DIRECTORATE OF DISTANCE EDUCATION

UNIVERSITY OF NORTH BENGAL

MASTER OF ARTS-PHILOSOPHY
SEMESTER -III

WESTERN METAPHYSICS

CORE-302

BLOCK-2

UNIVERSITY OF NORTH BENGAL

Postal Address:

The Registrar,

University of North Bengal,

Raja Rammohunpur,

P.O.-N.B.U., Dist-Darjeeling,

West Bengal, Pin-734013,

India.

Phone: (O) +91 0353-2776331/2699008

Fax: (0353) 2776313, 2699001

Email: regnbu@sancharnet.in ; regnbu@nbu.ac.in

Wesbsite: www.nbu.ac.in

First Published in 2019

FOREWORD

The Self Learning Material (SLM) is written with the aim of providing simple and organized study content to all the learners. The SLMs are prepared on the framework of being mutually cohesive, internally consistent and structured as per the university's syllabi. It is a humble attempt to give glimpses of the various approaches and dimensions to the topic of study and to kindle the learner's interest to the subject

We have tried to put together information from various sources into this book that has been written in an engaging style with interesting and relevant examples. It introduces you to the insights of subject concepts and theories and presents them in a way that is easy to understand and comprehend.

We always believe in continuous improvement and would periodically update the content in the very interest of the learners. It may be added that despite enormous efforts and coordination, there is every possibility for some omission or inadequacy in few areas or topics, which would definitely be rectified in future.

We hope you enjoy learning from this book and the experience truly enrich your learning and help you to advance in your career and future endeavours.

WESTERN METAPHYSICS

BLOCK-1

BLOCK-2

BLOCK 2 : WESTERN METAPHYSICS

Introduction to the Block

Unit 8 deals with the Causation and the causal condition is identified here by studying contrast cases – contexts where Congress won elections and states where it lost.

Unit 9 deals with the Concept of Space and Philosophy of space and time is the branch of philosophy concerned with the issues surrounding the ontology, epistemology, and character of space and time.

Unit 10 deals with the Concept of Time and Discussions of the nature of time, and of various issues related to time, have always featured prominently in philosophy, but they have been especially important since the beginning of the 20th Century.

Unit 11 deals with the Relation between space and time. Also it deals and Philosophical Controversy over Absolute and Relative Motion.

Unit 12 deals with the concept of Universals and particulars and the introduction of universals is a strategy to explain real-world phenomena like qualitative similarity and resemblance between particulars.

Unit 13 deasl with the Concept of Mind and body in Philosophy. To introduce the students to the complex notion of mind-body relationship and see its significance for our self-understanding.

Unit 14 deals with the concept of Self-knowledge and self-identity and In philosophy, "self-knowledge" standardly refers to knowledge of one's own sensations, thoughts, beliefs, and other mental states.

UNIT 8: CAUSATION

STRUCTURE

8.0 OBJECTIVES

After finishing this unit, we can able to know:

- Causation: causation and regularity
- Causation and Conditionals
- Relata of Causation

8.1 INTRODUCTION

What must a world be like, to host causal relations? When the cue ball knocks the nine balls into the corner pocket, in virtue of what is this case of causation?

Philosophers have, of course, disagreed over all of these questions. In what follows, I shall survey some of the main arguments in the literature.

All scientific inquiry begins with the question ‘why?’ Why does oil float on water? Why do we have earthquakes? Why do famines occur? Why did England industrialise before Germany? Why was India colonised? In one form or another all disciplines ask the question `why?’ History is no

exception. Like other natural and social sciences it too addresses the 'why' interrogative. Even as historians study the past they try to explain why a particular event or phenomenon did or did not occur. They ask, for example, why did the Roman Empire decline? Why did World War I occur? Why did the British transfer power to India in August 1947? Why did Gandhi withdraw the Non-cooperation Movement? The writing of history thus begins with why questions. However, unlike many other social sciences history does not focus upon generalities. It does not explain a category of events but analyzes a specific occurrence. Instead of offering an explanation for why de-colonisation occurs, or why civilisations decline, or why revolutions occur, it examines why the British left India in 1947, why the Minoan population decimated, why the socialist revolution occurred first in Russia. Historians, in other words, explain the occurrence of specific events. In place of treating the event as an instance of a general category it perceives it as, to borrow a phrase from Patrick Gardiner, a unique particular. Consequently it concentrates on those dimensions that are specific to the given event and offers an account that explains fully why the event E happened when it did.

However to assert that cardiac arrest was a necessary condition for the death of the individual we need to show that the absence of cardiac arrest would have meant absence of the effect - death. If death could have occurred due to some other condition – for example, liver failure or hemorrhage, then cardiac arrest may have been a sufficient condition but it cannot be designated as a necessary condition for the occurrence of the event - death of the individual. Since the person could have died due to the presence of other conditions the absence of cardiac arrest would not have prevented the effect. Hence, it cannot be a condition that is necessary for the event under consideration. What is being suggested here is that the relationship of necessity is different from that of sufficiency, and in philosophies of science the cause has been conceived as being both a necessary and a sufficient condition. If the cause is a necessary and sufficient condition, it implies that it is regularly associated with the given effect. That is, it is always present when the

effect E occurs, and always absent when the event E is absent. Constant conjunction is thus an important observable attribute of causation. Further, the causal condition is almost always antecedent to the effect. However, this does not mean that a condition that is regularly observed before the event E takes place is the cause of the latter. Constant conjunction and spatial contiguity are features of a cause-effect linkage but the cause cannot be identified on this basis alone. On a record, songs appear in a specific sequence. However, the song that comes first is not the cause of the one that follows. Likewise, lightning may be regularly observed before we hear a thunder but this does not mean that it is the cause of the latter. It is possible that both lightning and thunder are the visible effects of an altogether different cause. What needs to be underscored here is that regular association is not by itself sufficient for claiming that the condition that is observed first is the cause of that which comes after. To show that something is the cause of an event we need to show that its absence would have implied the absence of the event being explained. Similarly, listing events in the correct sequential order does not also provide an explanation of an event. We may enumerate in the correct time-sequence all that happened on a particular day but that may not offer an explanation of why E happened.

For instance, simple listing of events that happened one-after-another may give us no indication why the concerned person met with an accident or fell ill. We may learn how a particular event occurred – e.g., the correct sequence in which things occurred when the accident took place but it cannot provide an explanation as to why the accident occurred or why the person was fatally injured. Likewise, the historian may place events that occurred from January 1947 to August 1947 in the proper time sequence, but these would not constitute an explanation of why the British left India in 1947. Once again, explanation or answering the question why requires something more then the mere sequencing of events one-after- the-other in the correct order. At the very least it requires that we show that the presence of a particular condition, that may have come before, yielded that effect and that the absence of that condition may have meant non-occurrence of that event. In brief,

identifying the cause is not a matter of placing things one-after another. One needs to locate a condition that was necessary: that is, a condition without which the event may not have occurred.

8.2 CAUSATION: CAUSATION AND REGULARITY

In the natural sciences researchers conduct controlled experiments to determine what the necessary and sufficient condition is. By controlling and manipulating one condition while all others remain exactly the same they determine the impact that the condition has on the effect. If the elimination of condition C results in the absence of E while all else is the same, then C is said to be the cause of E. In the social sciences it is not always possible, or even desirable, to conduct experiments under controlled conditions. For example, if we are analysing the cause of communal violence that occurred in a given region, it is not possible to set up a controlled experiment. Since the event that is being explained has already occurred, the experiment cannot be conducted in its natural setting. The experiment can only be re-created in an artificial or laboratory condition and it is indeed questionable whether we should produce conditions in which individuals inflict physical harm upon each other. In addition to it, there is the difficulty of finding exactly similar groups of individuals whose behaviour is replicable. Given all these considerations, conducting controlled experiments poses innumerable problems in the social sciences, and researchers in these disciplines do not rely on this technique for arriving at causal explanations. Social scientists identify causes by using what John Stuart Mill called the Method of Agreement and the Method of Disagreement or Difference. The Method of Agreement draws an inventory of all those circumstances/conditions that are present whenever the event E occurs. It identifies a condition that is invariably present in all instances where E has occurred. The method of Difference, on the other hand, searches for that condition in terms of which the antecedent circumstances and the phenomenon differ. That is, a condition whose absence translates into the absence of that event. Social scientists combine these two methods to determine what caused E to occur. They pinpoint the cause by studying a

number of positive and negative instances: instances where event of the type E occurred and situations where E did not occur. If in all cases where E occurred condition C was always present and in all cases where E did not occur condition C alone was absent, then C is regarded as the cause of E. To take an example: if the analysis shows that in all instances where factionalism existed Congress lost elections and in all those states where the party was free of factional politics, it won the support of the voters, then it can be said that factionalism was the cause of party losing elections. The causal condition is identified here by studying contrast cases – contexts where Congress won elections and states where it lost. It is of course assumed that the states compared differed only in this one aspect and that all other prevailing conditions were more or less the same. If, for instance, factionalism is found in states where Congress has been loosing successive elections or where opposition parties have been increasing their vote percentage over the years, then factionalism cannot be identified as the cause. Alternately, if the states in which Congress won elections were marked by a high concentration of rural population and there is previously some evidence that these are sections that have supported the Congress in the past, then again one cannot easily conclude that factionalism is the cause of winning elections. And, if the states in which it lost elections were also those that had witnessed a spate of communal violence, then again, the disparity in initial conditions existing in the two kinds of states would prevent one from inferring that factionalism is the causal condition. The Causation existence of one common condition – namely, factionalism within the party - in states where it lost elections and the absence of that one condition in states where it won is not in itself sufficient for claiming that factionalism is the cause of lost electoral support. The election may have been won and lost due to completely different causal conditions. Hence, the crucial factor is that all other conditions in the compared situations must be “at par”. If the compared units differ in significant respects then it is not possible to infer with any degree of certainty what the causal condition is. It follows from the above discussion that in social sciences a cause is identified by studying a number of situations that are similar in terms of their antecedent conditions but different with regard to the outcome or

phenomenon that occur. However, what happens when comparable contexts are not available? What happens when we study and try to explain events are unique? How do we then identify a cause? One option is to say that in all such cases there is no satisfactory way of identifying the causal condition. Indeed several philosophers have, on account of the distinctiveness of the object and purpose of inquiry in history, argued that we abandon the search for causes. The natural sciences, they maintain, are generalising sciences. They aim to discover law-like generalisations. History, by comparison, focuses on that which is unique to the case being analysed. Further, natural sciences seek to gain knowledge with a view to enhancing technological control. Causes are sought not only to explain why something happened but also to predict circumstances in which we might expect similar events to occur and what might be controlled – manipulated or altered – to ensure that the said event does not occur. History, on the other hand, seeks to understand why the event occurred. It tries to make sense of a phenomenon by identifying the meaning that it had in a given historically defined context. Since its aim is to enhance communication and interaction, it is permeated by a different knowledge interest and therefore relies on a different methodological orientation. In place of identifying a condition that causes or produces a given effect it makes sense of the event by treating it as an expression of a specific world-view. It, in other words, explores the link between life, expression and a historical weltanschauung and understands rather than explains a given event. Here it needs to be emphasised that determining the cause of an event that is unique, or a one-time occurrence, poses a serious challenge. Historians, who affirm the relevance and importance of causal form of inquiry, have met this challenge by redefining the idea of cause. In particular they have attempted to dissociate explanation from prediction and argued that the cause refers to a condition that made the crucial difference in a given situation. While the cause was previously associated with the assertion, ‘whenever C also E’, they claim that the identified cause C only explains a given event E rather than all events of the type E. In saying that the cause explains fully why a specific event occurred at a given time and place, they suggest that historians search for a condition that was

necessary under the circumstances. They make, what might be called, singular causal assertions.

Check Your Progress 1

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. What is Causality?

   ……

   ……

   ……

   ……

   …….

8.3 CAUSATION AND CONDITIONALS

Causal counterfactuals e.g., 'if the ignition key had been turned then the car would have started' and causal conditionals e.g., 'if the ignition key was turned then the car started' are understood by thinking about multiple possibilities of different sorts, as shown in six experiments using converging evidence from three different types of measures. Experiments 1a and 1b showed that conditionals that comprise enabling causes, e.g., 'if the ignition key was turned then the car started' primed people to read quickly conjunctions referring to the possibility of the enabler occurring without the outcome, e.g., 'the ignition key was turned and the car did not start'. Experiments 2a and 2b showed that people paraphrased causal conditionals by using causal or temporal connectives (because, when), whereas they paraphrased causal counterfactuals by using subjunctive constructions (had…would have). Experiments 3a and 3b showed that people made different inferences from counterfactuals presented with enabling conditions compared to none. The implications of the results for alternative theories of conditionals are discussed.

Ordinary conditionals

How do people understand and reason from conditionals? In fact, there is as yet no consensus (e.g., Byrne & Johnson-Laird, 2009). One view is that people understand an 'ordinary' or indicative conditional, 'if there is a triangle on the blackboard then there is a circle' (if A then B) by thinking about rules of inference, either abstract (Braine & O'Brien, 1998; Rips, 1994) or domain specific (Fiddick, Cosmides, & Tooby, 2000; Holyoak & Cheng, 1995). Another view is that they understand it by thinking about probabilities: they assume the truth of the antecedent, A, and assess whether B or not-B is more probable (Evans & Over, 2004; see also Oaksford & Chater, 2007). A third view is that they understand it by thinking about possibilities (Johnson-Laird & Byrne, 2002). A principle of truth ensures that they think about only the true possibilities that are consistent with the conditional: a triangle and a circle, no triangle and no circle, and no triangle and a circle; and they do not think about false possibilities that are ruled out by the conditional — a triangle and no circle (Espino & Byrne, 2012; Espino, Santamaria, & Byrne, 2009; Johnson-Laird & Byrne, 2002). Because of the constraints of working memory they also tend to think about few possibilities (Johnson-Laird, Byrne, & Schaeken, 1992), and so they understand the conditional by envisaging initially just a single model, a triangle and a circle (A and B), as Table 1 outlines.

Table 1

The consistent possibilities for indicative and counterfactual conditionals expressing basic content and enabling causal relations; with information on strong and weak causes for comparison.

	Indicative	**Counterfactual**	
	If A then B	***If A had been then B would have been***	
Basic	A and B	A and B	(Conjecture)
	Not-A and not-B	Not-A and not-B	(Presupposed facts)
	Not-A and B	Not-A and B	
Enabler	A and B	A and B	(Conjecture)
	Not-A and not-B	Not-A and not-B	(Presupposed facts)
	A and not-B	A and not-B	
Strong	A and B	A and B	(Conjecture)
Cause	Not-A and not-B	Not-A and not-B	(Presupposed facts)
Weak	A and B	A and B	(Conjecture)
Cause	Not-A and not-B	Not-A and not-B	(Presupposed facts)
	Not-A and B	Not-A and B	

On this account, people can readily make the modus ponens inference (A therefore B) because it matches the initial possibility they have kept in mind. They have more difficulty with the modus tollens inference (not-B therefore not-A) because they must think about some of the other true possibilities, e.g., not-A and not-B, in order to make it. They tend to make the affirmation of the consequent inference (B therefore A), whenever they keep in mind the initial possibility and fail to think of other true possibilities, e.g., not-A and B. They make the denial of the antecedent inference (not-A therefore not-B) when they have thought about some of the alternative possibilities (not-A and not-B) but not others (not-A and B). The interpretation of a basic conditional can be modulated by its content and context (Johnson-Laird & Byrne, 2002), as illustrated by conditionals with causal content, in the next section.

Causal conditionals

How do people understand and reason from causal conditionals? Causal conditionals can refer to different sorts of causes (e.g., Goldvarg & Johnson-Laird, 2001). They can express a strong cause, e.g., heating

water to 100° causes it to boil, which is both necessary and sufficient for the outcome. They can express one of several alternative weak causes, e.g., arson caused the Australian bushfires, or accidental sparks from campfires caused them, any one of which is sufficient but not necessary. Or they can express one of several joint enabling conditions, e.g., arson caused the bushfires, enabled by the presence of dry vegetation, any one of which is necessary but not sufficient.

Alternative views exist about whether causes and enabling relations differ in terms of their meaning or logic, or in terms of characteristics such as normality, conversational relevance, constancy and covariation (e.g., Cheng & Novick, 1992; Einhorn & Hogarth, 1986; Hilton & Erb, 1996; Sloman, 2005; Turnbull & Slugoski, 1988). The interpretation of causality is controversial. One view is that people may think about different possibilities to mentally represent different sorts of causes (e.g., Frosch & Johnson-Laird, 2011; Goldvarg & Johnson-Laird, 2001; Johnson-Laird & Byrne, 1991).

Our focus is on enabling causes, and the possibilities that people consider for enabling causes. Most people consider that the enabling conditional 'if the ignition key was turned then the car started' is consistent with the possibility, the key was turned and the car started (A and B), and with the possibility, the key was not turned and the car did not start (not-A and not-B). But the full interpretation of the causal conditional depends on the retrieval of counterexamples (De Neys, 2011; De Neys et al., 2005; Markovits et al., 2010; see also Geiger & Oberauer, 2007). In this case people appear to think readily about disablers, e.g., the key was turned and the car did not start, perhaps because the battery was dead (A and not-B), that is, they judge the cause to be consistent with a third possibility. They do not tend to think of alternative causes, that is, possibilities consistent with the key not being turned and the car starting anyway. Their interpretation of the conditional as an enabling causal relation rules out as false the possibility that the key was not turned and the car started (not-A and B). People make different inferences from different causal relations because of the availability of counterexamples

(e.g., Byrne, 1989; Byrne, Espino, & Santamaria, 1999). As a result, for an enabling cause, they make the affirmation of the consequent (B therefore A) and denial of the antecedent (not-A therefore not-B) inferences only, and they resist the modus ponens (A therefore B) and modus tollens (not-B therefore not-A) inferences, because they can retrieve a disabler — the battery being flat caused the car not to start (e.g., Cummins, Lubart, Alksnis, & Rist, 1991; De Neys et al., 2005; Markovits & Potvin, 2001).

An enabling cause can be contrasted with other sorts of causes, such as a weak cause. For example, most people judge that a cause such as 'if the apples were ripe then they fell from the tree' is consistent with the possibility, the apples were ripe and they fell from the tree (A and B), and with the possibility, the apples were not ripe and they did not fall from the tree (not-A and not-B). In this case people appear to think readily about counterexamples based on alternative causes, that is, they judge that the cause is consistent with a third possibility, that the apples were not ripe and they fell from the tree anyway, perhaps because of strong winds (not-A and B). They do not tend to think readily of disablers in this case, that is, possibilities consistent with the apples being ripe and not falling from the tree, and so this possibility is ruled out as false. Hence the interpretation of the conditional is as a weak causal relation. For a weak causal relation, they make the modus ponens (A therefore B) and modus tollens (not-B therefore not-A) inferences but they resist the affirmation of the consequent (B therefore A) and denial of the antecedent (not-A therefore not-B) inferences.

For a third sort of causal relation, a strong cause, such as 'if Joe cut his finger then it bled' (A causes B), people tend to think of just two possibilities: he cut his finger and it bled (A and B) and he did not cut his finger and it did not bleed (not-A and not-B), as Table 1 shows. Most people do not tend to think readily of disablers, that is, possibilities consistent with Joe cutting his finger and it not bleeding, and they do not tend to think of alternative causes, that is, possibilities consistent with Joe not cutting his finger and it bleeding — even if such possibilities

exist (e.g., Cummins et al., 1991; De Neys et al., 2005). Hence they come to an interpretation of the causal relation as a strong cause, which rules out as false two possibilities: he cut his finger and it did not bleed (A and not-B) and he did not cut his finger and it bled (not-A and B). As a result, people make all four inferences from a strong cause. Enabling causes tend to be focused on when people create counterfactual conditionals, and so we turn now to a consideration of counterfactuals.

Counterfactual conditionals

Counterfactual conditionals often express causal claims (e.g., Thompson & Byrne, 2002), and the relation between counterfactuals and causal assertions has long been of interest to philosophers and psychologists (e.g., Byrne, 2011; Chisholm, 1946; Hoerl, McCormack, & Beck, 2011). Even with non-causal content, a counterfactual conditional in the subjunctive mood, e.g., 'if there had been a triangle then there would have been a circle' seems to mean something very different from an indicative one, 'if there was a triangle then there was a circle' (Lewis, 1973; Stalnaker, 1968). People tend to judge that someone who uttered the counterfactual meant to convey, there was not a triangle, and there was not a circle (Thompson & Byrne, 2002). When they are given an unexpected memory test after reading the counterfactual, they mistakenly recall there was not a triangle, and there was not a circle (Fillenbaum, 1974). They are primed to read quickly the conjunctions corresponding to there was not a triangle and there was not a circle when they have first read a counterfactual but not when they have read an ordinary conditional (Santamaria, Espino, & Byrne, 2005); whereas they tend to read the conjunction corresponding to there was a triangle and there was a circle equally quickly after a counterfactual and an ordinary conditional.

These results suggest that people tend to think about two possibilities when they understand a counterfactual. They think about the conjecture, a triangle and a circle, and they think about the presupposed facts, no triangle and no circle. From a counterfactual, they readily make the

inferences that require access to the presupposed facts (the modus tollens and denial of the antecedent inferences) as well as the inferences that require access to the conjecture (the modus ponens and affirmation of the consequent inferences) (Byrne & Tasso, 1999; see also Egan, Garcia-Madruga, & Byrne, 2009; Moreno-Rios, Garcia-Madruga, & Byrne, 2008). They do so for counterfactuals with various sorts of content, including causal content and deontic content (Quelhas & Byrne, 2003; Thompson & Byrne, 2002).

Our aim in this paper is to examine the mental representations that people construct of causal conditionals and counterfactuals. The first two experiments (1a and 1b) examine the possibilities that are primed by indicative conditionals that express enabling causal relations. We expect that when participants read an enabling cause, e.g., 'if the ignition key was turned then the car started', they will readily construct not only the possibility, 'the ignition key was turned and the car started' but also the possibility 'the ignition key was turned and the car did not start' and so they will be able to read rapidly conjunctions describing these possibilities. The next two experiments (2a and 2b) compare the paraphrases that participants produce of causal conditionals and counterfactuals, e.g., 'if the ignition key had been turned the car would have started'. We expect that their paraphrases of causal counterfactuals will reflect not only the possibility described in the counterfactual, 'the ignition key was turned and the car started' but also the presupposed facts 'the ignition key was not turned and the car did not start'. The final two experiments (3a and 3b) compare the inferences people make from counterfactual conditionals when enabling conditions are made explicitly available and when they are not. We expect that when a context is provided that explicitly refers to other enabling causes, e.g., 'there is petrol in the car', and alternative causes, e.g. 'the car has a start button', inferences such as modus ponens (A therefore B) and denial of the antecedent (not-A therefore not-B) will be suppressed for counterfactuals.

8.4 RELATA OF CAUSATION

Question: What are the causal relata? When the cue ball knocks the nine ball into the corner pocket, what are the terms of this causal relation? An account of the causal relata should reveal what sort of thing they are, how many of them there are, and what job each does. In short, it should reveal their category, number, and role.

