It is unclear what, if anything, differentiates a past period earlier than the present and a past period "inside" and composing the present. One might justifiably worry

[150] The present may be wholly constituted by past and future, or we might try to preserve some "truly" present "core" inside the extended present. If so, we will have to account for the character of the present "core" in exactly the same way, and this will seem to be the object of our inquiry, not the combinatorial "present." Such a theory would have aspects of both the interruption model (because there is a distinct present period within the "present"), and the combination model (because the present as a whole is composed of past and future).

that the present is not really anything at all in this model, let alone anything ontologically or experientially special.

One popular interpretation of the Stoics has been to take them as falling somewhere between the combination theorists and interruption theorists, and to say that the Stoic present is a composite of past and future around a divisible but uniquely present core of indeterminate length. Malcom Schofield refers to this as the "retrenchable present", meaning that the length of the present can be redescribed or understood differently depending on context.[151] A similar view has been argued by S. Sambursky (1959) and David Sedley (1999). There is evidence to recommend this reading, but it is not the only evidence, and there are serious problems reconciling this account with the ontological specialness of the present, as discussed above in Chapter 1, section 3. Indeed, there is evidence to suggest that the Stoics were drawn to each of the three models I have listed. In the following sections, I will make a case for the Stoics as junction theorists, combination theorists, and interruption theorists. I will reconcile this apparently conflicting evidence by showing that the Stoics understood the present in at least two discrete and interrelated senses, and that the different models correspond to differences in these two senses.

9. The Character of the Present: Problematized

9.1 The Combination Model Reading

The evidence for the Stoics as combination model theorists is likely the strongest. The claim that the present is composed of or divisible into past and future can be found both

[151] Schofield (1988): 347. Schofield himself borrows the term from G. E. L. Owen's use of retrenchable to refer to "here" in space (1975: 148-149).

in the reports of Stobaeus and in Plutarch's attacks on the Stoic theory of time. Plutarch's extended discussion of the Stoics on time in *Against the Stoics on Common Conceptions* centers largely on the idea that the Stoic present is a composite of past and future, and his attacks on the Stoic view of time only make sense given this understanding of the present. He begins with the following complaint:

> It is against common conception for future and past time to exist, but the present not to exist, and the recently and the soon to subsist, but the now to wholly not exist. Yet this is what befalls the Stoics, who neither leave a smallest time nor wish the now to be partless, but say that whatever someone thinks he has grasped and conceives of as present, that thing is past and future; thus nothing remains for the now nor is left for the part of present time, if that which is said to be present is distributed into the past and into the future.
>
> Παρὰ τὴν ἔννοιάν ἐστι χρόνον εἶναι μέλλοντα καὶ παρῳχημένον, ἐνεστῶτα δὲ μὴ εἶναι χρόνον, ἀλλὰ τὸ μὲν ἄρτι καὶ τὸ πρῴην ὑφεστάναι, τὸ δὲ νῦν ὅλως μηδὲν εἶναι. καὶ μὴν τοῦτο συμβαίνει τοῖς Στωικοῖς ἐλάχιστον χρόνον μὴ ἀπολείπουσι μηδὲ τὸ νῦν ἀμερὲς εἶναι βουλομένοις, ἀλλ' ὅ τι ἄν τις ὡς ἐνεστὼς οἴηται λαβὼν διανοεῖσθαι, τούτου τὸ μὲν μέλλον τὸ δὲ παρῳχημένον εἶναι φάσκουσιν· ὥστε μηθὲν κατὰ τὸ νῦν ὑπομένειν μηδὲ λείπεσθαι μόριον χρόνου παρόντος, ἄν, ὃς λέγεται παρεῖναι, τούτου τὰ μὲν εἰς τὰ μέλλοντα τὰ δ' εἰς τὰ παρῳχημένα διανέμηται.[152]

The problem Plutarch identifies is simple: The present is time or part of time most directly related to reality and to common experience. We do not directly experience the past (qua past) nor the future (qua future), but only the present. However, the Stoics claim that the present is divisible into past and future parts. Thus, there is no unique present; the present just is the past and future. The part of time that is most "real" and the only part of time that can be directly present and experienced is converted into the less ontologically substantial and experientially inaccessible parts of time. This concern is particularly pressing given that,

[152] Plut. *Comm. Not.* 1081c3-d1.

according to Plutarch, Chrysippus himself agreed that the present is ontologically special and the past and future are mere subsistence, while still maintaining that the present is composed of past and future:

> Chrysippus, wishing to practice art regarding the division, in *On the Void* and other places said that the past and future of time are not real (*huparchein*), but they subsist (*huphestēkenai*), and only the present (*to enestēkos*) is real (*huarchein*), **but in the third and fourth and fifth books of *On Parts*, he said of the present time that it is past and future.**
>
> Χρύσιππος δὲ βουλόμενος φιλοτεχνεῖν περὶ τὴν διαίρεσιν ἐν μὲν τῷ περὶ τοῦ Κενοῦ καὶ ἄλλοις τισὶ τὸ μὲν παρῳχημένον τοῦ χρόνου καὶ τὸ μέλλον οὐχ ὑπάρχειν ἀλλ' ὑφεστηκέναι φησί, μόνον δ' ὑπάρχειν τὸ ἐνεστηκός, ἐν δὲ τῷ τρίτῳ καὶ τετάρτῳ καὶ πέμπτῳ περὶ τῶν Μερῶν τίθησι τοῦ ἐνεστηκότος χρόνου τὸ μὲν μέλλον εἶναι τὸ δὲπαρεληλυθός.[153]

We have discussed the first half of this quote earlier, when I discussed the claim regarding the unique reality of the present in section 3 of Chapter 1. The second half of the quote, which I have bolded, is where we find the evidence that Chrysippus is a combination theorist. While he does not explicitly say so, Plutarch is at least implying that the present is *wholly* constituted of past and future – the present just *is* past and future. In the next section, Plutarch reiterates his basic complaint:

> Thus it follows that the real part (*to huparchon*) of time itself is divided into the unreal parts of the real part, or rather that the whole real part of time is completely destroyed, if the present has no parts, since the past and the future do not exist (*mē estin*).
>
> ὥστε συμβαίνει τὸ ὑπάρχον αὐτῷ τοῦ χρόνου διαιρεῖν εἰς τὰ μὴ ὑπάρχοντα τοῦ ὑπάρχοντος, μᾶλλον δ' ὅλως τοῦ χρόνου μηδὲν ἀπολείπειν ὑπάρχον, εἰ τὸ ἐνεστηκὸς οὐδὲν ἔχει μέρος, ὃ μὴ μέλλον ἐστὶν ἢ παρῳχημένον.

If the present is a real and existent thing, it must have parts (or be indivisible and atomic, which Plutarch states earlier is not the Stoic view). But if its parts are past and future, then

[153] Plut. *Comm. Not.* 1081f3-1082a1.

its parts are unreal and non-existent. To have unreal and non-existent parts is the same as having no parts – thus the present has no parts if its "parts" are the past and future. The only real part of time vanishes into unreality and non-existence. Now that time has no real parts – the reality of the present having vanished – time as a whole faces the same problem. It cannot be real and exist.

These arguments from Plutarch are arguments against a combination theory, where the present just is a composite of past and future. This is why the status of the past and the future are a threat to the status of the present; the present just is the past and present joined together. Plutarch's evidence is that Chrysippus claimed that the present is past and future – the "is" in this context appears to assert a compositional claim. The present is the past and future because the present is wholly composed of past and future.

We have other, less polemical sources supporting this position as well. Stobaeus reports that the Stoic Posidonius also described the present as a composite of past and future parts:

> And regarding the "whens" of time, there is the past, the future, and the present, which is composed from parts of the past and the future around the division itself; and the division is punctate. "The now" and similar things are conceived of as time in a broad sense (*en platei*), but not precisely (*kat' apartismon*).
>
> <καὶ> κατὰ τὸ πότε τοῦ χρόνου τὸν μὲν εἶναι παρεληλυθότα, τὸν δὲ μέλλοντα, τὸν δὲ παρόντα, ὃς ἔκ τινος μέρους τοῦ παρεληλυθότος καὶ τοῦ μέλλοντος περὶ τὸν διορισμὸν αὐτὸν συνέστηκε· τὸν δὲ διορισμὸν σημειώδη εἶναι. Τὸ δὲ νῦν καὶ τὰ ὅμοια ἐν πλάτει χρόνον καὶ οὐχὶ κατ' ἀπαρτισμὸν νοεῖσθαι. [154]

[154] Stobaeus *Ec.* I.8.42.16-21

The report from Stobaeus on Chrysippus does not contain an explicit statement about the identity of parts of the present, but there is a closely related comment on the divisibility and presentness of times:

> For since divisibility of continua is to infinity, the whole of time has divisibility to infinity in accordance with the division itself; therefore no time is present (*enestanai*) precisely (*apartisom*), but is only said to be so in a broad sense (*kata platos*).
>
> Ἐμφανέστατα δὲ τοῦτο λέγει, ὅτι οὐθεὶς ὅλως ἐνίσταται χρόνος. Ἐπεὶ γὰρ εἰς ἄπειρον ἡ τομὴ τῶν συνεχόντων ἐστί, κατὰ τὴν διαίρεσιν ταύτην καὶ πᾶς χρόνος εἰς ἄπειρον ἔχει τὴν τομήν· ὥστε μηθένα κατ᾽ ἀπαρτισμὸν ἐνεστάναι χρόνον, ἀλλὰ κατὰ πλάτος λέγεσθαι.[155]

This fragment tells us that time, being a continuum, is infinitely divisible. Chrysippus recognizes the point made in multiple skeptical arguments: if every time is divisible, there is no shortest time that is wholly present. Any extended time can be divided into parts that will be past and future – at least relative to what is left. We may speak about a time being present in a broad, loose sense, but at soon as we analyze the time precisely we see that whatever time we have picked out as present is, in fact, not wholly present. If we read this as saying that the present is wholly non-present (as opposed to partially present but not wholly so), then we arrive at a combination model view.

9.2 Against the Combination Model Reading

Despite the evidence for this reading, there are compelling reasons to reject it. Principally, Plutarch's main criticism against the Stoics is a powerful one. If the present is indeed ontologically special, the only part of time that is truly real and when states of affairs fully obtain, collapsing the present entirely into past and future – mere unreal subsistents –

[155] Stobaeus *Ec.* I.8.42.33-38

would be incoherent. Richard Sorabji (1983) has suggested that the two positions – the reality of the present (hereafter "the reality claim") and the divisibility of the present into past and future (hereafter "the composition claim") – are so deeply contradictory that they may represent two different stages of Chrysippus' thought, where acceptance of the latter claim constituted a rejection of the former. In this view, Chrysippus initially believed that the present was real in a special sense and included this claim in *On the Void*, but later realized that the infinite divisibility of continua implied that the present must be composed entirely of past and future, and in adopting this position in *On Parts* abandoned – or at least substantially revised – the former thesis from *On the Void*.[156] While this developmental proposal is possible, I will argue that the evidence can be accounted for without a hypothesized change of heart. Still, Sorabji's impulse is understandable and highlights the profound tension between the reality claim and the composition claim.

Michael Papazian (1999) has argued that Plutarch is willfully misinterpreting Chrysippus by equivocating on senses of "present" and conflating two distinct types of claims. In Papazian's reading, the sense in which the reality claim is true is in relation to present *objects*, while the sense in which the composition claim is true is in relation to present *times*. That is, present objects are *huparchon* and uniquely real, while past and future objects are mere susbsistents. Chrysippus is thus a presentist who holds that present objects are the only real objects.[157] Present *times*, however, have no special status and are composed of past and future times: "Ontologically, all times are on a par, since all are incorporeal.

[156] Sorabji (1983): 22.
[157] Papazian (1999): 111-112.

Chrysippus can accordingly assert that the present consists of a part that is past and a part that is future without contradiction, since the present time, like its parts, is incorporeal".[158]

However, this proposal makes it impossible to explain what makes an object "present", or what the interaction between present things and present times is. If the present time is wholly composed of past and future, then "present" objects will be wholly composed of parts in the past and parts in the future. If there is no real present for an object to occupy, how can that object itself be really present? The problem of present times redounds to present objects. If there is a special class of present objects, which are real while past and future objects are not, then there must be a specific present time associated with those objects. Papazian seems to implicitly treat the time at which present objects exist as a point – but this is a substantive claim about when things are really present, and thus what the present really is. If there's no privileged present time, then there are no privileged present objects. While I suspect that Papazain is correct that the reality claim is at least in part a claim about which objects are real, his reading fails to explain the character of that present and to explain *when* present objects are present – the very topic at issue in untangling the character of the present.

