

Philosophy, God and Motion

Simon Oliver

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Introduction

This essay is about motion. We commonly think of motion as the subject of the science of physics. It is a category which apparently refers to bodies and their spatial locomotions. We have come to accept Newton's three laws of motion and his stipulation that motion is a simple category well known to all. However, for those philosophers and theologians prior to the scientific revolution of the seventeenth century, motion tends to be presented as a more mysterious category which is not confined to spatial or local motion. Rather, it may apply to moral as well as physical movements: learning, growing, ripening and thinking count as motion, just as much as the movement of bodies through space. The cosmos is seen as saturated with motions of many kinds, and this apparently renders nature difficult to grasp: natural beings continuously move in their various ways. What causes motion? Why do things move? When I throw a ball into the air, what preserves it in motion after it has left my hand? Is motion orientated towards a particular goal? Are there different qualities of motion? Meanwhile, within the traditions of apophatic theology, God is frequently understood negatively as beyond all qualifications of motion. The divine reality is the first unmoved mover, the impassible and ineffable source of all created, moving being. So in addition to questions concerning the nature and purpose of motion which have concerned philosophers and scientists for centuries, a central theological question arises: what is the relation between a universe whose very nature is, to paraphrase Aristotle, a principle of motion and rest, and God who is wholly beyond motion?

Given this latter question, it might be thought that motion is something profoundly negative to be assuaged or overcome, marking the boundary between the ontological stability and certainty of the unchanging eternal, in which motion is absent, and the capricious cosmos which is saturated with motion. Perhaps motion does render things ultimately ungraspable, thereby constituting the cosmos as a mere diversion from truth, for any created thing is never absolutely identical with itself from one moment to the next. Such a negative view of the cosmos is traditionally ascribed to Plato. Similarly, one might suggest that modern science is an attempt to stop or slow down nature within the laboratory in order to make fixed and more

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certain observations. This is perhaps one of the reasons why contrived experiment did not fit well with Aristotelian natural philosophy: once one removed or manipulated motion – the essential characteristic of any natural entity – one was observing something wholly *unnatural*.

Just as motion might constitute the boundary between the unchanging eternal and the cosmos, so motion might also constitute the boundary between the discourses which refer to these realms. So we might think that the study of motion is properly and primarily confined to the science of physics, which deals with nature, while it is no concern of metaphysics or theology. Motion might therefore be understood as the boundary limit in a dualistic ontology: moving nature stands over and against the eternal stability of the Forms, the first unmoved mover or the unchanging, simple God.

This essay offers a different narration of the concept of motion. I seek to demonstrate that traditionally motion is a broad and complex concept applied analogically in various discourses, and that there can be an authentically theological, as well as natural philosophical, account of motion. For those theologians and philosophers prior to the rise of modernity, motion does not constitute the separation of discourses, but is a means of their unity. For Plato, in wholly undualistic fashion, motion is the very means by which we come to know all that is contained in the eternal stability of the Forms; it is, for Aristotle, the means of our passage from potency to actuality; it is, for Grosseteste, the means of the propagation of the universe from the simple, eternal light; it is, for Aquinas, the means of our participation in the eternal dynamism of the Trinitarian life of God. It is only later, when the concept of motion is narrowed dramatically to encompass only spatially quantified change, that the study of motion is confined solely to one discourse and comes to constitute a boundary between natural science, on the one hand, and metaphysics and theology, on the other.

I begin with Plato's *Timaeus*, a seminal text in western thought which exerted a great influence on the natural philosophers of the sixteenth and seventeenth centuries. Here one finds a cosmology which relates the motion of the realm of becoming to the eternity and reality of the Forms through the metaphysics of participation. For Plato, because cosmology is discourse about a universe of motion, it must to some degree be subject to the same transience as its subject matter; there is no objective or supra-cosmic stance from which one can discern the nature of the cosmos. However, this is not to say that cosmology is pure caprice for Plato, nor that motion is to be eschewed in order to secure certainty. On the contrary, I argue that motion makes possible human knowing and participation in the realm of the Forms because the eternity of being is known successively in the motions of the cosmos. It is precisely the motions of the cosmos, particularly the most perfect circular orbits which are more unitary and complete, which mediate to us the unity and stability of the Forms. So rather than constituting the division between being and becoming in dualistic fashion, I argue that for Plato it is precisely motion which enables the participation of becoming in

being. This text also instructs us in pre-Newtonian qualities of motion: we learn that motion is subject to subtle hierarchical differentiation.

In Chapter 2, I examine the natural philosophy of Aristotle, for his principal works were central to the medieval understanding of motion which was apparently supplanted by early modern science. In particular, I focus on Aristotle's *Physics* and examine his understanding of motion as that which hovers between potency and act while remaining related to a particular *telos*. Motion, for Aristotle, is not indifferent and self-explanatory, for motion can be natural (tending towards a being's *telos*) or violent (tending away from a being's *telos*), and each and every motion involves a mover and something that is moved in such a way that motion is a relational category. But motion for Aristotle not only applies to the physics of moving bodies. Motion is also applied analogically to the human ethical life to describe the way in which humanity moves and is moved towards its *telos*. In particular, in the sphere of human virtues one finds principles of motion towards the Good, which is the defining limit of all motion. Therefore, motion is not just an indifferent transfer of a density of being from one place to another; it is the means of the perfection of things within nature, and as motion is the continual actualisation of beings, I argue that motion is ecstatic for Aristotle, for any being in motion is constantly exceeding its own limits as it strives towards its goal and fulfilment.

Having described two principal accounts of motion within ancient philosophy, I turn to examine the influence of this ancient philosophy upon certain medieval thinkers. Initially focusing on the work of Robert Grosseteste, one of the first Latin commentators on Aristotle, I examine his cosmogony of light and motion, and his understanding of method in natural philosophy, particularly in his philosophical treatises *De Luce* and *De Veritate*. For Grosseteste, God is light and all things are a more or less rarefied form of light. Therefore, all things may be analogically related through the mediation of light. I argue that for Grosseteste cosmology is made possible because the universe is a motion of emanation from the one, true, eternal light of God. Therefore, to study light is to study God and all things in relation to God. Here we find a theological rendering of the qualitative and hierarchical motion of Plato and Aristotle.

The thought of Grosseteste has been regarded as one of the origins of experimental practice, for he appears to advocate the verification and falsification of hypothesis by contrived observation. In addition to examining Grosseteste's view of motion and his cosmogony of light, I also investigate the role of the *experimentum* in his thought and suggest that he advocates such practice not in order to mitigate a proto-Humean inductive scepticism, but rather to assuage the effects of the Fall. For Grosseteste, there is no dark chasm of un-illuminated nature which inductive reasoning is unable to traverse and which must therefore be surmounted by the constant repetition of experiment. Rather, all knowledge is a participation in God's illumination of all things, and therefore the motions of experimental practice perform a

similar role to cosmological analysis in Plato's *Timaeus*: the patterns of non-identical repetition and the modulations of temporal succession of the motion of the cosmos make clear to our clouded, fallen minds all that is known in the eternal simplicity of the divine light.

Grosseteste's immediate successor, Roger Bacon, extends the method of the *experimentum* into a *scientia experimentalis* while also advocating the study of mathematics. Does one find in Bacon's work an early intimation of the scientific practice which will come to characterise investigations of motion from the sixteenth century onwards? I argue that, in a number of respects, Bacon does indeed anticipate modern scientific concerns. I also investigate the way in which Bacon anticipates a characteristic feature of later medieval and early modern thought, namely an understanding of knowledge as representation. Knowledge for Bacon is not a visceral motion whereby a known object comes to reside in a different mode via the mysterious protocols of non-identical repetition in the mind of the knower. Rather, experience is the mere occasion for knowledge, that knowledge instead emerging from a separate agent intellect which is 'stamped' onto the mind. A new distrust of our experience of the world emerges from this view, because sensations are no longer reliable; God could, by a simple act of will, determine which representations assert themselves in the mind without there being a created source of that representation. Thus begins a scepticism, a distrust, concerning moving nature which places the identical repetition of experiment as the condition of possibility for certain knowledge at the heart of natural philosophy.