Options: The standard view of the causal relata is that they are of the category of event, and that their number is two, in the roles of cause and effect. So on the standard view, when the cue ball knocks the nine ball into the corner pocket, there is said to be an (actual) event e1 of the cue ball striking the nine ball, and an (actual, distinct) event e2 of the nine ball sinking into the corner pocket, such that e1 is cause and e2 effect. The standard view, in short, holds that the causal relata are a pair of events.

The standard view has, of course, been disputed on all counts. As to category, while the standard view casts the causal relata as events (Davidson 1980a and 1980b, Kim 1973, Lewis 1986b), one also finds considerable support for facts (Bennett 1988, Mellor 1995), and occasional support for such other entities as features (Dretske 1977), tropes (Keith Campbell 1990), states of affairs (Armstrong 1997), situations (Menzies 1989a), and aspects (Paul 2000). Allegiances are further complicated by disagreements over what events, facts, and these other creatures are.

As to number and role, while the standard view numbers the causal relata at two (Davidson 1980b, Mackie 1965, Lewis 1986a), one finds some support for contrastive views featuring three and even four relata (Hitchcock 1996, Woodward 2003, Maslen 2004, Schaffer 2005, Menzies 2007, Northcott 2008, Weslake forthcoming) with the additional term(s) playing the roles of causal alternative and/or effectual difference. One also finds some support for additional relata of a different sort, including descriptions (Anscombe 1975, McDermott 1995), models (Menzies 2004, Halpern and Pearl 2005, Hitchcock 2007a), and/or default states (Menzies 2004, McGrath 2005, Hall 2007, Hitchcock 2007a, Halpern 2008). (In what follows I will reserve "the relata" for

events or facts or whatnot, and use “secondary relata” when I wish to speak of the prospect of descriptions or models or defaults as additional relata. This is purely for expository convenience.)

Category: What is the category of the causal relata? What sort of thing are they? An account of the category of the relata should first determine which characteristics differentiate events from facts from the others, and then identify which characteristics the relata must have.

In practice, there are two main differentiating characteristics that one finds invoked. The first is immanence. Events and the others are generally regarded as immanent, while facts are generally regarded as transcendent. That is, the event of Brutus's stabbing Caesar is something concrete that occurs at a particular spatiotemporal location (the Senate on the Ides of March), while the fact that Brutus stabbed Caesar is something abstract and non-spatiotemporal. The question then arises as to whether causation requires immanent or transcendent relata.

The second main differentiator that one finds invoked is individuation. Events are sometimes (though not always) held to be relatively coarse-grained, while facts and the others are held to be relatively fine. For instance, the event of John's saying “hello” may be reckoned the same as the event of John's saying “hello” loudly, while the fact that John said “hello” is different from the fact that John said “hello” loudly. The question then arises as to whether causation requires coarse or fine relata.

Fortunately, questions of the true metaphysics of events, facts, and the other candidates may be postponed here, and the questions of the immanence and individuation of the causal relata may be addressed directly. Thus the issue of the category of the relata may, in practice, be usefully replaced by two questions: whether the relata are immanent, and how finely they are individuated.

Number and Role: What are the number and role of the causal relata? How many causal relata are there, and what kind of job do they do? An account of the number and role of the relata should first formulate

general determinants of the adicity of relations, and then apply these determinants to causation.

The view that there are two relata is widely assumed but seldom defended. Three main alternatives have been explored involving contrastivity. The first of these alternatives, inspired by van Fraassen's (1980) work on contrastive explanation, takes causal relations to include an effectual difference. On this view causal relations have the form: c causes e rather than e*. The second main alternative, based on Hitchcock's (1993, 1995a, 1996) work on probabilistic causation, takes causal relations to include a causal alternative. On this view causal relations have the form: c rather than c* causes e. The third main alternative, defended by Schaffer (2005), includes both a causal alternative and an effectual difference and so numbers the causal relata at four, yielding the form: c rather than c* causes e rather than e*. The question then arises whether contrasts (for cause and/or effect) help resolve problems and paradoxes.

Three further main alternatives have been explored positing secondary relata. The first of these, inspired by Anscombe's (1975) claim that causation is an intensional relation, takes causation to be relative to descriptions of the primary relata. On this view, causal relations have the form: c causes e relative to D, where D is an ordered pair of descriptions (for c and for e). The second of these alternatives, arising especially from Pearl's (2000) work on causal modeling, treats causation as relative to a certain sort of mathematical representation. On this view, causal relations have the form: c causes e relative to M, where M is an apt causal model of the situation. The third of these alternatives, which has roots in Hart and Honore's (1985) treatment of causation in the law, treats causation as relative to default states, which encode the states that are considered "normal" and "natural," as opposed to the deviant states. The simplest version of this view runs: c causes e relative to N, where N is an ordered pair of natural outcomes (concerning c and e). These views are all compatible. One could for instance hold that causal relations have the form: c causes e relative to D, M, and N. (Indeed one area of active

research concerns the combination of causal modeling with defaults: see Blanchard and Schaffer (forthcoming) for a critical overview.) The question then arises as to whether any secondary relata are needed, or whether they all constitute an objectionable loss of objectivity, or an objectionable departure from the allegedly "obvious binarity" of causation.

Presuppositions: Both the dispute over the category and over the number and role of the causal relata involve presuppositions of uniqueness. As to category, the dispute presupposes that there is a unique category of entity from which all causal relata must be drawn. Yet, it might be argued, ordinary language allows for the relata to be described in eventive (imperfect nominal), factive (perfect nominal), and other forms (Mackie 1974, Vendler 1984, Bennett 1988). Why not take ordinary language at its word, and let a thousand relata bloom?

As to number and role, the dispute presupposes that there is a unique number that is the adicity. Yet, it might be argued again, ordinary language allows for causal attributions with and without causal alternatives or effectual differences (Hitchcock 1996). Why not take ordinary language at its word, and let causation go multigrade?

There are two main arguments in defense of uniqueness, the first of which is that it staves off ambiguity (Menzies 1989a). If there were four choices for two relata, it might seem that there would be 24=16 "causal" relations (and more if there were more choices and/or relata and/or adicities). That said, it is unclear why there couldn't be a single causal relation (univocally denoted by "causation") which allowed different types of relata. The identity relation, for instance, can relate items of any ontological category.

The second argument for uniqueness is that it precludes a mysterious harmony (Mellor 1995). If there were a plurality of event causes and fact causes and the like, some metaphysical harmony would be needed amongst them, for surely they could not conflict. That is, it seems that

the event of the cue ball's striking the nine ball, and the fact that the cue ball struck the nine ball, must have comparable effects. But without a unique underlying causal relation, there would seem to be nothing keeping these effects aligned. That said, perhaps a plurality of causal relations could be harmonized, provided either (i) one were fundamental and the others derivative, or (ii) all were derivative from a common non-causal basis, such as the regularities among the events.

Immanence

Question: Are the causal relata immanent, or transcendent? That is, are they concrete and located in spacetime, or abstract and non-spatiotemporal?

This question is connected to the question of category. If the relata are transcendent, then they are facts. If they are immanent, then they are events, or one of the other candidates such as features, tropes, or situations.

In practice, one finds two main arguments on the question of immanence. First, there is the argument from pushing, which maintains that the relata must be immanent so as to push things around. Second, there is the argument from absences, which maintains that the relata must be transcendent so that absences can figure in causal relations.

Pushing: The main argument for immanence is that only immanent entities can interact. This argument is nicely summarized by one of its opponents, Bennett: “Some people have objected that facts are not the sort of item that can cause anything. A fact is a true proposition (they say); it is not something in the world but is rather something about the world, which makes it categorically wrong for the role of a puller and shover and twister and bender.” (1988, p. 22; see also Hausman 1998) According to the pushing argument, only concrete spatiotemporal entities can be causes and effects.

There are two main responses to the pushing argument, the first of which is to find substitute immanent entities. These substitute immanents serve as pushers, and relate to the causal facts, while still being distinct from them. Bennett, in the immediate continuation of the above quote, recruits objects for just such a purpose: "That rests on the mistaken assumption that causal statements must report relations between shovers and forcers. I grant that facts cannot behave like elbows in the ribs, but we know what items do play that role — namely, elbows. In our world the pushing and shoving and forcing are done by things — elementary particles and aggregates of them — and not by any relata of the causal relation." (1988, p. 22) Mellor (1995) offers a similar response, suggesting facta (the immanent truth-makers for facts) as the immanent basis for fact causation.

The second response to the pushing argument is to charge that it rests on a naive (pre-Humean) conception of causation as requiring some sort of metaphysical push or "oomph". If the causal relation is a mere matter of regularity, why can't the regularities hold between facts?

Absences: The main argument for transcendence is that absences can be involved in causal relations. Absences are said to be transcendent entities. They are nothings, non-occurrences, and hence are not in the world. Thus Mellor says, "For the 'C' and 'E' in a true causal 'E because C' need not assert the existence of particulars. They may deny it… They are negative existential statements, made true by the non-existence of such particulars,…" (1995, p. 132) Here Mellor is arguing that, in the case where rock-climbing Don does not die because he does not fall, Don's non-falling and non-dying are causally related, without there being any events or other immanent entities to relate.

There are two main responses to the absence argument, the first of which is to deny that absences can be causal. In this vein, Armstrong claims: "Omissions and so forth are not part of the real driving force in nature. Every causal situation develops as it does as a result of the presence of positive factors alone." (1999, p. 177; see also Beebee 2004a and Moore

2009) The theorist who denies absence causation may add some conciliatory codicil to the effect that absences stand in cause-like relations. Thus Dowe (2000, 2001) develops an account of ersatz causation (causation*) to explain away our intuitions that absences can be genuinely causal.

The second response to the absence argument is to deny that absences are transcendent. One way to do this would be to accept the existence of negative properties, and think of absences as events in which an object instantiates a negative property. Thus Don's instantiating non-falling at t0 might be counted an immanent event, and a cause of the further immanent event of his instantiating non-dying at t1. A second way to deny that absences are transcendent would be to take absence claims as merely a way to describe occurrences, as Hart and Honore recommend: "The corrective here is to realize that negative statements like 'he did not pull the signal' are ways of describing the world, just as affirmative statements are, but they describe it by contrast not by comparison as affirmative statements do." (1985, p. 38) Thus Don's not falling at t0 may be identified with his clinging to the rock at t0, and Don's not dying at t1 may be identified with his surviving at t1, which events are indeed causally related.

Check Your Progress 2

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. What is a Counterfactual conditional?

   ……
   ……
   ……
   ……
   ……
2. What are the causal relata?

……

……

……

……

……

8.5 LET US SUM UP

Causation is the "causal relationship between the defendant's conduct and end result". In other words, causation provides a means of connecting conduct with a resulting effect, typically an injury. In criminal law, it is defined as the actus reus (an action) from which the specific injury or other effect arose and is combined with mens rea (a state of mind) to comprise the elements of guilt. Causation only applies where a result has been achieved and therefore is immaterial with regard to inchoate offenses.

8.6 KEY WORDS

Casualty: Causality is efficacy, by which one process or state, a cause, contributes to the production of another process or state, an effect, where the cause is partly responsible for the effect, and the effect is partly dependent on the cause.

Causation: Causation is the "causal relationship between the defendant's conduct and end result". In other words, causation provides a means of connecting conduct with a resulting effect, typically an injury. In criminal law, it is defined as the actus reus (an action) from which the specific injury or other effect arose and is combined with mens rea (a state of mind) to comprise the elements of guilt. Causation only applies where a result has been achieved and therefore is immaterial with regard to inchoate offenses.

Relata: Definition of relata. plural of relatum. : a thing or term related : one of a group of related things : correlative specifically : one of the terms to which a logical relation proceeds : the second or one of the succeeding terms of a relation — compare referent sense 2b

8.7 QUESTIONS FOR REVIEW

1. What is Causality?
2. What is a Counterfactual conditional?
3. What are the causal relata?

8.8 SUGGESTED READINGS AND REFERENCES

- Achinstein, Peter, 1975, "Causation, Transparency, and Emphasis," Canadian Journal of Philosophy, 5: 1–23.
- ——, 1983, The Nature of Explanation, Oxford: Oxford University Press.
- Albert, David, 2000, Time and Chance, Cambridge, MA: Harvard University Press.
- Anscombe, G. E. M., 1975, "Causality and Determination," in E. Sosa (ed.), Causation and Conditionals, Oxford: Oxford University Press, pp. 63–81.
- Armstrong, D. M., 1997, A World of States of Affairs, Cambridge: Cambridge University Press.
- ——, 1999, "The Open Door," in H. Sankey (ed.), Causation and Laws of Nature, Dordrecht: Kluwer Academic Publishers, pp. 175–85.
- ——, 2004, "Going through the Open Door Again: Counterfactual versus Singularist Theories of Causation," in J. Collins, N. Hall, and L. A. Paul (eds.), Causation and Counterfactuals, Cambridge, MA: The MIT Press, pp. 445–57.
- Aronson, Jerrold, 1971, "On the Grammar of 'Cause'," Synthese, 22: 414–30.
- Beauchamp, Tom and Alex Rosenberg, 1981, Hume and the Problem of Causation, Oxford: Oxford University Press.

Notes

- Beebee, Helen, 2004a, "Causing and Nothingness," in J. Collins, N. Hall, and L. A. Paul (eds.), Causation and Counterfactuals, Cambridge, MA: The MIT Press, pp. 291–308.
- ——, 2004b, "Chance-changing Causal Processes," in P. Dowe and P. Noordhof (eds.), Cause and Chance: Causation in an Indeterministic World, London: Routledge, pp. 39–57.
- Bennett, Jonathan, 1988, Events and their Names, Indianapolis: Hackett Publishers.
- Black, Max, 1956, "Why Cannot an Effect Precede its Cause," Analysis, 16: 49–58.
- Blanchard, Thomas and Jonathan Schaffer, forthcoming, "Cause without Default," in H. Beebee, C. Hitchcock, and H. Price (eds.), Making a Difference, Oxford: Oxford University Press.
- Brand, Myles, 1980, "Simultaneous Causation," in P. van Inwagen (ed.), Time and Cause: Essays Presented to Richard Taylor, Dordrecht, D. Reidel Publishing, pp. 137–53.
- Campbell, Keith, 1990, Abstract Particulars, Oxford: Basil Blackwell.
- Carroll, John, 1994, Laws of Nature, Cambridge: Cambridge University Press.
- Cartwright, Nancy, 1983, How the Laws of Physics Lie, Oxford: Clarendon Press.
- Castañeda, Hector-Neri, 1984, "Causes, Causity, and Energy," in P. French, T. Uehling, Jr., and H. Wettstein (eds.), Midwest Studies in Philosophy (Volume IX), Minneapolis: University of Minnesota Press, pp. 17–27.
- Coady, David, 2004, "Preempting Preemption," in J. Collins, N. Hall, and L. A. Paul (eds.), Causation and Counterfactuals, Cambridge, MA: The MIT Press, pp. 325–40.
- Collingwood, R. G., 1940, An Essay on Metaphysics, Oxford: Clarendon Press.
- Collins, John, 2000, "Preemptive Prevention," Journal of Philosophy, 97: 223–34.
- Collins, John, Ned Hall, and L. A. Paul, 2004, "Counterfactuals and Causation: History, Problems, and Prospects," in J. Collins,

N. Hall, and L. A. Paul (eds.), Causation and Counterfactuals, Cambridge, MA: The MIT Press, pp. 1–58.

- Davidson, Donald, 1980a, "Actions, Reasons, and Causes," orig. 1963, in Essays on Actions and Events, Oxford: Clarendon Press, pp. 3–19.
- ——, 1980b, "Causal Relations," orig. 1967, in Essays on Actions and Events, Oxford: Clarendon Press, pp. 149–62.

8.9 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. Even though the event is taken to be a unique particular, historians nevertheless endeavor to explain its occurrence. The analysis of an event as a particular does not undermine either the effectiveness of the offered explanation or its claim to represent the truth. Like other social scientists, historians offer a complete explanation of the phenomenon under consideration, and they do this by determining what caused that event to occur. Search for causes is thus central to historical analysis. Up until the eighteenth century philosophers and historians commonly believed that the cause must be an antecedent event - one that occurred prior to the event that is being explained; and that the antecedent event must be regularly associated with the effect. However, following upon the work of John S. Mill, the cause is no longer identified as an event that occurs before. Rather it is conceived as a condition or a set of conditions that are always present when the event E occurs, and always absent when E does not occur The cause, in other words, is a condition that is both necessary and sufficient for bringing 18 about the given event E. It is said to be necessary because its absence implies the absence of the effect E, and it is sufficient because its presence yields the given result E. If a study shows that individuals with Vitamin A

deficiency suffered from night-blindness, and in all those individuals where Vitamin A was present in sufficient measure, night blindness did not occur, then all else being the same, we can say that deficiency of Vitamin A is the cause of night- blindness. We can designate Vitamin A as the cause because its absence meant night-blindness and its presence meant the absence of the effect – namely, night-blindness. Three points need to be emphasized here.

- First, the relationship of necessity is significantly different from that of sufficiency.

- Second, the cause is considered to be a condition that is both necessary and sufficient; and

- Third, constant conjunction is not an adequate indicator of a causal relationship. If in a given instance cardiac arrest leads to the death of a person, we may say that heart failure was a condition that was sufficient for producing the effect – namely, the death of a person.

Answers to Check your progress 2

1. Counterfactual conditionals often express causal claims (e.g., Thompson & Byrne, 2002), and the relation between counterfactuals and causal assertions has long been of interest to philosophers and psychologists (e.g., Byrne, 2011; Chisholm, 1946; Hoerl, McCormack, & Beck, 2011). Even with non-causal content, a counterfactual conditional in the subjunctive mood, e.g., 'if there had been a triangle then there would have been a circle' seems to mean something very different from an indicative one, 'if there was a triangle then there was a circle' (Lewis, 1973; Stalnaker, 1968). People tend to judge that someone who uttered the counterfactual meant to convey, there was not a triangle, and

there was not a circle (Thompson & Byrne, 2002). When they are given an unexpected memory test after reading the counterfactual, they mistakenly recall there was not a triangle, and there was not a circle (Fillenbaum, 1974). They are primed to read quickly the conjunctions corresponding to there was not a triangle and there was not a circle when they have first read a counterfactual but not when they have read an ordinary conditional (Santamaria, Espino, & Byrne, 2005); whereas they tend to read the conjunction corresponding to there was a triangle and there was a circle equally quickly after a counterfactual and an ordinary conditional.

2. When the cue ball knocks the nine ball into the corner pocket, what are the terms of this causal relation? An account of the causal relata should reveal what sort of thing they are, how many of them there are, and what job each does. In short, it should reveal their category, number, and role.

UNIT 9: SPACE

STRUCTURE

9.0 OBJECTIVES

After finishing this we can able to know:

- To know about the concept of Space
- To discuss the nature and dimensions of Space
- To discuss the Space Theories.
- To discuss about the Absolute and relational.
- To understand the Appearance or reality.

9.1 INTRODUCTION

Philosophy of space and time is the branch of philosophy concerned with the issues surrounding the ontology, epistemology, and character of space and time. While such ideas have been central to philosophy from its inception, the philosophy of space and time was both an inspiration for and a central aspect of early analytic philosophy. The subject focuses on a number of basic issues, including whether time and space exist

independently of the mind, whether they exist independently of one another, what accounts for time's apparently unidirectional flow, whether times other than the present moment exist, and questions about the nature of identity (particularly the nature of identity over time).

Since antiquity, natural philosophers have struggled to comprehend the nature of three tightly interconnected concepts: space, time, and motion. A proper understanding of motion, in particular, has been seen to be crucial for deciding questions about the natures of space and time, and their interconnections. Since the time of Newton and Leibniz, philosophers' struggles to comprehend these concepts have often appeared to take the form of a dispute between absolute conceptions of space, time and motion, and relational conceptions. This article guides the reader through some of the history of these philosophical struggles. Rather than taking sides in the (alleged) ongoing debates, or reproducing the standard dialectic recounted in most introductory texts, we have chosen to scrutinize carefully the history of the thinking of the canonical participants in these debates — principally Descartes, Newton, Leibniz, Mach and Einstein. Readers interested in following up either the historical questions or current debates about the natures of space, time and motion will find ample links and references scattered through the discussion.

Things change. A platitude perhaps, but still a crucial feature of the world, and one which causes many philosophical perplexities — sees for instance the entry on Zeno's Paradoxes. For Aristotle, motion (he would have called it ‘locomotion’) was just one kind of change, like generation, growth, decay, and fabrication and so on. The atomists held on the contrary that all change was in reality the motion of atoms into new configurations, an idea that was not to begin to realize its full potential until the Seventeenth Century, particularly in the work of Descartes. (Of course, modern physics seems to show that the physical state of a system goes well beyond the geometrical configuration of bodies. Fields, while perhaps determined by the states of bodies, are not themselves

configurations of bodies if interpreted literally, and in quantum mechanics bodies have ‘internal states’ such as particle spin.)

Not all changes seem to be merely the (loco) motions of bodies in physical space. Yet since antiquity, in the western tradition, this kind of motion has been absolutely central to the understanding of change. And since motion is a crucial concept in physical theories, one is forced to address the question of what exactly it is. The question might seem trivial, for surely what is usually meant by saying that something is moving is that it is moving relative to something, often tacitly understood between speakers. For instance: the car is moving at 60mph (relative to the road and things along it), the plane is flying (relative) to London, the rocket is lifting off (the ground), or the passenger is moving (to the front of the speeding train). Typically the relative reference body is either the surroundings of the speakers, or the Earth, but this is not always the case. For instance, it seems to make sense to ask whether the Earth rotates about its axis West-East diurnally or whether it is instead the heavens that rotate East-West; but if all motions are to be reckoned relative to the Earth, then its rotation seems impossible. But if the Earth does not offer a unique frame of reference for the description of motion, then we may wonder whether any arbitrary object can be used for the definition of motions: are all such motions on a par, none privileged over any other? It is unclear whether anyone has really, consistently espoused this view: Aristotle, perhaps, in the Metaphysics; Descartes and Leibniz are often thought to have but, as we'll see, those claims are suspect; possibly Huygens, though his remarks remain cryptic; Mach at some moments perhaps. If this view were correct, then the question of whether the Earth or heavens rotate would be ill-formed, those alternatives being merely different but equivalent expressions of the facts.

But suppose, like Aristotle, you take ordinary language accurately to reflect the structure of the world. Then you could recognize systematic everyday uses of ‘up’ and ‘down’ that require some privileged standards — uses that treat things closer to a point at the center of the Earth as more ‘down’ and motions towards that point as ‘downwards’. Of course

we would likely explain this usage in terms of the fact that we and our language evolved in a very noticeable gravitational field directed towards the center of the Earth, but for Aristotle, as we shall see, this usage helped identify an important structural feature of the universe, which itself was required for the explanation of weight. Now a further question arises: how should a structure, such as a preferred point in the universe, which privileges certain motions, be understood? What makes that point privileged? One might expect that Aristotle simply identified it with the center of the Earth, and so relative to that particular body; but in fact he did not adopt that tacit convention as fundamental, for he thought it possible for the Earth to move from the 'down' point. Thus the question arises (although Aristotle does not address it explicitly) of whether the preferred point is somewhere picked out in some other way by the bodies in the universe —the center of the heavens perhaps? Or is it picked out quite independently of the arrangements of matter?