Furthermore, the language Plutarch attributes to Chrysippus about the present alone being *huparchon* is strongly temporal – he doesn't talk about present things (e.g. *ta paronta*), but instead specifically uses the singular term "τὸ ἐνεστηκός" (*to enestēkos*) to refer to the present, contrasting it with "the past and the future *of time*" (τὸ μὲν παρῳχημένον τοῦ χρόνου καὶ τὸ μέλλον). It is not past and future objects that are denied the

[158] Papazian (1999): 115.

verb *huparchein*, but – explicitly! – past and future *times*. *Enestēkos* is the perfect passive participle from *enistēmi*, which is the verb associated with the present tense in grammar generally and Stoicism specifically.[159] The grammarian Dionysisus Thrax identifies three verbal "times": "*enestōs*, *parelēluthōs*, *mellōn*"[160] – exactly the terms we see used for present, past, and future respectively in Plutarch's formulation of the reality claim. In addition, when Chrysippus denies that any time is strictly present (as recorded in Stobaeus), he uses the verb *enistēmi* there as well.[161] In that context the reference seems clearly to be to present times – as Papazian apparently agrees when he argues that the present time is fully divisible into past and future times (since no time is strictly present). Plutarch would have to be deliberately misquoting Chrysippus in order to distort his view. This, however, is unlikely, given that the same language appears in Stobaeus' attribution of the reality claim to Chrysippus. The Stobaeus version uses the present accusative participle of *enistēmi*, *ton enestōta*, and claims that only this *huparchein*. Plutarch's language about the present being *huparchon* is almost identical to the language in Stobaeus,[162] suggesting that he is accurately representing their views without deliberate distortion.

The core problem with the combination model is serious, and neither Sorabji nor Papazian's proposed remedy entirely satisfactory. Thus, we will move on to the next possible interpretation of the Stoic present: the modified, "retrenchable" interruption model reading favored by Sedley and Sambursky.

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[159] See LSJ entry for ἐνίστημι B.III.2; SVF II.165 (p. 48).
[160] DT 638.23 (Part 1 vol. 1 pg. 53 line 1): "Χρόνοι τρεῖς, ἐνεστώς, παρεληλυθώς, μέλλων."
[161] Stobaeus *Ec*. I.8.42.34: "οὐθεὶς ὅλως ἐνίσταται χρόνος".
[162] Though different enough to strongly suggest that Stobaeus (or his source) is not merely copying from Plutarch; the wording varies and the Stobaeus passage includes the additional statement about the past and future being real in the way predicates and properties are real.

9.3 The Interruption Model Reading

In order to avoid the fatal flaw of the combination model – unique ontological status for the present without a corresponding unique period – we might read the same evidence offered for the combination model in a different light. David Sedley and Samuel Sambursky have both offered such a reading of the Chrysippus passage on infinite divisibility:

> And he says this most clearly, that no time is wholly present. since divisibility of continua is to infinity, the whole of time has divisibility to infinity in accordance with the division itself; therefore no time is present precisely, but is only said to be so in a broad sense.
>
> Ἐμφανέστατα δὲ τοῦτο λέγει, ὅτι οὐθεὶς ὅλως ἐνίσταται χρόνος. Ἐπεὶ γὰρ εἰς ἄπειρον ἡ τομὴ τῶν συνεχόντων ἐστί, κατὰ τὴν διαίρεσιν ταύτην καὶ πᾶς χρόνος εἰς ἄπειρον ἔχει τὴν τομήν· ὥστε μηθένα κατ᾽ ἀπαρτισμὸν ἐνεστάναι χρόνον, ἀλλὰ κατὰ πλάτος λέγεσθαι.[163]

Sedley and Sambursky both suggest that this division of time– like all division to infinity – never results in an empty or punctate extension. That is, whatever period we designate as present can always be further divided into past and future, but never *wholly* divided into past and future. In a one second period, I can shave off a quarter second of past and a quarter second of future, but a half second of present will remain. That half second can have an eighth of a second of past and an eighth of a second of future shaved off, but a quarter second of present will remain. And so on, ad infinitum. After every division a smaller present remains, but it is always of non-zero duration and always appropriately called present – even though a further division into past, future, and remnant present could be made. Thus, the present is of indeterminate (but non-zero) length. In the *Cambridge History of Hellenistic Philosophy* (1999) Sedley comments:

[163] Stobaeus *Ec.* I.8.42.33-38.

> Although any present temporal duration contains past and future elements, the infinite divisibility of time is Chrysippus' guarantee that no process of peeling away the past and future elements from the present need pare it down to a Diodorean partless 'now' or to a mere temporal boundary. One can use the term 'now' with varying degrees of 'broadness' – this week, today, this morning, the duration of the conversation, etc. – and, with each narrowing, some past and future parts of the present are stripped away. **But no amount of such narrowing will yield and altogether durationless instant**.[164]

On this view, the length of the present is dependent upon context, observer, and attention to the process of division. "This week" is a more exact present than "this year", but less so than "this day", and so forth. There is no single "most exact" present, because division will always yield a continuum, never a point or a time atom, and continua are always divisible.

Sambursky's reading of the passage is similar:

> In the case of time, the limiting process consists in an infinite approach to the mathematic Now both from the direction of the past and from the future. In this sense, 'no time is entirely present' and the present is "partly spread over the future and partly over the past", because the present is given by **an infinite sequence of nested time intervals shrinking towards the mathematical "now",** whereby the "lower" boundaries of each interval are points of the past and the "upper" ones points of the future. In strict conformity with the dynamic conception of continua – spatial as well as temporal – **the present *qua* limit of time is not sharp but forms a fringe** covering the immediate past and future. In contradistinction to the static concept of an atom of time we have thus to regard the Stoic present as a shrinking duration of only indistinctly defined boundaries.[165]

Sambursky suggests that the present is not one unique time, but an infinite series of times, asymptotically approaching – but never reaching – zero.[166] Thus, Sedley and Sambursky

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[164] Sedley (1999): 395.
[165] Sambursky (1959): 104-105.
[166] In *The Physical World of the Greeks* (1956), Sambursky in fact does speak of the Stoics as atomists about time, who reduce the present to a minimal now of sorts. Regarding the composition claim in Plutarch, he wrote: "This formulation, with its definition of the present as the centre of a very small, but still finite, portion of time, is clearly an attempt to comprehend the elements of time as finite "quanta" and not as extensionless points. The present becomes, so to speak, an "atom of time", or to use the language of calculus, a differential of time. So great was the desire to the Stoics to give a clear answer to [Zeno's] paradox of the arrow, that these bitter opponents of the atomic hypothesis and ardent champions of the continuum had to have recourse to an

both interpret the present as an indeterminate period that can be defined depending on context. The present is always extended, and never wholly present – but also never wholly past and future.

I have labeled this type of view as an interruption model reading because it resists the move to identify the present wholly with past and future, and instead maintains a unique (though indeterminate) intermediate extended period for the present, between past and future. The present can remain "special," even though it is difficult to catch hold of, because it is never fully assimilated into past and future. Some present core always remains.

One potential advantage of this interruption model is that it preserves the commonsense idea that the present is a part of time, while the junction model and combination model perhaps do not. This concern seems to weigh especially strongly upon Sedley, who suggests that the Stoics avoided defining the present as a point because such a model "threatens to generate the paradoxical consequences that no change can take place in the present, and that the present, far from being a privileged part of time, is not a part of time at all."[167] The combination model may also be accused – at least indirectly – of making the present no longer a part of time. In *Time, Creation, and the Continuum* (1983), Richard Sorabji argues that this is the case if one assumes that the present really just is past and future, and that past, present, and future times are unable to overlap such that the same time is at once genuinely both past and present or both future and present:

> It might be maintained that the present cannot really overlap with the past and future. In that case, the present which was previously declared to be the only existent part of time, will have after all to be viewed as sizeless, and so not a

"atomic" solution" (151). It is not clear to me whether this atomizing reading is the same as the temporal "fringe" reading discussed above.

[167] Sedley (1999): 104-105.

> part of time at all. This would be to concede the force of Aristotle's paradox,[168] and to allow that in some sense time does not exist.[169]

Sorabji's criticism of the combination model closely echoes one of Plutarch's; if the present is composed of past and future, then the present is not a time at all – it is nothing more than portions of two other times placed together, unable to generate a new time that is not identical with either.

Thus, in the junction model the present is not a time or part of time because points cannot be parts of extended continua (more on this later), and in the combination model the present is, arguably, not a part of time because it reduces to two more basic part of time, and neither of these is compatible with said part being truly present. Only the interruption model fully preserves the present as a unique, extended part of time. Whether this is a true desideratum is a more complex question which will be discussed in detail later in the chapter in section 9.7.

This reading has the advantage of maintaining a non-composite existence for the present as a unique part of time and uses familiar and well-documented Stoic views on division to make sense of how this could be. There is something about this reading that seems deeply right, both as a reading of the relevant passage and as just the sort of thing we would expect the Stoics to say about an extended present.

9.4 Against the Interruption Model Reading

However, this reading does not completely erase the concern so energetically put forward by Plutarch. If the present has a special ontological status, then that status may be

[168] Sorabji is here discussing an aporia put forward by Aristotle in *Phys.* IV.10 regarding the present.
[169] Sorabji (1983): 22. The position outlined here is the view Sorabji argues Chrysippus held.

equally threatened by indeterminacy. It is one thing to suggest that whether a time is present is a matter of perspective. It is surely another to claim that the *reality* of an object or state of affairs all depends on your attention to division. If, as Chrysippus says, no time is precisely present, and only the present is real, then no time is precisely real. To use alternate language: if things only obtain in the present, and no time is precisely present, then there is no time when things precisely obtain. The present, as the times when things really are, is nearly as threatened by radical indeterminacy as by total non-existence.

We also might push the problem from the opposite side – not eternal shrinking and division, but eternal growth and addition. If this week can be present, so can this year. If this year, this century, this millennium, this cosmic cycle. In a sense, the whole of time can be broadly present. Indeed, Apollodorus (recorded in Stobaeus) suggests that this is the case:

> And we say that the whole of time is present, as the year is present: according the larger circuit; and the whole of time is said to be real, although it is not precisely real in any of its parts.
>
> Ἐνεστάναι δὲ τὸν πάντα χρόνον ὡς τὸν ἐνιαυτὸν ἐνεστηκέναι λέγομεν κατὰ μείζονα περιγραφήν· καὶ ὑπάρχειν ὁ πᾶς χρόνος λέγεται, οὐδενὸς αὐτοῦ τῶν μερῶν ὑπάρχοντος ἀπαρτιζόντως.[170]

Under the interruption model reading, not only is the "specialness" of the present threatened by being indeterminately small, but it is also threatened by being indeterminately large. If there is no difference between a present that lasts a hundredth of a second and one that lasts for the whole of time, then the present doesn't pick out a "special" or uniquely "real" time. It picks out any time whatsoever. Past and future do not refer to times that are inherently

[170] Stobaeus *Ec.* I.8.42.6-10.

different from the present – they merely refer to earlier and later sections of a potentially universal present.

Finally, although the fact that the interruption model makes the present a time is a positive aspect from the point of view of commonsense and makes it easier to accommodate the idea of motion in a present, it is not an unalloyed advantage. In fact, there is some reason to believe that the Stoics denied that the present is a time, making this a weakness of the theory, not an advantage. This evidence will be discussed in section 9.7. Moreover, although the interruption model does not have the exact problem with motion that the junction model does, there is still a real question of when and how motion occurs. All motions involve at least two non-identical states – let's call them A and B – and some object O. O cannot be in state A and state B at the same time, because the transition from A to B involves ceasing to be A and becoming B instead. When can this change occur? Not while the object is A, because then it is A and not B and has not changed. Not while the object is B and not A, because that is when the change has already occurred. So when is it occurr*ing*?[171] This general problem of change is still a problem even in an extended and divisible present. In fact, Plato deals with the problem of the time of change by positing the existence of a "suddenly" – an instant of change likely meant to be punctate – to solve the problem;[172] in such a system the punctate present is better able to accommodate motion than the extended present.

[171] The argument parallels a famous dilemma attributed to Diodorus Cronos about motion in place: If an object (locomotively) moves, it either moves in the place where it is or in the place where it is not. It does not move in the place where it is, because that would not be motion, but rather staying at rest in the same place. But it does not move in the place where it is not, because nothing can do anything in a place where it is not. Thus, nothing moves. (*M* X.105-107). See Sedley (1977): 84-89 for a discussion of arguments about motion in the philosophy of Diodorus Cronos.
[172] *Parm.* 156c-e.

Furthermore: if the change from A to B involves multiple non-identical and mutually exclusive states,[173] either the states will be simultaneous or they will be sequential. If truly simultaneous, then all at exactly the same time, – which will be just as problematic as if at a punctate present. Multiple states constituting parts of a motion can surely not all occur at once in the same instant. But if sequential, then even if we stipulate that they all happen in "the present," some will be past and some future relative to others. This seems paradoxical as well. Although the problems of motion are perhaps most stark in the punctate present junction model, it is far from obvious that they are eliminated in other models.

While I remain convinced that there is something right about this interruption model reading and that it captures something valuable about the sources, it also leaves us with serious problems regarding the present. Given the special status of the present, it seems wrong to leave the length – indeed, the identity – of the present, and the presentness (precise or otherwise) of times to the whims of human attention and interest. Is there any way to preserve a special, unique, and definite present before we begin slicing and dicing times to infinity?