Having examined one of the earliest attempts to assimilate Aristotelian natural philosophy into theology, I move on to study the Platonic and Aristotelian synthesis in the work of Thomas Aquinas. I argue that questions of motion appear at all levels in the hierarchy of sciences addressed by Aquinas and that, ultimately, all motion is analogically related to the eternal emanations of the persons of the Trinity. This forms a reassessment of the doctrine of God as the 'first unmoved mover'. Many philosophers and theologians reject this supposedly Aristotelian view which is associated particularly with Aquinas's so-called 'Five Ways' of proving God's existence. Critics argue that such a view renders God static and divine action restricted to a 'first push' or merely efficient causality. This paves the way for deism. In response to the notion that God is the first motionless mover, an emphasis has been placed more recently on the passible nature of divinity. One thinks particularly of 'process theology' and the focus on suffering as the form of kinship between God and humanity. By contrast, I demonstrate that God does not, and could not, 'become' for Aquinas (there is no potentiality in the divine), but by means of a Neoplatonic hierarchical understanding of causation in which God 'touches' every motion, one can attain a more nuanced understanding of God as 'unmoved mover' in which the dynamism of Trinitarian love is mediated via motion to the cosmos.

From the importance of motion for Aquinas's doctrine of God and understanding of creation, I examine the importance of motion in his ethics, most

particularly the analogy between the fulfilment of bodies in nature through motion and the attainment of beatitude in God's moving of humanity through the law and virtue. The incarnation is, I suggest, a crucial moment for Aquinas, for here one finds the origin and *telos* of human motion in the midst of the way. This is a revelation which reorientates us towards a goal which of our own power we could not discern. The justification and passion wrought by Christ's death and resurrection removes the obstacle of sin which prevents humanity from achieving its end. The salvation of Christ is continually mediated through the sacraments, and most particularly the Eucharist where, I suggest, one finds the unification of all cosmic motion in a single point of rest in the midst of the way, though 'rest' itself is here also to be seen in qualitative and hierarchical terms.

Having outlined one of the most dominant visions of the medieval period, I examine a different tradition which finds a focus in the work of the Persian Islamic philosopher Avicenna. I argue that, in contrast to Aquinas, for whom the various sciences are analogically related to each other through the application of concepts such as motion, Avicenna anticipates the separation of physics from the realm of metaphysics and thus suggests what will later become the restriction of questions of motion to an autonomous physics. For example, for Avicenna the question of the proof of God's existence, which for Aquinas belongs both to physics and metaphysics, is confined purely to metaphysics. Motion, which is the subject of physics, no longer points beyond itself to a divine origin and end. Moreover, the Plotinian emanationist cosmology espoused by Avicenna suggests a substantial cosmic hierarchy between the absolute One and moving creation in such a way that motion, rather than providing the means of relating creation to God or becoming to being, defines and determines the boundary between the two. By contrast, for Aquinas, God's 'touch' is intimate to every motion.

In addition to Avicenna's separation of physics and metaphysics, I examine another medieval tradition relating to motion, namely the theory of impetus. In various presentations of this theory, a number of recent commentators have seen a precursor of Newton's principle of inertia. I argue that, through impetus theory, motion becomes a more exclusively quantitative category, and that certain motions, such as those of the heavenly spheres, are related to God not because of their exalted cosmological status, but because a being is now required which possesses a sufficient quantity of power to sustain such motion. Although impetus theory remains Aristotelian in many important respects, in others it anticipates the physics and voluntarist theology of Newton.

Having examined some principal understandings of motion in medieval theology and natural philosophy, I address the revolution in physics brought about by the publication of Sir Isaac Newton's *Principia*. I argue that, although Newton produces laws of motion and places these at the heart of his treatise, nevertheless motion becomes a simple category and is supplanted by force as the central subject of physics. Moreover, because motion is no longer

teleologically ordered and is understood as a state, this category is no longer ontological and tells us nothing about the being of a moving body.

In addition to an examination of Newton's physics, I explore the relationship of his science of motion to his theology. Whereas for Aquinas all motion is relational and analogically related to the emanations of the persons of the Trinity, because Newton maintains an Arian, non-Trinitarian position, he is unable to find a source and ground for a relational cosmos at the highest ontological level. How can a motionless God, construed by Newton in voluntaristic terms, now be related to a cosmos in motion? For Aquinas, God's relation to the cosmos is understood through motion's participation in the emanation of the persons of the Trinity, through which God created the universe. By contrast, Newton conceives of an absolute space begotten of God (the infamous *sensorium dei*) in and through which God creates and acts in the world. I argue that, curiously, this absolute space takes on the characteristics of a more orthodox Christ in Newton's theology.

This is the view of motion bequeathed to the eighteenth century. In the concluding section of this essay I comment on more recent understandings of the nature of motion and suggest that mechanistic cosmologies were already thought to be dubious, even at times by Newton himself. I examine briefly the rise of electromagnetism and thermodynamics, suggesting that these innovations rely on a form of analogical reasoning which bears an interesting resemblance to the natural philosophy which was the subject of the first four chapters of this essay. Moreover, I suggest that motion is understood once again as relational rather than idealised as the state of a body in a vacuum. The second law of thermodynamics, for example, is interpreted as the donation or sharing of energy by all created beings in such a way that relations are constantly being re-established between creatures. Finally, I suggest, following Wolfgang Smith, that a Thomistic ontology which includes substantial form and an ontological hierarchy with a varied understanding of motion is more fitting to some of the most recent developments in physics, particularly the peculiarities of quantum theory.

Although motion is thought to be the exclusive purview of physics, this essay, through the examination of key texts, seeks to argue that this is a recent view and that theology, rather than averring to scientific accounts of motion in a straightforward fashion, may be able to offer its own authentic approach. While this is not an attempt to supplant scientific notions of motion, it seeks to suggest that these apparently opposed discourses can be brought into closer proximity once again through the sharing of a category which is applied analogically, and ultimately to its divine origin and end.

This essay may therefore be placed very broadly within the ambit of what has become known as 'science and theology'. Science is often assumed to express literally what theology expresses through myth, narrative or analogy. Alternatively, science might apparently provide criteria of rationality to which theology should aspire, or science is thought to offer a kind of natural proof of theology's claims in such a way that theologians are free

to pursue their particular enquiries in isolation, resting secure in their vindication by science's rigour. Or theology simply fills in the ever shrinking gaps left by science. However, this essay seeks a shift in emphasis by examining the genealogy of a concept which might once again be shared analogically by the different *scientia*. This is not arbitrary or alien to science or theology, for this essay argues that both rely on analogical predication, namely discourse which examines the multifarious, complex, non-univocal relations between things which conjoin, by shared participation in a transcendent origin and goal, to form a *uni*-verse. Analogy implies more than a series of resemblances of the kind which might lead to the claim that 'motion' in physics happens to resemble 'motion' understood theologically in an innocuously pleasing fashion. Rather, it is the contention of this essay that science and theology are related, like all things, by their shared participation in the *scientia divina*, that participation being made possible by the various analogically related motions of created being and, more particularly, of human knowing.

1 Plato's *Timaeus* and the soul's motion of knowing

The architects of the modern scientific revolution of the seventeenth century onwards, from whom we inherit our common understanding of such concepts as motion, have frequently been seen to build upon a tradition whose foundations lie some two millennia earlier in ancient Greece, and particularly in the Platonic treatise *Timaeus*.¹ It is in this work, written in the fourth century BC during the later part of Plato's career,² that he sketches the very purpose and limits of scientific enquiry. The cosmos is, perhaps for the first time, investigated and described through the establishment of axioms from which emerge mathematical proportion and the 'harmonic music of the heavens'.³ In terms later adopted by the founders of modern science, Plato seeks explanation of phenomena as diverse as the motion of the heavenly planets and stars, the behaviour of the elements and the workings of the human body by a description of their origins, structure, place and behaviour within the ordered universe. No longer are the happenings of nature the result of the activities of recalcitrant deities. Instead, through one of the earliest instances of a method that might be broadly recognised as 'scientific' in the modern sense, Plato describes an orderly cosmos which is constituted according to certain identifiable proportions and which behaves in observable and predictable patterns.⁴

The *Timaeus* is in part a polemic against the *physiologoi* of ancient Greece, those philosophers who believed that the universe originated by chance rather than design or 'art', and that its activity is the result of the natural activity of soulless bodies.⁵ This immanentism was anathema to Plato.⁶ Rather, cosmology in the *Timaeus* is fundamentally a 'theological' enterprise which seeks to identify the *telos* of nature. It is theological in the sense that the cosmos is described in terms of its participation in a transcendent origin and purpose: it is not the self-explanatory and closed system of the *physiologoi*. The cosmos is a realm not of static being but of change and becoming which finds its explanation only with reference to its origin and continued participation in the unchanging, eternal and transcendent realm of the Forms and, ultimately and crucially, in its relation to the Good.⁷ This change and becoming manifests itself in terms of motion, and therefore motion is a central concern in Plato's cosmological treatise.