The issues that arise in this simple theory help frame the debates between later physicists and philosophers concerning the nature of motion; in particular, we will focus on the theories of Descartes, Newton, Leibniz, Mach and Einstein, and their interpretations. But similar issues circulate through the different contexts: is there any kind of privileged sense of motion, a sense in which things can be said to move or not, not just relative to this or that reference body, but 'truly'? If so, can this true motion be analyzed in terms of motions relative to other bodies — to some special body, or to the entire universe perhaps? (And in relativity, in which distances, times and measures of relative motion are frame-dependent, what relations are relevant?) If not, then how is the privileged kind of motion to be understood, as relative to space itself — something physical but non-material — perhaps? Or can some kinds of motion be best understood as not being spatial changes — changes of relative location or of place — at all?

9.2 SPACE: NATURE AND DIMENSIONS

Why is there a "philosophy of space and time"? It seems obvious that any serious study of the nature of space and time, and of our knowledge

of them, must raise questions of metaphysics and epistemology. It also seems obvious that we should expect to gain some insight into those questions from physics, which does take the structure of space and time, both on small and on cosmic scales, as an essential part of its domain. But this has not always seemed so obvious. That physics has an illuminating, even authoritative, perspective on these matters was not automatically conceded by philosophy, as if in recognition of some inherent right. No more did physics simply acquire that authority as a result of its undoubted empirical success. Rather, the authority came to physics because physicists – over several centuries, in concert with mathematicians and philosophers – engaged in a profound philosophical project: to understand how concepts of space and time function in physics, and how these concepts are connected with ordinary spatial and temporal measurement. Indeed, the empirical success of physics was itself made possible, in some part, by the achievements of that philosophical effort, in defining spatio-temporal concepts in empirically meaningful ways, often in defiance of the prevailing philosophical understanding of those concepts. In other words, the physics of space and time has not earned its place in philosophy by suggesting empirical answers to standing philosophical questions about space and time. Instead, it has succeeded in redefining the questions themselves in its own empirical terms. The struggle to articulate these definitions, and to re-assess and revise them in the face of changing empirical circumstances, is the history of the philosophy of space and time from Newton to Einstein. That history is not usually understood in these terms. More commonly, it is identified with the history of the "absolute versus relational" question: are space, time, and motion "absolute" entities that exist in their own right, or are they merely abstracted from observable relations? Without doubt this has been an important question, both for physics and for philosophy and philosophical stances on it have evidently been powerful motivating principles for physical speculation. For that reason it plays a large role in the history that I have to tell. But it is not the entire story, or even the central part. And the tendency to see the history of space-time theories through the lens of this controversy – a

tendency that has prevailed for most of the past century or more – has therefore clouded our view of that history.

The absolute–relational debate is a cherished example of the influence of philosophy on the evolution of physics, for it seems to exhibit fundamental theoretical physics in the aspect of a kind of inductive metaphysics, in which physical arguments are brought in support of metaphysical ideas, and vice versa, in an ongoing philosophical dialectic. But the struggle to define a genuine physics of space and time has involved another sort of dialectic altogether: not between metaphysical positions, but between our theory of space and time, as expressed in the laws of physics, and our evolving knowledge of matter and forces in space and time. The revolutionary changes in conceptions of space and time, such as those brought about by Newton and Einstein, were therefore driven by a kind of conceptual analysis: an analysis of what physics presupposes about space and time, and of how these presuppositions must confront the changes in our empirical knowledge and practice. By overlooking this process of conceptual analysis, we tend to misrepresent the historical discussions of space and time by Newton, Einstein, and others, and the philosophical arguments that they gave; we fail to get a proper sense of the progressive force of those arguments, as central aspects of the scientific argument for theoretical change in the face of empirical discovery. But we do not merely cloud the historical picture. We also obscure the connections between the problems of space and time and some broader issues in the history of philosophy: the nature and function of a-priori presuppositions in science, and the rational motivations for conceptual change in science.

To clear away these obscurities is the purpose of my book. The revival of metaphysical debate on space and time, over the past several decades, must be understood as part of the general reaction against logical positivism in the late twentieth century. The positivist view was that debate had been largely settled by Einstein: clear-sighted philosophers had always grasped the relativity of space, time, and motion on epistemological grounds, and Einstein finally brought their insight to

fruition in a physical theory. From the more recent literature on the absolute–relational controversy, by contrast, we get a more vivid and realistic picture of the interaction between physics and philosophy, especially of the diverse ways in which purely philosophical convictions have motivated some of the most revolutionary work in physics. And we see, moreover, how sometimes the philosophical aims of physicists have been unrealized – how much divergence there has been between the original philosophical motivations behind revolutionary theories, and the content and structure of the theories that were eventually produced. The most familiar example – and the most damning to the positivists' neat picture – is the divergence between Einstein's vision of a theory of "the relativity of all motion" and general relativity itself, which turned out to have similarities with Newton's theory of absolute space that Einstein found philosophically hard to accept. In such cases there can be no doubt of the tremendous heuristic power of the original philosophical ideas, yet they can give rise to theories that seem to contradict them.

9.3 THEORIES

Aristotle

To see that the problem of the interpretation of spatiotemporal quantities as absolute or relative is endemic to almost any kind of mechanics one can imagine, we can look to one of the simplest theories — Aristotle's account of natural motion (e.g., On the Heavens I.2). According to this theory it is because of their natures, and not because of 'unnatural' forces, that that heavy bodies move down, and 'light' things (air and fire) move up; it is their natures, or 'forms', that constitute the gravity or weight of the former and the levity of the latter. This account only makes sense if 'up' and 'down' can be unequivocally determined for each body. According to Aristotle, up and down are fixed by the position of the body in question relative to the center of the universe, a point coincident with the center of the Earth. That is, the theory holds that heavy bodies naturally move towards the center, while light bodies naturally move away.

Does this theory involve absolute or merely relative quantities? It depends on the nature of the center. If the center were identified with the center of the Earth, then the theory could be taken to eschew absolute quantities: it would simply hold that the natural motions of anybody depend on its position relative to another, namely the Earth. But Aristotle is explicit that the center of the universe is not identical with, but merely coincident with the center of the Earth (e.g., On the Heavens II.14): since the Earth itself is heavy, if it were not at the center it would move there! So the center is not identified with anybody, and so perhaps direction-to-center is an absolute quantity in the theory, not understood fundamentally as direction to some body (merely contingently as such if somebody happens to occupy the center). But this conclusion is not clear either. In On the Heavens II.13, admittedly in response to a different issue, Aristotle suggests that the center itself is 'determined' by the outer spherical shell of the universe (the aetherial region of the fixed stars). If this is what he intends, then the natural law prescribes motion relative to another body after all — namely up or down with respect to the mathematical center of the stars.

It would be to push Aristotle's writings too hard to suggest that he was consciously wrestling with the issue of whether mechanics required absolute or relative quantities of motion, but what is clear is that these questions arise in his physics and his remarks impinge on them. His theory also gives a simple model of how they arise: a physical theory of motion will say that 'under such-and-such circumstances, motion of so-and-so a kind will occur' — and the question of whether that kind of motion makes sense in terms of the relations between bodies alone arises automatically. Aristotle may not have recognized the question explicitly, but we see it as one issue in the background of his discussion of the center.

Descartes

The issues are, however, far more explicit in the entry on Descartes' physics; and since the form of his theory is different the 'kinds of

motion' in question are quite different — as they change with all the different theories that we discuss. For Descartes argued in his 1644 Principles of Philosophy (see Book II) that the essence of matter was extension (i.e., size and shape) because any other attribute of bodies could be imagined away without imagining away matter itself. But he also held that extension constitutes the nature of space, hence he concluded that space and matter was one and the same thing. An immediate consequence of the identification is the impossibility of the vacuum; if every region of space is a region of matter, then there can be no space without matter. Thus Descartes' universe is 'hydrodynamical' — completely full of mobile matter of different sized pieces in motion, rather like a bucket full of water and lumps of ice of different sizes, which has been stirred around. Since fundamentally the pieces of matter are nothing but extension, the universe is in fact nothing but a system of geometric bodies in motion without any gaps.

Ancient and medieval views

The earliest recorded Western philosophy of time was expounded by the ancient Egyptian thinker Ptahhotep (c. 2650–2600 BC) who said:

Follow your desire as long as you live, and do not perform more than is ordered, do not lessen the time of following desire, for the wasting of time is an abomination to the spirit...

— 11th maxim of Ptahhotep

The Vedas, the earliest texts on Indian philosophy and Hindu philosophy, dating back to the late 2nd millennium BC, describe ancient Hindu cosmology, in which the universe goes through repeated cycles of creation, destruction, and rebirth, with each cycle lasting 4,320,000 years. Ancient Greek philosophers, including Parmenides and Heraclitus, wrote essays on the nature of time.

Incas regarded space and time as a single concept, named pacha (Quechua: pacha, Aymara: pacha).

Plato, in the Timaeus, identified time with the period of motion of the heavenly bodies, and space as that in which things come to be. Aristotle, in Book IV of his Physics, defined time as the number of changes with respect to before and after, and the place of an object as the innermost motionless boundary of that which surrounds it.

In Book 11 of St. Augustine's Confessions, he ruminates on the nature of time, asking, "What then is time? If no one asks me, I know: if I wish to explain it to one that asketh, I know not." He goes on to comment on the difficulty of thinking about time, pointing out the inaccuracy of common speech: "For but few things are there of which we speak properly; of most things we speak improperly, still the things intended are understood." But Augustine presented the first philosophical argument for the reality of Creation (against Aristotle) in the context of his discussion of time, saying that knowledge of time depends on the knowledge of the movement of things, and therefore time cannot be where there are no creatures to measure its passing (Confessions Book XI ¶30; City of God Book XI ch.6).

In contrast to ancient Greek philosophers who believed that the universe had an infinite past with no beginning, medieval philosophers and theologians developed the concept of the universe having a finite past with a beginning, now known as Temporal finitism. The Christian philosopher John Philoponus presented early arguments, adopted by later Christian philosophers and theologians of the form "argument from the impossibility of the existence of an actual infinite", which states:

"An actual infinite cannot exist."
"An infinite temporal regress of events is an actual infinite."
"∴ An infinite temporal regress of events cannot exist."

In the early 11th century, the Muslim physicist Ibn al-Haytham (Alhacen or Alhazen) discussed space perception and its epistemological implications in his Book of Optics (1021). He also rejected Aristotle's definition of topos (Physics IV) by way of geometric demonstrations and defined place as a mathematical spatial extension. His experimental proof of the intro-mission model of vision led to changes in the understanding of the visual perception of space, contrary to the previous emission theory of vision supported by Euclid and Ptolemy. In "tying the visual perception of space to prior bodily experience, Alhacen unequivocally rejected the intuitiveness of spatial perception and, therefore, the autonomy of vision. Without tangible notions of distance and size for correlation, sight can tell us next to nothing about such things."

Realism and anti-realism

A traditional realist position in ontology is that time and space have existence apart from the human mind. Idealists, by contrast, deny or doubt the existence of objects independent of the mind. Some anti-realists, whose ontological position is that objects outside the mind do exist, nevertheless doubt the independent existence of time and space.

In 1781, Immanuel Kant published the Critique of Pure Reason, one of the most influential works in the history of the philosophy of space and time. He describes time as an a priori notion that, together with other a priori notions such as space, allows us to comprehend sense experience. Kant holds that neither space nor time are substance, entities in them, or learned by experience; he holds, rather, that both are elements of a systematic framework we use to structure our experience. Spatial measurements are used to quantify how far apart objects are, and temporal measurements are used to quantitatively compare the interval between (or duration of) events. Although space and time are held to be transcendentally ideal in this sense, they are also empirically real—that is, not mere illusions.

Some idealist writers, such as J. M. E. McTaggart in The Unreality of Time, have argued that time is an illusion (see also The flow of time, below).

The writers discussed here are for the most part realists in this regard; for instance, Gottfried Leibniz held that his monads existed, at least independently of the mind of the observer.

Check Your Progress 1

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. How do you know about the concept of Space in Philosophical understanding?

   ……
   ……
   ……
   ……
   ……

2. Discuss the nature and dimensions of Space.

   ……
   ……
   ……
   ……
   ……

3. Discuss the Space Theories.

   ……
   ……
   ……
   ……
   ……

9.4 ABSOLUTE AND RELATIONAL

Absolute Space and Motion

In our discussion of Descartes we called the sense of motion operative in the science of mechanics ‘true motion’, and the phrase is used in this way by Newton in the Scholium. Thus Newton's bucket shows that true (rotational) motion is anti-correlated with, and so not identical with, proper motion (as Descartes proposed according to the Garber reading); and Newton further argues that the rate of true (rotational) motion is unique, and so not identical with change of place, which is multiple. Newton proposed instead that true motion is motion relative to a temporally enduring, rigid, 3-dimensional Euclidean space, which he dubbed ‘absolute space’. Of course, Descartes also defined motion as relative to an enduring 3-dimensional Euclidean space; the difference is that Descartes space was divided into parts (his space was identical with a plenum of corpuscles) in motion, not a rigid structure in which (mobile) material bodies are embedded. So according to Newton, the rate of true rotation of the bucket (and water) is the rate at which it rotates relative to absolute space. Or put another way, Newton effectively defines the complete predicate x moves-absolutely as x moves-relative-to absolute space; both Newton and Descartes offer competing complete predicates as analyses of x moves-truly.

Absolute Space vs. Galilean Relativity

Newton's proposal for understanding motion solves the problems that he posed for Descartes, and provides an interpretation of the concepts of constant motion and acceleration that appear in his laws of motion. However, it suffers from two notable interpretational problems, both of which were pressed forcefully by Leibniz (in the Leibniz-Clarke Correspondence, 1715–1716) — which is not to say that Leibniz himself offered a superior account of motion (see below). (Of course, there are other features of Newton's proposal that turned out to be empirically inadequate, and are rejected by in relativity theory: Newton's account violates the relativity of simultaneity and postulates a non-dynamical

spacetime structure.) First, according to this account, absolute velocity is a well-defined quantity: more simply, the absolute speed of a body is the rate of change of its position relative to an arbitrary point of absolute space. But the Galilean relativity of Newton's laws (see the entry on space and time: inertial frames) means that the evolution of a closed system is unaffected by constant changes in velocity; Galileo's experimenter cannot determine from observations inside his cabin whether the boat is at rest in harbor or sailing smoothly. Put another way, according to Newtonian mechanics, in principle Newton's absolute velocity cannot be experimentally determined. So in this regard absolute velocity is quite unlike acceleration (including rotation). Newtonian acceleration is understood in absolute space as the rate of change of absolute velocity, and is, according to Newtonian mechanics, in general measurable; for instance by measuring the height that the water ascends the sides of the bucket. (It is worth noting that Newton was well-aware of these facts; the Galilean relativity of his theory is demonstrated in Corollary V of the laws of the Principia, while Corollary VI shows that acceleration is unobservable if all parts of the system accelerate in parallel at the same rate, as they do in a homogeneous gravitational field.) Leibniz argued (rather inconsistently, as we shall see) that since differences in absolute velocity are unobservable, they are not be genuine differences at all; and hence that Newton's absolute space, whose existence would entail the reality of such differences, must also be a fiction. Few philosophers today would immediately reject a quantity as unreal simply because it was not experimentally determinable, but this fact does justify genuine doubts about the reality of absolute velocity, and hence of absolute space.

The Ontology of Absolute Space

The second problem concerns the nature of absolute space. Newton quite clearly distinguished his account from Descartes' — in particular with regards to absolute space's rigidity versus Descartes' ‘hydrodynamical’ space, and the possibility of the vacuum in absolute space. Thus absolute space is definitely not material. On the other hand, presumably it is

supposed to be part of the physical, not mental, realm. In De Gravitatione, Newton rejected both the traditional philosophical categories of substance and attribute as suitable characterizations. Absolute space is not a substance for it lacks causal powers and does not have a fully independent existence, and yet it is not an attribute since it would exist even in a vacuum, which by definition is a place where there are no bodies in which it might inhere. Newton proposes that space is what we might call a 'pseudo-substance', more like a substance than property, yet not quite a substance. (Note that Samuel Clarke, in his Correspondence with Leibniz, which Newton had some role in composing, advocates the property view, and note further that when Leibniz objects because of the vacuum problem, Clarke suggests that there might be non-material beings in the vacuum in which space might inhere.) In fact, Newton accepted the principle that everything that exists, exists somewhere — i.e., in absolute space. Thus he viewed absolute space as a necessary consequence of the existence of anything, and of God's existence in particular — hence space's ontological dependence. Leibniz was presumably unaware of the unpublished De Gravitatione in which these particular ideas were developed, but as we shall see, his later works are characterized by a robust rejection of any notion of space as a real thing rather than an ideal, purely mental entity. This is a view that attracts even fewer contemporary adherents, but there is something deeply peculiar about a non-material but physical entity, a worry that has influenced many philosophical opponents of absolute space.

Absolute Space in the Twentieth Century

The Spacetime Approach

After the development of relativity (which we will take up below), and its interpretation as a spacetime theory, it was realized that the notion of spacetime had applicability to a range of theories of mechanics, classical as well as relativistic. In particular, there is a spacetime geometry — 'Galilean' or 'neo-Newtonian' spacetime — for Newtonian mechanics that solves the problem of absolute velocity; an idea exploited by a

number of philosophers from the late 1960s (e.g., Earman 1970, Friedman 1983, Sklar 1974 and Stein 1968). For details the reader is referred to the entry on spacetime: inertial frames, but the general idea is that although a spatial distance is well-defined between any two simultaneous points of this spacetime, only the temporal interval is well-defined between non-simultaneous points. Thus things are rather unlike Newton's absolute space, whose points persist through time and maintain their distances: in absolute space the distance between p-now and q-then (where p and q are points) is just the distance between p-now and q-now. However, Galilean spacetime has an 'affine connection' which effectively specifies for every point of every continuous curve, the rate at which the curve is changing from straightness at that point; for instance, the straight lines are picked out as those curves whose rate of change from straightness is zero at every point. (Another way of thinking about this space is as possessing — in addition to a distance between any two simultaneous points and a temporal interval between any points — a three-place relation of colinearity, satisfied by three points just in case they lie on a straight line.)

Since the trajectories of bodies are curves in spacetime, the affine connection determines the rate of change from straightness at every point of every possible trajectory. The straight trajectories thus defined can be interpreted as the trajectories of bodies moving inertially (i.e., without forces), and the rate of change from straightness of any trajectory can be interpreted as the acceleration of a body following that trajectory. That is, Newton's First Law can be given a geometric formulation as 'bodies on which no net forces act follow straight lines in spacetime'; similarly, the Second Law can be formulated as 'the rate of change from straightness of a body's trajectory is equal to the forces acting on the body divided by its mass'. The significance of this geometry is that while acceleration is well-defined, velocity is not — in accord with the empirical determinability of acceleration but not of velocity, according to Newtonian mechanics. (A simple analogy helps see how such a thing is possible: betweenness on a curve, but not 'up' is a well-defined concept in Euclidean space.) Thus Galilean spacetime gives a very nice

interpretation of the choice that nature makes when it decides that the laws of mechanics should be formulated in terms of accelerations not velocities.

Substantivalism

Put another way, we can define the complete predicate x accelerates as trajectory(x) has-non-zero-rate-of-change-from-straightness, where trajectory maps bodies onto their trajectories in Galilean spacetime. And this predicate, defined this way, applies to the water in the bucket if and only if it is rotating, according to Newtonian mechanics formulated in terms of the geometry of Galilean spacetime; it is the mechanically relevant sense of the word in this theory. But this theoretical formulation and definition have been given in terms of the geometry of spacetime, not in terms of the relations between bodies; acceleration is 'absolute' in the sense that there is a preferred (true) sense of acceleration in mechanics and which is not defined in terms of the motions of bodies relative to one another. (Note that this sense of 'absolute' is broader than that of motion relative to absolute space, which we defined earlier. In the remainder of this article we will use it in the broader sense. The reader should be aware that the term is used in many ways in the literature, and such equivocation often leads to significant misunderstandings.) Thus if any of this analysis of motion is taken literally then one arrives at a position regarding the ontology of spacetime rather like that of Newton's regarding space: it is some kind of 'substantial' (or maybe pseudo-substantial) thing with the geometry of Galilean spacetime, just as absolute space possessed Euclidean geometry. This view regarding the ontology of spacetime is usually called 'substantivalism' (Sklar, 1974). The Galilean substantivalist usually sees himself as adopting a more sophisticated geometry than Newton but sharing his substantivalism (though there is room for debate on Newton's exact ontological views; see DiSalle, 2002). The advantage of the more sophisticated geometry is that although it allows the absolute sense of acceleration apparently required by Newtonian mechanics to be defined, it does not allow one to define a similar absolute speed or velocity — x accelerates can be

defined as a complete predicate in terms of the geometry of Galilean spacetime but not x moves in general — and so the first of Leibniz's problems is resolved. Of course we see that the solution depends on a crucial shift from speed and velocity to acceleration as the relevant senses of 'motion': from the rate of change of position to the rate of rate of change.

While this proposal solves the first kind of problem posed by Leibniz, it seems just as vulnerable to the second. While it is true that it involves the rejection of absolute space as Newton conceived it, and with it the need to explicate the nature of an enduring space, the postulation of Galilean spacetime poses the parallel question of the nature of spacetime. Again, it is a physical but non-material something, the points of which may be coincident with material bodies. What kind of thing is it? Could we do without it? As we shall see below, some contemporary philosophers believe so.

Leibniz

There is a 'folk-reading' of Leibniz that one finds either explicitly or implicitly in the philosophy of physics literature which takes account of only some of his remarks on space and motion. The reading underlies vast swathes of the literature: for instance, the quantities captured by Earman's (1999) 'Leibnizian spacetime' do not do justice to Leibniz's view of motion (as Earman acknowledges). But it is perhaps most obvious in introductory texts (e.g., Ray 1991, Huggett 2000 to mention a couple). According to this view, the only quantities of motion are relative quantities, relative velocity, acceleration and so on, and all relative motions are equal, so there is no true sense of motion. However, Leibniz is explicit that other quantities are also 'real', and his mechanics implicitly — but obviously — depends on yet others. The length of this section is a measure, not so much of the importance of Leibniz's actual views, but the importance of showing what the prevalent folk view leaves out regarding Leibniz's views on the metaphysics of motion and interpretation of mechanics. (For further elaboration of the following

points the reader is referred to the entry on Leibniz's philosophy of physics)

That said, we shall also see that no one has yet discovered a fully satisfactory way of reconciling the numerous conflicting things that Leibniz says about motion. Some of these tensions can be put down simply to his changing his mind (see Cover and Hartz 1988 for an explication of how Leibniz's views on space developed). However, we will concentrate on the fairly short period in the mid 1680–90s during which Leibniz developed his theory of mechanics, and was most concerned with its interpretation. We will supplement this discussion with the important remarks that he made in his Correspondence with Samuel Clarke around 30 years later (1715–1716); this discussion is broadly in line with the earlier period, and the intervening period is one in which he turned to other matters, rather than one in which his views on space were dramatically evolving.