9.5 The Junction Model Reading

The junction model promises precisely that. In the junction model, the present is a point of zero-duration that joins the past and future, just as a point joins two line segments. According to Plutarch, the Stoic Archedemus held such view:

> Archedemus, on the one hand, saying that the now is a certain juncture and connection of the past and the future, did not realize that he destroyed, as it seems, the whole of time; for if the now is not a time, but a limit of time, and

[173] Mutually exclusive in the sense that being in A constitutes not yet being in B, and being in B constitutes no longer being in A.

> every part of time is just like the now is, then it is clear that the whole of time has no parts, but is dissolved into limits and connections and junctures.
>
> Ἀρχέδημος μὲν ἁρμήν τινα καὶ συμβολὴν εἶναι λέγων τοῦ παρῳχημένου καὶ τοῦ ἐπιφερομένου τό ‘νῦν’ λέληθεν αὑτὸν ὡς ἔοικε τὸν πάντα χρόνον ἀναιρῶν. εἰ γὰρ τὸ νῦν οὐ χρόνος ἐστὶν ἀλλὰ πέρας χρόνου πᾶν δὲ μόριον χρόνου τοιοῦτον οἷον τὸ νῦν ἐστιν, οὐδὲν φαίνεται μέρος ἔχων ὁ σύμπας χρόνος ἀλλ’ εἰς πέρατα διόλου καὶ συμβολὰς καὶ ἁρμὰς ἀναλυόμενος.[174]

Putting aside the polemical content, Plutarch is quite clearly saying that Archedemus was a junction theorist. The word "point" is never used, but the language of junctions, connection, and – perhaps most tellingly – limits, conveys the same idea. Time is a one-dimensional continuum, and thus its limits will be zero-dimension points.[175] Aristotle also defines the now as a junction and connection, and he makes it explicit that such a junction will be point-like.[176] The idea is not merely that the present does work connecting the past and future – which might be accomplished by an extended continuum with one end touching the present and another touching the future – but that the present *is* the point of connection itself. There is a single point at which the past ends and the future begins, and this point is the present.[177] It is also clear that Plutarch assumed that the Archedemean present was a point by the counterargument he offers against it. The threat of time being dissolved into limits and junctions is a threat of dissolution from a continuum to a set of points. One cannot generate an extended one-dimensional continuum out of zero-dimensional pieces. Plutarch even notes

[174] *Comm. Not.* 1081e6-f3.
[175] Just as the limit of a two-dimensional surface is a one-dimensional line, and the limit of a three-dimensional body is a two-dimensional surface (DL 7.135; attributed to Posidonius).
[176] See Aristotle *Phys.* IV.13.
[177] Marcus Aurelius also often discusses the present as a point or moment; see, for example, *Med.* VI.10: "all of present time is a point in eternity" (πᾶν τὸ ἐνεστὼς τοῦ χρόνου στιγμὴ τοῦ αἰῶνος); II.14: "for the present is equal for all, and what is lost is therefore equal, and thus it is clear that what is lost is a moment" (τὸ γὰρ παρὸν πᾶσιν ἴσον καὶ τὸ ἀπολλύμενον οὖν ἴσον καὶ τὸ ἀποβαλλόμενον οὕτως ἀκαριαῖον ἀναφαίνεται). Marcus Aurelius' metaphysical *bonafides* are relatively weak and his conception of the present in these quotes somewhat ambiguous, but his word choices may suggest a Stoic tendency to talk about the present in terms of points and instants.

that this would mean that the present is not a time – and if all of time is like the present, then none of time will be a time.[178]

Sedley (1999) suggests that Archedemus is a rogue actor, reviving the junction view on his own against the consensus of earlier Stoics.[179] Although this is possible, I am not convinced Sedley is correct; the evidence for the combination and interruption model readings is not sufficiently clear to license the conclusion that other Stoics did not utilize this junction model in some way. It is not impossible to read Chrysippus as a junction model theorist;[180] the junction model could make sense of the claim (attributed by Plutarch to Chrysippus) that "the present is past and future"[181] – after all, the point of junction is identical to the end of the past and the beginning of the future. But it also allows the present to be special – it is not an extended continuum that resolves into periods of past and periods future, but a unique point of junction that is wholly all three at one. In a line segment ABC, where B is a point at the center of AC, B both is the right-most point of AB and the left-most point of BC, but it does not collapse into AB nor BC, not any of their parts. AB and BC are both line segments, and all their parts are smaller line segments. B is a point. Likewise, the present is the end of the past and beginning of the future, but it is not a part of either, and it plays a special role that neither the past nor future (nor any of their parts) can play.

Best of all, there is nothing ad hoc about the length of a punctate present. It is exactly as long as it can be – zero-duration. If it were any longer, it would not be a punctate

[178] This argument is reminiscent of the Zeno's paradox of the arrow (See Arist. *Phys.* VI.9.239b30-33) – although Zeno's argument is about the moving object in the present, not the present itself. Still, the base assumption that all of time is made up of "times" like the present is an element of both Zeno's argument and Plutarch's.
[179] Sedley (1999): 395.
[180] Sandbach (1975) at least considers this possibility, though he finds the evidence for it insufficient (51).
[181] Plut. *Comm. Not.* 1081f8-1082a1

connection of past and future. If it were any shorter, we would be in the realm of the impossible – no extension is shorter than zero. The length of the present is fixed by its identity and definition.

9.6 Against the Junction Model Reading

As with the other models, there are serious problems with reading the Stoics as pure junction model theorists. To begin, Plutarch explicitly says that the Stoics hold that the "now" is partless – "*ameres"*:

> It is against common conception for future and past time to exist, but the present not exist, and the recently and the soon to subsist, but the now to wholly not exist. Yet this is what befalls the Stoics, **who neither leave a smallest time nor wish the now to be partless**, but say that whatever someone thinks he has grasped and conceives of as present, that thing is past and future.
>
> Παρὰ τὴν ἔννοιάν ἐστι χρόνον εἶναι μέλλοντα καὶ παρῳχημένον, ἐνεστῶτα δὲ μὴ εἶναι χρόνον, ἀλλὰ τὸ μὲν ἄρτι καὶ τὸ πρῴην ὑφεστάναι, τὸ δὲ νῦν ὅλως μηδὲν εἶναι. καὶ μὴν τοῦτο συμβαίνει τοῖς Στωικοῖς **ἐλάχιστον χρόνον μὴ ἀπολείπουσι μηδὲ τὸ νῦν ἀμερὲς εἶναι βουλομένοις**, ἀλλ' ὅ τι ἄν τις ὡς ἐνεστὼς οἴηται λαβὼν διανοεῖσθαι, τούτου τὸ μὲν μέλλον τὸ δὲ παρῳχημένον εἶναι φάσκουσιν.[182]

If the Stoics do not allow the now to be partless, it seems that that now cannot be a point.[183] Points do not have parts; to have parts would imply extension, which points by definition lack. There is some nuance to this issue, and I suspect that it is not as decisive as it originally appears; one might wonder if "partless" is even the correct term to apply to a point, or if it is in some sense a category error – it is not merely that points fail to have parts, but rather points are not the sort of thing for which parts are relevant. The gist of Plutarch's claim here

[182] *Comm. Not.* 1081c 3-9.
[183] Plutarch seems to use "now" (*to nun*) here as roughly synonymous with the present generally. Whether this is always the case is a more complicated question.

might just be that the Stoics deny the existence of time atoms, as proposed by Diodorus Cronus, which constitute a minimal and partless extended time.[184]

Nevertheless, there clearly is a Stoic idea that the present can be divided – and specifically divided into past and future. A point cannot be divided at all. I have argued that there is a sense in which a punctate present "is past and future"[185] – the sense in which it is the terminating point of the past and the starting point of the future. This, however, will not account for the Chrysippean claim in Stobaeus that the present "has division to infinity."[186] There must be some sense in which the present is divisible – and thus some sense in which it is extended and not punctate. The junction model cannot accommodate this aspect of the Stoic theory.

Another problem is that under the junction model, the present is defined as a limit, and limits occupy a vexed and unclear place in Stoic philosophy. At worst, limits may be mere concepts or mental constructs, which would banish them from the super genus of "somethings" into the oblivion of "mere nothings." Proclus reports that this is the case: "it is not necessary to think that limits, I mean those of bodies, subsist only in thought (*epinoian psilēn uphestanai*) as the Stoics supposed."[187] Since there is evidence that objects in thought, either conceptions (*ennoēmata*) or thoughts (*dianoia*) are not in the class of somethings (*ti*) for the Stoics,[188] subsistence as concept would almost certainly mean that limits fail to be

[184] See Sedley (1977) for information on Diodorus Cronus and his philosophy.
[185] Plut. *Comm. Not.* 1081f8-1082a1: "τοῦ ἐνεστηκότος χρόνου τὸ μὲν μέλλον εἶναι τὸ δὲ παρεληλυθός."
[186] Stobaeus *Ec.* I.8.42.35-37: "Επεὶ γὰρ εἰς ἄπειρον ἡ τομὴ τῶν συνεχόντων ἐστί, κατὰ τὴν διαίρεσιν ταύτην καὶ πᾶς χρόνος εἰς ἄπειρον ἔχει τὴν τομήν".
[187] Proclus *In. Eucl.* I.1.89.15-17: "ὅτι δὲ οὐ δεῖ νομίζειν κατ' ἐπίνοιαν ψιλὴν ὑφεστάναι τὰ τοιαῦτα πέρατα, λέγω τῶν σωμάτων, ὥσπερ οἱ ἀπὸ τῆς Στοᾶς ὑπέλαβον"
[188] Stobaeus *Ec.* I.12.3.2-4; Sextus Empiricus *M* I (pr.).17.3-5.

something and are instead nothing.[189] If Proclus is right about limits, then to make the present a limit would be to deny the present even the reality and "something"-ness allotted to incorporeals. The present would be less real than the past and future, not more real, and might have to be scrubbed from our ontology altogether.

However, the evidence on this point is far from clear – other sources call limits incorporeals, and there is even evidence that they may be bodies.[190] Even the Proclus passage is far from definitive; there are reasons to distrust Proclus' accounts of Stoic ontology,[191] and he specifies that he means limits of bodies – while time is decidedly not a body. Limits of corporeals might have a different status from limits of incorporeals. These complications regarding limits are far from decisive, but they do represent a point on which the junction theorist would have to say more to make her account cohere with Stoic doctrine.

Sedley's key objection to the junction view – and the reason he believes that the Stoics themselves rejected it – is that the punctate present "threatens to generate the paradoxical consequences that no change can take place in the present, and that the present, far from being a privileged part of time, is not a part of time at all."[192] As we have briefly discussed already, the problem of change in a punctate present is a serious one – but the problems with motion and change are not unique to the punctate present. The second point, however, that making the present a point makes it no time at all, is perhaps a feature of the

[189] See again Caston (1999) for a dissenting defense of concepts as "somethings"; LS Chapter 30 (179-183) for concepts as nothings.
[190] For a discussion of Stoics on limits see Long and Sedley (1987): Chapter 50 (162-166); Brunschwig (1988); Sedley (1999): 392-394; White (2003): 150-151; and Anna Ju (2009).
[191] As I discussed in Chapter 1, Proclus also identifies time as a concept (*In Tim.* III.95.7-17 = SVF II.521) for the Stoics – and time is a canonical incorporeal, not a mere concept. Moreover, only somethings subsist; Proclus is being sloppy at best by saying that anything could "subsist in bare thought", as anything only real in "bare thought" would fail to meet the basic qualifications for subsistence. (Ju 2009: 374).
[192] Sedley (1999): 394.

model, not a bug – assuming we can make it compatible with the claim that the present has a special status. In fact, there is evidence that the present is not a part of time for the Stoics; if true, this is a reason to support the junction model reading rather than a reason to reject it.