Because this change and becoming which are manifest in movement are defining aspects of the cosmos investigated in the *Timaeus*, this chapter will examine Platonic cosmology through a study of the nature and purpose of motion as expounded in the treatise. It will be seen that Plato does not have a 'theory' of motion in the modern sense of the provision of a predictive model, but that motion is understood teleologically as, on the one hand, a purposeful ordering of the cosmos and, on the other hand, the means of nature's fulfilment and the a priori condition for the understanding of the universe in all its diversity. Crucially, motion will be understood as emerging from the persuasion of the pre-existent realm of 'necessity' from chaos to teleological order by the craftsmanship of *nous*. In addition, it will be seen that the study of cosmology, and particularly the study of motion in astronomy, has its own pedagogical *telos*. Finally, I will suggest ways in which the understanding of motion in Plato's *Timaeus* hints at the very purpose and nature, or movement, of natural and political philosophy.

The nature of the cosmos

The status of cosmological accounts

The *Timaeus* tells the story of the formation of the universe. Plato would not have intended this to be a definitive cosmology or a final and exhaustive account of the universe. This is because 'truth' does not lie within the universe. For Plato, truth lies in the realm of the unchanging Forms, that truth being illuminated by the Form of the Good. The visible realm of becoming, whose origin Plato is seeking to investigate, only discloses truth in so far as it participates in the unchanging and intelligible world of Forms. To the extent that the visible world fails to participate in the Forms, it becomes unintelligible and corresponds to the realm of mere 'opinion'. Because Plato's treatise is itself a discourse *within* the realm of becoming and change and also a discourse *about* that realm, it will to some extent be subject to the same demur as this realm of mere opinion. The cosmology presented by Plato cannot fully escape or transcend the limits described by its subject matter. So the *Timaeus*, unlike many modern speculative scientific cosmologies, is not an account aimed at definitive statements, because there cannot be any such neutral exhaustive, or in any alleged fashion, supra-cosmic statements about the universe. Why? Because the universe is the visible realm of becoming. Rather, the *Timaeus* presents a mythical story about a universe which is itself 'mythical'.

However, this is not to say that the *Timaeus* presents mere baseless fiction or a pure invention of Plato's mind. For Plato, philosophic discourse consists in affirmative and negative statements about Forms. The philosopher discerns the true structure of the realm of the Forms, what each Form is in itself and how it differs from other Forms. A false judgement is understood as the mistaking of one Form for another, or mistaking the visible realm of

becoming and the intelligible and unchanging realm of the Forms.⁸ Therefore, Plato is not concerned to give a purely immanent account of the universe; such an account, if it is to be true to its subject matter, is not possible. His treatise will only be true to the extent that it comes close to an understanding of the universe in its relation to the realm of the Forms: this is the means by which the *Timaeus* can receive an element of the truth which resides in that transcendent realm. Plato's cosmology is an attempt to see the universe in its most fundamental being; that is, in its relation to the Forms. Ultimately, the Form of the Good is the source of that being and therefore Plato's cosmology will be truthful to the extent that it can correctly identify the universe in its relation to the Good.⁹

Because the realm of becoming is an 'image' or 'likeness' of the Living Creature which resides in the realm of the Forms, Plato is comparing a model with its copy. The universe was created by the Demiurge¹⁰ according to a transcendent ideal model, and just as a copy cannot be understood apart from its relation to, and origin in, the model from which it emanates or to which it is aligned, so neither can cosmology be undertaken without recourse to the model from which the universe emanates and in which it participates.¹¹ So Timaeus says, 'If then, Socrates, in many respects concerning many things – the gods and the generation of the universe – we prove unable to render an account at all points entirely consistent with itself and exact, you must not be surprised'.¹²

If Platonic cosmology is concerned to identify the universe in its relation to the Forms, and fundamentally the relation of everything to the Form of the Good, how is the natural philosopher to identify and know anything of the transcendent realm where truth resides? To put this question in the familiar terms of the allegory of the cave in *The Republic*, Book VII, how does one escape from the cave to see everything in the light of the Good? In *Timaeus*, Plato outlines a view which regards motion as a central means for the realm of becoming to participate in being, for the identification of the Forms and therefore the key to a truthful account of the universe.

The World Soul and the body of the universe

How does Plato conceive the origin of the universe? He begins with a discordant and disordered realm that is brought into order by the Demiurge.¹³ The visible world is a living creature made after the likeness of an eternal original by the Demiurge, having soul in body and reason in soul. In keeping with the Living Creature, the model after which the universe is formed embraces all the intelligible Forms of living creatures. So too its visible image, the universe, embraces all the visible living creatures within itself.¹⁴ For Plato, the universe is unique with nothing lying outside.¹⁵ It is therefore whole and cannot suffer external assault. Neither can the universe suffer internal dissolution because this would entail the supremacy of a part over the whole.¹⁶ It contains within its body the four primary bodies of

earth, air, fire and water whose quantities are fixed by reason in a certain definite proportion.¹⁷ Thus Plato states that

accordingly, the god set water and air between fire and earth, and made them, so far as was possible, proportional to one another, so that as fire is to air, so is air to water, and as air is to water, so is water to earth, and thus he bound together the frame of the world visible and tangible.

(Plato, *Timaeus*, 32b)¹⁸

He rejected the Ionian belief in an indefinite quantity of homogeneous matter and the Atomists' belief in an indefinite plurality of atoms, for if body were thus indefinite and unlimited it would have nothing holding it together. For Plato it is the design and proportion between the elements which holds the body of the universe together. Moreover, he believed that the motion which is observable in the cosmos could not take place if that cosmos were monadic because like cannot move like. This is because motion is here characterised as the transformation of one element into another and, if the cosmos were essentially homogeneous, there would be no difference to enable mutual transformation of elements. Thus if the universe were only earth, no motion and change (construed as the transformation of one element into another) could take place. For Plato, the motion of transformation continually takes place between earth, air, fire and water and this kind of motion requires that difference be a fundamental aspect of the cosmos.

However, it may be thought that, because Plato embraces the common axiom in Greek natural philosophy that 'like attracts like', the four elements would eventually arrive at and occupy their own distinct places within the body of the cosmos, thus forming four regions, each homogeneous, in which motion and change were precluded. However, Plato insists that because the cosmos is a sphere,¹⁹ the elemental particles are compacted together in such a way that the smaller elements (fire, for example, which is the smallest and 'sharpest' of the four elements, seen in its ability to divide and break down the solids of earth and evaporate water)²⁰ are forced in between the larger elements and this continually divides and transforms. Because the elements are of different sizes and not homogeneous after the fashion of atoms, there will also be a constant change of volume which preserves the motion of transformation within the body of the cosmos.²¹ To take just one instance of this motion of transformation, one might recall that liquids (water), gases (air) and solids (earth) continually contract and expand under different conditions of heat (fire).

In addition to the elements which fill the body of the cosmos, the Demiurge also gives to this living creature the most perfect of forms and motions. The sphere is the most uniform of all solid figures and the only figure which, through axial rotation, moves entirely within the orbit of its own spatial limits. This rotation symbolises the movement of Reason and is superior to the six rectilinear motions. In all these ways the universe resembles the

intelligible Living Creature, the model in whose image it is formed by the Demiurge. However, to understand this axial rotation of the body of the universe and its importance, it is necessary to consider the World Soul.