Leibniz and Newton

The great debate between defining notions of space and time as real objects themselves (absolute), or mere orderings upon actual objects (relational), began between physicists Isaac Newton (via his spokesman, Samuel Clarke) and Gottfried Leibniz in the papers of the Leibniz–Clarke correspondence.

Arguing against the absolutist position, Leibniz offers a number of thought experiments with the purpose of showing that there is contradiction in assuming the existence of facts such as absolute location and velocity. These arguments trade heavily on two principles central to his philosophy: the principle of sufficient reason and the identity of indiscernibles. The principle of sufficient reason holds that for every fact, there is a reason that is sufficient to explain what and why it is the way it is and not otherwise. The identity of indiscernibles states that if there is no way of telling two entities apart, then they are one and the same thing.

The example Leibniz uses involves two proposed universes situated in absolute space. The only discernible difference between them is that the latter is positioned five feet to the left of the first. The example is only possible if such a thing as absolute space exists. Such a situation, however, is not possible, according to Leibniz, for if it were, a universe's position in absolute space would have no sufficient reason, as it might very well have been anywhere else. Therefore, it contradicts the principle of sufficient reason, and there could exist two distinct universes that were in all ways indiscernible, thus contradicting the identity of indiscernibles.

Standing out in Clarke's (and Newton's) response to Leibniz's arguments is the bucket argument: Water in a bucket, hung from a rope and set to spin, will start with a flat surface. As the water begins to spin in the bucket, the surface of the water will become concave. If the bucket is stopped, the water will continue to spin, and while the spin continues, the surface will remain concave. The concave surface is apparently not the result of the interaction of the bucket and the water, since the surface is flat when the bucket first starts to spin, it becomes concave as the water starts to spin, and it remains concave as the bucket stops.

In this response, Clarke argues for the necessity of the existence of absolute space to account for phenomena like rotation and acceleration that cannot be accounted for on a purely relationalist account. Clarke argues that since the curvature of the water occurs in the rotating bucket as well as in the stationary bucket containing spinning water, it can only be explained by stating that the water is rotating in relation to the presence of some third thing—absolute space.

Leibniz describes a space that exists only as a relation between objects, and which has no existence apart from the existence of those objects. Motion exists only as a relation between those objects. Newtonian space provided the absolute frame of reference within which objects can have motion. In Newton's system, the frame of reference exists independently of the objects contained within it. These objects can be described as

moving in relation to space itself. For almost two centuries, the evidence of a concave water surface held authority.

Mach

Another important figure in this debate is 19th-century physicist Ernst Mach. While he did not deny the existence of phenomena like that seen in the bucket argument, he still denied the absolutist conclusion by offering a different answer as to what the bucket was rotating in relation to: the fixed stars.

Mach suggested that thought experiments like the bucket argument are problematic. If we were to imagine a universe that only contains a bucket, on Newton's account, this bucket could be set to spin relative to absolute space, and the water it contained would form the characteristic concave surface. But in the absence of anything else in the universe, it would be difficult to confirm that the bucket was indeed spinning. It seems equally possible that the surface of the water in the bucket would remain flat.

Mach argued that, in effect, the water experiment in an otherwise empty universe would remain flat. But if another object were introduced into this universe, perhaps a distant star, there would now be something relative to which the bucket could be seen as rotating. The water inside the bucket could possibly have a slight curve. To account for the curve that we observe, an increase in the number of objects in the universe also increases the curvature in the water. Mach argued that the momentum of an object, whether angular or linear, exists as a result of the sum of the effects of other objects in the universe (Mach's Principle).

Einstein

Albert Einstein proposed that the laws of physics should be based on the principle of relativity. This principle holds that the rules of physics must be the same for all observers, regardless of the frame of reference that is

used, and that light propagates at the same speed in all reference frames. This theory was motivated by Maxwell's equations, which show that electromagnetic waves propagate in a vacuum at the speed of light. However, Maxwell's equations give no indication of what this speed is relative to. Prior to Einstein, it was thought that this speed was relative to a fixed medium, called the luminiferous ether. In contrast, the theory of special relativity postulates that light propagates at the speed of light in all inertial frames, and examines the implications of this postulate.

All attempts to measure any speed relative to this ether failed, which can be seen as a confirmation of Einstein's postulate that light propagates at the same speed in all reference frames. Special relativity is a formalization of the principle of relativity that does not contain a privileged inertial frame of reference, such as the luminiferous ether or absolute space, from which Einstein inferred that no such frame exists.

Einstein generalized relativity to frames of reference that were non-inertial. He achieved this by positing the Equivalence Principle, which states that the force felt by an observer in a given gravitational field and that felt by an observer in an accelerating frame of reference are indistinguishable. This led to the conclusion that the mass of an object warps the geometry of the space-time surrounding it, as described in Einstein's field equations.

In classical physics, an inertial reference frame is one in which an object that experiences no forces does not accelerate. In general relativity, an inertial frame of reference is one that is following a geodesic of space-time. An object that moves against a geodesic experiences a force. An object in free fall does not experience a force, because it is following a geodesic. An object standing on the earth, however, will experience a force, as it is being held against the geodesic by the surface of the planet.

Einstein partially advocates Mach's principle in that distant stars explain inertia because they provide the gravitational field against which acceleration and inertia occur. But contrary to Leibniz's account, this

warped space-time is as integral a part of an object as are its other defining characteristics, such as volume and mass. If one holds, contrary to idealist beliefs, that objects exist independently of the mind, it seems that relativistics commits them to also hold that space and temporality have exactly the same type of independent existence.

Conventionalism

The position of conventionalism states that there is no fact of the matter as to the geometry of space and time, but that it is decided by convention. The first proponent of such a view, Henri Poincaré, reacting to the creation of the new non-Euclidean geometry, argued that which geometry applied to a space was decided by convention, since different geometries will describe a set of objects equally well, based on considerations from his sphere-world.

This view was developed and updated to include considerations from relativistic physics by Hans Reichenbach. Reichenbach's conventionalism, applying to space and time, focuses around the idea of coordinative definition.

Coordinative definition has two major features. The first has to do with coordinating units of length with certain physical objects. This is motivated by the fact that we can never directly apprehend length. Instead we must choose some physical object, say the Standard Metre at the Bureau International des Poids et Mesures (International Bureau of Weights and Measures), or the wavelength of cadmium to stand in as our unit of length. The second feature deals with separated objects. Although we can, presumably, directly test the equality of length of two measuring rods when they are next to one another, we cannot find out as much for two rods distant from one another. Even supposing that two rods, whenever brought near to one another are seen to be equal in length, we are not justified in stating that they are always equal in length. This impossibility undermines our ability to decide the equality of length of

two distant objects. Sameness of length, to the contrary, must be set by definition.

Such a use of coordinative definition is in effect, on Reichenbach's conventionalism, in the General Theory of Relativity where light is assumed, i.e. not discovered, to mark out equal distances in equal times. After this setting of coordinative definition, however, the geometry of spacetime is set.

As in the absolutism/relationalism debate, contemporary philosophy is still in disagreement as to the correctness of the conventionalist doctrine.

9.5 APPEARANCE OR REALITY

It would not be an exaggeration to say that the distinction between appearance and reality is, and has always been, one of the principal focal points of philosophy. Although the question relates to intricate relationships among theories of knowledge, ontology, and truth, the chief question raised by the distinction is epistemological: How can people know the nature of reality when all that people have immediate access to are appearances? Broadly speaking, responses to the question fall into one of three classes: Those that argue that observers are unavoidably "cut off" from reality, those that argue that there is some way of "getting at" reality through the appearances, and those that reject the distinction. This article will examine some of the most prominent statements of each position. Surveying these positions will illustrate the way in which any approach to the issue forces a philosopher to take a stand on a wide set of philosophical issues, which explains why the distinction has formed a starting point for many of the greatest philosophical systems in the history of Western philosophy.

Check Your Progress 2

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. Discuss about the Absolute and relational.

   ……
   ……
   ……
   ……
   ……

2. What do you understand the Appearance or reality.

   ……
   ……
   ……
   ……
   ……

9.6 LET US SUM UP

This unit has been concerned with tracing the history and philosophy of 'absolute' and 'relative' theories of space and motion. Along the way we have been at pains to introduce some clear terminology for various different concepts (e.g., 'true' motion, 'substantivalism', 'absolute space'), but what we have not really done is say what the difference between absolute and relative space and motion is: just what is at stake? Recently Rynasiewicz (2000) has argued that there simply are no constant issues running through the history that we have discussed here; that there is no stable meaning for either 'absolute motion' or 'relative motion' (or 'substantival space' vs 'relational space'). While we agree to a certain extent, we think that nevertheless there are a series of issues that have motivated thinkers again and again; indeed, those that we identified in the introduction. (One quick remark: Rynasiewicz is probably right that the issues cannot be expressed in formally precise terms, but that does not mean that there are no looser philosophical affinities that shed useful light on the history.

9.7 KEY WORDS

Space: Philosophy of space and time is the branch of philosophy concerned with the issues surrounding the ontology, epistemology, and character of space and time

Absolute: not qualified or diminished in any way; total.

9.8 QUESTIONS FOR REVIEW

1. How do you know about the concept of Space in Philosophical understanding?
2. Discuss the nature and dimensions of Space
3. Discuss the Space Theories.
4. Discuss about the Absolute and relational.
5. What do you understand the Appearance or reality.

9.9 SUGGESTED READINGS AND REFERENCES

- Albert, David (2000) Time and Chance. Harvard Univ. Press.
- Dainton, Barry (2010) Time and Space, Second Edition. McGill-Queens University Press. ISBN 978-0-7735-3747-7
- Earman, John (1989) World Enough and Space-Time. MIT Press.
- Friedman, Michael (1983) Foundations of Space-Time Theories. Princeton Univ. Press.
- Adolf Grünbaum (1974) Philosophical Problems of Space and Time, 2nd ed. Boston Studies in the Philosophy of Science. Vol XII. D. Reidel Publishing
- Horwich, Paul (1987) Asymmetries in Time. MIT Press.
- Lucas, John Randolph, 1973. A Treatise on Time and Space. London: Methuen.
- Mellor, D.H. (1998) Real Time II. Routledge.
- Laura Mersini-Houghton; Rudy Vaas (eds.) (2012) The Arrows of Time. A Debate in Cosmology. Springer. ISBN 978-3642232589.
- Hans Reichenbach (1958) The Philosophy of Space and Time. Dover
- Hans Reichenbach (1991) The Direction of Time. University of California Press.

- Rochelle, Gerald (1998) Behind Time. Ashgate.
- Lawrence Sklar (1976) Space, Time, and Spacetime. University of California Press.
- Gal-Or, Benjamin "Cosmology, Physics and Philosophy". Springer-Verlag, New York, 1981, 1983, 1987 ISBN 0-387-90581-2
- Ahmad, Manzoor (May 28, 1998). "XV: The Notion of Existence". In Naeem Ahmad; George F McClean (eds.). Philosophy in Pakistan. Department of Philosophy, University of Punjab, Lahore, Punjab Province of Pakistan: Punjab University press. pp. 245–250. ISBN 1-56518-108-5. Retrieved 4 July 2012.
- Bayle, Pierre. (1991, originally 1696) Historical and Critical Dictionary: Selections. R. Popkin and C. Brush (trans. and eds.). Indianapolis: Hackett Publishing. ISBN 087220104X
- Berkeley, George. (1988, originally 1710 and 1713) Principles of Human Knowledge/Three Dialogues. Roger Woolhouse (ed.). London: Penguin Books. ISBN 0192835491
- Descartes, Rene. (1998, originally 1638 and 1641) Discourse on Method and Meditations on First Philosophy. Donald A. Cress (trans.). Indianapolis: Hackett Publishing. ISBN 1420926721
- Kant, Immanuel. (2001, originally 1783) Prolegomena to Any Future Metaphysics. James W. Ellington (trans. and ed.). Indianapolis: Hackett Publishing. ISBN 0198751516
- Long, A. A. and D. N. Sedley. (trans. and eds.). (1987) The Hellenistic Philosophers, Vol. I. Cambridge: Cambridge University Press. ISBN 0521275563
- Plato. (2004, originally around 380 B.C.E.) The Republic, C. D. C. Reeve (trans.). Indianapolis: Hackett Publishing. ISBN 0872207366
- Pryor, James. (2000) "The Skeptic and the Dogmatist." Noûs 34, 517-49.
- Reid, Thomas. (1983, originally 1764, 1785 and 1788) Inquiry and Essays. Ronald E. Beanblossom and Keith Lehrer (eds.). Indianapolis: Hackett Publishing. ISBN 0915145855
- Sokal, Alan. (1996) "Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity," in Social Text,

Spring-Summer 1996. University of Nebraska Press. ISBN 0803279957

- Stroud, Barry. (1984) The Significance of Philosophical Skepticism. Oxford: Oxford University Press. ISBN 0198247613
- Unger, Peter. (1979) Ignorance: A Case for Skepticism. Oxford: Oxford University Press. ISBN 0198244177

9.10 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. Philosophy of space and time is the branch of philosophy concerned with the issues surrounding the ontology, epistemology, and character of space and time. While such ideas have been central to philosophy from its inception, the philosophy of space and time was both an inspiration for and a central aspect of early analytic philosophy. The subject focuses on a number of basic issues, including whether time and space exist independently of the mind, whether they exist independently of one another, what accounts for time's apparently unidirectional flow, whether times other than the present moment exist, and questions about the nature of identity (particularly the nature of identity over time).
2. The most familiar example – and the most damning to the positivists' neat picture – is the divergence between Einstein's vision of a theory of "the relativity of all motion" and general relativity itself, which turned out to have similarities with Newton's theory of absolute space that Einstein found philosophically hard to accept. In such cases there can be no doubt of the tremendous heuristic power of the original philosophical ideas, yet they can give rise to theories that seem to contradict them. See Section 8.2.
3. It would be to push Aristotle's writings too hard to suggest that he was consciously wrestling with the issue of whether mechanics required absolute or relative quantities of motion, but what is

clear is that these questions arise in his physics and his remarks impinge on them. His theory also gives a simple model of how they arise: a physical theory of motion will say that ‘under such-and-such circumstances, motion of so-and-so a kind will occur’ — and the question of whether that kind of motion makes sense in terms of the relations between bodies alone arises automatically. Aristotle may not have recognized the question explicitly, but we see it as one issue in the background of his discussion of the center. See Section 8.3

Answers to Check your progress 2

1. Newton's proposal for understanding motion solves the problems that he posed for Descartes, and provides an interpretation of the concepts of constant motion and acceleration that appear in his laws of motion. However, it suffers from two notable interpretational problems, both of which were pressed forcefully by Leibniz (in the Leibniz-Clarke Correspondence, 1715–1716) — which is not to say that Leibniz himself offered a superior account of motion (see below). (Of course, there are other features of Newton's proposal that turned out to be empirically inadequate, and are rejected by in relativity theory: Newton's account violates the relativity of simultaneity and postulates a non-dynamical spacetime structure.)
2. It would not be an exaggeration to say that the distinction between appearance and reality is, and has always been, one of the principal focal points of philosophy. Although the question relates to intricate relationships among theories of knowledge, ontology, and truth, the chief question raised by the distinction is epistemological

UNIT 10: TIME

STRUCTURE

10.0 OBJECTIVES

After this unit, we can able to know:

- To know about the concept of Time; nature and directions
- To know the Passage of time
- To describe the Theories
- To discuss about Absolute and relational
- To know about the Appearance or reality.

10.1 INTRODUCTION

Discussions of the nature of time, and of various issues related to time, have always featured prominently in philosophy, but they have been especially important since the beginning of the 20th Century. This article contains a brief overview of some of the main topics in the philosophy of time — Fatalism; Reductionism and Platonism with respect to time; the

topology of time; McTaggart's arguments; The A Theory and The B Theory; Presentism, Eternalism, and The Growing Universe Theory; time travel; and the 3D/4D controversy — together with some suggestions for further reading on each topic, and a bibliography.

Note: This entry does not discuss the consciousness, perception, experience, or phenomenology of time. An historical overview and general presentation of the various views is available in the entry on temporal consciousness. Further coverage can be found in the SEP entry on the experience and perception of time. For those interested specifically in phenomenological views.

Fatalism

A good deal of work in the philosophy of time has been produced by people worried about Fatalism, which can be understood as the thesis that whatever will happen in the future is already unavoidable (where to say that an event is unavoidable is to say that no human is able to prevent it from occurring). Here is a typical argument for Fatalism.

(1) There exist now propositions about everything that might happen in the future.

(2) Every proposition is either true or else false.

(3) If (1) and (2), then there exists now a set of true propositions that, taken together, correctly predict everything that will happen in the future.

(4) If there exists now a set of true propositions that, taken together, correctly predict everything that will happen in the future, then whatever will happen in the future is already unavoidable.

∴ (5) Whatever will happen in the future is already unavoidable.

The main objections to arguments like this have been to premises (2) and (4). The rationale for premise (2) is that it appears to be a fundamental principle of semantics, sometimes referred to as The Principle of Bivalence. The rationale for premise (4) is the claim that no one is able to make a true prediction turn out false.

A proper discussion of Fatalism would include a lengthy consideration of premise (4), and that would take us beyond the scope of this article. For our purposes it is important to note that many writers have been motivated by this kind of argument to deny Bivalence. According to this line, there are many propositions — namely, propositions about matters that are both future and contingent — that are neither true nor false right now. Take, for example, the proposition that you will have lunch tomorrow. On this view, that proposition either has no truth value right now, or else has the value indeterminate. When the relevant time comes, and you either have lunch or don't, then, on the view in question, the proposition that you have lunch on the relevant day will come to be either true or false (as the case may be), and from then on that proposition will forever retain its truth value.

The view that Bivalence is false, and that, in particular, there are sometimes propositions about the future that are neither true nor false, is sometimes referred to as the "Open Future" response to arguments for Fatalism. One important presupposition of the Open Future response is that it makes sense to talk about a proposition's having a truth value at a time, and that, moreover, it is possible for a proposition to have different truth values at different times. Thus, the Open Future response to arguments for Fatalism entails the following semantical thesis.

The Tensed View of Semantics:

Propositions have truth values at times rather than just having truth values simpliciter.

The fundamental semantical locution is 'p is v at t' (where the expression in place of 'p' refers to a proposition, the expression in place of 'v' refers to a truth value, and the expression in place of 't' refers to a time).

It is possible for a proposition to have different truth values at different times.

The Tensed View of Semantics can be contrasted with the following semantical view.

The Tenseless View of Semantics:

Propositions have truth values simpliciter rather than having truth values at times.
The fundamental semantical locution is ‘p is v’ (where the expression in place of ‘p’ refers to a proposition and the expression in place of ‘v’ refers to a truth value).
It is not possible for a proposition to have different truth values at different times.
Other views that have (at least sometimes) been associated with the Open Future response to Fatalism include Taking Tense Seriously and The Growing Universe Theory, which will be discussed below.

Suggestions for Further Reading: Aristotle, De Interpretatione, Ch. 9; Besson and Hattiangadi forthcoming; Lewis 1986a; Markosian 1995; McCall 1994; Miller 2005; Sullivan forthcoming; Taylor 1992, Ch. 6; Torre 2011; van Inwagen 1983, Ch. 2.

2. Reductionism and Platonism with Respect to Time

What if one day things everywhere ground to a halt? What if birds froze in mid-flight, people froze in mid-sentence, and planets and subatomic particles alike froze in mid-orbit? What if all change, throughout the entire universe, completely ceased for a period of, say, one year? Is such a thing possible?

If the answer to this last question is Yes — if it is possible for there to be a period of time during which nothing changes, anywhere (except, perhaps, for the pure passage of time itself, if there is such a thing) — then it is possible that a worldwide “freeze” will occur between the time you finish reading this sentence and the time you start the next sentence. In fact, if it's possible for there to be a period of time without change,

then it may well be that a million years have passed since you finished reading the last sentence.

The question of whether there could be time without change has traditionally been thought to be closely tied to the question of whether time exists independently of the events that occur in time. For, the thinking goes, if there could be a period of time without change, then it follows that time could exist without any events to fill it; but if, on the other hand, there could not be a period of time without change, then it must be that time exists only if there are some events to fill it.

Aristotle and others (including, especially, Leibniz) have argued that time does not exist independently of the events that occur in time. This view is typically called either "Reductionism with Respect to Time" or "Relationism with Respect to Time," since according to this view, all talk that appears to be about time can somehow be reduced to talk about temporal relations among things and events. The opposing view, normally referred to either as "Platonism with Respect to Time" or as "Substantivalism with Respect to Time" or as "Absolutism with Respect to Time," has been defended by Plato, Newton, and others. On this view, time is like an empty container into which things and events may be placed; but it is a container that exists independently of what (if anything) is placed in it.

Why would someone endorse the reductionist view about time? Historically, two main arguments have played the biggest roles in convincing people. One is conceptual: time, according to this argument, is by definition nothing more than a system of temporal relations among things and events, so that the idea of a period of time without change turns out to be incoherent. The other main argument for Reductionism is epistemological: we could never have any reason, according to this argument, to posit a period of empty time; and, moreover, even if there were such a period, we would not have any way of knowing about either its existence or its length.

What about Platonism with Respect to Time — why would someone endorse that view? One reason is that the empty container metaphor has a lot of intuitive appeal. (This is no doubt true of both the temporal and spatial versions of Platonism.) And another reason is that some people do not find the main arguments against Platonism with Respect to Time compelling. For example, it has been suggested by Sydney Shoemaker that there are possible circumstances in which it would make perfect sense to posit periods of empty time, and even to claim to know just how long those periods are.

Here is a simplified version of Shoemaker's argument. Consider a small, spatially finite possible world that is divided into three zones, A, B, and C. In Zone A, there is a complete freeze — a cessation of all change — for one hour every 2 years. These local freezes in Zone A are preceded by a short period in which every object in A takes on a reddish glow (observable to the occupants of all three zones), while at the same time a temporary force field develops at the boundary of Zone A, preventing anything from entering or exiting that zone during the freeze. While the freeze in Zone A is taking place, Zone A appears to those in Zones B and C to be pitch black, since no light can enter or exit the frozen zone; but as soon as the local freeze in Zone A is over, the people in the other two zones can again see everything in Zone A, and can in fact see those things resuming their normal behaviors without missing a beat. To those who remain in Zone A for the freeze, it appears that the reddish glowing and the development of the force field are immediately followed, not by any cessation of change, but, instead, by a large number of sudden and discontinuous changes in the other two zones.