9.7 Is the Present Even a Part of Time?

From Chrysippus we have already seen the claim that "no time is precisely present"; let us now look at that claim in a larger context:

> Time is spoken of in two ways, just like the earth and sea and void, as both the whole and the parts of it. And just as the void is completely unlimited in every direction, time also is completely unlimited in each direction; for the past and the future are unlimited. And he said this most clearly, that no time is wholly present. For since divisibility of continua is to infinity, the whole of time has divisibility to infinity in accordance with the division itself; therefore no time is present precisely, but is only said to be so in a broad sense.
>
> διττὸς λέγεται ὁ χρόνος, καθάπερ ἥ τε γῆ καὶ ἡ θάλαττα καὶ τὸ κενόν, τά τε ὅλα καὶ τὰ μέρη τὰ αὐτῶν. Ὥσπερ δὲ τὸ κενὸν πᾶν ἄπειρον εἶναι πάντῃ καὶ τὸν χρόνον πάντα ἄπειρον εἶναι ἐφ' ἑκάτερα· καὶ γὰρ τὸν παρεληλυθότα καὶ τὸν μέλλοντα ἄπειρον εἶναι. Ἐμφανέστατα δὲ τοῦτο λέγει, ὅτι οὐθεὶς ὅλως ἐνίσταται χρόνος. Ἐπεὶ γὰρ εἰς ἄπειρον ἡ τομὴ τῶν συνεχόντων ἐστί, κατὰ τὴν διαίρεσιν ταύτην καὶ πᾶς χρόνος εἰς ἄπειρον ἔχει τὴν τομήν· ὥστε μηθένα κατ' ἀπαρτισμὸν ἐνεστάναι χρόνον, ἀλλὰ κατὰ πλάτος λέγεσθαι.[193]

The sense of the "double" speak about time seems to be that we can either speak of time as a single whole, or we can speak of discrete and finite "times." What is true about time will depend on which sense we use. Time (the whole) is infinite. A time (say the hour of noon on Tuesday June 15, 2018), is finite. The second sense of "a time" can also apply to the past and future. The past is *a* time, but it is not time, full stop. Thus, when we define time and times, we must be careful which sense of the word we mean. We might be speaking about

[193] Stobaeus *Ec.* I.8.42.29-38.

the whole, or we might be speaking about its parts. The comment about "earth and sea and void" is more cryptic, but it fits into the same general picture. "Earth" can refer to *the* Earth, the planet we live on, or it can refer to a clump of earth that is a mere part of the Earth. Similarly, there is *the* sea and there are discrete parts of the sea – which are equally sea. The void is a totality, but there are also sections of void that are proper parts of the whole. Crucially – as Sambursky notes[194] – the parts of earth are all earth, the parts of sea are all sea, and the parts of void are all void. In these cases, like divides into like. Similarly, the parts of time are all time(s), and we can use the same word to refer to the whole of time or to a discrete (part of) time. If the parts of time are all times, but no time is (precisely) present, then the present is *not* a time, and not a part of time. There is no section of the earth that is not precisely earth, no section of the sea that is not precisely sea.

A clearer articulation of the idea that the present is not a time comes from Posidonius:

> "The now" and similar things are conceived of as time broadly, but not precisely.
>
> Τὸ δὲ νῦν καὶ τὰ ὅμοια ἐν πλάτει χρόνον καὶ οὐχὶ κατ' ἀπαρτισμὸν νοεῖσθαι.[195]

While we might conceive of the now in a broad sense as a time (in the second Chrysippan sense – a discrete time which is a part of the whole of time), when we speak precisely the now is *not* a time. Why? Perhaps because, speaking precisely, the now is a limit or juncture of time. Posidonius mentions a "division" of past and future several times during his

[194] Sambursky (1959): 102.
[195] Stobaeus *Ec.* I.8.42.20-21.

discussion of the present, and although this is not identified with the present it is certainly suggestive.

As a last point, we might briefly look outside Stoicism and see how Aristotle – the junction theorist *par excellence* – deals with the problem of the punctate present as a part of time. While Aristotle is no Stoic, he may provide us a model of what a philosopher of time might have to say about the punctate now. Aristotle clearly and consistently maintains that the now is punctate and is not a part of time.[196] Instead, the present is a junction of time, joining past and future, and a limit of time(s).[197] Just as discrete line segments terminate in two points, discrete time segments terminate in two "nows."[198] Although the Aristotelian now is not a part of time, it nevertheless maintains a special place in the Aristotelian system. Humans only access time through nows – time is not directly experienced, but rather inferred on account of differences between two nows. Time can only exist between two discrete nows; if two nows are completely qualitatively identical, or if no difference is observed, time does not pass and there is no corresponding time between those two nows.[199] This Aristotelian now does not exactly mirror what we know of the Stoic now – the Stoic definition of time as a dimension of motion is quite different from Aristotle's definition of time as a number of before and after in motion, and Aristotle does not explicitly suggest that the now has a special ontology[200] – but it does provide precedent that the now may be

[196] *Phys.* IV.11.220a18-21.
[197] *Phys*. IV.13.222a 10-12.
[198] *Phys.* IV.11.220a 9-26.
[199] *Phys.* IV.11.218b26-35; 219a25-30.
[200] At least, not in the *Physics* – a full discussion of the ontology of past, present, and future in Aristotle's philosophy would require a deep dive into *DI* 9.

punctate and neither a time nor a part of time while still playing a special and significant role in the definition and explication of time.

Archedemus would likely want to borrow at least one point from Aristotle to respond to Plutarch's accusation. Plutarch complains that if all of time is like the present, and the present is a mere limit or junction or connection, then all of time is reduced to limits and junctions and connections. Plutarch's basic assumption seems to be that the present is a part of time, and that time is made up of presents. It is true that a time made up of temporal points would continue to have zero-extension, no matter how many more punctate moments we add. No addition of a zero-extension point will ever make our desired timeline have a non-zero-extension. However, the same thing is true of geometric lines and points. Aristotle responds that a point is not a part of a line, and a line is not made up of points. Likewise, he asserts that the present is not a part of time, and time is not made up of presents.[201] The proper parts of time – past, future, days, hours, and so forth – are all themselves extended times, and time is constituted by parts like these. The Chrysippus quote about the earth and sea and void suggests just such a reading; the parts of time are all times, and if the present is a point and thus not a time, it is also not a part of time and not something that time can be divided into or constituted by.

9.8 Conclusion and Review

We have now seen that there is evidence connecting the Stoics to all three of the models of the present discussed in the first half of this chapter**.** The Stoics appear to be combination theorists insofar as they say that the present is both past and future, that the

[201] *Phys*. VI.1.231a-231b.

present is infinitely divisible, and that no time is precisely present. Under this reading, "present" would be a name we give to certain stretches of past and future around a central division, but it would not be anything else over and above the past and future themselves. This sort of present would be a time only very loosely speaking – when closely examined it collapses into two genuine times, i.e. past and future. While this reading has quite a bit of evidence, it runs into a major problem: it appears incompatible with the special status of the present. Multiple Stoic sources say that the present alone "is real", and that the past and future completely lack this status. If the present is literally identified with past and future, this distinction is empty. Furthermore, if there is a special and particularly real part of time, while all other times are mere incorporeal subsistents, then (as Plutarch notes) converting that real part of time into the unreal parts of time leaves one with nothing real at all.

The interruption model reading takes this same evidence and claims that, although any stretch of time can be divided into past and future, it can never be *wholly* divided into past and future. There is an extended present core between past and future that can be shrunk ever smaller and smaller through subsequent divisions into past, future, and remaining present, but will never reach a length of zero. This avoids the trap of completely converting the present into past and future or eliminating it entirely, but it leaves us with new troubles. If the present has a special ontological status, then it is odd that this status should be tied to a completely indeterminate period. The consequence seems to be that the reality of a time or the things in that time will depend on how much attention we pay to the present and what context we have in mind. We could will objects (or at least their states) in and out of our ontology simply by paying attention to different potential present spans of time, because no present is realer than any other. Shorter presents may be more precise – but there can always

be a shorter one. A present that lasts one millionth of a second is still an infinite number of divisions away from an unmixed, ideal present, as is a present that lasts one million years. The present is no longer unique in this reading, because any stretch of time that contains both past and future has an equal claim to presentness.

Furthermore, there is reason to believe that the present is not a time and is not a part of time. The interruption model reading makes sense of the claim for Chrysippus that no time is precisely present (because any present can always be further divided into past and future parts), but not the claim of Posidonius that the present is not, precisely, a time. Under the interruption reading, the present *is* a time – albeit one of indefinite length.

The junction model also has textual support; although it is attributed to the relatively obscure Archedemus, not Chrysippus himself, it is worth considering whether it might be part of a general Stoic view of the present. The junction model postulates that the present is a punctate point of connection between past and future, joining and limiting each of them. This has the advantage of determining a precise and principled length for the present without sacrificing the Stoic aversion to extended atoms, and thus giving the special ontological status of the present a clear boundary.

While one might worry that this reading of the present threatens the status of the present as a part of time, there is good reason to believe that the Stoics did not view the present as time or a part of time, making this a feature and not a bug. Aristotle demonstrates that it is possible to build a philosophy of time in which the present is punctate and not a part of time but still plays a special role and has a special status. However, the junction reading also raises problems about limits in Stoicism and familiar skeptical problems about motion in the present, and is in apparent conflict with the passages that say that the present is

divisible and identical to or composed of past and future. If the present is, broadly speaking, a time, there must be some way to account for that, even if the present is not a time in a precise sense. The junction theory is not able to explain how that can be the case. In the next chapter, I will propose a new model and show how it solves the various problems associated with the views discussed in the chapter while also making sense of the extant evidence.

Chapter 4: A Solution for the Stoic Present

10. Chapter 4 Introduction

In the last chapter I sketched out evidence for three readings of the Stoics on the present and showed how, although they all could find some support, none were able to satisfactorily account for the special status of the present or the difference between present, past, and future while also respecting the idea of the present as divisible into past and future. In this section I will propose a solution. The evidence on the length and character of the present seems self-contradictory and to pull in different direction because there are, in fact, two distinct senses of "present" in Stoicism. These two presents are closely connected, but are not identical. In the first sense, there is (to borrow language from Chrysippus and Posidonius) a "strict" present. This strict present is a point; it is the division and junction of past and future. This validates the evidence from Archedemus and Marcus Aurelius that the present is a point,[202] and explains the evidence that the present is not – strictly speaking – a time. This is because, strictly speaking, the present is a point. However, this is not the only sense in which we may speak about the present. There is a secondary sense – going back at least to Aristotle – where the terms "present" and, especially, "now" – pick out a larger span of time that is not uniquely present and is, in fact, composed of past and future. This secondary, or "broad" present is not identical to the strict present, which is a point, but instead is present because it contains the strict present. I call this model "the derivative present model," because it assumes that the extended present really exists and is present, but

[202] See footnote 177 in Chapter 3, section .5

is dependent for its presenteness upon a more basic strict present. I will show how this derivative present model can address many of the problems addressed in Chapter 3, and even how the present can be "retrenchable" and thus of variable length without compromising the objective ontology of objects and events. Finally, towards the end of the chapter, I will briefly consider the relationship between the past and future and the present generally. I will argue that although the (broad) present is composed of the past and future, the realness of past and future events and facts are nevertheless dependent on the present; the compositional relationship gives priority to the past and future as parts of the present, but the ontological relationship still gives priority to the present as the locus of real occurrence and being.

11. The Derivative Present Model

11.1 Broad and Strict Presents

At this point, we must look at descriptions of the present in a "broad" or "strict" sense. We have already discussed Chrysippus' claim that "no time is present (*enestanai*) precisely (*apartisom*), but is only said to be so in a broad sense (*kata platos*)."[203] Chrysippus contrasts two possible ways of speaking about a time as present: one is precise, the other is broad. Furthermore, the claim about the strict sense appears to be technical and about how the world in fact is – no time *is present*, strictly – while the broad sense corresponds to what is said, not necessarily what it is – "is only *said to be so* in a broad sense." This statement is, as we have seen, highly ambiguous: is Chrysippus denying that any segment of time is fully

[203] Stobaeus *Ec.* I.8.42.37-38: "ὥστε μηθένα κατ' ἀπαρτισμὸν ἐνεστάναι χρόνον, ἀλλὰ κατὰ πλάτος λέγεσθαι".

present in a precise sense, meaning that only *some* of that time is fully present? Or does he mean that no section of time is present at all, except in a broad and perhaps merely linguistic sense? The first option supports an indeterminate interruption model reading, while the second supports the combination model reading.

Fortunately, we have an extended fragment from Posidonius with a similar claim and distinction between "strict" or "precise" and "broad" senses of the present, which we may check against Chrysippus for more information. While we cannot assume that Posidonius is necessarily explicating an exact Chrysippan view (or even necessarily a dogmatic Stoic position), the similarities in language are suggestive of a continuity of thought. The entire fragment on Posidonius' view of time as reported in Stobaeus runs as follows:

> Posidonius: Some things are infinite in every respect, like the whole of time; others in some respect, like the past and future; for each of them is limited (*peperantai*) only by the present (*ton paronta*). And he defines time thus, as the *diastēma* of motion, or the measure of fast and slow, +insofar as it has been conceived+.[204] And regarding the "whens"[205] of time, there is the past, the future, and the present, which is constituted from part of the past and part of the future around the division itself; and the division is punctate (*semiodē*). And the now and similar things are conceived of as time in a broad sense (*kata platon*), but not in a precise sense (*apartismon*). And the now is also said to be the smallest time available to sensation, composed of past and future around the division.
>
> Ποσειδωνίου. Τὰ μέν ἐστι κατὰ πᾶν ἄπειρα, ὡς ὁ σύμπας χρόνος· τὰ δὲ κατά τι, ὡς ὁ παρεληλυθὼς χρόνος καὶ ὁ μέλλων· κατὰ γὰρ τὸν παρόντα μόνον ἑκάτερος πεπέρανται. Τὸν δὲ χρόνον οὕτως ὁρίζεται· διάστημα κινήσεως ἢ μέτρον τάχους τε καὶ βραδύτητος, +ὅπως ἔχει τὸ ἐπινοούμενον.+ <καὶ> κατὰ

[204] This text in this section is grammatically and logically unclear; see Kidd (2004, v.II.1): 394-400 for a discussion of interpretational options.