The World Soul is composed of Existence, Sameness and Difference.²² The realm of being and the realm of becoming are similarly composed, although in the realm of being these features take an indivisible form and in the realm of becoming they are divisible in form. First of all, 'Existence' is possessed fully by the Forms; thus to say of a thing that it exists is to say that it partakes of Existence. The visible realm partakes of Existence to a lesser degree than the full participation of the Forms. Secondly, 'Sameness' refers to the positive content of a Form in virtue of which it is always the same as itself. A Form always is what it is, and Sameness excludes any kind of change. But paradoxically this 'Sameness' also means that a Form must participate in 'Difference', for all Forms are distinct from each other. Once again, the realm of the visible, in being the realm of change, participates only partially in Sameness and Difference. In other words, all Forms and their visible images partake of Existence, Sameness and Difference, although only the Forms participate in the fullest possible sense. However, the World Soul occupies an intermediate form of Existence, Sameness and Difference which is composed of the divisible and the indivisible. Thus the soul partakes of both intelligible and generated Existence, Sameness and Difference. It is 'the best of things brought into being by the most excellent of things intelligible and eternal'.²³ How are the characteristics of the World Soul to be enumerated? As immortal and imperishable, the soul is like the eternal, immortal and intelligible realm of being; as alive and intelligent, the soul is like the visible realm of becoming, because life and intelligence cannot exist without change.²⁴ And in so far as it is the unique soul of the world, the World Soul is like the Forms in its participation in Sameness and Difference. However, because Sameness and Difference are to some extent dispersed among all souls, the World Soul resembles the realm of becoming. In this sense, the World Soul is therefore a mediator between the invisible realm of being and the visible realm of becoming and change. Having established this hierarchy of Existence, Sameness and Difference, the Demiurge now forms a hierarchy of motions.²⁵

The World Soul is divided into two strips formed into rings which are placed together to form a sphere. The first ring is known as the circle of the Same and the second as the circle of the Different. The former is given the more perfect and dominant motion to the right,²⁶ the latter having the less perfect rotation to the left. The circle of the Same has a single and undivided motion. However, the motion of the circle of the Different is divided into seven unequal circles with three moving at the same speed and four moving at different speeds, although always in a strict ratio to each other.²⁷ Later in the *Timaeus*, these seven circles are to become the motions of the planets in the heavens. There is thus an emanation of motion through the World Soul into the body of the universe. All motion originates in, and is governed by,

the circle of the Same whose motion is perfect. The circle of the Different partakes of this motion, although imperfectly, as do the planetary bodies through the circles of the Different. Eventually, all the souls, and hence the bodies which are dispersed throughout the universe, partake of the motion which originates in the World Soul.

It can therefore be said that motion properly belongs to soul.²⁸ Plato does not believe that body is self-moving and he rejects the view that the world order has arisen by chance and necessity through the blind working of indifferent powers within the bodily elements. Rather, the World Soul is a moving source of motion which emanates throughout the body of the universe: 'And the soul, being everywhere inwoven from the centre to the outermost heaven and enveloping the heaven all around on the outside, revolving within its own limit, made a divine being of ceaseless and intelligent life for all time'.²⁹ In this sense the soul is prior to body. However, this is not to suggest a dualistic view of moving soul and inert body within the universe. That the world should have a body without a soul is equally as impossible as the world having a soul without a body. The World Soul and the body of the universe are not distinct ontological entities which stand over and against each other, for they partake of the same being which resides in the realm of the Forms and emanates from the Good. Plato is not claiming that the World Soul was made before body. To say that the World Soul is prior to body is to say that motion originates in the soul, in a self-moving thing, this being the very definition of soul.³⁰ Because the cosmos is now endowed with the principle of autonomous and ordered self-movement, it becomes evident why Plato regards it as a living creature: the cosmos is an ensouled living entity.

Rotation

The World Soul thus possesses circular motion, this motion being transmitted through the circle of the Different to the planetary bodies and throughout the whole universe. The perfection of the circular motion which originates in the World Soul is assumed by Plato in the *Timaeus*. However, in the *Laws* Plato outlines the reasons for describing circular rotation as akin to perfect rational motion. In essence, rotation comprehends all motions within itself and resolves them all to a unified and ordered motion. Plato comments that 'when a disk revolves ... points near and far from the centre describe circles of different radii in the same time; their motion varies according to these radii and is proportionately quick or slow'.³¹ In an important sense, the rotation of the disk unifies these motions of varying radii and speed. All individual points participate in the motion of the whole disk – they borrow their motion from the disk. In the same way the rotational motion of the World Soul can unify, in an ordered and rational fashion, the other motions. By contrast, the six rectilinear motions (forwards, backwards, up, down, left and right) represent for Plato the 'irrational wanderings';

these are in a sense deficient and unordered and they are likened to the irrational wanderings of unreflective minds. However, the circular rotation of the World Soul is unifying in another sense. This motion is primary because it is always a motion in relation to the centre of the sphere of the universe which is at rest, whereas the irrational wanderings can only ever be relative to another motion or to an arbitrary point of rest. To describe the circular motion of the World Soul as absolute would be somewhat disingenuous, because for Plato there are no absolutes in the realm of becoming. However, this motion of the World Soul can be adequately described as the primary motion and certainly the most perfect of all movements. As will be seen in later chapters, the primacy of circular motion is also crucial in the cosmologies of Aristotle and Aquinas.

Symmetry

The World Soul thus performs the role of mediation between the realm of the Forms and the visible cosmos as well as transmitting its own self-motion throughout the Living Creature. However, there is a further means by which the World Soul mediates the very Form of the Good.³² Plato formulated the truly remarkable hypothesis that the characteristics which the Good bestows upon the other Forms, for example beauty, proportion, harmony and, most generally and importantly, symmetry, can be expressed in terms of mathematics. 'Symmetry' for Plato entailed a common measure between things which allowed proportion to appear and which made these things commensurable. If the proportion between two things remains forever constant, they are properly symmetrical. One example of symmetry, discovered by the Pythagoreans in ancient Greece and highly important to this aspect of Plato's cosmology, lay in the relationship between different musical notes played on a string instrument. The pitch of a note is in proportion to the length of the string on which the note is played. Thus if two different notes are played on different instruments, the proportion between the notes will remain consonant with the ratio of the lengths of the strings on which the notes are played. Thus a common measure (the length of the string) has enabled a proportion to be identified and a symmetry to be established which may be expressed in terms of mathematics. The same harmonious music will be produced if the correct ratio is preserved between two strings producing two notes.

Plato postulated that these harmonious intervals, which make relations describable, commensurate, rational and therefore symmetrical, are inscribed in the structure of the World Soul.³³ First, the World Soul is given the most perfectly symmetrical of motions, namely circular rotation and a constant speed. No variation is admitted and proportions remain constant allowing proper symmetry to be established. Secondly, as was mentioned above, the Demiurge divides the World Soul according to certain mathematical proportions. The circle of the Different is divided into seven parts according to a mathematical progression in such a way that these different parts move in

constant proportion to each other.³⁴ The seven parts become the distances from the earth and therefore the proportion of the motions of the seven heavenly spheres known to Plato (the sun, the moon, Mercury, Venus, Mars, Jupiter and Saturn).³⁵ These motions were observed by astronomers as constant and therefore rational. This is a cosmology which is taken directly from the mathematical theory of music known to the Pythagoreans. The identifiable proportions which enabled the description of the rational and harmonious movement of music are transposed to describe the rational and harmonious movement of the heavenly bodies and thus identify their participation in the symmetry, proportion, order and beauty bestowed by the Good. The motion of the stars, which is directly bestowed by the circle of the Same, and the motion of the planets, which is bestowed by the circle of the Different, is thus rendered rational. This is the movement of the music of the spheres transmitted through the soul of the universe.³⁶

Cosmological knowing

Having established this mediatory character of the composition of the World Soul, the perfection of the motion of the Same, the unifying character of that motion and the proportions and symmetry in the motions of the Same and the Different, Plato can further explain why this motion is so important for our knowledge of the intelligible realm and therefore for cosmology as a whole. First, the rational movement of the World Soul, which is transmitted throughout the body of the cosmos and which is in mathematical proportion and therefore symmetry, makes cosmology possible. True knowledge is possible only of the Forms, and these have beauty, proportion, symmetry and order bestowed upon them by the Good, thus constituting them as rational and intelligible. It is through the mediation of the World Soul, which partakes of this symmetry through the form and proportions of its motion, that cosmology, the *eikos logos* or verisimilar account, is made possible. Secondly, and in a similar vein, Plato comments that

whenever she [the World Soul] is in contact with anything that has dispersed existence or with anything whose existence is indivisible, she is set in motion all through herself and tells in what respect precisely, and how, and in what sense, and when, it comes about that something is qualified as either the same or different with respect to any given thing, whatever it may be, with which it is the same or from which it differs, either in the sphere of things that become or with regard to things that are changeless.