Meanwhile, In Zone B there is a similar freeze for one hour every 3 years, and in Zone C there is a freeze for one hour every 5 years. The inhabitants of this strange world quickly become aware of the local freezes, and they have no trouble calculating the “freeze function” for each of the three zones. What's more, they also calculate that there is a global freeze — a period during which each one of the three zones undergoes a local freeze — exactly once every 30 years. Whenever a

global freeze occurs, of course, no one is able to see any frozen objects or blacked-out zones, since everyone and everything is frozen at the same time. But the reddish glowing and the development of temporary force fields that precede each world-wide freeze are observable to everyone; and so the global freeze times come to be celebrated by "empty time parties" all over the world.

No doubt the inhabitants of this unusual world could come up with a theory that explains the local freezes in a way that doesn't posit any empty time. For they could theorize that in Zone A there is a local freeze every two years, except for the 30th year, when there is no freeze; and similarly for the other zones. But such a theory would involve freezing functions that are more complicated than those that entail a global freeze every 30 years.

What is this thought experiment supposed to show? Well, it can't be taken to show that global freezes are possible, because (at least the way the story has been told here) they are simply a stipulated detail of the story, and we can't show that something is possible merely by stipulating that it is the case in some possible world. What the thought experiment does seem to show, however, is that it is possible for rational beings to have at least some evidence for the existence of periods of empty time in their world. For we can describe the possible world of the thought experiment in a neutral way that specifies how things in the world appear to its denizens, without specifying whether the real freeze functions for Zones A, B, and C are the simpler ones described above that entail a global freeze every 30 years or the more complicated ones that do not have that entailment. And a possible world that appears this way to its inhabitants is surely a world in which those inhabitants have some reason to take seriously the possibility that there are periods of empty time in their world, that they know when those periods occur, and even that they know exactly how long the periods of empty time last.

Reductionism with Respect to Time and Platonism with Respect to Time have spatial analogues, and the views about time have traditionally been

taken to stand or fall with their spatial counterparts. Indeed, although there is considerable controversy over the degree to which time is similar to the dimensions of space, the Reductionism vs. Platonism dispute is widely thought to be one area in which the two dimensions are perfectly analogous. (But it is worth noting that if Shoemaker's argument is sound, then this conventional wisdom should perhaps be challenged. For it does not appear that there will be anything like a spatial analogue of that argument.)

Suggestions for Further Reading: Alexander 1956k; Arntzenius 2012; Coope 2001; Newton-Smith 1980; Shoemaker 1969.

3. The Topology of Time

It's natural to think that time can be represented by a line. But a line has a shape. What shape should we give to the line that represents time? This is a question about the topology, or structure, of time.

One natural way to answer our question is to say that time should be represented by a single, straight, non-branching, continuous line that extends without end in each of its two directions. This is the "standard topology" for time. But for each of the features attributed to time in the standard topology, two interesting questions arise: (a) does time in fact have that feature? and (b) if time does have the feature in question, is this a necessary or a contingent fact about time?

Questions about the topology of time appear to be closely connected to the issue of Platonism versus Reductionism with Respect to Time. For if Reductionism is true, then it seems likely that time's topological features will depend on contingent facts about the relations among things and events in the world, whereas if Platonism is true, so that time exists independently of whatever is in time, then time will presumably have its topological properties as a matter of necessity. But even if we assume that Platonism is true, it's not clear just what topological properties should be attributed to time.

Consider the question of whether time should be represented by a line without a beginning. Aristotle has argued (roughly) that time cannot have a beginning on the grounds that in order for time to have a beginning, there must be a first moment of time, but that in order to count as a moment of time, that allegedly first moment would have to come between an earlier period of time and a later period of time, which is inconsistent with its being the first moment of time. (Aristotle argues in the same way that time cannot have an end.)

It is also worth asking whether time must be represented by a single line. Perhaps we should take seriously the possibility of time's consisting of multiple time streams, each one of which is isolated from each other, so that every moment of time stands in temporal relations to other moments in its own time stream, but does not bear any temporal relations to any moment from another time stream. Likewise we can ask whether time could correspond to a branching line, or to a closed loop, or to a discontinuous line. And we can also wonder whether one of the two directions of time is in some way priveleged, in a way that makes time itself asymmetrical.

Suggestions for Further Reading: On the beginning and end of time: Aristotle, Physics, Bk. VIII; Kant, The Critique of Pure Reason, esp. pp. 75ff; Newton-Smith 1980, Ch. V; Swinburne 1966. On the linearity of time: Newton-Smith 1980, Ch. III; Swinburne 1966, 1968. On the direction of time: Price 1994, 1996; Savitt 1995; and Sklar 1974. And finally, on all of these topics: Newton-Smith 1980.

4. McTaggart's Argument

In a famous paper published in 1908, J.M.E. McTaggart argued that there is in fact no such thing as time, and that the appearance of a temporal order to the world is a mere appearance. Other philosophers before and since (including, especially, F.H. Bradley) have argued for the same

conclusion. We will focus here only on McTaggart's argument against the reality of time, which has been by far the most influential.

McTaggart begins his argument by distinguishing two ways in which positions in time can be ordered. First, he says, positions in time can be ordered according to their possession of properties like being two days future, being one day future, being present, being one day past, etc. (These properties are often referred to now as "A properties.") McTaggart calls the series of times ordered by these properties "the A series." But he says that positions in time can also be ordered by two-place relations like two days earlier than, one day earlier than, simultaneous with, etc. (These relations are now often called "B relations.") McTaggart calls the series of times ordered by these relations "the B series."

(An odd but seldom noticed consequence of McTaggart's characterization of the A series and the B series is that, on that characterization, the A series is identical to the B series. For the items that make up the B series (namely, moments of time) are the same items that make up the A series, and the order of the items in the B series is the same as the order of the items in the A series; but there is nothing more to a series than some specific items in a particular order.)

In any case, McTaggart argues that the B series alone does not constitute a proper time series. I.e., McTaggart says that the A series is essential to time. His reason for this is that change (he says) is essential to time, and the B series without the A series does not involve genuine change (since B series positions are forever "fixed," whereas A series positions are constantly changing).

McTaggart also argues that the A series is inherently contradictory. For (he says) the different A properties are incompatible with one another. (No time can be both future and past, for example.) Nevertheless, he insists, each time in the A series must possess all of the different A

properties. (Since a time that is future will be present and past, and so on.)

One response to this argument that McTaggart anticipates involves claiming that it's not true of any time, t, that t is both future and past. Rather, the objection goes, we must say that t was future at some moment of past time and will be past at some moment of future time. But this objection fails, according to McTaggart, because the additional times that are invoked in order to explain t's possession of the incompatible A properties must themselves possess all of the same A properties (as must any further times invoked on account of these additional times, and so on ad infinitum). Thus, according to McTaggart, we never resolve the original contradiction inherent in the A series, but, instead, merely generate an infinite regress of more and more contradictions.

Since, according to McTaggart, the supposition that there is an A series leads to contradiction, and since (he says) there can be no time without an A series, McTaggart concludes that time itself, including both the A series and the B series, is unreal.

Philosophers like McTaggart who claim that time is unreal are aware of the seemingly paradoxical nature of their claim. They generally take the line that all appearances suggesting that there is a temporal order to things are somehow illusory.

Suggestions for Further Reading: Bradley 1893; Dyke 2002; McTaggart 1908; Mellor 1998; Prior 1967, 1968b.

10.2 TIME; NATURE AND DIRECTIONS

Building from a mix of insights from the historical debates of absolutism and conventionalism as well as reflecting on the import of the technical apparatus of the General Theory of Relativity, details as to the structure of space-time have made up a large proportion of discussion within the

philosophy of space and time, as well as the philosophy of physics. The following is a short list of topics.

Relativity of simultaneity

According to special relativity each point in the universe can have a different set of events that compose its present instant. This has been used in the Rietdijk–Putnam argument to demonstrate that relativity predicts a block universe in which events are fixed in four dimensions.

Invariance vs. covariance

Bringing to bear the lessons of the absolutism/relationalism debate with the powerful mathematical tools invented in the 19th and 20th century, Michael Friedman draws a distinction between invariance upon mathematical transformation and covariance upon transformation.

Invariance, or symmetry, applies to objects, i.e. the symmetry group of a space-time theory designates what features of objects are invariant, or absolute, and which are dynamical, or variable.

Covariance applies to formulations of theories, i.e. the covariance group designates in which range of coordinate systems the laws of physics hold.

This distinction can be illustrated by revisiting Leibniz's thought experiment, in which the universe is shifted over five feet. In this example the position of an object is seen not to be a property of that object, i.e. location is not invariant. Similarly, the covariance group for classical mechanics will be any coordinate systems that are obtained from one another by shifts in position as well as other translations allowed by a Galilean transformation.

In the classical case, the invariance, or symmetry, group and the covariance group coincide, but they part ways in relativistic physics. The

symmetry group of the general theory of relativity includes all differentiable transformations, i.e., all properties of an object are dynamical, in other words there are no absolute objects. The formulations of the general theory of relativity, unlike those of classical mechanics, do not share a standard, i.e., there is no single formulation paired with transformations. As such the covariance group of the general theory of relativity is just the covariance group of every theory.

Historical frameworks

A further application of the modern mathematical methods, in league with the idea of invariance and covariance groups, is to try to interpret historical views of space and time in modern, mathematical language.

In these translations, a theory of space and time is seen as a manifold paired with vector spaces, the more vector spaces the more facts there are about objects in that theory. The historical development of spacetime theories is generally seen to start from a position where many facts about objects are incorporated in that theory, and as history progresses, more and more structure is removed.

For example, Aristotelian space and time has both absolute position and special places, such as the center of the cosmos, and the circumference. Newtonian space and time has absolute position and is Galilean invariant, but does not have special positions.

Holes

With the general theory of relativity, the traditional debate between absolutism and relationalism has been shifted to whether spacetime is a substance, since the general theory of relativity largely rules out the existence of, e.g., absolute positions. One powerful argument against spacetime substantivalism, offered by John Earman is known as the "hole argument".

This is a technical mathematical argument but can be paraphrased as follows:

Define a function d as the identity function over all elements over the manifold M, excepting a small neighbourhood H belonging to M. Over H d comes to differ from identity by a smooth function.

With use of this function d we can construct two mathematical models, where the second is generated by applying d to proper elements of the first, such that the two models are identical prior to the time t=0, where t is a time function created by a foliation of spacetime, but differ after t=0.

These considerations show that, since substantivalism allows the construction of holes, that the universe must, on that view, be indeterministic. Which, Earman argues, is a case against substantivalism, as the case between determinism or indeterminism should be a question of physics, not of our commitment to substantivalism.

Direction of time

The problem of the direction of time arises directly from two contradictory facts. Firstly, the fundamental physical laws are time-reversal invariant; if a cinematographic film were taken of any process describable by means of the aforementioned laws and then played backwards, it would still portray a physically possible process. Secondly, our experience of time, at the macroscopic level, is not time-reversal invariant. Glasses can fall and break, but shards of glass cannot reassemble and fly up onto tables. We have memories of the past, and none of the future. We feel we can't change the past but can influence the future.

Causation solution

One solution to this problem takes a metaphysical view, in which the direction of time follows from an asymmetry of causation. We know

more about the past because the elements of the past are causes for the effect that is our perception. We feel we can't affect the past and can affect the future because we can't affect the past and can affect the future.

There are two main objections to this view. First is the problem of distinguishing the cause from the effect in a non-arbitrary way. The use of causation in constructing a temporal ordering could easily become circular. The second problem with this view is its explanatory power. While the causation account, if successful, may account for some time-asymmetric phenomena like perception and action, it does not account for many others.

However, asymmetry of causation can be observed in a non-arbitrary way which is not metaphysical in the case of a human hand dropping a cup of water which smashes into fragments on a hard floor, spilling the liquid. In this order, the causes of the resultant pattern of cup fragments and water spill is easily attributable in terms of the trajectory of the cup, irregularities in its structure, angle of its impact on the floor, etc. However, applying the same event in reverse, it is difficult to explain why the various pieces of the cup should fly up into the human hand and reassemble precisely into the shape of a cup, or why the water should position itself entirely within the cup. The causes of the resultant structure and shape of the cup and the encapsulation of the water by the hand within the cup are not easily attributable, as neither hand nor floor can achieve such formations of the cup or water.

This asymmetry is perceivable on account of two features:

i) the relationship between the agent capacities of the human hand (i.e., what it is and is not capable of and what it is for) and non-animal agency (i.e., what floors are and are not capable of and what they are for) and
ii) that the pieces of cup came to possess exactly the nature and number of those of a cup before assembling.

In short, such asymmetry is attributable to the relationship between

i) temporal direction and
ii) the implications of form and functional capacity.

The application of these ideas of form and functional capacity only dictates temporal direction in relation to complex scenarios involving specific, non-metaphysical agency which is not merely dependent on human perception of time. However, this last observation in itself is not sufficient to invalidate the implications of the example for the progressive nature of time in general.

Thermodynamics solution

The second major family of solutions to this problem, and by far the one that has generated the most literature, finds the existence of the direction of time as relating to the nature of thermodynamics.

The answer from classical thermodynamics states that while our basic physical theory is, in fact, time-reversal symmetric, thermodynamics is not. In particular, the second law of thermodynamics states that the net entropy of a closed system never decreases, and this explains why we often see glass breaking, but not coming back together.

But in statistical mechanics things become more complicated. On one hand, statistical mechanics is far superior to classical thermodynamics, in that thermodynamic behavior, such as glass breaking, can be explained by the fundamental laws of physics paired with a statistical postulate. But statistical mechanics, unlike classical thermodynamics, is time-reversal symmetric. The second law of thermodynamics, as it arises in statistical mechanics, merely states that it is overwhelmingly likely that net entropy will increase, but it is not an absolute law.

Current thermodynamic solutions to the problem of the direction of time aim to find some further fact, or feature of the laws of nature to account for this discrepancy.

Laws solution

A third type of solution to the problem of the direction of time, although much less represented, argues that the laws are not time-reversal symmetric. For example, certain processes in quantum mechanics, relating to the weak nuclear force, are not time-reversible, keeping in mind that when dealing with quantum mechanics time-reversibility comprises a more complex definition. But this type of solution is insufficient because

1) the time-asymmetric phenomena in quantum mechanics are too few to account for the uniformity of macroscopic time-asymmetry and

2) it relies on the assumption that quantum mechanics is the final or correct description of physical processes.

One recent proponent of the laws solution is Tim Maudlin who argues that the fundamental laws of physics are laws of temporal evolution (see Maudlin [2007]). However, elsewhere Maudlin argues: "[the] passage of time is an intrinsic asymmetry in the temporal structure of the world... It is the asymmetry that grounds the distinction between sequences that runs from past to future and sequences which run from future to past" [ibid, 2010 edition, p. 108]. Thus it is arguably difficult to assess whether Maudlin is suggesting that the direction of time is a consequence of the laws or is itself primitive.

Flow of time

The problem of the flow of time, as it has been treated in analytic philosophy, owes its beginning to a paper written by J. M. E. McTaggart, in which he proposes two "temporal series". The first series, which

means to account for our intuitions about temporal becoming, or the moving Now, is called the A-series. The A-series orders events according to their being in the past, present or future, simpliciter and in comparison to each other. The B-series eliminates all reference to the present, and the associated temporal modalities of past and future, and orders all events by the temporal relations earlier than and later than.

McTaggart, in his paper "The Unreality of Time", argues that time is unreal since a) the A-series is inconsistent and b) the B-series alone cannot account for the nature of time as the A-series describes an essential feature of it.

Building from this framework, two camps of solution have been offered. The first, the A-theorist solution, takes becoming as the central feature of time, and tries to construct the B-series from the A-series by offering an account of how B-facts come to be out of A-facts. The second camp, the B-theorist solution, takes as decisive McTaggart's arguments against the A-series and tries to construct the A-series out of the B-series, for example, by temporal indexicals.

10.3 PASSAGE OF TIME

In the context of interpreting Kant’s views concerning space and time, a number of philosophical questions are relevant. Kant himself provides a litany of these questions in his so-called Inaugural Dissertation of 1770, a text in which he broke with his previous broadly “Leibnizian” views from the pre-critical period (Hatfield 2006, 72-6). He writes:

Space is not something objective and real, nor a substance, nor an accident, nor a relation; instead, it is subjective and ideal, and originates from the mind’s nature in accord with a stable law as a scheme, as it were, for coordinating everything sensed externally. (Ak 2: 403)

In this one pithy sentence, we find a list of many important early modern questions concerning space. Is space “real,” or is it “ideal” in some sense? Is it a substance in its own right, a property of some substance, or perhaps neither? Is it somehow dependent on the relations among

objects, or independent of those relations? What is the relationship between space and the mind? And finally, how do these various issues intersect with one another?

The passage from the Inaugural Dissertation hints at five distinct questions or issues concerning space and time. First, there is the question of the ontology of space and time considered within the framework of what Kant would regard as the dogmatic metaphysics of the seventeenth century. This framework might suggest that if space and time are to exist, or to characterize the physical world, they must be considered either substances in their own right, or else properties of some substance. Neither option seems particularly attractive. Space and time seem distinct from substances because they are causally inert, causally inaccessible—their aspects or properties cannot be altered by interacting with any other substance—and imperceptible. Since they are often regarded as infinite, moreover, some thinkers have doubted that they could be substances, as God is often thought of as the sole infinite substance (Descartes may have conceived of space as "indefinite" for this reason). However, it is also difficult to think of space and time as properties of any substance, for then they would presumably be dependent on that substance for their existence. If we regard them as dependent on any contingent substance, it seems that we would be committed to the idea that space and time could fail to exist, or could disappear, depending on the happenings of that contingent substance. One might think instead that space and time depend on the one necessary substance, but this obviously raises a host of other issues. To think of space and time as properties of God is potentially to regard God as spatiotemporal, which is verboten from the point of view of many seventeenth-century thinkers (Janiak 2008, chapter five).

A second topic arises if we consider the ontology of space and time independently from the substance-property metaphysical framework, viz. by considering the relationship of space and time to physical objects. Following Newton's discussion in the first (1687) edition of the Scholium in the Principia, the modern debate concerning space's

ontology has been centered on two overarching conceptions: absolutism (now sometimes called "substantivalism," although that label raises certain issues), the view that space and time exist independently of all possible objects and object relations, or perhaps the view that space-time points exist; and relationalism, the view that space and time depend for their existence on possible objects and relations, or perhaps the view that space-time points do not exist (DiSalle 2006).

Leaving aside questions about ontology, there is a distinct—or at least potentially distinct—issue regarding space and time: what is the origin of our representation of space and of time? This third issue arises from the sense in the early modern period that our idea or representation of space and time must somehow be importantly distinct from our idea or representation of ordinary physical objects. Many believed that space and time are causally inert and therefore imperceptible—how then are we are able to represent space and time at all? Few are willing to deny that we have a representation, not merely of spatial and of temporal objects, but also of space and time themselves, so there is a genuine puzzle lurking here.

The fourth topic follows on the heels of the third: what is the content of our idea or representation of space and time? From Kant's point of view, the content of a representation might provide us with a guide as to its possible origin. Alternatively, we might be able to consider the origin of a representation as providing us with a clue as to what its content might be. In the case of space, there may be reason to think that the content of our representation must somehow reflect what we know about space from Euclidean geometry.

The fifth and final topic is closely connected with the third and fourth, and indeed, connects all four previous topics with one another: what is the relationship between space and time, on the one hand, and the human mind, on the other? This question obviously cries out for clarification. Part of what this question might mean can be characterized by the third and fourth questions above: if we think of the mind as representing space

and time in a certain way, then perhaps this is part of our understanding of the mind's relationship with space and time themselves. But within the context of Kant's work, there is, at least prima facie, another issue lurking here—are space and time somehow dependent upon the mind for their existence? It may be that some kind of dependence is suggested by the origin—or by the content—of our representation of space and time (or perhaps by these two jointly). But Kant also seems to think that a view recognizing the dependence of space and time on the mind might offer advantages in addressing the ontological problems mentioned above.

Each of these five philosophical issues concerning space and time is relevant for understanding Kant's views. As we will see below, part of the difficulty in interpreting Kant arises from the fact that he evidently transforms various aspects of the early modern debates concerning space and time through the perspective presented in the first Critique (Allison 2004, 120-1). Within the context of the first issue raised above, the view that space and time are real may mean that space and time are substances in their own right, rather than merely properties; yet within the context of the absolutism-relationalism debate, if space and time are real, they exist independently of all objects and relations. But Kant uses the terms real and ideal to express views concerning the relation between space and time and the mind, leaving aside any views concerning objects and relations. This entry aims to clarify matters by separating these various considerations.

10.4 THEORIES

The A Theory and The B Theory

Needless to say, despite arguments such as McTaggart's, many philosophers have remained convinced of the reality of time (for it certainly seems like there is a temporal order to the world). But a number of philosophers have been convinced by at least one part of McTaggart's argument, namely, the part about the contradiction inherent in the A series. That is, some philosophers have been persuaded by McTaggart

that the A series is not real, even though they have not gone so far as to deny the reality of time itself. These philosophers accept the view (sometimes called "The B Theory") that the B series is all there is to time. According to The B Theory, there are no genuine, unanalyzable A properties, and all talk that appears to be about A properties is really reducible to talk about B relations. For example, when we say that the year 1900 has the property of being past, all we really mean is that 1900 is earlier than the time at which we are speaking. On this view, there is no sense in which it is true to say that time really passes, and any appearance to the contrary is merely a result of the way we humans happen to perceive the world.

The opponents of The B Theory accept the view (often referred to as "The A Theory") that there are genuine properties such as being two days past, being present, etc.; that facts about these A properties are not in any way reducible to facts about B relations; and that times and events are constantly changing with respect to their A properties (first becoming less and less future, then becoming present, and subsequently becoming more and more past). According to The A Theory, the passage of time is a very real and inexorable feature of the world, and not merely some mind-dependent phenomenon.

(It is worth noting that some discussions of these issues employ terminology that is different from the A series/B series terminology used here. For example, some discussions frame the issue in terms of a question about the reality of tense (roughly, the irreducible possession by times, events, and things of genuine A properties), with A Theorists characterized as those who affirm the reality of tense and B Theorists characterized as those who deny the reality of tense.)

The A Theorist is normally happy to concede McTaggart's claim that there can be no time without an A series, but the typical A Theorist will want to reject the part of McTaggart's argument that says that the A series is inherently contradictory. For the typical A Theorist will deny McTaggart's claim that each time in the A series must possess all of the

different A properties. That is, she will deny that it is true of any time, t, that t is past, present, and future. Instead, she will insist, the closest thing to this that can be true of a time, t, is (for example) that t was future, is present, and will be past, where the verbal tenses of the verb 'to be' in this claim are not to be analyzed away (just as the apparent references to the putative A properties pastness, presentness, and futurity are not to be analyzed away in favor of reference to B relations).

Thus the standard A Theorist's response to McTaggart's argument involves the notion that we must "take tense seriously," in the sense that there is a fundamental distinction between (for example) saying that x is F and saying that x was F. The thesis can be put this way.

Taking Tense Seriously: The verbal tenses of ordinary language (expressions like 'it is the case that', 'it was the case that', and 'it will be the case that') must be taken as primitive and unanalyzable.