[205] *Pote* (πότε) – "when" – here appears to refer to a part of time. Porphyry discusses the use of *pote* to mean a specific time dependent on time as a whole in his commentary on Aristotle's *Categories (142.6-14)*. Kidd translates "*to pote*" as "times" in his translation of this Posidonius passage (1999, vol. III: 158; frag. 99). I have chosen the somewhat awkward and hyperliteral translation "the whens" to avoid inserting either language of either "parts" or "times", as these are both highly charged terms in the discussion. In fact, since Posidonius goes on to clarify that the present is *not* strictly a time, and thus presumably not a part of time, it would be misleading to translate *to pote* – which includes the present – as "parts" or "times."

> τὸ πότε τοῦ χρόνου τὸν μὲν εἶναι παρεληλυθότα, τὸν δὲ μέλλοντα, τὸν δὲ παρόντα, ὃς ἔκ τινος μέρους τοῦ παρεληλυθότος καὶ τοῦ μέλλοντος περὶ τὸν διορισμὸν αὐτὸν συνέστηκε· τὸν δὲ διορισμὸν σημειώδη εἶναι. Τὸ δὲ νῦν καὶ τὰ ὅμοια ἐν πλάτει χρόνον καὶ οὐχὶ κατ᾽ ἀπαρτισμὸν νοεῖσθαι. Λέγεσθαι δὲ τὸ νῦν καὶ [κατὰ] τὸν ἐλάχιστον πρὸς αἴσθησιν χρόνον περὶ τὸν διορισμὸν τοῦ μέλλοντος καὶ παρεληλυθότος συνιστάμενον.[206]

Posidonius uses language similar to Chrysippus when talking about the present; we see his version of the composition claim, that the present is composed of past and future, and a distinction between precise and strict ways of talking about present time. However, there is an interesting difference in the formulation: while Chrysippus denied that any time was strictly present, Poseidonius denies that the present is – strictly – a time. These two statements taken together rule out the possibility of the interruption model, even with a divisible and indeterminate present, as the interruption model makes the present a genuine time. In the Sedley and Sambursky version of the interruption model, the present was, strictly, a time (of indeterminate length), even if no time was strictly present (because it could always be further subdivided into past, future, and present parts).

Posidonius' explanation of the composition claim is also interesting, and suggestive of an interest in the junction model. The present, understood as a "when" (*pote*), is composed of part of the past and part of the future – thus far the account matches what we know of Chrysippus. However, Posidonius emphasizes that these past and future parts are around a division between past and future, and he explicitly emphasizes that this division is punctate. Posidonius' model of the present thus explicitly includes a punctate division of past and future, even if it is not immediately identified with this division. Thus, we can see that Posidonius is not opposed to the idea of a punctate division between past and future, and

[206] Stobaeus *Ec.* I.8.42.11-25 (=Kidd fr. 98).

is willing to make use of this kind of division. There is no suggestion at *all* of an extended present between the past and future; the only components given for the present are a part of the past, a part of the future, and a punctate division between past and future. If there is any candidate in this set for "strict" present, it must be that division.

We also see Posidonius discuss the present as a limit of past and future, as each of these is limited only by the present.[207] This limit language strongly suggests an understanding of the present as a point, especially combined with Posidonius' definition of the present. If we take the broad composite present – which is defined as part of the past, part of the future, and dividing point – as the limit of the past, then the past would be limited as soon as it came into contact with the past-most part of the present – which is itself a part of the past. Thus, there would be "past" (i.e. the part of the past composing the present) after the end of the past (the point where "the past" comes into contact with the edge of the extended composite present).[208] Clearly the sense in which the "present" is a limit of past and future is the sense in which it is not composite – either a wholly present time atom (anathema to the Stoics) or a dividing point. Posiedonius makes it clear that it is the latter.

In addition, Posidonius gives us an example of a "broad" present – the smallest time available to perception. This smallest perceivable time is clearly not present in a strict sense – it is a time, so it is extended and divisible, and there is no metaphysical reason it cannot be further divided into smaller times. The smallest perceivable time will, like all present "whens", be composed of past and future around a punctate division. The smallest

[207] Stobaeus *Ec.* I.8.42.14
[208] See Arist. *Phys*. VI.3.234a for an argument along these lines that the present as limit of past and future must be punctate.

perceivable time is clearly not metaphysically special (unlike the Diodorean time atom), but it *is* epistemologically interesting. The shortest perceivable present is the shortest time we can experience, and thus when we experience a time as now, it will be what is perceived. Any shorter time period fails to be of practical human interest, as it cannot be perceived. What makes this specific duration special is not its physical properties but how we are able to interact with it in experience. Even if the strictest now is a point and not a time, there is still a way to talk about the present of human experience and to identify it as a kind of "broad" now, with its borders set by human perceptual and processing ability.

When we use the terms "now" and "present" for longer periods, the same features will be relevant. Today is "the present day" not because it is all simultaneously present, but rather because it is the day that contains the present hour, which contains the present minutes, which contains the present second, and so forth, until we arrive at the strict present. This cannot be a time – no time is strictly present – and thus must be the punctate division itself. The smallest perceivable present is present because it contains this strict present, the present minute is present because it contains the smallest perceivable present (which contains the strict present), and so forth. Today really is the present day, because it is a period of time composed of both past and future that contains the strict present. Yersterday, however, is not the present day, because it is composed solely of past time and fails to contain the strict present. Yet although yesterday is not present, it may be a part of a larger broad present – say, this present year, which contains both the present day and yesterday. The present year is present in virtue of containing the present day (which contains the strict present), and it has both past parts (such as yesterday and all of today prior to the strict present) and future parts (all of today following the strict present, tomorrow, and so forth).

This understanding of the relationship between types of presents – a derivative relationship based on containment – helps us make sense of the passage on Apollodorus in Stobaeus. The passage reads, in full:

> Of Apollodorus: Apollodorus, in his work on physics, defines time thus: Time is the *diastēma* of the motion of the cosmos; and thus it is unlimited as the whole of number is said to be unlimited; for there is the past of time, the present (*to enestēkos*), and the future. And we say that the whole of time is present (*enestanai*), as the year is present: according the larger circuit; and the whole of time is said to be real (*huparchein*), although it is not precisely (*apartixontōs*) real in any of its parts (*merōn*).
>
> Ἀπολλοδώρου. Ἀπολλόδωρος δ' ἐν τῇ Φυσικῇ τέχνῃ οὕτως ὁρίζεται τὸν χρόνον· Χρόνος δ' ἐστὶ τῆς τοῦ κόσμου κινήσεως διάστημα· οὕτως δ' ἐστὶν ἄπειρος, ὡς ὁ πᾶς ἀριθμὸς ἄπειρος λέγεται εἶναι· τὸ μὲν γάρ ἐστιν αὐτοῦ παρεληλυθός, τὸ δὲ ἐνεστηκός, τὸ δὲ μέλλον. Ἐνεστάναι δὲ τὸν πάντα χρόνον ὡς τὸν ἐνιαυτὸν ἐνεστηκέναι λέγομεν κατὰ μείζονα περιγραφήν· καὶ ὑπάρχειν ὁ πᾶς χρόνος λέγεται, οὐδενὸς αὐτοῦ τῶν μερῶν ὑπάρχοντος ἀπαρτιζόντως.[209]

Apollodorus' reference to the way in which "the year is present" follows the explanation I gave above. The year is present in virtue of being a "larger circuit" – literally a larger "drawing around" (*perigraphē*). The year draws a larger "circle" around the present, and contains it; in that way the present year is present, while the past year and coming year are not.[210]

Sambursky (1959) reads the passage differently; as I discussed in Chapter 2, he sees the reference to the "larger circuit" as a reference to the so-called great year and periods of the cosmic cycles.[211] However, there is good reason to read the passage the way I have suggested. As I have mentioned several times in previous chapters, the fact that time is

[209] Stobaeus *Ec.* I.8.42.2-10.
[210] Aristotle speaks in a similar way in *Phys.* III.6.206a, where he references both the day and the Olympic games as things which "are" by virtue of coming about in succession, even though neither can exist in its entirety at once.
[211] Sambursky (1959): 106.

infinite – as Apollodorus emphasizes here – speaks strongly against any model which has time only last for the finite duration of a cosmic cycle or period of the great year. In addition, we see the language of circles and circumscribing being used for much shorter periods – namely, periods of life – in Seneca. While Seneca may be generally more inclined towards ethical questions than metaphysical one, we may still look to him for Stoic use of language about time. Seneca writes:

> The whole of time stands in parts, and it has greater circles inscribed around smaller ones. There is one which embraces and encircles all; this extends from birth to the last day. There is another which encloses the years of adolescence. There is one which ties up the whole of boyhood in its ambit. Then there is the year itself, containing in itself all times, by multiplication of which life is composed. Months encircle with a narrower circle. The day has the smallest circuit, but even it goes from start to finish, from rise to fall.
>
> *Tota aetas partibus constat et orbes habet circumductos maiores minoribus. Est aliquis, qui omnis conplectatur et cingat; hic pertinet a natali ad diem extremum. Est alter, qui annos adulescentiae cludit. Est qui totam pueritiam ambitu suo adstringit. Est deinde per se annus in se omnia continens tempora, quorum multiplicatione vita conponitur. Mensis artiore praecingitur circulo. Angustissimum habet dies gyrum, sed et hic ab initio ad exitum venit, ab ortu ad occasum.*[212]

The picture painted by Seneca involves a set of concentric circles, with larger ones inscribed around smaller ones. The year is quite literally a larger circle relative to a month or to a day; when Seneca says that the year contains all time with itself he seems to mean that a year includes a complete cycle of seasons and of the calendar, composed of month and days; the year takes us through every possible season and date. In the same way, months and days are shorter repeating cycles within the years. Every January has repeating similar features, and so on. "The whole of time stands in parts" because time is never fully present all at the same

[212] *Ep*. 12.6

time and as whole, but we can still conceive of time as something with parts that contain and circumscribe other parts. Seneca is not giving a detailed physics of time here, but he is giving us a way of thinking about time as a series of circles *without* falling prey to the idea that time itself is fixed to the length of one world cycle.

Apollodorus goes beyond just claiming that the year is present – he asserts that the *whole of time* is present. This sentiment was previously discussed as a problem for the indeterminate interruption model reading; if the present can be any period and any length, what is to stop us from saying that the whole of time is present, and just as present as another present which is only a millisecond long? If we accept this, the term "present" appears to lack any special meaning and can refer to any time at all, including *all* of time. This seemed devastating for the idea of the present as a uniquely real part of time, or even a distinct part of time at all.

The answer in the derivative present reading lies in the exact formulation by Apollodorus – all of time is said to be present "as (*hōs*) the year is present." That is, the whole of time is not present unqualifiedly, but only in the specific way that the year is present – as the container for a strict present. It does not follow that every temporal period is truly present. It is correct to say that this year is present, because the period of time beginning at midnight this January 1st and ending right before midnight on this December 31st contains the strict present. The present year also contains both the present day and yesterday – yesterday is thus a constituent part of a broadly present time (this year). But yesterday is not present in the same way that today is present. The 24-hour period from midnight to midnight yesterday does not contain the strict present. It has no future parts, and no broadly present parts (because it fails to have a containment relation with the present).

Although it is a part of the present year, it is a fully past part of the present year. Since we understand that the broad present is composed of past and future, this should not surprise us. The present day, on the other hand, is both a part of the present year and present in its own right by containing the strict present. By maintaining a privileged present and giving this privileged present a strictly limited length and location (it is punctate and always located at the exact, strict present), we can distinguish between broadly present periods and wholly past or present periods by drawing temporal boundaries around an extended time and asking whether the strict present exists within those boundaries. If so, the time is broadly present (although its parts are all still past and future). If not, then the time is not a broad present, and is simply past or simply future. Because the boundaries of any given broad present are drawn by human interest and context, not physical constraints, there is no limit on how long or short the broad present can be (although anything shorter than the shortest perceivable present will fail to be of interest to human experience). If I am interested in this year, I can talk about the present year and set temporal boundaries at the start and end of a year; if I am interested in today, I can talk about the present day and set temporal boundaries at the start and end of the day. Nevertheless, the question of whether a given temporal period – once the boundaries are selected – qualifies as a broad present does take us back to an issue of physics, namely whether the relevant period contains the physical present. What makes a period broadly present depends on objective facts about the temporal location of the strict present. If I call yesterday "the present day" I am simply speaking in error. Thus we preserve a real difference between past and future, and even if the whole of time is taken as the broadest possible present, we can still see that it is composed of past parts and future parts, and that many of these parts are not themselves present given framing boundaries.