(Plato, *Timaeus*, 37a–b)

As was stated above, cosmology for Plato involves correctly identifying the universe in its relation to the Forms and ultimately in its relation to the Good. The World Soul can be seen as the condition of possibility for this

understanding precisely because of its characteristic motions. However, as regards the understanding of the cosmos, these motions are not primarily physical. They are instead the motions of 'wish, reflection, diligence, counsel, opinion true and false, joy and grief, cheerfulness and fear, love and hate'.³⁷ Whereas for modern science it is a commonplace that motion is attributed primarily to bodies and only metaphorically to the emotions and intelligence, Plato is here describing the latter as primary, for they reside in the soul which is the very source of motion. It now becomes clear that it is by participating in the ordered motion of the World Soul that we come to identify correctly the realms of being and becoming and their relation to each other. It is by our ordered movements of wishing, reflecting, being diligent, forming true opinions and expressing appropriate joy, grief and love that we correctly distinguish the real from its image. Disordered wanderings of the soul produce the confusion which misunderstands the Forms and fails correctly to identify the realms of becoming and being. This is discussed by Plato in relation to the motions of the soul in children. F. M. Cornford comments that

in infancy the motions of the soul-circles in human beings are perturbed and distorted by the inflow of nourishment and of sense-impressions, and 'when they meet with something outside that falls under the Same or the Different they speak of it as "the same as this" or "different from that" contrary to the true facts, and show themselves mistaken and foolish'.

(Cornford, *Plato's Cosmology*, p. 96; Plato, *Timaeus*, 44a)

Once the individual becomes older, the motion of the soul begins to govern the body and the right names are given to what is the same and what is different, in such a way that the individual becomes rational in accordance with the rational movement of the World Soul. It will be noticed that Plato is not giving an intellectualist account of what it is to be rational and to possess rational and ordered motion. The World Soul itself is not pure intelligence. Owing to its existence with a perceptible body, it may be said to possess emotions and feelings in the same way as the human soul experiences such things as they arise from an encounter with the body.³⁸

One may suspect that Plato is again erring towards a dualistic account of the role of soul and body within cosmology. This might be the case were it not for the body's own exaltation through its production of time. Time, for Plato, is the moving image of eternity.³⁹ The Living Being is eternal, and by necessity this characteristic cannot be fully conferred on anything generated, so Plato believes that the Demiurge created an everlasting likeness which moves according to number, 'that to which we give the name Time'.⁴⁰ It might be thought that the nearest one could come to the unchanging realm of being would be a situation of rest or *stasis*, for this would remove the corruption of change. However, it is through time that the realm of becoming attains a greater approximation to the realm of being because the

realm of becoming is then *most fully itself*, just as the realm of being is always most fully realised as itself. Within the realm of becoming, *stasis* actually denies the very nature of that realm as a realm of movement, change and therefore of becoming. In a sense, *stasis* would be a mere parody of the realm of being. Therefore, Plato suggests that the visible realm of becoming, the universe, more fully participates in the realm of being by the circular motion of time. Time is circular because it is coterminous with the motion of the celestial clock, namely the circular movement of the heavenly bodies. This circular time, the wheel of becoming – birth, growth, maturity, decay, death, rebirth – is a non-identically repeated cycle marked by the movement of the years which are in turn the movement of the heavenly bodies. Curiously, this cyclical motion incorporates the eternal in its repetitive nature. Yet time can never be a tedious or repetitive motion because its non-identically repetitive nature indicates that the eternal, in which time seeks to participate, can never be exhaustively disclosed. This point can be made with reference to the seasons. The realm of being comprehends the seasons together in a complete fashion. However, it is better for the realm of becoming to comprehend the seasons one by one through the circular motion of time rather than contemplate, for example, only a perpetual and static winter. Therefore, far from being denigrated, it is the physical motion of time which is exalted to the status of disclosing what is only fully comprehended in the eternity of the realm of the Forms. It is also in the physical motion that the realm of being is most fully itself as the realm of change and does not lapse into a parodic form of being. It is important to remember that Plato does not view the *telos* of the cosmos as finally entering into being. The *telos* of the cosmos is to be the cosmos most properly in relation to that from which it emanates. The physical motion of time is a crucial means of deepening that participation.

Therefore, motion for Plato originates in the World Soul, and reaches its most perfect and rational form in the movement of the circle of the Same. This motion is dispersed throughout the cosmos through the circular motion of the Different. The myriad souls of the universe partake of this motion, as also does the physical realm by means of the motion of the heavenly bodies. Because the World Soul has a composition of Existence, Sameness and Difference which is intermediate between the realm of being and becoming, between the realm of the Forms and the cosmos, it acts as a mediating element in the visible realm's comprehension both of the invisible and of itself. The motions of the soul are primary for Plato, while the physical motions are dependent on those of the soul. However, this does not drive a division between the soul and the body, for it is by the circular motion of the heavenly bodies, a motion that constitutes time, that the realm of the visible seeks to comprehend all that is held together in the realm of the intelligible. Through the motion of time the cosmos becomes more fundamentally itself, that is a realm of change and becoming which emanates and seeks to participate in the realm of the Forms. In this sense,

the motion of the world's body is a kind of self-transcendence as its operational capacity (the means of comprehending the eternal realm of being) has a higher potency than its material being (the definition of the circle of change and time).

Reason, necessity and the power of rhetorical persuasion

It is thus that Plato describes the relation between the World Soul and the body of the universe, so establishing the nature and possibility of cosmological enquiry. The primary concern in the *Timaeus* thus far has been to elucidate the purpose of creation. Timaeus has spoken of the benevolence of the divine craftsman, 'the best of causes', and the desire to fashion a realm 'that is the best of things that have become'.⁴¹ It is the craftsmanship of reason, seen most particularly in the Demiurge and manifest in the potent motion of the World Soul, that has been the focus of consideration in the first part of this treatise. Perhaps unexpectedly, Plato now makes a new beginning and returns to consider that upon which reason works, namely the realm of 'necessity'.⁴² To what is Plato referring in his consideration of the realm of 'necessity'? To answer this question, one must realise the full importance of teleology in Plato's cosmology. This is well illustrated in Plato's middle to late dialogue, the *Phaedo*, where we find a dramatisation of Socrates's last day and execution.

Phaedo of Elis narrates a conversation between Socrates and two visitors to Athens, Simmias and Cebes. For a brief period, during a consideration of the intellectual biography of Socrates, the conversation settles on the subject of enquiry into nature and its causes.⁴³ Socrates recalls an encounter with someone reading from a book by the fifth-century Athenian philosopher Anaxagoras in which it is claimed that intelligence orders all things. At first, Socrates delights in the thesis that intelligence is the reason for everything, that *nous* is the ordering principle behind the cosmos. He believes that intelligence must situate and order the visible realm in the best possible way so that any enquiry into an element of nature will ask how it is best for that thing to exist, or act, or be acted upon. Socrates claims that explanations should always refer to 'the best, the highest good'. So, for example, Socrates expects Anaxagoras to explain the shapes and positions of the earth and planets in terms of what is best and the finest exemplar of the benevolent cause of the cosmos.

For I never imagined that, when he said they [the sun, the moon and the stars] were ordered by intelligence, he would introduce any other cause for these things than that it is best for them to be as they are. So I thought when he assigned the cause of each thing and of all things in common he would go on to explain what is best for each and what is good for all in common.