In virtue of her commitment to Taking Tense Seriously, the A Theorist will say that no time ever possesses all of the different A properties. Thus, according to the A Theorist, there is no contradiction in the A series — i.e., no contradiction in saying of a time, t, that t was future, is present, and will be past — and, hence, no contradiction to be passed along to the different times at which t was future, is present, and will be past.

In effect, then, the typical A Theorist makes exactly the move in response to McTaggart's argument that McTaggart anticipated, and explicitly rejected. Not surprisingly, then, many supporters of McTaggart's argument feel that the A Theorist's response fails.

Although some B Theorists deny that time really passes as a result of considering McTaggart's argument, many B Theorists have different reasons for saying that time doesn't really pass. Two other arguments against The A Theory (besides McTaggart's argument, that is) have been especially influential. The first of these is an argument from the special

theory of relativity in physics. According to that theory (the argument goes), there is no such thing as absolute simultaneity. But if there is no such thing as absolute simultaneity, then there cannot be objective facts of the form "t is present" or "t is 12 seconds past". Thus, according to this line of argument, there cannot be objective facts about A properties, and so the passage of time cannot be an objective feature of the world.

It looks as if the A Theorist must choose between two possible responses to the argument from relativity: (1) deny the theory of relativity, or (2) deny that the theory of relativity actually entails that there can be no such thing as absolute simultaneity. Option (1) has had its proponents (including Arthur Prior), but in general has not proven to be widely popular. This may be on account of the enormous respect philosophers typically have for leading theories in the empirical sciences. Option (2) seems like a promising approach for A Theorists, but A Theorists who opt for this line are faced with the task of giving some account of just what the theory of relativity does entail with respect to absolute simultaneity. (Perhaps it can be plausibly argued that while relativity entails that it is physically impossible to observe whether two events are absolutely simultaneous, the theory nevertheless has no bearing on whether there is such a phenomenon as absolute simultaneity.)

The second of the two other influential arguments against The A Theory concerns the rate of the alleged passage of time. According to this argument, if it is true to say that time really passes, then it makes sense to ask how fast time passes. But (the argument goes) if it makes sense to ask how fast time passes, then it is possible for there to be a coherent answer to that question. Yet, according to the argument, there is no rate that can be coherently assigned to the passage of time. ("One hour per hour," for example, is said not to be a coherent answer to the question "How fast does time pass?") Thus, the argument concludes, it cannot be true to say that time really passes.

This argument raises important questions concerning the correct way to talk about rates, but it has been argued that the A Theorist can answer

those questions in a way that allows her to avoid any untoward consequences.

Check Your Progress 1

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. Discuss about Presentism, Eternalism, and The Growing Universe Theory.

   ……

   ……

   ……

   ……

   …….

10.5 ABSOLUTE AND RELATIONAL

Absolute/relational vs. real/ideal

Likewise, Leibniz's contention that space is *ideal* (L5: 33) serves as his response to Clarke's claim (C4: 7) that there can be "extramundane" space, that is, space beyond the boundaries of the object-universe. Here, too, the contention that space is ideal—or that it lacks reality—amounts to the contention that it *cannot exist independently of objects*. This is evident in a passage from Leibniz's last letter:

I have demonstrated that space is nothing other than an order of the existence of things observed in their simultaneity. And therefore the fiction of a material finite universe, moving forward in an infinite empty space, cannot be admitted. It is altogether unreasonable and impracticable. For, besides that there is no real space out of the material universe, such an action would be without any design in it: it would be working without doing any thing…It would produce no change which could be observed by any person whatsoever. These are imaginations of philosophers who have incomplete notions, who make of space an absolute reality [réalité absolue] (L 5: 29).

Note that by "real space out of the material universe" Leibniz does not mean space *independent of the mind*, but rather, space *independent of objects*.

This is not to say that there is no discussion of space's status relative to the mind in the correspondence. Leibniz asserts in his last letter that relations are "ideal" because they are neither substances nor accidents, and are therefore not elements of reality (L5: 47). As he writes in the *New Essays*, in reality there are only substances and properties of substances; the mind "adds" relations (*New Essays*, 2.12; cf. also 2.30.4 and 2.25.1). Since space is the order of the possible relations of objects, it is presumably ideal in the sense of being mind-dependent. But Leibniz's point here seems to be that just as people reify relations, thinking they exist independently of objects, they reify space, thinking it too exists independently of objects. So even when Leibniz discusses the ideality of space, he does so to indicate that we need not think of relations and of space as absolute in order to account for the tendency toward reification.

The ideality and reality of space bear a different significance for Kant than they do for Leibniz and Clarke. For Kant, asking whether something is real or ideal concerns its status vis-à-vis the mind. One of Kant's most explicit discussions of realism and idealism appears in the Fourth Paralogism (A368-380), where he is concerned with the possible mind-dependent status of objects and with the status of our knowledge of their existence. Although it is clear that Kant is discussing the status of spatial objects vis-à-vis the mind, *in part by discussing the relation of space and time to the mind*, there is no treatment here of the status of space and time vis-à-vis objects *per se*.

But I understand under the *transcendental idealism* of all appearances the doctrine according to which they are all together to be regarded as mere representations, and not as things in themselves, and accordingly that space and time are only sensible forms of our intuition, but not

determinations given for themselves, or conditions of objects as things in themselves. This idealism is opposed by *transcendental realism*, which considers space and time as something given in themselves (independent of our sensibility). The transcendental realist therefore represents outer appearances (when one grants their reality) as things in themselves, which would exist independently of us and our sensibility, and therefore also would be outside us according to pure concepts of the understanding. (A369)

In light of these points, consider the following table:

Realist relationalism	**Idealist relationalism**
1. Space is the order of possible relations among objects 2. Relations are mind-independent	1. Space is the order of possible relations among objects 2. Relations are mind-dependent
Realist absolutism	**Idealist absolutism {?}**
1. Space is an object-independent framework for object relations 2. Space is mind-independent	1. Space is an object-independent framework for object relations 2. Space is mind-dependent

A realist can be a relationalist if she thinks space is the order of actual and possible relations among actual (and maybe possible) objects and she thinks those relations are *real*. This indicates, incidentally, that realists about space need not think of it as a kind of *object*: it can be perfectly real *and* the order of possible relations among objects. Indeed, Kant himself may have held this view in his *Physical Monadology* of 1755: he still accepted Leibinzian relationalism, but he rejected the Leibnizian construal of relations, holding them to be aspects of reality. Similarly, some contemporary defenders of relationalism seem to hold the view that space is the order of actual and possible relations among actual and possible objects, and those relations are perfectly real, that is, they are not dependent on the mind in any sense.

Absolutism raises other difficulties. It is possible to think of space as an instantaneous framework projected onto reality by the mind. If space is such a mind-dependent framework, it could still be thought of as independent of objects. At any rate, if absolutism indicates that space is independent of all objects and relations, and if that is held to entail that it must be independent of the mind as well, we probably require some clarification of this entailment, for it is not obvious (Ishiguro 1972, 109). In fact, Kant may have defended an absolutist-idealist conception of space in the *Inaugural Dissertation* of 1770 (Friedman 1992, 29-31).

Kant consistently writes in the *Critique* of ideality and reality in the more familiar modern sense, where mind-dependence is at issue. Kant's usage serves to shift the philosophical discussion concerning space from a focus on relationalism and absolutism to one on idealism and realism. Hence when he reflects on the Newtonian and Leibnizian conceptions of space and time in general terms in the Transcendental Aesthetic, he eschews a discussion of the relative merits of absolutism and relationalism in favor of discussing the common mistake of his predecessors. For instance, after outlining his conception of space and time, Kant claims: "Those, however, who assert the absolute reality [*absolute Realität*] of space and time, whether they take it to be subsisting or only inhering, must themselves come into conflict with the principles [*Principien*] of experience" (A39/B56). The former group, also called "the mathematical investigators of nature," is clearly identified with the Newtonians, and the latter, the "metaphysicians of nature," with the Leibnizians (cf. Shabel 2005, 31, 45-9). So transcendental idealism is articulated as a kind of *replacement* for the Leibnizian and Newtonian conceptions of space and time, but it is not their status as relationalist and absolutist conceptions, respectively, that calls for their replacement. Rather, it is their status as representatives of a separate and overarching conception of space, a conception according to which space (like time) is said to bear an "absolute reality." This occurrence of 'absolute' clearly cannot have the meaning that Leibniz and Clarke intend.

This raises a difficult question. Kant contends that transcendental idealism as a general conception of space is to be contrasted with transcendental realism, a position he attributes both to Newton and to Leibniz. Yet from Leibniz's point of view, the only elements of reality are substances and their properties. Relations, which are neither substances nor properties, are not among such elements, if we are speaking with metaphysical rigor. This is evident in a number of texts; for instance, in response to his Lockean interlocutor, Leibniz writes in the *New Essays*: "This division of the objects of our thoughts into substances, modes, and relations is pretty much to my liking. I believe that qualities are nothing but modifications of substances and the understanding adds relations [l'entendement y adjoute les relations]." He adds that relations are "the work of the understanding" (*New Essays*, 145). Since space for Leibniz is just the order of object relations, and relations are ideal, space too is ideal in some sense (*New Essays*, 145; cf. Cassirer 1902, 248). That is to say, there is a sense in which spatiality does not characterize reality (Adams 1994, 254-5). These views are to be found in the letters to Clarke and in the *New Essays*, both of which Kant read, and Kant himself explicitly mentions some of them. The obvious obstacles to understanding Leibniz as a realist complicate the interpretation of transcendental idealism, since Kant clearly thinks it is an alternative to both Leibniz's and Newton's (allegedly realist) views. This problem is tackled in the next section.

10.6 APPEARANCE OR REALITY

Time Travel

We are all familiar with time travel stories, and there are few among us who have not imagined traveling back in time to experience some particular period or meet some notable person from the past. But is time travel even possible?

One question that is relevant here is whether time travel is permitted by the prevailing laws of nature. This is presumably a matter of empirical

science (or perhaps the correct philosophical interpretation of our best theories from the empirical sciences). But a further question, and one that falls squarely under the heading of philosophy, is whether time travel is permitted by the laws of logic and metaphysics. For it has been argued that various absurdities follow from the supposition that time travel is (logically and metaphysically) possible. Here is an example of such an argument.

(1) If you could travel back in time, then you could kill your grandfather before your father was ever conceived. (For what's to stop you from bringing a gun with you and simply shooting him?)
(2) It's not the case that you could kill your grandfather before your father was ever conceived. (Because if you did, then you would ensure that you never existed, and that is not something that you could ensure.)
∴ (3) You cannot travel back in time.
Another argument that might be raised against the possibility of time travel depends on the claim that Presentism is true. For if Presentism is true, then neither past nor future objects exist. And in that case, it is hard to see how anyone could travel to the past or the future.

A third argument, against the possibility of time travel to the past, has to do with the claim that backward causation is impossible. For if there can be no backward causation, then it is not possible that, for example, your pushing the button in your time machine in 2020 can cause your appearance, seemingly out of nowhere, in, say, 1900. And yet it seems that any story about time travel to the past would have to include such backward casuation, or else it would not really be a story about time travel.

Despite the existence of these and other arguments against the possibility of time travel, there may also be problems associated with the claim that time travel is not possible. For one thing, many scientists and philosophers believe that the actual laws of physics are in fact compatible with time travel. And for another thing, as I mentioned at the beginning of this section, we often think about time travel stories; but when we do

so, those thoughts do not have the characteristic, glitchy feeling that is normally associated with considering an impossible story. To get a sense of the relevant glitchy feeling, consider this story: Once upon a time there was a young girl, and two plus two was equal to five. When one tries to consider that literary gem, one mainly has a feeling that something has gone wrong (one immediately wants to respond, "No, it wasn't"), and the source of that feeling seems to be the metaphysical impossibility of the story being told. But nothing like this happens when one considers a story about time travel (if it is one of the logically consistent stories about time travel that is, such as the one depicted in the movie Los Cronocrímenes (Timecrimes)). One task facing the philosopher who claims that time travel is impossible, then, is to explain the existence of a large number of well-known stories that appear to be specifically about time travel, and that do not cause any particular cognitive dissonance.

Check Your Progress 2

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. Discuss about Absolute/relational vs. real/ideal.

   ……
   ……
   ……

2. What is Time Travel?

   ……
   ……
   ……

10.7 LET US SUM UP

It would not be an exaggeration to say that the distinction between appearance and reality is, and has always been, one of the principal focal points of philosophy. Although the question relates to intricate

relationships among theories of knowledge, ontology, and truth, the chief question raised by the distinction is epistemological: How can people know the nature of reality when all that people have immediate access to are appearances? Broadly speaking, responses to the question fall into one of three classes: Those that argue that observers are unavoidably "cut off" from reality, those that argue that there is some way of "getting at" reality through the appearances, and those that reject the distinction. This article will examine some of the most prominent statements of each position. Surveying these positions will illustrate the way in which any approach to the issue forces a philosopher to take a stand on a wide set of philosophical issues, which explains why the distinction has formed a starting point for many of the greatest philosophical systems in the history of Western philosophy.

10.8 KEY WORDS

Eternalism: Eternalism is a philosophical approach to the ontological nature of time, which takes the view that all existence in time is equally real, as opposed to presentism or the growing block universe theory of time, in which at least the future is not the same as any other time.

Universe: The Universe is all of space and time and their contents, including planets, stars, galaxies, and all other forms of matter and energy.

Presentism: uncritical adherence to present-day attitudes, especially the tendency to interpret past events in terms of modern values and concepts.

10.9 QUESTIONS FOR REVIEW

1. Discuss about the Concept of Time?
2. Discuss the Nature of Time concept.
3. Discuss about the A theory and B Theory.
4. Discuss about Presentism, Eternalism, and The Growing Universe Theory.
5. What is Time Travel?

10.10 SUGGESTED READINGS AND REFERENCES

- Mellor, D.H. (1998) Real Time II. Routledge.
- Laura Mersini-Houghton; Rudy Vaas (eds.) (2012) The Arrows of Time. A Debate in Cosmology. Springer. ISBN 978-3642232589.
- Hans Reichenbach (1958) The Philosophy of Space and Time. Dover
- Hans Reichenbach (1991) The Direction of Time. University of California Press.
- Rochelle, Gerald (1998) Behind Time. Ashgate.
- Lawrence Sklar (1976) Space, Time, and Spacetime. University of California Press.
- Turetzky, Philip (1998) Time. Routledge.
- Bas van Fraassen, 1970. An Introduction to the Philosophy of Space and Time. Random House.
- Gal-Or, Benjamin "Cosmology, Physics and Philosophy". Springer-Verlag, New York, 1981, 1983, 1987 ISBN 0-387-90581-2
- Ahmad, Manzoor (May 28, 1998). "XV: The Notion of Existence". In Naeem Ahmad; George F McClean (eds.). Philosophy in Pakistan. Department of Philosophy, University of Punjab, Lahore, Punjab Province of Pakistan: Punjab University press. pp. 245–250. ISBN 1-56518-108-5. Retrieved 4 July 2012.

10.11 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. According to The B Theory, time is very much like the dimensions of space. Just as there are no genuine spatial properties (like being north), but, rather, only two-place, spatial relations (like north of), so too, according to the B Theorist, there are no genuine A properties. According to The A Theory, on the other hand, time is very different from the dimensions of space. For even though there are no genuine

spatial properties like being north, there are, according to the A Theorist, genuine A properties; and time, unlike space, can truly be said to pass, according to The A Theory.

There is another important respect in which some (but not all) A Theorists believe time to be unlike the dimensions of space. Some A Theorists believe that there are crucial ontological differences between time and the dimensions of space. For some A Theorists also endorse a view known as "Presentism," and others endorse a view that we will call "The Growing Universe Theory."

Presentism is the view that only present objects exist. More precisely, it is the view that, necessarily, it is always true that only present objects exist. (At least, that is how the name 'Presentism' will be used here. Some writers have used the name differently. Note that, unless otherwise indicated, what is meant here by 'present' is temporally present, as opposed to spatially present.) According to Presentism, if we were to make an accurate list of all the things that exist — i.e., a list of all the things that our most unrestricted quantifiers range over — there would be not a single non-present object on the list. Thus, you and the Taj Mahal would be on the list, but neither Socrates nor any future Martian outposts would be included. (Assuming, that is, both (i) that each person is identical to his or her body, and (ii) that Socrates's body ceased to be present — thereby going out of existence, according to Presentism — shortly after he died. Those who reject the first of these assumptions should simply replace the examples in this article involving allegedly non-present people with appropriate examples involving the non-present bodies of those people.) And it's not just Socrates and future Martian outposts, either — the same goes for any other putative object that lacks the property of being present. All such objects are unreal, according to Presentism.

Presentism is opposed by Non-presentism, which is the view that there are some non-present objects. More precisely, Non-presentism is the

view that, possibly, it is sometimes true that there are some non-present objects.

'Non-presentism' is an umbrella term that covers several different, more specific versions of the view. One version of Non-presentism is Eternalism, which says that objects from both the past and the future exist just as much as present objects. According to Eternalism, non-present objects like Socrates and future Martian outposts exist right now, even though they are not currently present. We may not be able to see them at the moment, on this view, and they may not be in the same space-time vicinity that we find ourselves in right now, but they should nevertheless be on the list of all existing things.

It might be objected that there is something odd about attributing to a Non-presentist the claim that Socrates exists right now, since there is a sense in which that claim is clearly false. In order to forestall this objection, let us distinguish between two senses of 'x exists now'. In one sense, which we can call the temporal location sense, this expression is synonymous with 'x is present'. The Non-presentist will admit that, in the temporal location sense of 'x exists now', it is true that no non-present objects exist right now. But in the other sense of 'x exists now', which we can call the ontological sense, to say that x exists now is just to say that x is now in the domain of our most unrestricted quantifiers, whether x happens to be present, like you and me, or non-present, like Socrates. When we attribute to Non-presentists the claim that non-present objects like Socrates exist right now, we commit the Non-presentist only to the claim that these non-present objects exist now in the ontological sense (the one involving the most unrestricted quantifiers).

According to the Eternalist, temporal location matters not at all when it comes to ontology. But according to a somewhat less popular version of Non-presentism, temporal location does matter when it comes to ontology, because only objects that are either past or present — but not objects that are future — exist. On this view, which we can call "The Growing Universe Theory," the universe is always increasing in size, as

more and more things are added on to the front end (temporally speaking).

Despite the claim by some Presentists that theirs is the common sense view, it is pretty clear that there are some major problems facing Presentism (and, to a lesser extent, The Growing Universe Theory; but in what follows we will focus on the problems facing Presentism). One problem has to do with what appears to be perfectly meaningful talk about non-present objects, such as Socrates and the year 3000. If there really are no non-present objects, then it is hard to see what we are referring to when we use expressions such as 'Socrates' and 'the year 3000'.

Another problem for the Presentist has to do with relations involving non-present objects. It is natural to say, for example, that Abraham Lincoln was taller than Napoleon Bonaparte, and that World War II was a cause of the end of The Depression. But how can we make sense of such talk, if there really are no non-present objects?

A third problem for the Presentist has to do with the very plausible principle that for every truth, there is a truth-maker. The problem is that it is hard to see what the truth-makers could be for such truths as that there were dinosaurs and that there will be Martian outposts.

Finally, the Presentist, in virtue of being an A Theorist, must deal with the arguments against The A Theory that were discussed above.

Answers to Check your progress 2

1. Various confusions can plague one's understanding of the modern debate between absolutism and relationalism about space and time—some of these confusions are especially pervasive in discussions of Kant's views. For instance, absolutism is sometimes conflated with realism, and idealism with relationalism. One reason for the first conflation may be historical in nature. In their celebrated correspondence, which forms part of

the essential background to Kant's work on space and time in the Critique, Clarke and Leibniz often consider the proposition: space is real. By our lights, realism and anti-realism concern the question of whether something is in some sense dependent on the mind. We ask this question about tables and chairs, numbers and sets, and all manner of other things. But when Leibniz and Clarke discuss the "reality," or the "absolute reality," of space, they are typically concerned with the question of space's status vis-à-vis objects. This is clearly the case when Leibniz and Clarke consider one of the principal questions of their correspondence, whether their common acceptance of the principle of sufficient reason entails that one of them holds the correct conception of space (cf. L3: 4 and C 3: 4-5). Leibniz contends, while Clarke denies, that if space were independent of objects, God would lack a sufficient reason for placing the objects of the universe into space with one orientation rather than another. Leibniz concludes from this that space lacks "reality" or that it lacks "absolute reality"). Based on precisely the same considerations, Leibniz denies that space is "absolute" (L3: 2-3, L3: 5, L4: 16, L4: 9-10), or contends that it is "relative" (L3: 4). Hence in this context, for space to be real is for space to exist independently of objects and relations.

2. One question that is relevant here is whether time travel is permitted by the prevailing laws of nature. This is presumably a matter of empirical science (or perhaps the correct philosophical interpretation of our best theories from the empirical sciences). But a further question, and one that falls squarely under the heading of philosophy, is whether time travel is permitted by the laws of logic and metaphysics. For it has been argued that various absurdities follow from the supposition that time travel is (logically and metaphysically) possible. Here is an example of such an argument.

UNIT 11: RELATION BETWEEN SPACE AND TIME

STRUCTURE

11.0 OBJECTIVES

After this unit, students can able to understand:

- Philosophical Controversy Over Absolute and Relative Motion
- The Lingering Problem of Absolute Space
- 19th-Century Analyses of the Law of Inertia

11.1 INTRODUCTION

A "frame of reference" is a standard relative to which motion and rest may be measured; any set of points or objects that are at rest relative to one another enables us, in principle, to describe the relative motions of bodies. A frame of reference is therefore a purely kinematical device, for the geometrical description of motion without regard to the masses or forces involved. A dynamical account of motion leads to the idea of an "inertial frame," or a reference frame relative to which motions have distinguished dynamical properties. For that reason an inertial frame has

to be understood as a spatial reference frame together with some means of measuring time, so that uniform motions can be distinguished from accelerated motions. The laws of Newtonian dynamics provide a simple definition: an inertial frame is a reference-frame with a time-scale, relative to which the motion of a body not subject to forces is always rectilinear and uniform, accelerations are always proportional to and in the direction of applied forces, and applied forces are always met with equal and opposite reactions. It follows that, in an inertial frame, the center of mass of a system of bodies is always at rest or in uniform motion. It also follows that any other frame of reference moving uniformly relative to an inertial frame is also an inertial frame. For example, in Newtonian celestial mechanics, taking the "fixed stars" as a frame of reference, we can determine an (approximately) inertial frame whose center is the center of mass of the solar system; relative to this frame, every acceleration of every planet can be accounted for (approximately) as a gravitational interaction with some other planet in accord with Newton's laws of motion.

This appears to be a simple and straightforward concept. By inquiring more narrowly into its origins and meaning, however, we begin to understand why it has been an ongoing subject of philosophical concern. It originated in a profound philosophical consideration of the principles of relativity and invariance in the context of Newtonian mechanics. Further reflections on it, in different theoretical contexts, had extraordinary consequences for 20th-century theories of space and time.