11.2 Place and Time: Containment Relations

Thinking about time in this way – with specific periods of time acting as containers for others and deriving their status from a contained component – draws the analogy between place and time even closer. The Stoic language of broad and precise presents has an interesting overlap with language in ancient philosophy generally about place, and the senses in which a given object has a place or is in place. There is a precise sense of place corresponding to the exact location of an object – in Aristotle's theory, for instance, the precise place of an object O would be the surface of the body surrounding and containing O.[213] The precise sense of an object's place is either exactly coextensive with that object and fully occupied by it or exactly surrounding and in direct contact with it. However, that is not the only relevant sense of place. Sextus Empiricus gives the examples that a person's place might be a school, or the city of Alexandria.[214] Obviously one person will not occupy and fill the entire city of Alexandria, or be in contact with the entirety of a schoolroom. Nevertheless, it can still be true to say that Socrates is in Alexandria and false to say that he is in Megara, because Alexandria is the place he is in and Megara is not. The reason is that Alexandria surrounds and contains Socrates, just as I have argued times can contain the strict present. Sextus even goes so far as to say that the broad sense of place is posterior to the strict sense of place, because the broad place *contains* the strict place, which itself contains the body whose place it is:

> For place conceived of broadly (*kata platos*) is preceded by place in a strict sense (*kat' akribeian*), and it is impossible for anything to move in broad place if it has not already moved in strict place; for just as strict place contains the moving body, so the broad place contains strict place with the moving body.

[213] See *Phys.* IV.4.212a.
[214] *M* X.15.1-8.

> προηγεῖται γὰρ τοῦ κατὰ πλάτος νοουμένου τόπου ὁ κατ᾽ ἀκρίβειαν, καὶ ἀδύνατόν ἐστιν ἐν τῷ κατὰ πλάτος τόπῳ κινηθῆναί τι μὴ προκινηθὲν ἐν τῷ κατ᾽ ἀκρίβειαν· ὡς γὰρ οὗτος περιεκτικός ἐστι τοῦ κινουμένου σώματος, οὕτως ὁ κατὰ πλάτος τόπος σὺν τῷ κινουμένῳ σώματι καὶ τὸν κατ᾽ ἀκρίβειαν τόπον περιέσχηκεν.[215]

Sextus' argument has force because an object's broad place only is its broad place in virtue of containing the object's strict place (which contains the object itself). If my strict place is contained somewhere in Megara, my broad place cannot be Alexandria. Furthermore, we can have concentric containment relations: If my strict place is my exact location in bed or the surface of my blankets where the touch me, then my broad place in one sense will be my house, and in an even broader sense will be the city that contains my house. My place in a broad sense is the United States of America, because a smaller broad place containing me is the state of California (which is contained by said United States), smaller yet is San Diego (contained by the state of California), smaller yet my house (contained by San Diego), or even my bedroom (contained by my house). Each of these broad place facts is only true in virtue of a containment relation to another place, up to the strict place itself – which is a strict place in virtue of exactly containing (or enclosing) me.

11.3 An Objection to Temporal Overlap

Sorabji considers this very parallel between place and time in response to his own view that Chrysippus was a skeptic about the reality of the present. If places can overlap with each other in a broad sense, why not believe that past and future can overlap with the present? He responds that place and time are relevantly disanalogous:

> I would reply that we cannot infer from the Stoic treatment of place to their treatment of time, for place and time are not alike in the relevant respects. For

[215] *M* X.108.4-109.4.

> one thing, it is genuinely embarrassing to allow the present to overlap with the past and future, whereas there is nothing obviously objectionable about broadly conceived places overlapping, so there is not the same reason to expect the notion of broadly conceived place to be rejected.[216]

Sorabji's claim is that places can overlap, but the parts of time cannot. It is not, however, obvious that this is correct. For one thing, place cannot overlap without qualification; the location currently occupied by the state of California can not overlap with the location currently occupied by the state of Oregon. Although the state of California might theoretically grow in such a way that it subsumed some of Oregon, that would involve us reconceptualizing our idea of what each "place" is and picking out new locations, not an actual overlap between two distinct locations. When two places overlap, it is because one contains – or partially contains – another. California overlaps with San Diego because it contains San Diego. One highway could overlap with another because they both contain the same stretch of road.

By the same token, it seems true that times cannot overlap without some containment relation. Tomorrow cannot overlap with yesterday, because they do not contain each other or contain a shared part. It is true that one is past and one is future, but that does not seem to be the relevant feature that blocks them from overlapping. By contrast, this week can overlap with yesterday by containing yesterday, even though this week contains both past, present, and future parts, and yesterday is wholly past.

Still, there *is* something intuitive to the idea that past and future cannot overlap with each other, nor can either overlap with the present. As we have seen, this tension is intensified by the claim that the present has a special ontology that past and future lack. My

[216] Sorabji (1983): 26.

reading of the Stoics can account for both intuitions by representing the broad model as derivative on the existence of a strict present. If there is a strict present, i.e. a dividing point between past and future that is completely partless, and broad presents are derivatively present in virtue of containing the strict present, then the analogy with place becomes much stronger and the tension is relaxed. Sorabji objects to the idea of overlap between a time that is distinctively present and times that are past and future. However, if we define the broad present as a period of time composed of past and future but containing their dividing point, we can clearly account for both what makes that stretch of time present *and* what makes it past and future. There is no uniquely present time with its own fully distinct identity which is illicitly overlapping with past and future times; rather, the strict present has no overlap with any time and the broad present is composed out of the past and future time and defined as present by its relationship with the strict present.

11.4 The Imperfect Present

This solution goes part of the way towards addressing the difference between the present on the one hand and the past and future on the other, by allowing the present to grow or to retract to different lengths without designating every period of time equally present. It makes it clear that given periods of time are only present derivatively, as fully past or fully future parts of a broad present. But we have not yet fully solved the problem of the distinctive ontology of the present. If, as we have discussed, the present "is real" or "*huparechein*" and the past and the future explicitly do not share this status, we are still left wondering *which* times, events, and objects are present and *huparchon*, and which are not, as well as the unsettling question of whether the ontological status of those times, events,

and objects, alters depending on one's point of view and what the situationally relevant broad present is. How can we fix what is present in a stable and independent way?

We might suggest that only the strict present is *huparchon*, and only strictly present objects/events are *huparchon*, but this does not fit comfortably with our evidence. The emphasis in the texts is consistently on the broad present, and the fact that the present is divisible and continuous. Why bother describing and defining this broad present if it has no metaphysical significance at all? Apollodorus is quite clear that the broad present is *huparchon*, to the extent that all of time *huparchein* in some sense.[217] Chrysippus' discussion of predicates being *huparchon*[218] also makes it clear that the broad present is what is relevant – "I am walking" is dependent on a broad present, not just a strict present, because present walking always has past and future parts.

The answer is not clear in any of our texts, and so my solution must be somewhat speculative. The key appears to be in the discussion of activities, or motions, and the status of verbs as predicates. In Chapter 1, I discussed at some length Chrysippus' comparison of the status of the present to the status of predicates:

> <Chrysippus> says that only the present (*ton enestōta*) is real (*huparchein*), and the past and the future subsist (*huphestanai*) but are not at all real, unless as properties also are said to be real only as predicates, like "to walk" is real for me when I am walking, but when I am lying down or sitting it is not real […]
>
> μόνον δὲ ὑπάρχειν φησὶ τὸν ἐνεστῶτα, τὸν δὲ παρῳχημένον καὶ τὸν μέλλοντα ὑφεστάναι μέν, ὑπάρχειν δὲ οὐδαμῶς, εἰ μὴ ὡς καὶ κατηγορήματα ὑπάρχειν λέγεται μόνα τὰ συμβεβηκότα, οἷον τὸ περιπατεῖν ὑπάρχει μοι ὅτε περιπατῶ, ὅτε δὲ κατακέκλιμαι ἢ κάθημαι οὐχ ὑπάρχει [...][219]

[217] Stobaeus *Ec.* I.42.6-8: Ἐνεστάναι δὲ τὸν πάντα χρόνον ὡς τὸν ἐνιαυτὸν ἐνεστηκέναι λέγομεν κατὰ μείζονα περιγραφήν.
[218] See quote below.
[219] Stobaeus *Ec.* I.8.42.38-43.

I argued that Chrysippus means that ongoing action is real for an agent just in case she is presently engaged in an ongoing action with past and future temporal parts. This is meant to resolve our paradoxes of motion – our agent cannot be walking at a strict present in the sense that walking (a movement with multiple states) is happening in a punctate instant (which can only be one state). If we could isolate a strict present, it would be as though the world were frozen in a single unmoving state. But neither is it the case that there is a pure, fully present period where the walking occurs. Rather, Chrysippus wants to say that "I walk" just is to say "I have been walking and I will be walking." My walking has past parts and future parts – it cannot have strictly present parts that are themselves motions, because the strict present is not a part of time and is too short to contain a motion, but it is ongoing and continuous. Now that we have investigated the present in more detail, we may go even further: an action or motion (which may include rest or a continuing state of "being x"[220]) is present just in case the continuous span of time that motion occupies contains the strict present. Thus, if I began walking yesterday at 7am and stopped yesterday at 8am, I *have* walked but am not now walking. Walking is not *huparchon* for me in virtue of yesterday's walk. Why not? Because 7am to 8am yesterday is not a period of time that contains that strict present. Thus, it is not broadly present, and the walking located at that time is not broadly present nor *huparchon*.

By expanding this understanding to include – as the Stoics surely would – states of being, we can get some grip on what the extension of *huparchon* is. I am currently engaged

[220] See, e.g., the otherwise puzzling reference from Zeno that "All things which come about and perish come about, and all things which are are (*ta onta einai*), through time" (Stobaeus *Ec.* I.8.40e.4-6). The last of these is continued being, which occurs over time without necessarily involving change to a new state.

in a wide range of activities, one of which is "living" or even "existing." To exist is a kind of motion – my existence is not a feature of an instant, but rather something continuous with past and future parts. "Existing" is real and present for me, because the time span of my existence contains that strict present. There is a broad present of "my life", and when I cease to exist I will cease to be present and *huparchon*, because the temporal span of my existence will fail to contain the strict present. This is not merely a fact about time and times, but a fact about me and my reality.

This connects nicely with the idea that time is the dimension of motion. Just as it would be impossible to determine what is "here" without an idea of bodies and place, it is impossible to determine what is "now" without an idea of motions and time. What is real and *huparchon* is what is in some continuous state of being or moving that lasts for a time containing the strict present (and is thus broadly present). Motion is not merely a defining aspect of time as a whole, but of what is present as well.

There is further evidence to support the idea that the Stoics think of what is present in terms of continuous motions and processes. The Scholiast on Dionysius Thrax wrote:

> The Stoics define the present as the imperfect[221] present, since it extends also into <the past and into> the future; for the person saying "I do" indicates also that he did something and that he will do something.
>
> Τὸν ἐνεστῶτα οἱ Στωϊκοὶ ἐνεστῶτα παρατατικὸν ὁρίζονται, ὅτι παρατείνεται καὶ εἰς <παρεληλυθότα καὶ εἰς> μέλλοντα· ὁ γὰρ λέγων «ποιῶ» καὶ ὅτι ἐποίησέ τι ἐμφαίνει καὶ ὅτι ποιήσει.[222]

[221] The translation of *paratatikon* as imperfect is meant in the conventional grammatical sense, as is appropriate in the context of a work on grammar. The term might also be literally translated as "extended" or "continuing"; Crivelli (1994) and Bett (2012) translate *paratatikon* as "continuative" in S.E. *M* X. The contrast is typically with *suntelesikon* (perfect or complete).

[222] *Commentaria in Dionysii Thracis Artem Grammaticam*, in *Anecdota Graecae* ed. Bekker, II, 891.

The Stoic present is not just divisible, but – in a grammatical sense – imperfect. To be presently doing something is not, as we have already conjectured, simply a claim about a punctate present instant. Nor is it a claim about some fully present period that may be further shortened under observer scrutiny. Rather, the present statement "I do" is *explicitly* understood in terms of past doing and future doing. To be acting in the present just is to have been acting recently and to be about to be acting soon.[223]

11.5 A Challenge from Plutarch: The Eternal Lunch

Another source that discusses motion and the present in Stoicism in this same closely connected way is Plutarch – who attacks the Stoics with the assumption that their theory is something like what I have outlined above. We have already visited in great detail Plutarch's complaints about the Stoic (specifically Chrysippan) claim that the present is divisible into past and future while only the present *huparchein*. Plutarch offers several counterarguments based on the composition claim that the present is composed of past and future, but he moves from there to a subtly different genre of argument. Instead of arguing about times, Plutarch moves to arguing about the implications of the present on continuous *motions*. In short, Plutarch complains that Stoics do not only say that the present is composed of past and future, but that present tense statements – e.g., I am lunching – are equivalent to past and future tense statements – e.g. I have lunched recently and I will lunch soon. This claim is the same as what the Scholiast on Dionysisus Thrax tells us about the Stoics having an "imperfect present." The move is subtle, but substantive, and if my interpretation of the

[223] With the qualification that the action is continuous; if I walked yesterday and will walk tomorrow but am doing no walking today, clearly "I walk" is false. It is only when there is one continuous motion with past and future parts that this one motion must include the division of past and future, i.e. the strict present, and thus be present.

Chrysippus passage from Stobaeus on walking and the Scholiast on Dionysius Thrax are correct, then Plutarch is discussing a genuine component of Stoic theory of time. The passage containing the argument is quite dense, but well worth our time to evaluate.