(Plato, *Phaedo*, 98a–b)⁴⁴

However, to his great disappointment, Socrates soon finds that Anaxagoras explains the phenomena of nature in immanent and mechanistic terms. He mocks the way in which Anaxagoras might explain his sitting with the visitors to Athens in terms of the bones, sinews, joints, sockets and muscles of the body, or their conversation in terms of the operation of auditory sensations and vocal sounds. These explanations are wholly insufficient for Socrates. His explanation for his sitting and conversing with the visitors refers to his condemnation by the Athenian authorities and his decision that

it was best for me to sit here and that it is right for me to stay and undergo whatever penalty they order. For, by the Dog, I fancy these bones and sinews of mine would have been in Megara or Boeotia long ago, carried thither by an opinion of what was best, if I did not think it was better and nobler to endure any penalty the city might inflict rather than to escape and run away.

(Plato, *Phaedo*, 98e)

A proper explanation requires reference to a *telos* reaching far beyond merely mechanistic causal explanation. Socrates explains his sitting and conversing with reference to justice, and ultimately with reference to what is best, to the way in which his actions relate to the Good. He makes a crucial distinction between 'a cause ... and the thing without which the cause could never be a cause'.⁴⁵ The mechanistic or immanent explanation of Socrates's position is necessary, but wholly insufficient, to a full understanding of his circumstances.

This distinction between what constitutes a necessary and a sufficient causal explanation informs Plato's consideration of 'reason' and 'necessity' in the *Timaeus*. For Plato, 'necessity' refers to the realm of chaos which preceded the creation of the cosmos by the Demiurge. It is referred to as 'necessity' for two reasons. First, because it is indeed a necessary cause of the existence of an ordered and visible realm of becoming (just as the bones and sinews were a necessary cause of Socrates sitting and talking with the visitors to Athens). The Demiurge required raw materials with which to work in fashioning the universe after the Form of the Living Creature. Secondly, this realm of 'necessity' is one of mechanistic causes in which elements interact 'of necessity' but with no reference to a *telos* which transcends this mechanism. In contrast to modern accounts of causation, Plato, like Aristotle who followed him,⁴⁶ associates 'necessity' with 'chance'. On this view, phenomena are the result of causes which cannot act other than the way they do, which are necessary but not ordered to any transcendent end and which can therefore give rise to chance. 'Necessity' is contrasted with 'purpose'. To use Aristotle's example, rain may be said to fall because of the necessary cooling of evaporated moisture, its necessary condensation and eventual fall to the ground. However, in a cosmos which is explained with no reference to final causes, this rain may be said to fall for a multitude of purposes – to flood

houses, to drown, or to grow crops. On this view of the cosmos, rain has no 'purpose', and its coincidence with any other phenomena of nature would be regarded as mere 'chance'.

Plato regards the realm of 'necessity' with which the Demiurge begins as one of mechanical causes with no distinct purpose; it manifests chance. These mechanical causes are not arranged in any order, and it is for this reason that this realm is properly described as 'chaotic'. The realm of 'necessity' is called the 'errant cause' by Plato. It is a necessary, but wholly insufficient, cause of the universe. They are things which are 'incapable of any plan or intelligence or purpose'.⁴⁷ So, given this atavistic disorder, how does 'reason' in the form of the Demiurge act upon this realm of 'necessity' and 'chance' in order to give rise to a purposeful and ordered cosmos?

Plato employs a highly suggestive phrase in describing the interaction between 'reason' and 'necessity': 'this universe was fashioned in the beginning by the victory of reasonable persuasion over necessity'.⁴⁸ In understanding this phrase, one must keep in mind the image of the Demiurge as craftsman. A good craftsman knows the characteristics and possibilities inherent in the materials which are available. No good craftsman will attempt to make a saw from wood. In other words, a good craftsman selects material best adapted to his purpose and cannot 'force' those materials to take on forms contrary to their natures. All the causal elements behind the production of an artefact combine to effect their product: the purpose of the craftsman, the work of his hands and tools, the nature of the materials to hand. All this is highly suggestive of 'persuasion' as opposed to 'force' or 'compulsion'. Plato is emphasising that reason and necessity work in co-operation in such a way that the universe is not the result of an arbitrary or violent imposition of the will of the Demiurge. Rather, the Demiurge 'persuades' the realm of necessity, the realm of chance and chaos, to yield an ordered and purposeful cosmos.

In considering the action of the Demiurge as 'the victory of reasonable persuasion over necessity', Plato is suggesting that the power which formed the universe is analogous to the power of rhetorical persuasion. One might therefore learn something of Plato's understanding of the persuasive power behind the cosmos by a consideration of his understanding of the practice and purpose of rhetoric.⁴⁹ Plato's mature understanding of rhetoric is most clearly expressed in the *Phaedrus* where we find Socrates outside the walls of Athens on the banks of the River Ilissus.

Together with his interlocutor, Phaedrus, Socrates commences a consideration of the art of rhetoric. Phaedrus reads a speech delivered by Lysias concerning the advantages of a relationship with a non-lover over a relationship with a lover.⁵⁰ Socrates expresses a dissatisfaction with the speech because of its repetitious and ill-formed character.⁵¹ However, it is Lysias's inclusion of copious points which most impresses Phaedrus, for this apparently renders the former's account of the subject exhaustive.⁵² Socrates, in his displeasure at Lysias's speech, claims that he can deliver a speech quite

different from that of Lysias and yet just as good. Phaedrus delights in the possibility of another speech offering yet more points on this same subject, and so persuades Socrates to give his own oration concerning the favour to be expressed towards the non-lover rather than the lover.⁵³ Yet this attempt by Phaedrus to elicit another speech from Socrates is more indicative of compulsion or extortion than proper persuasion.⁵⁴

Having delivered his speech favouring the non-lover over the lover, Socrates realises that his recitation on this subject was 'foolish and somewhat impious'.⁵⁵ He remembers the divinity of Love and therefore offers a recantation of this first speech and begins a consideration of the advantages of the lover over the non-lover. Socrates's first speech is now seen as an example of the deception that is possible in rhetoric when the subject matter is one about which the speaker and hearers are not clear, in this case the character and purpose of love.⁵⁶ Therefore, Socrates delivers a second speech in praise of the lover, one which ends with a prayer to Love for the acceptance of his words and the turning of Phaedrus and Lysias towards love and philosophical discourses.⁵⁷ This second speech of Socrates features the characteristics of proper rhetoric and the art of persuasion upon which he will focus in his conversation with Phaedrus. To what view of rhetoric does this initial exchange lead?

Socrates's speech, and the art of rhetoric, begins with a consideration of the soul, for the goal of a speech is 'to lead souls by persuasion'.⁵⁸ Therefore, if one is effectively to persuade one's hearers, it is necessary to know the nature of the soul, whether it is one or multiform and varied, to what end it acts and the manner of its being acted upon.⁵⁹ Given this knowledge of the nature of the soul, the rhetorician 'will classify the speeches and the souls and will adapt each to the other, showing the causes and effects produced and why one kind of soul is necessarily persuaded by certain classes of speeches, and another is not'.⁶⁰ Socrates identifies the essence of soul as self-movement. The soul never ceases to move, it is the source and beginning of all motion and is therefore immortal. That which moves itself, says Socrates, must be the ungenerated and indestructible source of motion, for otherwise all the heavens and all generation must fall into ruin, stop and never again have a source of motion or an origin.⁶¹

Socrates claims that the characterisation of the soul as immortal is as much as can be said before resorting to the allegory of the charioteer as an explanation of the form of the soul. He likens the soul to a winged chariot and its pilot, pulled by two horses. It is claimed that when the soul is perfect and in possession of full wings, it rises up to the heavens, partakes of the nature of the divine and is nourished by 'beauty, wisdom and goodness', while any soul which falls below is destroyed by 'the opposite qualities, such as vileness and evil'.⁶² It is the souls of the gods, likened to chariots pulled by two good and obedient horses, which can mount up when at 'a feast or a banquet' to the outer surface of the heavens to be carried around by the revolution of the heavens to behold the eternal realm which 'is visible only to the

mind, the pilot of the soul'.⁶³ However, the souls of embodied humans, unlike those of the gods, are hindered in their flight by unruly passions, represented by an errant horse pulling the chariot. The charioteer is constantly distracted by the need to compensate for the unruly behaviour of this errant horse. Thus the chariot finds great difficulty in rising to contemplate the eternal and unchanging realm, but is instead pulled back towards the vicissitudes of the realm of opinion, there to be deprived of those good things which nourish the wings of the soul.⁶⁴