Why is there a "philosophy of space and time"? It seems obvious that any serious study of the nature of space and time, and of our knowledge of them, must raise questions of metaphysics and epistemology. It also seems obvious that we should expect to gain some insight into those questions from physics, which does take the structure of space and time, both on small and on cosmic scales, as an essential part of its domain. But this has not always seemed so obvious. That physics has an illuminating, even authoritative, perspective on these matters was not automatically conceded by philosophy, as if in recognition of some

inherent right. No more did physics simply acquire that authority as a result of its undoubted empirical success. Rather, the authority came to physics because physicists – over several centuries, in concert with mathematicians and philosophers – engaged in a profound philosophical project: to understand how concepts of space and time function in physics, and how these concepts are connected with ordinary spatial and temporal measurement. Indeed, the empirical success of physics was itself made possible, in some part, by the achievements of that philosophical effort, in defining spatio-temporal concepts in empirically meaningful ways, often in defiance of the prevailing philosophical understanding of those concepts. In other words, the physics of space and time has not earned its place in philosophy by suggesting empirical answers to standing philosophical questions about space and time. Instead, it has succeeded in redefining the questions themselves in its own empirical terms. The struggle to articulate these definitions, and to re-assess and revise them in the face of changing empirical circumstances, is the history of the philosophy of space and time from Newton to Einstein. That history is not usually understood in these terms. More commonly, it is identified with the history of the "absolute versus relational" question: are space, time, and motion "absolute" entities that exist in their own right, or are they merely abstracted from observable relations? Without doubt this has been an important question, both for physics and for philosophy, and philosophical stances on it have evidently been powerful motivating principles for physical speculation.

For that reason it plays a large role in the history that I have to tell. But it is not the entire story, or even the central part. And the tendency to see the history of space-time theories through the lens of this controversy – a tendency that has prevailed for most of the past century or more – has therefore clouded our view of that history. The absolute–relational debate is a cherished example of the influence of philosophy on the evolution of physics, for it seems to exhibit fundamental theoretical physics in the aspect of a kind of inductive metaphysics, in which physical arguments are brought in support of metaphysical ideas, and vice versa, in an ongoing philosophical dialectic. But the struggle to define a genuine

physics of space and time has involved another sort of dialectic altogether: not between metaphysical positions, but between our theory of space and time, as expressed in the laws of physics, and our evolving knowledge of matter and forces in space and time. The revolutionary changes in conceptions of space and time, such as those brought about by Newton and Einstein, were therefore driven by a kind of conceptual analysis: an analysis of what physics presupposes about space and time, and of how these presuppositions must confront the changes in our empirical knowledge and practice. By overlooking this process of conceptual analysis, we tend to misrepresent the historical discussions of space and time by Newton, Einstein, and others, and the philosophical arguments that they gave; we fail to get a proper sense of the progressive force of those arguments, as central aspects of the scientific argument for theoretical change in the face of empirical discovery. But we do not merely cloud the historical picture. We also obscure the connections between the problems of space and time and some broader issues in the history of philosophy: the nature and function of a-priori presuppositions in science, and the rational motivations for conceptual change in science.

The revival of metaphysical debate on space and time, over the past several decades, must be understood as part of the general reaction against logical positivism in the late twentieth century. The positivist view was that debate had been largely settled by Einstein: clear-sighted philosophers had always grasped the relativity of space, time, and motion on epistemological grounds, and Einstein finally brought their insight to fruition in a physical theory. From the more recent literature on the absolute–relational controversy, by contrast, we get a more vivid and realistic picture of the interaction between physics and philosophy, especially of the diverse ways in which purely philosophical convictions have motivated some of the most revolutionary work in physics. And we see, moreover, how sometimes the philosophical aims of physicists have been unrealized – how much divergence there has been between the original philosophical motivations behind revolutionary theories, and the content and structure of the theories that were eventually produced. The most familiar example – and the most damning to the positivists' neat

picture – is the divergence between Einstein's vision of a theory of "the relativity of all motion" and general relativity itself, which turned out to have similarities with Newton's theory of absolute space that Einstein found philosophically hard to accept. In such cases there can be no doubt of the tremendous heuristic power of the original philosophical ideas, yet they can give rise to theories that seem to contradict them.

This seemingly mysterious circumstance has a broader significance for the philosophy of science. A primary preoccupation of the philosophy of science, since the later twentieth century, has been the question of the rationality of scientific revolutions, and the commensurability or incommensurability of competing conceptual frameworks, a kind of question raised most forcefully by Kuhn (1970a). As a matter of the history and sociology of science, it is beyond dispute that there have been, and are, competing groups within scientific disciplines with competing aims and methods, and with finite capacities for communication and mutual understanding. As a matter of philosophy, however, Kuhn introduced the radical claim that scientific conceptual frameworks are by their very nature incommensurable with one another. Whatever one thinks of Kuhn's view, it should be clear that theories of space and time provided Kuhn with some of the most vivid examples of profound conceptual shifts – not merely dramatic shifts in beliefs about the world or even in scientific methods, but in the very concepts that define the objects of scientific inquiry, the phenomena to be observed and the magnitudes to be measured. Kuhn emphasized the transition from Newtonian to relativistic mechanics, for example, less because it challenged specific traditional beliefs than because it created a conceptual system within which fundamental concepts of length and time, and with them force, mass, and acceleration, would have to be revised (Kuhn, 1970a, p. 102).

This last notion was hardly original with Kuhn. On the contrary, it was a central point – one might even say, the most fundamental motivating principle – for the logical positivists' interpretation of Einstein. If special relativity had appeared to be a merely incremental change from

Newtonian mechanics (or general relativity from special relativity), part of a gradual and cumulative development driven by the steady application of traditional scientific methods, it would have seemed to them completely without philosophical interest. It was precisely because Einstein had undertaken a radical revision of fundamental concepts that the logical positivists saw him as revolutionary for philosophy as well as for science. What distinguished Kuhn from the logical positivists, especially, was his view of how and why such conceptual revisions take place. According to Kuhn, "critical discourse" about the foundations of theories typically takes place because the prevailing theoretical framework is in crisis: from one side, it faces an accumulation of anomalies, or "puzzles" that ought to yield to the framework's standard methods, but that have somehow resisted being solved; from the other side, it faces serious competition from a novel alternative framework. "It is particularly in times of acknowledged crisis," Kuhn wrote, "that scientists have turned to philosophical analysis as a device for unlocking the riddles of their field," even though they "have not generally needed or wanted to be philosophers" (Kuhn, 1970a, p. 88). It was "no accident," therefore, that the twentieth-century revolutions against Newtonian physics, and indeed Newton's own conceptual revolution, were "both preceded and accompanied by fundamental philosophical analyses of the contemporary research tradition" (Kuhn, 1970a, p. 88).

While he acknowledged the creative influence of philosophical analyses, however, Kuhn was not prepared to admit that a philosophical argument against an existing theory could furnish any objective argument on behalf of a new rival. Nor could he acknowledge that such arguments could illuminate the relations between the theories, or the sense in which the shift from the old to the new theory might be understood as genuine theoretical progress. Philosophical beliefs, in short, functioned in scientific revolutions as subjective influences; they might motivate or persuade individual scientists – making particular theories or lines of research more psychologically accessible or appealing for scientists of particular philosophical tastes – but could never provide anything resembling a rational justification for theory change. For the

philosophical arguments for a particular paradigm are always based on the paradigm itself. "When paradigms enter, as they must, into a debate about paradigm choice, their role is necessarily circular. Each group uses its own paradigm to argue in that paradigm's defense . . . Yet, whatever its force, the status of the circular argument is only that of persuasion" (Kuhn, 1970a, p. 94). When scientists at a time of crisis "behave like philosophers," in Kuhn's phrase (1970b, p. 6), this is because they are engaging in inconclusive "debates about fundamentals" such as are characteristic of philosophy (Kuhn, 1970b, p. 6). The prominence of philosophical considerations during revolutionary times merely highlights the lack of any clear methodological rules to guide conceptual change. For the positivists, by contrast, such a revision could have an objective philosophical ground, as a radical critique of concepts that were epistemologically ill-founded.1 For example, relativity theory was motivated by, and embodied, an evident progress in the philosophical understanding of space and time and the ways in which we measure them. The revised concepts of mass, length, and time were not merely the side-effects of a change in world view, but, rather, direct expressions of this improved understanding. So the theory was not only motivated, but also justified, by the philosophical arguments of Einstein.

There could be no question of the rationality of a conceptual transformation that appeared so clearly to be a kind of conceptual reform. From the perspective of the later twentieth century, however, this understanding of Einstein's revolution seemed particularly misguided. On the one hand, it seemed to exemplify what was wrong with the positivists' approach to science in general: the simple-minded belief that unobservable theoretical entities could be eliminated, and that theory could be reduced to its purely empirical content. On the other hand, it exhibited mistaken views about the content of general relativity itself. A number of physicists and philosophers quickly noted this discrepancy, and appreciated the important continuities between general relativity and its predecessors. But the dominant voices in the emerging discipline of "philosophy of science" were those of the positivists, especially Reichenbach (1957); as a result, a proper understanding of the bearing of

general relativity on the metaphysics of space, time, and motion was slow in coming. By the late 1960s, the elements of a more circumspect viewpoint were in place: that Newton's theory of absolute space and time was not a mere metaphysical appendage to his physics, but had some genuine foundation in the laws of motion; that general relativity did not "relativize" all motion, but distinguished among states of motion in radically new ways; and that space-time in general relativity was in some respects the same sort of metaphysical entity as it had been in Newtonian mechanics – at the very least, both theories characterize space-time geometry as an objective physical structure. In short, Einstein's work no longer seemed to have settled the absolute–relational controversy decisively in favor of relationalism. Therefore it no longer seemed to conform to the positivists' picture of it, as an epistemological critique that eliminated metaphysics from physics; that picture had only displayed their flawed understanding of the theory, and of the role of theoretical entities in science.

This account makes it possible, finally, to rehabilitate a central idea of the logical positivists: that there were philosophical arguments for special and general relativity, and that creating the theories was as much a work of philosophical analysis as of scientific discovery. In the form that the logical positivists gave it, that idea was discredited, because it seemed to rest on extremely simplistic philosophical notions regarding metaphysics, meaning, and the relation between theory and observation. But now we can see that the philosophical analysis of space and time has been, at least in the cases that matter, something more subtle than the mere application of epistemological strictures or slogans. Despite the delusions of philosophers and scientists of having purely epistemological or metaphysical insights into the nature of space, time, and motion, philosophy is not an independent source of knowledge of space-time; our ability to conceive of or to reason about space has always depended on principles borrowed, explicitly or implicitly, from physics. But this is not to say that physics simply provides answers to philosophical questions from its own resources, or that philosophy has to content itself with accepting them. Rather, it says that, at certain critical points in its history,

the fundamental problems of physics have to do with the ways in which fundamental concepts are defined. In those circumstances, the pursuit of physics in accord with those concepts evidently has not resolved the underlying problems. These are the times at which philosophical analysis has become an unavoidable task for physics itself.

11.2 PHILOSOPHICAL CONTROVERSY OVER ABSOLUTE AND RELATIVE MOTION

Leibniz, later, articulated a more general "equipollence of hypotheses": in any system of interacting bodies, any hypothesis that any particular body is at rest is equivalent to any other. Therefore neither Copernicus' nor Ptolemy's view can be true—though one may be judged simpler than the other—because both are merely possible hypothetical interpretations of the same relative motions. This principle clearly defines (what we would call) a set of reference frames, differing in their arbitrary choices of a resting point or origin, but agreeing on the relative positions of bodies at any moment and their changing relative distances through time.

For Leibniz and many others, this general equivalence was a matter of philosophical principle, founded in the metaphysical conviction that space itself is nothing more than an abstraction from the geometrical relations among bodies. In some form or other it was a widely shared tenet of the 17^{th}-century "mechanical philosophy". Yet it was flatly incompatible with physics as Leibniz himself, and the other "mechanists," actually conceived it. For the basic program of mechanical explanation depended essentially on the concept of a privileged state of motion, as expressed in the assumption that bodies maintain a state of rectilinear motion until acted upon by an external cause. Thus their fundamental conception of force, as the power of a body to change the state of another, likewise depended on this notion of a privileged state. This dependence was clearly exhibited in the vortex theory of planetary motion, in which every orbit was explained by the balance between the planet's inherent centrifugal tendency (its tendency to follow the tangent to the orbit) and the pressure of the surrounding medium.

For this reason, the notion of a dispute between "relativists" or "relationists" and "absolutists" or "substantivalists", in the 17th century, is a drastic oversimplification. Newton, in his controversial Scholium on space, time, and motion, was not merely asserting that motion is absolute in the face of the mechanists' relativist view; he was arguing that a conception of absolute motion was already implicit in the views of his opponents—that it was implicit in their conception, which he largely shared, of physical cause and effect. The general equivalence of reference-frames was implicitly denied by a physics that understood forces as powers to change the states of motion of bodies.

Newton therefore held that physics required the conception of absolute space, a distinguished frame of reference relative to which bodies could be said to be truly moving or truly at rest. Assuming, as both Newton and Leibniz did, that states of motion could be distinguished by their causes and effects, the distinguished status of this frame of reference is physically well founded—and metaphysically well-founded for a metaphysics that, like Newton's or Leibniz's, takes force to be a well-founded notion. On Leibniz's conception of force, in particular, a given force is required to generate *or to maintain* a given velocity—for objects "passively" resist motion, but maintain their states of motion only by "active" force—so that, on dynamical grounds, "every body truly does have a certain amount of motion, or, if you will, force." This implies that there is in principle a distinguished frame of reference in which the velocities of bodies correspond to their true velocities, i.e. to the amounts of moving force that they truly possess, and it implies that in any frame that is in motion relative to this one, bodies will not have their true velocities. In short, such a conception of force, if it could be applied physically, would give a precise physical application of Newton's conception of absolute space.

At a time when the relativity of motion was just beginning to be understood, Newton introduced a theory of absolute motion in absolute space and time. The controversy that then began has never ceased. What

right did Newton have to explain the observable relative motions by an appeal to these unobservable entities? What role can such metaphysical hypotheses play in empirical science? By re-examining Newton's arguments for his theory, and understanding its role in the science that he helped to develop, we can see that these questions are misdirected. Newton's theory of space and time was never a mere metaphysical hypothesis. Instead, it was his attempt to define the concepts presupposed by the new mechanical science – the conceptual framework that made relative motion physically intelligible within a conception of causal interaction. Rather than an empirically questionable addition to his scientific work, it was an essential part of his work to construct an empirical science of motion. Rather than mere metaphysical baggage carried by an otherwise empirically successful theory, it was inseparable from Newton's effort to define the empirically measurable quantities of classical mechanics.

The history of Newton's ideas of space and time was once part of a philosophical justification for general relativity. For much of the twentieth century, the standard view of that history was something like this. When Newton introduced the theory, it was immediately obvious to his wisest philosophical contemporaries that this was a backward step. The Aristotelian conception of the universe as a collection of distinguished places, to which bodies belonged according to their particular qualities, had given way to the conception of an infinite, homogeneous Euclidean space; the conception of types of natural motions, all defined in relation to the resting Earth, had given way to the recognition that motion is essentially relative, i.e. is nothing more than the relative displacement of a body relative to other bodies. The second point had been absolutely essential, in fact, to overcoming what had otherwise seemed to be good empirical arguments against any motion of the Earth. Therefore Newton's ideas of absolute space and absolute motion represented just the sort of primitive metaphysical thinking – a kind of reification of abstract objects – from which physics was now trying to escape, in order to become an empirical science. Huygens and Leibniz were particularly emphatic in rejecting these ideas. But Newton,

through his notorious "water-bucket" experiment, claimed to know how to determine true motion dynamically: the centrifugal forces that arise in the spinning bucket demonstrate that the water is rotating, not merely relative to its material surroundings (the local frame of reference), but with respect to space itself. Leibniz and Huygens, along with a few other philosophers such as Berkeley, could easily see the emptiness of such an argument, which invoked a mysterious unobservable entity to explain the observed phenomenon. And they could see the inherent inability of physics to say anything meaningful about motion without referring it to observable objects. What they could not see was how to construct a dynamical theory that would avoid the philosophical embarrassments of Newton's theory.

In the history of modern physics, space and time have after all played something like the role attributed to them by Kant. Not as forms of intuition: this was only incidentally the case, in a context where the geometry of space and the intuitive means of knowing about space seemed inseparable from one another. In that context, the processes of "representing to ourselves" in the productive imagination and of conceptualizing the relative situations of physical things appeared to be seamlessly connected. That is, the infinite Euclidean space in which physics treated the positions and motions of bodies was the most straightforward extension of the space in which we move, grasp our relation to our immediate surroundings, and situate our spatial point of view. But they have played the quasi-Kantian role of a framework that enables physics to constructively define its fundamental concepts of force and causality, by giving physics the means to construct such concepts as measurable theoretical quantities. The familiar and vague notion of force, through the work of Galileo, Huygens, Newton, and others, became a physical concept with a constructive spatio-temporal definition, one that did not really violate the common notion – even if it seemed to at first – but that rendered it a powerful tool of physical investigation, and thereby made the discovery of physical forces a clear and attainable goal. The connection with intuition was transformed by the recognition that intuition itself borrowed its self-evidence from

elementary physical principles, principles so familiar as to be relied upon almost completely unconsciously. Then the true weak point of Kant's view was revealed: that the intuitive picture of space depended on principles that are physical and contingent, so that it could no longer be thought of as apodeictically certain or beyond revision; space could therefore no longer be a fixed framework for physics, but became something about which physics could eventually reveal surprising facts. Yet none of this fundamentally changed the role of space and time as a framework for the construction of physical magnitudes with empirical measures, and for the posing of questions about force and causality as empirical questions. The framework remained indispensable to the scientific approach to nature in general, as Kant had aptly put it, "not as a pupil ready to accept whatever the teacher should recite, but as a judge compelling a witness to answer the questions that he sets" (Kant, 1787 [1956], p. Bxiii). With the emergence of the notion of space-time, the connection with intuition may be said to have been dissolved altogether. The difference was not merely that physical principles could provide novel empirical facts about the nature of space, but that physics could cause us to reconsider the very principles by which we define spatial and temporal measurement. For the simple principle of rigid displacement that it had shared with spatial intuition, physics would substitute dynamical principles with no self-evident intuitive counterpart. Einstein's definition of simultaneity accorded well with the intuitive use of the concept, but to acknowledge it as the fundamental definition, rather than as just a practical substitute for absolute simultaneity, was to separate the objective features of space-time from everything that made spatial measurement seem intuitively evident. The laws of electrodynamics, essentially spatio-temporal in character, took precedence over the pre-theoretical notion of rigid spatial displacement, which consequently could reveal only a "complicated projection" of invariant geometrical relations on some arbitrary inertial frame. In retrospect, it emerged that it was only a simplistic assumption about simultaneity that made spatial relations appear so intuitively obvious in the first place. Yet even so the basic role of the spatio-temporal framework was not so radically transformed. Space-time, rather than

space, was the framework within which physical magnitudes were to be constructed, and were understood as objectively meaningful to the extent that they corresponded to invariant features of the space-time structure. Evidently this situation was altered by the emergence of general relativity; objective physical magnitudes evidently could not be defined as the invariants of a structure that would not, in general, have any large-scale symmetries.

11.3 THE LINGERING PROBLEM OF ABSOLUTE SPACE

Newton understood the Galilean principle of relativity with a degree of depth and clarity that eluded most of his "relativist" contemporaries. It may seem bizarre, therefore, that the notion of inertial frame did not emerge until more than a century and a half after his death. He had identified a distinguished class of dynamically equivalent "relative spaces," in any of which true forces and masses, accelerations and rotations, would have the same objectively measured values. Yet these spaces, though empirically indistinguishable, were not equivalent in principle; evidently Newton conceived them as moving with various velocities in absolute space, though those velocities could not be known. Why should not he, or someone, have recognized the equivalence of these spaces immediately?

This is not the place for an adequate answer to this question, if indeed one is possible. For much of the 20th century, the accepted answer was that of Ernst Mach: Newton lived in an age "deficient in epistemological critique," and so was unable to draw the conclusion that these empirically indistinguishable spaces must be equivalent in every meaningful sense, so that no one of them deserves even in principle to be designated as "absolute space." Yet even those whom the 20th century credited with more sophisticated epistemological views, such as Leibniz, evidently had difficulties understanding force and inertia in a Galilei-invariant way, despite a philosophical commitment to relativity. Perhaps it suffices to say that to abandon the intuitive association of force or motion with velocity in space, and to accept an equivalence-class

structure as the fundamental spatiotemporal framework, requires a level of abstraction that became possible only with the extraordinary development of mathematics, especially of a more abstract view of geometry, that took place in the 19th century. (See geometry: in the 19th century.) In the 17th century only Christiaan Huygens came close to expressing such a view; he held that not velocity, but velocity-difference, was the fundamental dynamical quantity. He therefore understood, for example, that the "absoluteness" of rotation had nothing to do with velocity relative to absolute space, but arose from the difference of velocity among different parts of a rotating body—a difference which would, evidently, be the same irrespective of the velocity of the body as a whole in absolute space. But of this Huygens gave only the merest suggestion, in manuscripts that remained unpublished for two centuries. (See Stein 1977.) The concept of inertial frame therefore emerged only in the late 19th century, when, as we shall see, it did not seem to be of any great immediate importance.

Meanwhile, the relativity principle was understood as the equivalence of uniform states of motion, but any systems in such a state was implicitly understood to have a definite, though unknown and unknowable, velocity in absolute space. Euler (1748), for example, defended Newton's conceptions of space and time against the thesis that space and time are ideal, and motion merely relative; his broad argument was that metaphysics had no standing to criticize conceptions that are required by the established laws of physics. Yet he noted that the laws of motion permit us to determine, not the velocity of any motion in space, but only the absolute sameness of direction of an inertial trajectory over time, and the equality of time-intervals in which an inertially-moving particle moves equal distances. To Euler, these irreducibly spatial and temporal aspects of the laws of motion implied that space and time could not possibly be ideal. Like Newton, therefore, he upheld both the relativity of velocity and the reality of absolute space. The inconsistency of such a theory can be seen in two ways. On the one hand, we can see it as a fundamental incoherence, even if, again, we excuse those who held it on the grounds of the limited mathematical tools available to them. On the

other hand, it does represent a deep appreciation of the indistinguishability of velocities in absolute space, and a consequent effort to make sure that the actual treatment of actual physical systems is not undermined by this uncertainty. Newton hoped to analyze the dynamical interactions that hold the solar system together; he wanted to show that his dynamical account, and the view of "the frame of the system of the world" that emerges from it, is a matter of "reasoning from phenomena" rather than of plausible conjecture. It was therefore a very circumspect, even prescient, move on his part to demonstrate, through his use of Corollaries IV and V, that the analysis is completely independent of any conceivable translation of the system in absolute space.

Check Your Progress 1

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. Discuss the Philosophical Controversy Over Absolute and Relative Motion.