> The conception of time for them, then, is like clutching water, which falls away and slips through one's grasp the tighter one squeezes it, while as to actions and motions it involves the utter ruin of clear apprehension. For, if now is divided partly into what is past and partly into what is future, it is necessary also that of what at the moment is now in motion part has moved and the rest about to move and that terminus and initiation of motion have been abolished <and> that there will be no part of any deed that has been first or will be last, since actions are divided in correspondence with time. For, as the Stoics say that of the present time part has gone by and the rest is to come, so it must be that part of what is being done has been done and the rest will be done. When, then, did lunching, writing, walking, commence and when will they have an end if everyone lunching lunched and will be lunching and everyone walking walked and will be walking? And, what is, as people say, the most outrageous of outrages, if it is characteristic of one who is living that he has been living and will be living, his living neither had initiation nor will it have a terminus; but each of us, as it seems, has come to be, though he did not begin living, and will die, though he will not stop living. For if no part is last but some of the living being's actuality always extends into the future, it never becomes false that "Socrates will be living <if he is living." And> as often as <it will be> true to say "Socrates is living" so far will it be false to say "Socrates is dead." Consequently, if in infinitely many parts of time it is true to say "Socrates will be living," in no part of time will it be true to say "Socrates is dead." And yet, what terminus could a deed have and where could it terminate which is being done if as often as it is true to say "it is being done" it is also true to say "it will be done"? For one who says of Plato writing and arguing that Plato will at some time stop <writing and> arguing will be making a false statement if it is never false to say of him who is arguing "he will be arguing" and of him who is writing "he will be writing." [224]

> Ἡ μὲν οὖν τοῦ χρόνου νόησις αὐτοῖς οἷον ὕδατος περίδραξις, ὅσῳ μᾶλλον πιέζεται, διαρρέοντος καὶ διολισθάνοντος· τὰ δὲ τῶν πράξεων καὶ κινήσεων τὴν πᾶσαν ἔχει σύγχυσιν τῆς ἐναργείας. ἀνάγκη γάρ, εἰ τοῦ νῦν τὸ μὲν εἰς τὸ παρῳχημένον τὸ δ' εἰς τὸ μέλλον διαιρεῖται, καὶ τοῦ κινουμένου κατὰ τὸ νῦν τὸ μὲν κεκινῆσθαι τὸ δὲ κινήσεσθαι, πέρας δὲ κινήσεως ἀνῃρῆσθαι καὶ ἀρχήν, μηδενὸς <δ'> ἔργου πρῶτον γεγονέναι μηδ' ἔσχατον ἔσεσθαι μηδέν, τῷ χρόνῳ τῶν πράξεων συνδιανεμομένων· ὡς γὰρ τοῦ ἐνεστῶτος χρόνου τὸ

[224] Plut. *Comm. Not.* 1082.42.A5-D3 *trans*. Cherniss.

μὲν παρῳχῆσθαι τὸ δὲ μέλλειν λέγουσιν, οὕτως τοῦ πραττομένου τὸ μὲν πεπρᾶχθαι τὸ δὲ πραχθήσεσθαι. πότε τοίνυν ἔσχεν ἀρχὴν πότε δ' ἕξει τελευτὴν τὸ ἀριστᾶν τὸ γράφειν τὸ βαδίζειν, εἰ πᾶς μὲν ὁ ἀριστῶν ἠρίστησε καὶ ἀριστήσει πᾶς δ' ὁ βαδίζων ἐβάδισε καὶ βαδιεῖται; τὸ δὲ δεινῶν, φασί, δεινότατον· εἰ τῷ ζῶντι τὸ ἐζηκέναι καὶ ζήσεσθαι συμβέβηκεν, οὔτ' ἀρχὴν ἔσχε τὸ ζῆν οὔθ' ἕξει πέρας, ἀλλ' ἕκαστος ἡμῶν ὡς ἔοικε γέγονε μὴ ἀρξάμενος τοῦ ζῆν καὶ τεθνήξεται μὴ παυσόμενος. εἰ γὰρ οὐθέν ἐστιν ἔσχατον μέρος ἀλλ' ἀεί τι τῷ ζῶντι τοῦ παρόντος εἰς τὸ μέλλον περίεστιν, οὐδέποτε γίνεται ψεῦδος τό 'ζήσεσθαι Σωκράτη'· <ἀλλ'> ὁσάκις ἀληθὲς <ἔσται> τό 'ζῇ Σωκράτης', ἐπὶ τοσοῦτον ψεῦδος τό 'τέθνηκε Σωκράτης'· ὥστ', εἰ τό 'ζήσεται Σωκράτης' ἀληθές ἐστιν ἐν ἀπείροις χρόνου μέρεσιν, ἐν οὐδενὶ χρόνου μέρει τό 'τέθνηκε Σωκράτης' ἀληθὲς ἔσται. καίτοι τί πέρας ἂν ἔργου γένοιτο, ποῦ δὲ λήξειε τὸ πραττόμενον, ἄν, ὁσάκις ἀληθές ἐστι τό 'πράττεται', τοσαυτάκις ἀληθὲς ᾖ καὶ τό 'πραχθήσεται'; ψεύσεται γὰρ ὁ λέγων περὶ τοῦ γράφοντος καὶ διαλεγομένου Πλάτωνος ὅτι 'παύσεταί ποτε Πλάτων <γράφων καὶ> διαλεγόμενος', εἰ μηδέποτε ψεῦδός ἐστι τό 'διαλεχθήσεται' περὶ τοῦ διαλεγομένου καὶ τό 'γράψει' περὶ τοῦ γράφοντος.

Plutarch begins by transitioning from his arguments about the composition of the present into implications for understanding ongoing motions and actions. If, he reasons, the present is part past and part future, then the present "I do" is equivalent to the past "I have done" and the future "I will do." And as we have seen, the Scholiast supports him on this point and it is far from implausible as an interpretation of Stoic thought.

Plutarch moves from here to launch his counter argument. If "I lunch" means "I have been lunching" and "I will lunch", then at any moment when I am (presently) lunching, there is also lunching to my immediate past (recently) and lunching to my immediate future (soon). This is because the imperfect Stoic present is always composed of a little past and a little future, and the present action is composed of past action and future action. But if this is the case, what is the status of my first moment of lunching? When I began to lunch, "I am lunching" was true. I was, indeed, lunching – otherwise it would have been prior to my lunching, not the start of it. But it "I am lunching" is true, then "I have lunched recently" is true, because any present action has past and future parts. Thus it turns out that my first

moment of lunching was not the first moment at all – there was previous lunching immediately before! Could that have been my first moment of lunching? Clearly not – because if "I have been lunching recently" is true, then at that past moment "I am lunching" was true while it was present – and that means that there must have been some lunching previous to that, because that present lunching must have had both past and future parts. My lunching turns out to have had no starting point and to regress infinitely into the past.

The same, of course, is true for the future. At the last moment of my lunching, I am still lunching. "I lunch" is true. If I am lunching and "I lunch" is true, then it is the case that I just have lunched and I will lunch soon. But if it's true that I will lunch soon, then this is not in fact the end of my lunching. There is more lunching to come. And at that future time of lunching, when it is present and I am presently lunching, there will necessarily be more lunching in *its* future (because to be lunching is to have lunched and to be about to lunch), ad infinitum. My lunching is without past or future terminus; it continues through all eternity.

For a more dramatic example than my eternal lunch, Plutarch asks us to consider a human life. If it is true that you are living, then it is true that you were living and will be living. By the same logic there is no time at which your life could start and no time at which it could end. In Plutarch's own words, "Each of us, as it seems, has come to be, though he did not begin living, and will die, though he will not stop living."[225]

Plutarch's challenge exploits a real ambiguity in the Stoic theory. If the present is a continuous period of indefinite length, composed entirely of past and future, and if present

[225] Plut. *Comm. Not.* 1082.

motion/action is always imperfect, contributed by past motion and future motion, then there is a worrying indefiniteness to all action. It is not clear what would be involved in the start of an action or its end, or what the exact relation is between the present state (e.g. "I am lunching") and the past and future motions (e.g. I have lunched and I will lunch). If all action is continuous and ongoing, how can it also be discrete and finite?

My derivative present reading can give an answer by leaning on the Archideman (and Aristotelian) idea of the strict present as a limit. Because the strict present marks a zero-dimensional junction of past and future, it can demarcate and limit one-dimensional temporal periods – and therefore the actions occurring in those periods. We only need a quick emendation to my initial definition of what makes an action "broadly" present to clarify that the containment relationship may include a period which has the strict present an outside limit – i.e. as the first or last instant of the period.[226] We must also emend our understanding of the imperfect present to allow that an action may be present and ongoing by having continuous future parts or past parts, but not necessarily both at the same time.

In this model, if we could somehow freeze the world at the exact instant of my beginning to lunch, "I lunch" would be true because there is a continuous period containing the strict present instant – as an outside edge – that is occupied by my lunching. That period is entirely future relative to the frozen instant; thus, "I will lunch" is true in virtue of my future lunching, and "I am lunching" is true in virtue of the lunching taking place over a continuous period with the right kind of containment/limiting relation relative to the strict present. I am, at my first instant of lunching, within a broad present defined by my lunching

[226] As before, these instants are not *part*s of the period, nor real times in their own right. They are limits of times and junctions of past and future. The period is a time, the strict present or instant is a limit of that time.

that contains *only future parts*. There are no past parts, because no time has yet elapsed within this period (and there are of course no present parts, because broad present are wholly composed of past and future parts).[227] The same holds true of my last instant of lunching – if by some feat we froze the world at my last instant of lunching I would be presently lunching in virtue of being in a broad present period of lunching composed of wholly past periods of continuous lunching activity. At any other instant to the future of this instant[228] I will no longer be lunching, because when that instant is the strict present it will not be contained by (or limiting) a broadly present period that contains lunching activity. Because of the continuous nature of time it is impossible to actually find and isolate these terminal instants – humans live in continuous one-dimensional times, not zero-dimensional strict presents – but they may still function as limits. The relevant fact of the imperfect present is that the present is continuous and that motion is a matter of continuous activity over time, not a static feature of instants. We can preserve that intuition for the Stoics and grant them their imperfect present without creating a world where all activities bleed into the past and future without limits.

12. The Parts of Time in Relation to Each Other

12.1 Past and Future versus the Present

This discussion of the present has, of necessity, revealed a great deal about the relationship between the present on the one hand and the past and future on the other. Most

[227] To reiterate: The broad present is a time, and thus its proper parts must be times.; the strict present is not a time. Past and future are times, and are thus suitable to be parts of the broad present.
[228] There is, of course, no such thing as a *next* instant – because will be a one-dimension extended period between any two points, and an infinite number of zero-dimensional potential points in any one-dimensional period. See Aristotle *Phys*. IV.10.218a.

obviously, the present has a different status from the past and the future – the present is real (*huparchon*) while the past and future are subsistent but not real. Furthermore, the past and future are times without qualification, but the present is not, strictly, a time. In the sense that the present is a time, it is because it is composed of parts that are themselves times – i.e. past and future periods. So the present has a privileged ontology, but as a time it is compositionally posterior to the past and the future. It is also that case the present activities and motions – e.g. walking, lunching, living – are motions in virtue of having past and future parts, and present in virtue of being continuous through a broadly present period that contains the division of past and future (i.e. the strict present).

This leaves us with an interesting question about the relationship between past and future on the one hand and the present on the other: What about events, objects, and motions that are fully past or fully future? Forget for a moment the walk I am taking right now, and think instead about the walk I took yesterday, or the walk I will talk tomorrow. The former is fully in the past, the latter fully in the future. There are broad presents that contain all three walks, present past and future, such as the broad present occupied by my activity of living. However, Chrysippus is very clear that yesterday's walk is no longer *huparchon*, because it is not an ongoing activity. To use my language, the period of time occupied by yesterday's walk does not contain the strict present. I have walked, but I am not now walking. I accounted for the reality of today's walk, composed of past and future parts, derivatively. It is real because it derives its reality from the broad present; past and future motions are not per se real, but only in virtue of the right kind of relationship with a present process. The same is clearly not true of yesterday's walk. It is not real in the way that today's walk is, because it is fully past.