Through the mouth of Socrates, Plato claims that the soul may rise to partake of the revolution of the heavens to make that perfect motion its own. Once again, as in the *Timaeus*, this motion of the soul is contrasted to the wandering which ensues when the unruly passions drag the soul down to the confusion and conflict of the realm of opinion. The crux of Plato's argument appears to be that the soul must rise to the point where its own motion is indistinguishable from what might be described, in the terms of the *Timaeus*, as the motion of the World Soul. This attainment of the motion of the World Soul is termed a kind of 'madness' because the life of the soul exceeds its own solitary capabilities in ways that might be regarded as strange and unexpected.⁶⁵ This participation in the motion of the World Soul is thus a kind of self-abandonment to partake in a greater beauty and perfection, and yet in that self-abandonment the soul realises its own inherent capabilities all the more. In Socrates's speech, this participation in the more perfect motion of another is contrasted with Lysias's preference for the wilful self-control of the soul by a refusal to exercise the soul's proper desire, its nourishment in Love. The affection of the non-lover, says Socrates, will only cause the soul to be 'a wanderer upon the earth',⁶⁶ forever confined to its own solitary innate capabilities.

Having put forward his elaborate allegory of the charioteer, Socrates can identify the goal of rhetoric as the persuasion of the soul towards the Good by means of the soul's ever intensifying participation in the perfect revolution of the World Soul. In other words, rhetoric can bring to a halt the soul's wanderings. Therefore, any speech must itself be ordered and in proper proportion. So Socrates clearly states that

every discourse must be organised, like a living being, with a body of its own, as it were, so as not to be headless or footless, but to have a middle and members, composed in fitting relation to each other and to the whole.

(Plato, *Phaedrus*, 264c)

The protocol of ordering and arranging is a process of dialectic, of dividing and collecting things by classes, trying not to break up any part 'after the manner of a bad carver',⁶⁷ and these processes of division and bringing together are regarded by Socrates as 'aids to speech and thought' by which one can be led to the truth.⁶⁸ He also claims that a speech must be in right proportion to its subject matter and that the rhetorician must know the

proportions of his art, just as the musician is aware of the harmony which is contained in the proportions of the notes which lie between the highest and the lowest.⁶⁹ Finally, it is conviction in the truth, which is, of course, coterminous with the path of the Good, which is the ultimate *telos* of the art of rhetoric.⁷⁰

It is now possible to delineate the similarities between the art of rhetoric as described by Socrates in the *Phaedrus* and the triumph of the Demiurge in persuading the realm of necessity to yield an ordered and rational universe. Like the rhetorician in the *Phaedrus*, the Demiurge works with, and not against, the materials to hand: there is no arbitrary imposition of a will alien to the cosmos or the hearer of a speech. Socrates claims that the deliverer of any speech must know both the subject matter at hand and the souls to which the speech is addressed so that all might be in harmonic proportion. Likewise, the intelligence which persuades necessity into order is aware of the possibilities within this realm as a craftsman is aware of the possible forms which his materials might possess. It is motion, however, which forms a crucial link between the creative and persuasive arts in the *Phaedrus* and *Timaeus*. As was stated above, Plato claims, through the second speech of Socrates, that the soul may rise on its wings to sit on the outer regions of the heavens, making the rotation of the World Soul its own and thus being in such ordered and perfect motion (one might almost describe this as a 'motionless motion')⁷¹ that a contemplation of the eternal realm of the Forms is then possible without the distractions of wandering change. Similarly, once Plato has described the formation of the World Soul and the nature of its priority over body in the *Timaeus*,⁷² he then begins to describe how the Demiurge persuades the realm of necessity away from chance wanderings to assume, in differing intensities, the perfect motion of the World Soul as its own.⁷³ Yet the intelligence which persuades the realm of necessity and the speech which persuades the soul towards truth begin to be eclipsed by the brilliant light of the Good which is their common end. The goal of the persuasive activity of the Demiurge is not the Demiurge himself; rather, it is the deepening participation in the Good through ordered motion. The same is true of the goal of the rhetorician in the *Phaedrus*. Whereas for Phaedrus and Lysias the goal of speech writing was the praise of the writer,⁷⁴ the goal for Socrates is the praise of the divine truth, expressed, for example, in the hymn to Love at the end of the second speech, and the drawing of the soul toward the Good. Just as a sculptor 'persuades' a sculpture to emerge from a block of marble, so too the Socratic dialectic and the essentially dialectical process of bringing order from the realm of necessity draw out what is latent within the materials to hand. Meanwhile, both the rhetorician and the craftsman fade before the new beauty which emerges from the dialectical motion of persuasion.

This dialectic of persuasion is also latent within the second part of what was intended – along with the *Timaeus* and a putative third treatise – to be a trilogy. That second treatise, the unfinished *Critias*, begins to describe human history, and particularly the formation and government of the mythical city

of Atlantis. Through the character of Critias, Plato describes how, 9,000 years earlier, the gods had divided up the earth into kingdoms, 'not according to the results of strife' but by the acceptance of the just allocation of land. The gods looked after the inhabitants of each land not by using any physical means of control, but rather 'they directed from the stern where the living creature is easiest to turn about, laying hold on the soul by persuasion, as by a rudder, according to their own disposition'.⁷⁵

The land of Atlantis came to Poseidon. Critias tells of how Poseidon fathered five sets of male twins by Cleito, the daughter of two inhabitants of Atlantis. These ten were to become the kings of the regions of the island. Critias goes on to describe the city and buildings of Atlantis. These take a form and proportion that is reminiscent of the formation of the World Soul and cosmos by the Demiurge in the *Timaeus*. For example, the capital city of Atlantis is surrounded by a series of concentric rings of canals and land which are formed in strict proportion to each other. These rings of water mediate between the sea and an irrigated plain at the foot of a protective range of mountains upon which food was grown and on whose rivers timber and other goods were transported.⁷⁶ Atlantis is thereby depicted as a realm of co-operation between its constituent parts, both natural and human, which is achieved not by force but by persuasion. This was not, however, a realm of wholly perfect or entirely civil motions. Because of this laws were required, which were exercised with gentleness and wisdom 'in dealing with the changes and chances of life and in their [the regions of Atlantis] dealings with one another'.⁷⁷ These laws thus acted as a means of the perpetual luring of the constituent parts of Atlantis into the movement of friendly co-operation. In addition, the ritual of the pillar made from orichalcum (a mineral peculiar to Atlantis) at the temple of Poseidon in the centre of the capital formed an important part of the balanced and ordered government of the island. This ritual was celebrated every fifth and sixth year around the pillar on which was inscribed the law of Poseidon. The law maintained the harmonious balance between the regions. At this ritual, the ten kings of the regions gathered and 'took counsel about public affairs and gave judgement'.⁷⁸

Through Critias, Plato therefore describes an order of harmonious balance and right motion which results not from force, but from the right use of persuasion through the rhetoric of law and government. It was only when that harmonious balance was upset, 'when the portion of divinity that was within them [the inhabitants] was ... becoming weak through being oftentimes blended with a large measure of mortality' that they 'lost their comeliness'.⁷⁹ In charting the course of human history, Plato describes how the now lost city of Atlantis began to desire its wealth for its own sake and adopt an attitude of lawless ambition. Along with the *Timaeus*, the first part of this trilogy is therefore pointing to what was to be an organic whole in which cosmology, human history and civil government are understood within the ambit of harmony, symmetry and proportion given through persuasion into a right motion, all aimed at drawing the elements of

becoming into a mutual participation of friendship in the beauty of the Good. Thus every aspect of the realm of becoming is understood in terms of its orientation towards its teleological fulfilment.

The pedagogy and ethics of cosmology⁸⁰

Having established the *telos* of the realm of becoming to be a deepening participation in the realm of the Forms, and particularly the Form of the Good, by means of its rhetorical persuasion into ordered motion, one may ask if the cosmological task itself participates in this movement to the *telos*. Or is the *Timaeus*, like so many of its Ionian predecessors and modern successors, an example of mere *curiositas*?

Within the process of the creation of the universe, Plato focuses on the relation of the mind of the Demiurge with the Forms.⁸¹ However, it is not the Demiurge alone who comes to know the Forms. Plato clearly states that 'true belief, we must allow, is shared by all mankind, intelligence only by the gods and a small number of men'.⁸² How may mankind come to share in belief and even intelligence? As was seen above, the World Soul is the vital ontological condition of possibility for man's knowledge of the Forms. More particularly, it is the motion of the World Soul, which is mathematical, symmetrical and rational and which orders the motions throughout the body of the universe, which prevents the 'wanderings' of the mind from taking men into the realm of mere basest opinion. The form and symmetry of the rational motion of the World Soul is particularly manifest to us in the motions of the stars and planets. Plato comments that, 'Sight, then, in my judgement is the cause of the highest benefits to us in that no word of our present discourse about the universe could have been spoken, had we never seen stars, Sun, and sky'.⁸³ Plato goes further to say that the opportunity to investigate the nature of the world is the greatest gift that has ever come to mortal man from heaven. Yet one must do more than merely gaze upon the heavens. It is necessary too that we use sight in order to 'observe the circuit of intelligence in the heaven and profit by them for the revolutions of our own thought, which are akin to them'.⁸⁴ Plato is here recommending the study of astronomy, that is the exercise of intellectual powers in the learning of the mathematical proportions which constitute the music of the heavens, as a means of reproducing within ourselves the unerring motion of the heavenly gods so as to 'reduce to settled order the wandering motions in ourselves'.⁸⁵ However, this study of astronomy is not even an end in itself, for the purpose is to instil in ourselves the motion of reason which is ordered towards a deepening knowledge, and therefore participation, in the Forms and most particularly the Form of the Good.⁸⁶

In seeking this deepening participation in the realm of being, Plato's utmost concern is with the health, and therefore happiness, of the soul. Towards the end of the *Timaeus*, he claims that if man is concerned only with the satisfaction of appetites (one might here include the appetites of

curiosity) and ambitions, his thoughts will be merely mortal and will pass away. However,

if his heart has been set on the love of learning and true wisdom and he has exercised that part of himself above all, he is surely bound to have thoughts immortal and divine, if he shall lay hold upon truth, nor can he fail to possess immortality in the fullest measure that human nature admits ... he must needs be happy above all.

(Plato, *Timaeus*, 90b–c)

One must care for the soul by 'giving it nourishment and motions proper to it'.⁸⁷ These motions, which are akin to the divine aspect in mankind, are those of the thoughts and revolutions of the universe. For Plato, it is by studying these motions that one might correct the motions in the head which were distorted at birth in such a way that man might bring the intelligence into the likeness of that which intelligence discerns and thereby win the fulfilment of the best life set by the gods before mankind.⁸⁸

It might be thought that Plato is claiming that the study of cosmology, and astronomy in particular, is an enterprise exclusively for those who are, or who could become, philosophers. It is by studying the order and rationality of the motions of the World Soul manifest in the heavens with their harmonious and mathematical proportions that such order and rationality is instilled in the human soul. As Plato claims when discussing the motions of the soul in infancy,⁸⁹ it is only by preserving a rational and therefore ordered circular motion of thought that one comes to know anything of the eternal Forms. It is through 'bringing the intelligence into the likeness of that which intelligence discerns'⁹⁰ that one finds fulfilment in the life proposed as the human *telos*. Whereas elsewhere Plato stresses the affinity between the Forms and the human soul, in the *Timaeus* it is seen that mankind finds particular affinity and fulfilment in participating in the motions of the World Soul and the cognitive life of the Demiurge. In this fashion, Plato is maintaining that the realm of the Forms and the light of the Good are mediated by intermediate gods in the guise of the Demiurge, World Soul and heavenly ensouled beings. It is by the imitation of the eternal (which is mediated by the gods) through its regular and rational moving image that one comes to know anything of being and thus find fulfilment.

However, Plato does exhort all people to the study of cosmology and astronomy because of its immediate effect in producing an ordered and therefore more ethical intellect.⁹¹ Although it may not be possible for all to know the Forms, it would be possible to learn of regular and rational motion by some observation and study of the motions of the World Soul seen in the heavens. However, another benefit, namely health, may be obtained by the study of the workings of the cosmos. Plato describes how ill health occurs owing to an imbalance between soul and body and that health can be restored by appropriate care and exercise of each part. He states that

as our body is heated and cooled within by things that enter it, and again is dried and moistened by what is outside, and suffers affections consequent upon disturbances of both these kinds, if a man surrenders his body to these motions in a state of rest, it is overpowered and ruined.

(Plato, *Timaeus*, 88d)

So Plato maintains that one must, in the first instance, imitate the motion of the Receptacle of Becoming so as to shake the parts of the body into some kind of order.⁹² As an aid to more general health, Plato observes that 'of motions the best is that which is produced in oneself by oneself, since it is most akin to the movement of thought in the universe'. So he recommends gymnastic exercise as a means of maintaining and promoting health. This recommendation, rather than emerging from a detailed biology, is made on the basis of what constitutes a proper and orderly motion, that inference being made from a study of the workings of the cosmos.

It has been seen that Plato's cosmology as expounded in the *Timaeus* is fundamentally 'theological' in character. The cosmos is identified as that which participates in and obtains its being from a transcendent source. That participation is achieved through persuasion from necessity and chance to an ordered motion, and more particularly through the acceptance of the motion of the World Soul. The creative dialectic of the Demiurge is alike in character to the art of the rhetorician as expressed in the *Phaedrus*. Both matter and the soul are persuaded to yield a beauty which is already inherent within themselves, and yet this can be achieved only through a participation in the motion of that which is greater, namely that of the World Soul. That motion constitutes time, the 'moving image of eternity', by which the temporal realm of becoming comes to know, in the succession of time, the Forms which are comprehended in total in their eternity. Thus for Plato cosmology cannot be a totalising discourse. The non-identically repetitive nature of time reveals the truth that the universe neither is 'presence' itself, nor is it fully absent. The universe cannot be fully grasped because it is never wholly still. Instead, motion is continuous and there is always more to be bestowed and seen within time's own movement. In addition, the very composition of the World Soul and its rational motion indicates the stability, beauty, symmetry and proportion of the Good. By the study of this motion in astronomy allied to the metaphysical category of music, the *Timaeus* outlines the pedagogical and ethical nature of cosmology. In a sense, therefore, the *Timaeus* is a discourse offering a theological ethics as well as a mere investigation into the workings of the cosmos. Perhaps even more unexpected, however, is that Plato's cosmology also provides a health regime based on the study of motion.

Throughout this treatise, motion is seen to be the subject matter of cosmology, the means of the mediation of the being which resides in the Forms, and the very condition of possibility for human knowledge of the cosmos, a knowledge which will see the realm of becoming in its relation to

the eternal realm of being. Yet the unifying and crucial aspect of this Platonic motion is that it is teleologically orientated towards human fulfilment through a deepening participation in the Forms and particularly the Good. Motion is the means of mediating the Forms to the cosmos; it is the means by which humans may know and therefore imitate and participate in the rational and intelligible; it is therefore the means of the fulfilment in happiness through the right motions of both intellect and body. The *Timaeus* is far from mere curiosity. Through the subject of motion Plato writes a theological, ethical and pedagogical cosmology. Because motion is so central to this treatise it can be seen that the most excellent motion is recommended as the very motion of the human psyche and body, not only the immediate human body but also the body politic. This is seen particularly in the consonance between the principles enunciated in the *Timaeus* and those expressed in the successor work, the *Critias*. In the latter, the same principles of beauty and harmony which characterised the motion and unity of the cosmos also characterise the motion and unity of the political realm. These principles help to explain the course of human history in the descent of Atlantis into a disordered wandering.

The motion which characterises the realm of becoming, therefore, is both beautiful and symmetrical; it is a rational revolution which expresses the harmonic balance of the Good. Thus Platonic cosmology is not an acquisitive exercise which seeks the attainment of facts, after the fashion of an inexorable forward motion towards an indeterminate end. Rather, motion as presented in the *Timaeus* is the perfect synthesis of the ideal 'end' with the embodied means of fulfilment in that end.