Interestingly, however, the Stoics appear to have had a mechanism to translate some apparently past or future facts into present ones. In a neat parallel with their treatment of objects, where they limited the powers of non-bodies while also dramatically expanding the set of things they considered bodies, they seem to have limited the kinds of facts that could be used in logic and inference to *present* facts, while also expanding the domain of "present" facts to include some apparently past and future facts. Sextus Empiricus discusses this issue in his section on "signs" – i.e. where one thing which is known acts as a sign for some other things which is unknown:[229]

> In addition, <the Stoics> say, the sign has to be a present sign of a present thing. Some people are misled into holding that a present thing can be a sign of a past thing, as in the case of "If this person has a scar, he has had a wound." For if he has a scar it is a present thing – for it appears – but his having had a wound is a past thing, for there is no longer a wound. And they also hold that a present thing can be a sign of a future thing, such as what is contained in a conditional such as "If this person has been wounded in the heart, he will die"; for they say that the wound to the heart is already there, but the death is to come. But the people who say such things fail to understand that while past things and future things are different, the sign and the thing signified are, even in these cases, a present thing in relation to a present thing. For in the first case, "If this person has a scar, he has had a wound," the wound has occurred already and is gone, but this person's having had a wound, which is a proposition, is present, being said about something that has occurred. And in the case of "If this person has been wounded in the heart, he will die," while the death is to come, the proposition that he will die, being said about a thing that is to come, is present, in so far as it is true even now.
>
> Ἔτι, φασί, τὸ σημεῖον παρὸν παρόντος εἶναι δεῖ σημεῖον. ἔνιοι γὰρ ἐξαπατώμενοι καὶ παρὸν παρῳχημένου θέλουσιν εἶναι σημεῖον, ὡς ἐπὶ τοῦ "εἰ οὐλὴν ἔχει οὗτος, ἕλκος ἔσχηκεν οὗτος"· τὸ μὲν γὰρ "οὐλὴν ἔχει" παρόν ἐστι, φαίνεται γάρ, τὸ δὲ ἕλκος ἐσχηκέναι παρῳχημένον, οὐκέτι γὰρ ἔστιν ἕλκος· καὶ παρὸν μέλλοντος, ὡς τὸ περιεχόμενον τῷ τοιούτῳ συνημμένῳ "εἰ καρδίαν τέτρωται οὗτος, ἀποθανεῖται οὗτος"· τὸ μὲν γὰρ τραῦμα τῆς καρδίας εἶναί φασιν ἤδη, τὸν δὲ θάνατον μέλλειν. ἀγνοοῦσι δὴ οἱ τὰ τοιαῦτα

[229] E.g. A person seeing smoke in the distance may infer that there is also a fire, even if she is too far away to see the fire. In this case, the smoke is the sign of the fire.

> λέγοντες, ὅτι ἄλλ᾽ ἐστὶ τὰ παρῳχημένα καὶ τὰ μέλλοντα, τὸ μέντοι σημεῖον καὶ σημειωτὸν κἀν τούτοις παρὸν παρόντος ἐστίν. ἔν τε γὰρ τῷ προτέρῳ τῷ "εἰ οὐλὴν ἔχει οὗτος, ἕλκος ἔσχηκεν οὗτος" τὸ μὲν ἕλκος γέγονεν ἤδη καὶ παρῴχηκεν, τὸ δὲ ἕλκος ἐσχηκέναι τοῦτον, ἀξίωμα καθεστηκός, ἐνέστηκεν, περὶ γεγονότος τινὸς λεγόμενον· ἔν τε τῷ "εἰ καρδίαν τέτρωται οὗτος, ἀποθανεῖται οὗτος" ὁ μὲν θάνατος μέλλει, τὸ δὲ ἀποθανεῖσθαι τοῦτον ἀξίωμα ἐνέστηκεν, περὶ μέλλοντος λεγόμενον, παρὸ καὶ νῦν ἐστιν ἀληθές. ὥστε καὶ ἀξίωμά ἐστι τὸ σημεῖον, καὶ ἐν ὑγιεῖ συνημμένῳ καθηγεῖται τῷ ἀρχομένῳ ἀπὸ ἀληθοῦς καὶ λήγοντι ἐπὶ ἀληθὲς, ἐκκαλυπτικόν τέ ἐστι τοῦ λήγοντος, καὶ διὰ παντὸς παρὸν παρόντος ἐστὶ σημεῖον. [230]

This passage tells us that Stoic signs can only be of and about the present – a present sign of a present thing. But it also allows us to include the grammatical perfect in the realm of the present, such that facts about what has happened count as present (rather than past) facts. If a man presently has a scar, it is presently a true fact about him that he has been wounded. It is the current state of the man – that he has been wounded – that is the thing signed, not the past act of wounding. Future things signed are accounted for in terms of present facts as well. Our imaginary person is presently such that a wound in the heart would be fatal; this is not a future fact about what will happen in the future if he is stabbed, but rather a present fact about his biology.

Why require these translations of past and future into present? The answer is probably the ambiguous and uneasy status of incorporeals in Stoic physics. The past and the future are subsistent, but not existent or real. Citing the past or the future in a sign relation would seem to involve them in a causal process, albeit somewhat indirectly. If a present scar can reveal a past wounding, then a past thing stands in some sort of causal relation to a present thing – a relationship where one reveals the other. The same would hold true with a past or future sign, which would do the work of revealing. But if past and future are

[230] *M* VIII.254.1-256.4, *trans*. Bett.

incorporeal subsistents, not corporeal existents, then they should not stand in any sort of causal relationships. This assumes that past and future *events* and *objects* have the same status as past and future times, but this appears to be the inference we are meant to draw regarding the present, and no clear distinction between the status of times and the status of things in those times is ever clearly drawn in our texts.

If this reading is true, it suggests that whenever we reason about past and future events, we actually have some present equivalent in mind. One tempting way to read this evidence is to say that statements or facts about what happened in the past are best understood as claims about what currently is true of bodies and their causal histories (e.g. the past wounding no longer exists, but the man who has been wounded exists, and his current causal history is different because of the wounding than it would have been without it), and claims about the future are best understood as claims about current states of objects and their potential causal interactions. Note that this assumes determined causal features; it is not true that if I stab person X then she will die *because* of some future event where she does die, or an imagined timeline in which I stab her and she dies. This would be to understand the present (which is real) in terms of the future (which is unreal), and to let the incorporeal future casually relate to the corporeal present object. Instead, it is true in virtue of facts about her right now – that she is mortal, does not have skin hard enough to repel a knife, that she needs a certain amount of blood to live and has veins in such and such locations, and so on. The truthmakers in both the past and future cases cannot be past and future events, but must present ones. This allows us to make sense of a puzzling feature of Stoic modality where. According to Cicero, they claim that something may be possible despite being determined to never occur. The example given is that a gem may be breakable

despite it being deterministically true that it will never be broken.[231] According to my analysis, this is because "breakability" is a current feature of the gem's internal structure rather than a fact about what will or will not happen to the gem in the future.

This causal reading of the relationship between past and future events on the one hand and present ones on the other gains some support from Cicero's reports of Chrysippus views in *De Fato*. Most interesting perhaps is the claim that logical bivalence – that is, the truth or falsity of statements – requires causal determinism (and thus Fate):

> Chrysippus argues in this way: "If there is motion without a cause, then it will not be that every proposition, which the dialecticians call *axioma*, is either true or false, **for that which does not have efficient causes will be neither true nor false;** however all propositions are true or false; hence there is no motion without cause."
>
> *Concludit enim Chrysippus hoc modo: "Si est motus sine causa, non omnis enuntiatio, quod* ἀξίωμα *dialectici appellant, aut vera aut falsa erit; causas enim efficientis quod non habebit, id nec verum nec falsum erit; omnis autem enuntiatio aut vera aut falsa est; motus ergo sine causa nullus est.*[232]

What Chrysippus seems to have in mind here is something like the principle of sufficient reason – an event will not occur unless there are sufficient efficient causes for its occurrence. His reasoning here probably begs the question (if uncaused motions exist, then it is false that every event must have sufficient efficient causes), but it is telling that he expresses his ideas not in terms of uncaused motions leading to new motions, but rather in terms of *truth and falsity* of propositions. At least part of what it means for a proposition to be true is that it have sufficient efficient causes. Thus, causal histories really do seem to be part of what makes present facts and statements true, and the passage from Sextus further

[231] Cicero, *De Fato* VII.
[232] Cicero *De Fato* X.20.

tells us that those causal histories – although in some sense about past and future events – are actually present things. A full analysis of Stoic causation is outside the scope of this project; I content myself with suggesting that causation may be at the heart of the relationship between the true past and future as incorporeals subsistents that are not real and the present as what is real.

12.2 Past and Future (A)symmetries

What about the proper parts of time, namely the past and future? Are these ontologically symmetrical, as the theory of time as a place-like dimension would seem to suggest? Or is there another asymmetry, as with the present? None of our sources directly address this question, but there is good reason to think that past and future are on identical ontological footing, although there probably is a directional "arrow" of time pointing from past to future.

Why might one suppose that past and future are ontologically asymmetric? There are two particularly compelling points of common sense that suggest this asymmetry. The first is that the past has happened and is thus fixed, while the future has not yet happened and is still "open." That is, past events cannot be changed but future events still can. There are facts of the matter about the past, but not about the future. The second point relates to our epistemic access – the past is knowable and can be remembered, while the future is unknowable and shut off from us.

Neither of these points hold good in Stoicism. On the first, we may look to the Stoic idea of Fate and causal determinism.[233] The future may *seem* open, but in the Stoic system

[233] See LS Chapter 55 (333-343); Bobzien (1998).

this is largely – if not entirely – an illusion. There are facts of the matter about what will occur, not merely as a matter of contingent events on future timelines but as a matter of causal and fated necessity. The past is fixed, but so for all important purposes is the future. The epistemic reason to believe in an asymmetry is greatly weakened by the Stoic belief in divination.[234] While it is true that generally the past is better known than the future, the future is *in principle* knowable. Likewise, we may often lack definite information about the past. The fact that we know more about the past than about the future is a matter of degree of knowability, not kind.

What motivation does this leave the Stoics to assert an ontological asymmetry between past and future? It is true that the past *has* happened and the future *has yet* to happen, but this difference clearly pales in the face of the difference both states have with the present, which *is* happening. We know this because every extant source focuses on the latter distinction, and treats that *already has* versus the *has yet to* as analogous sorts of states, to be contrasted with the present rather than with each other. Past and future have the same status as times and parts of times and share the same ontological verb. It appears, then, that the past and future are most likely ontologically symmetrical in Stoicism. It need not, however, follow that they are not distinct in their identities; past and future occupy distinct temporal "locations" in that each is bounded on one side by the present but infinite in the other temporal direction. The past is temporally prior to the present, while the future is temporally posterior. If past and future were identified as the same times, then we could not make sense of the present as a boundary dividing them.

[234] See, e.g., extensive discussion of the Stoics by Cicero in *On Divination*.

Conclusion

Where does all this leave the Stoic theory of time? We have discovered that time for the Stoics is an incorporeal dimension, analogous to place. It cannot be identified with any events or sets of events, not even the motions of celestial bodies or the cosmic cycles of *ekpyrōsis*. Time also cannot be a property of bodies without jeopardizing its status as incorporeal. Instead, time is the locus and container of a certain kind of bodily extension, namely the extension of bodily motions along a dimension of duration which measures speed, just as the three spatial dimensions measure height, breadth, and depth of bodies.

Furthermore, time, properly speaking, is composed of past and future; past and future meet at a junction point which, having no extension, is not properly a time but is a strict metaphysical present. There is, however, a secondary derivative present, composed entirely of past and future, which is a time – at least loosely speaking. This derivative present is present in virtue of containing the strict present and is indeed of indefinite length. The special ontological status of the present as "*huparchon*" does attach to this broad derivative present – but it does so in the sense that actions which have a present part are presently ongoing actions and thus "are real" and "*huparchon*" despite extending into the past and future. Thus, the Stoics are able to solve Diodorean and Eleatic challenges against the concept of present motion by maintaining that motion occurs in the (broad) present while accepting that motion cannot happen in a partless time and inherently involves past and future parts.

While I have laid out a general Stoic physics of time and of the present, many intriguing questions remain for the Stoic treatment of time at large. I briefly suggested at the

end of Chapter 4 that Stoic understanding of past and future propositions – and thus likely past and future states of affairs – are bound up in Stoic notions of cause and Fate. Further inquiry into time as an aspect of Stoic determinism and Stoic logic could bring further light to the interesting status of the past and future. The fact that *kataleptic* appearances are only of objects which are *huparchon* invites the obvious conclusion that *kataleptic* appearances can only be of present things. How, then, should we understand knowledge of past and future in Stoicism? Is such knowledge fundamentally different from knowledge of the present? Or is the story of *kataleptic* appearances like the story of logical signs, where apparently past and future propositions were converted into present facts? Such questions reach beyond the scope of this project and its focus on the physics of time, but are well worth future investigation.

There are intriguing implications of my project for Stoic ethics as well. Stoic ethics – particularly Roman Stoic ethics – returns frequently to the subject of fear and hope. Fear and hope are inherently future-oriented emotions, and at least one of the recurring objections to these emotions is that they concern what is not. In a metaphysical sense, this turns out to be literally true; the future is not only "not yet" in the sense that it has not yet occurred or is uncertain, it "is not" because it literally is not real. Fear and hope for the future is as irrational as fear as in an illusory Fury once one understands that it is merely an illusion. This gives a much stronger reason for rejecting dear and hope than an appeal to future uncertainty, especially given Stoic commitments to determinism and the possibility of divination. However, if the strategy of converting some past and future states into present states holds good in ethics as well as in logic, there may be some objects of fear which appear future directed but are in fact present directed. The same holds good for grief, which

is apparently past directed – is the object of grief truly a non-existent entity or event in the past, or the present perfect state of having lost?

I hope to have laid ground for future debates in Stoic physics and philosophy; at the very least I aspire to have convinced my readers that the subject is of real interest and that the extant texts are enough to make the investigation of time in Stoicism fruitful. I anticipate – with due apology to the Stoic ethicists – future work on this topic.

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