   ……
   ……
   ……
   ……
   …….

2. Describe the Lingering Problem of Absolute Space.

   ……
   ……
   ……
   ……
   …….

11.4 19TH-CENTURY ANALYSES OF THE LAW OF INERTIA

The development of this concept began with a renewed critical analysis of the notion of absolute space, for reasons not anticipated by Newton's contemporary critics. Its starting point was a critical questions about the law of inertia: relative to what is the motion of a free particle uniform and rectilinear? If the answer is "absolute space," then the law would appear to be something other than an empirical claim, for no one can observe the trajectory of a particle relative to absolute space. Two quite different answers to the question were offered in 1870, in the form of revised statements of the law of inertia. Carl Neumann proposed that when we state the law, we must suppose that there is a body somewhere in the universe—the "body Alpha"—with respect to which the motion of a free particle is rectilinear, and that there is a time-scale somewhere relative to which it is uniform (Neumann 1870). Ernst Mach (1883) claimed that the law of inertia, and Newton's laws generally, implicitly appeal to the fixed stars as a spatial reference-frame, and to the rotation of the earth as a time-scale; at least, he held, such is the basis for any genuine empirical content that the laws have. The notion of absolute space, it followed, was only an unwarranted abstraction from the practice of measuring motions relative to the fixed stars.

Mach's proposal had the advantage of a clear empirical motivation; Neumann's "body Alpha" seemed no less mysterious than absolute space, and almost sounds comical to the modern reader. But Neumann's discussion of a time-scale was somewhat more fruitful. He noted that the law of inertia defines a time-scale: equal intervals of time are those in which a free particle travels equal distances. Such a definition is another aspect of the Newtonian theory first made explicit by Euler (1748). Neumann also noted, however, that this definition is quite arbitrary. For, in the absence of a prior definition of equal times, any motion whatever can be stipulated to be uniform. It is no help to appeal to the requirement of freedom from external forces, since the free particles presumably are known to us only by their uniform motion. We have a genuine empirical claim only when we state of at least two free particles that their motions are mutually proportional; equal intervals of time can then be defined as those in which two free particles travel mutually proportional distances.

Check Your Progress 2

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. Write about the 19th-Century Analyses of the Law of Inertia.

   ……
   ……
   ……
   ……
   …….

11.5 LET US SUM UP

The metaphysical questions about space and time may then be translated into a straightforward form: what does our best current physics say about space and time? Rightly rejecting the positivists' view of relationalism as the inevitable result of progress in epistemology, contemporary literature views it (and its antithesis) essentially as a metaphysical hypothesis, confirmed or not by how well it accords with the best available physical theory. This new attitude clearly implies that it is not for "the philosophy of space and time" to judge what might be the best available theory. Physics presumably has empirical methods for deciding such things, and these are of the highest philosophical interest – from them, if from anywhere, must come the answer to Kuhnian concerns about incommensurability – but the philosophical discussion of space and time may take such decisions for granted. It is also implied, therefore, that what makes a theory "the best" has nothing to do with its philosophical implications concerning space and time. Philosophical "intuitions" might move physicists to prefer one metaphysical hypothesis to another, and to try (as Einstein did) to create a theory that accords with it, but the theory itself would have to be judged on largely empirical grounds. An abstract philosophical argument against "absolute" structures has no force; what relationalism needs is a theory that can save the phenomena without them.

Post-positivist philosophy of science does not take problems of interpretation very seriously, because of its rejection of the positivists' theory of theories. Instead of seeing a scientific theory as a set of axioms, which depend on coordinative definitions (or "correspondence rules," "meaning-postulates," etc.) for their connection with experience, contemporary philosophy of science typically represents a theory as a model-theoretic structure. Reference to experience is expressed in the hypothesis that the theory, understood as a structure, has "the world" as one of its models. As a way of talking about theories, this "semantic view" has definite merits, some of which will be discussed (and occasionally exploited) later in this book. But it is not a way of understanding the physical interpretation of formal structures; on the contrary, it tends to hide the problem from view.

All of this suggests that there is a great deal of truth in the remark that modern physics, under the influence of Newton, has had to create "its own theory of measurement" (Smith, 2003a). But for the physics of space and time, perhaps this point should be stated even more strongly: in a certain sense, space-time physics is its theory of measurement; it is a program to interpret certain characteristic phenomena as measurements of fundamental dynamical quantities, and then, to interpret mathematical relations among the quantities as expressing physical relations among the phenomena. I don't believe that this last point is affected by the possibility that, in our own time, research into quantum gravity is likely to yield a replacement for general relativity – not only that, but a theory in which space-time theory as Newton and Einstein understood it will no longer be fundamental, and some other kind of structure will play the fundamental role in that theory that space-time has played up to now. If philosophers and physicists are to make philosophical sense of such a structure, surely they will require a clear understanding – clearer, at any rate, than twentieth century philosophy of science was able to achieve – of what the role of space-time structure really was, and how it functioned as a framework for other physical objects, interactions, and processes. I hope that this book has been a step toward that understanding

11.6 KEY WORDS

Motion: **Philosophy** of **motion**. **Philosophy** of **motion** is a branch of **philosophy** concerned with exploring questions on the existence and nature of **motion**. The central questions of this study concern the epistemology and ontology of **motion**, whether **motion** exists as we perceive it, what is it, and, if it exists, how does it occur.

Space: Philosophy of space and time is the branch of philosophy concerned with the issues surrounding the ontology, epistemology, and character of space and time

11.7 QUESTIONS FOR REVIEW

1. Discuss the Philosophical Controversy Over Absolute and Relative Motion.
2. Describe the Lingering Problem of Absolute Space.
3. Write about the 19th-Century Analyses of the Law of Inertia.

11.8 SUGGESTED READINGS AND REFERENCES

- DiSalle, R. (1988). Space, Time and Inertia in the Foundations of Newtonian Physics. Unpublished Ph.D. Dissertation, University of Chicago.
- —— (1991). "Conventionalism and the origins of the inertial frame concept." In PSA 1990. East Lansing: The Philosophy of Science Association.
- —— (2002). "Newton's philosophical analysis of space and time." Forthcoming in The Cambridge Companion to Newton. Cambridge: Cambridge University Press.
- Earman, J. (1989). World Enough and Spacetime: Absolute and Relational Theories of Motion. Boston: M.I.T. Press.
- Ehlers, J. (1973) "The nature and structure of space-time." In The Physicist's Conception of Nature. Edited by Jagdish Mehra, 71–95. Dordrecht: Reidel.

Notes

- Einstein, A. (1905). “On the electrodynamics of moving bodies.” In Einstein, et al. (1952), pp. 35–65.
- Einstein, A. (1916). “The foundation of the general theory of relativity.” In Einstein, et al. (1952), pp. 109–164.
- Einstein, A. (1949), “Autobiographical notes.” In P.A. Schilpp, ed., Albert Einstein, Philosopher-Scientist. Chicago: Open Court.
- Einstein, A. (1951). Relativity: The Special and the General Theory. R. Lawson, tr. New York: Crown Publishers Inc..
- Einstein, A., H. A. Lorentz, H. Minkowski, and H. Weyl (1952). The Principle of Relativity. W. Perrett and G.B. Jeffery, trs. New York: Dover Books.
- Euler, L. (1748).“Réflexions sur l'espace et le temps.” Histoire de l'Academie Royale des sciences et belles lettres 4 (1748): 324–33
- Friedman, M. (1983). Foundations of Space-Time Theories. Princeton: Princeton University Press.
- Lange, L. (1885). “Ueber das Beharrungsgesetz.” Berichte der Königlichen Sachsischen Gesellschaft der Wissenschaften zu Leipzig, Mathematisch-physische Classe 37 (1885): 333–51.
- Leibniz, G. (1970). Philosophical Papers and Letters. Edited by Leroy Loemker. Dordrecht: Reidel.
- Mach, E. (1872). Die Geschichte und die Wurzel des Satzes von der Erhaltung der Arbeit. Prague: J.G. Calve'sche K.-K. Univ-Buchhandlung.
- Mach, E. (1883). Die Mechanik in ihrer Entwickelung, historisch-kritisch dargestellt. 2nd edition. Leipzig: Brockhaus.
- Minkowski, H. (1908). “Space and time.” In Einstein, et al. (1952), pp. 75–91.
- Misner, C., K. Thorne, and J.A. Wheeler (1973). Gravitation. San Francisco: Freeman
- Muirhead, R.F. (1887). “The laws of motion.” Philosophical Magazine, 5th series, 23: 473–89.
- Neumann, C. (1870). Ueber die Principien der Galilei-Newton'schen Theorie. Leipzig: B. G. Teubner, 1870.

- Newton, I. (1726). The Principia: Mathematical Principles of Natural Philosophy, tr. I. Bernard Cohen and Anne Whitman. Berkeley and Los Angeles: University of California Press, 1999.
- Newton, I. (1729). Sir Isaac Newton's Mathematical Principles of Natural Philosophy and his System of the World. 2 vols. Edited by Florian Cajori. Translated by Andrew Motte. Berkeley: University of California Press, 1962.
- Seeliger, H. (1906). "Über die sogenannte absolute Bewegung." Sitzungs-Berichte der Bayerische Akademie der Wissenschaft: 85–137.
- Stein, H. (1967). "Newtonian space-time." Texas Quarterly 10: 174–200.
- Stein, H. (1977). "Some philosophical prehistory of general relativity." In Foundations of Space-Time Theories. Edited by John Earman, Clark Glymour, and John Stachel, 3–49. Minnesota Studies in the Philosophy of Science, Vol. 8. Minneapolis: University of Minnesota Press.
- Thomson, J. (1884). "On the law of inertia; the principle of chronometry; and the principle of absolute clinural rest, and of absolute rotation." Proceedings of the Royal Society of Edinburgh 12: 568–78.
- Torretti, R. (1983). Relativity and Geometry. Oxford: Pergamon Press.

11.9 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. To solve this problem was, arguably, a central aim of Kant's critical philosophy, and the fate of his attempt is particularly instructive. In his view, the argument for a fundamental constitutive principle was a transcendental argument, showing that the principle is a condition of the possibility of experience; the argument for the Newtonian framework of space and time, accordingly, was that it was the condition for our understanding

of matter, motion, and force. So Newton's revolution was justified by the fact that it articulated, for the first time in the history of science, concepts of space, time, and causality by which the entire Universe could be understood as an interacting system. Traditional metaphysics, and even common sense, by contrast, stood revealed as having only the most confused ideas of these matters – except to the extent that something like the Newtonian conceptions were latent in them. Like the positivists' interpretation of Einstein, however, this interpretation of Newton now seems to epitomize the shortcomings of the philosophy that produced it. Kant understood rightly that the Newtonian principles, as presuppositions of empirical reasoning, could not themselves be derived by empirical reasoning of the same kind. But he mistakenly inferred that they are immune from any empirical reasoning – that they are connected with the fundamental categories of human understanding, and hence are both necessary and sufficient for any intelligible account of our experience. As the later career of Newtonian physics suggests, constitutive principles can be overturned by empirical knowledge. They cannot be fixed for all time, any more than they can be changed arbitrarily. See Section 11.2

2. Newton understood the Galilean principle of relativity with a degree of depth and clarity that eluded most of his "relativist" contemporaries. It may seem bizarre, therefore, that the notion of inertial frame did not emerge until more than a century and a half after his death. He had identified a distinguished class of dynamically equivalent "relative spaces," in any of which true forces and masses, accelerations and rotations, would have the same objectively measured values. Yet these spaces, though empirically indistinguishable, were not equivalent in principle; evidently Newton conceived them as moving with various velocities in absolute space, though those velocities could not be known. See Section 11.3

Answers to Check your progress 2

1. The development of this concept began with a renewed critical analysis of the notion of absolute space, for reasons not anticipated by Newton's contemporary critics. Its starting point was a critical questions about the law of inertia: relative to what is the motion of a free particle uniform and rectilinear? If the answer is “absolute space,” then the law would appear to be something other than an empirical claim, for no one can observe the trajectory of a particle relative to absolute space. See Section 11.4.

UNIT 12: UNIVERSALS AND PARTICULARS

STRUCTURE

12.0 OBJECTIVES

After this unit, we can able to know:

- Universals and particulars: distinction
- Verities
- Abstract entities
- Nominalism
- Resemblance and classes
- Realism
- Classical and contemporary

12.1 INTRODUCTION

As with many issues in philosophy, we started with a fairly simple question and found it difficult to reach a satisfactory answer. Qualitative similarity is a seemingly undeniable feature of our experience of the world. And there seems to be every reason to expect an explanation for this common fact. But upon closer inspection we find that we must either accept some rather unusual items into our world view, or go through some fairly elaborate theorizing to reach an answer. And that elaborate theorizing itself seems full of problems.

Perhaps this explains why the Problem of Universals has had such a hold on philosophers for all these years. We sense that there must be an adequate solution to be found, but our failure to find one prods our reason and imagination. Of course, we've only skimmed the surface of this debate in this essay, and nearly every move we've discussed has been debated, reformulated, argued for and against, analyzed, accepted as obviously true and rejected as obviously false. A consensus does seem to be emerging though, as one of the main contributors to the debate in recent decades has articulated, that two genuine contenders are left: Strong Realism and Trope Nominalism. As always, there is much work to be done on this issue, despite its distinguished heritage. We hope this introduction to the problem has inspired you to seek a new path, to find a flaw in our reasoning, to note what hasn't been noted before. You might turn out to be the next Plato.

Let's start with individuals: individuals are singular objects, also called 'particulars'. A red London bus, a red apple, a ruby and the red evening sun are all examples of individuals. What they have in common is redness; it is the universal they share.

In a metaphysical sense, individuals are fundamental entities. Nearly everyone would permit them into their ontology, i.e. into one's inventory of what one considers real. Individuals possess a multitude of properties, or qualities, such as the apple that has the colour red, a sweet taste, a round form, a weight, a temperature, etc. Individuals are singular, unique objects of the spatio-temporal world; they fill space and can only be in

one place at a time. Individuals are therefore said to be non-repeatable or not multi-exemplifiable. Also, individuals are subject to change: an individual comes into existence and goes out of existence at various moments in time. Between these moments at least some of the properties an individual possess change. The apple turns from green to red to brown over a certain period of time.

Universals

The introduction of universals is a strategy to explain real-world phenomena like qualitative similarity and resemblance between particulars. Some philosophers consider universals like redness as real entities which are shared across multiple individuals. If it is the case that 8,000 London buses are red at the same times then the universal redness must be in 8,000 places at once. That means that universals, in contrast to individuals, have to be repeatable or multi-exemplifiable; a universal can be here and there at the same time; it is 'one-over-many'. Furthermore, its simultaneous existence in one place is independent from its existence elsewhere. Spraying one of the 8,000 buses green does not diminish redness as such. That implies that redness, while being present in many different places at once, is wholly present in each of the individuals by which it is instantiated. That makes universals rather strange objects in anyone's ontology.

Universals: In or Above Particulars?

A metaphysical question that has been controversial for millennia is where universals are supposed to reside? According to the Platonic tradition, universals transcend the spatio-temporal world; they exist outside of space and time; they are eternally and changeless; they are not material in the way (many) individuals are. Redness would continue to exist if all red particulars disappear. In contrast, Artistotelians argue that universals are immanent. They exist on the level of particulars only. Therefore, if all red objects disappear from the world the universal redness would vanish, too.

The metaphysical debate about universals is raging on. Are universals real? Are they necessary? If so, what is their nature? In language, predicates like ‘is red’ are used to describe objects. Is there anything in reality that matches the one-over-many concept enshrined in language and thought? Is commonality real or imagined? These questions touch upon the ‘Problem of Universals’ to which different philosophers proposed a range of compelling answers.

12.2 UNIVERSALS AND PARTICULARS: DISTINCTION

In metaphysics, a universal is what particular things have in common, namely characteristics or qualities. In other words, universals are repeatable or recurrent entities that can be instantiated or exemplified by many particular things. For example, suppose there are two chairs in a room, each of which is green. These two chairs both share the quality of "chairness", as well as greenness or the quality of being green; in other words, they share a "universal". There are three major kinds of qualities or characteristics: types or kinds (e.g. mammal), properties (e.g. short, strong), and relations (e.g. father of, next to). These are all different types of universals.

Paradigmatically, universals are abstract (e.g. humanity), whereas particulars are concrete (e.g. the personhood of Socrates). However, universals are not necessarily abstract and particulars are not necessarily concrete. For example, one might hold that numbers are particular yet abstract objects. Likewise, some philosophers, such as D. M. Armstrong, consider universals to be concrete.

Most do not consider classes to be universals, although some prominent philosophers do, as John Bigelow.

The problem of universals is an ancient problem in metaphysics about whether universals exist. The problem arises from attempts to account for the phenomenon of similarity or attribute agreement among things.

For example, grass and Granny Smith apples are similar or agree in attribute, namely in having the attribute of greenness. The issue is how to account for this sort of agreement in attribute among things.

There are many philosophical positions regarding universals. Taking "beauty" as an example, three positions are:

- Idealism or conceptualism: beauty is a property constructed in the mind, so it exists only in descriptions of things.

- Platonic realism: beauty is a property that exists in an ideal form independently of any mind or thing.

- Aristotelian realism: beauty is a property that only exists when beautiful things exist.

Taking a broader view, the main positions are generally considered classifiable as: realism, nominalism, and idealism (sometimes simply named "anti-realism" with regard to universals). Realists posit the existence of independent, abstract universals to account for attribute agreement. Nominalists deny that universals exist, claiming that they are not necessary to explain attribute agreement. Conceptualists posit that universals exist only in the mind, or when conceptualized, denying the independent existence of universals. Complications which arise include the implications of language use and the complexity of relating language to ontology.

A universal may have instances, known as its particulars. For example, the type dog (or doghood) is a universal, as are the property red (or redness) and the relation betweenness (or being between). Any particular dog, red thing, or object that is between other things is not a universal, however, but is an instance of a universal. That is, a universal type (doghood), property (redness), or relation (betweenness) inheres in a particular object (a specific dog, red thing, or object between other things).

One branch of metaphysics is ontology, the study of 'being' or what exists. We can classify what sorts of things exist. Start, for example, with whales, which are mammals, which are animals, which are living things. Each whale is an individual thing, a 'particular'. Each class – of whales, animals, and so on – contains many particular things, but we usually suppose that each of these classifications has 'internal unity', i.e. that the class is not formed by some arbitrary imposition. (Compare the class of 'pets' – what's in and what's out?) Living things are examples of physical things, which are all 'particular things'. What each class has in common – 'being a whale', 'being a mammal', etc. – identifies a property or quality of particular things: all whales have the property of being a whale in common, while whales and elephants have in common that they are mammals. Our language commonly identifies particular things as subjects and properties by predicates: x is a whale; whales are mammals. Predicates indicate (at least) two types of property – qualities, which we've been looking at; but also relations, e.g. 'to the north of', 'larger than' and so on, e.g. 'whales are larger than mice'. These relations are also something particular things have in common, but now in ordered pairs: and both exemplify the relation 'are larger than'. Can we say that properties (qualities and relations) 'exist', though obviously in a different way from particulars? 'Being a mammal' and 'is larger than' don't sound like they refer to 'things' – they aren't nouns. However, we do have nouns that don't refer to particular things, but to what they can have in common: 'size', 'blue', 'honesty', 'rarity', and so on. So it seems that there are two sorts of thing – particulars and properties. Some philosophers think of properties as 'universals'. Words and phrases that refer to universals apply generally, to more than one thing; words that refer to particular things pick out just that one thing.

a. The Nature of Universals

In fundamental debates in metaphysics, it can be useful to understand the type of entity or concept in contrastive terms. For instance, it is helpful to understand universals by contrasting them with individuals. What then, is

an individual, or a particular, in the philosophical or metaphysical sense of the term?

Traditionally, the term "individual" is used to pick out members of a certain category of existents, each member of which is said to be unique. More precisely, individuals are said to be non-repeatable (not multi-exemplifiable), which means that they can't be in more than one place at a time. Examples include the familiar objects of sense-experience, such as chairs or tigers. A room may contain many chairs that are virtually alike in their intrinsic qualities, but each chair is nonetheless a distinct thing in one place at one time. By contrast, the universal "chair" is repeated around the room.

The individuals familiar from experience are also said to be material: they fill regions of space with impenetrable "stuff," and are locatable in space and time. Some philosophers are committed to other types of individuals, as well: immaterial ones (such as souls and sense-data) and even ones that are also outside space and time (such as numbers and God). The crucial contrast for our purposes, however, is between what repeatable (universals) are and what are not (individuals).

Although individuals are nonrepeatable, universals can serve their characteristic functions only if they differ from individuals in this respect. In order to ground relations of qualitative identity, for instance, universals must be multi-exemplifiable (or repeatable), able to be here and there at the same time. My apple and yours are both individuals, and this implies that each can be in only one place at a time. But if the redness they share is a universal, then the redness they share is a real non-individual, literally in both. The apples are similar in virtue of sharing this universal, redness. And if redness is shared in this way, then it is in at least two places at once.

As we proceed we will get more precise about these characterizations, and explore variations that have been defended in opposing Realist accounts. But we can appreciate already why some philosophers balk at

the existence of universals. For, as just noted, all defenders want to say that universals are repeatable. It seems, however, that defenders of universals must also say that universals are wholly present in each of the places they exist.

To explain, suppose we were to destroy one of the apples considered above. We'd have one fewer individual, to be sure. Would there be a diminishment of redness itself? It doesn't seem so, since redness is held to be an entity in its own right. Nor does it seem to make sense to say that redness increases when another apple ripens and turns red. These considerations suggest that a universal is wholly present in each of its instances, and that the existence of a universal at one place is unrelated to its simultaneous existence at any other place. It's not clear, however, how universals could be both wholly present in each of the places they exist, and, at the same time, present in many different places at once. This certainly would make them unusual, to say the least.

Moreover, it seems to be a mark of materiality that a material thing can be in only one place at a time. If so, then universals cannot be material. This in turn creates a problem when it comes to causation. For as we usually understand causal relations, one thing affects another by interacting with it, say by colliding with it. But that seems possible only if the entities in question are material. For these reasons it is difficult to explain how universals interact with other things that exist. The puzzle becomes more acute when we wonder how we can know universals at all. Don't they have to interact with our brains for us to know them? If they are not material, this interaction is quite mysterious.

In summation, we've seen that universals are quite different from individuals, and in ways that make them odd. Philosophers with low tolerance for strangeness tend to dismiss them for these reasons. Why, then, do some philosophers continue to believe in them, despite their unusual natures?

b. Reasons to Postulate Universals

Universals are called on to serve many philosophical functions. For most of this article, we'll focus on one particularly famous one – the role universals play in professed solutions to what has come to be called "The Problem of Universals."

First, a word or two about postulating entities is in order. Here we might compare the philosophical enterprise of deciding whether universals exist with the scientific enterprise of deciding whether strange unobservable entities, like quarks or neutrinos, exist. The scientific case is itself controversial, but many scientists and philosophers believe in the existence of unobservables, provided the theories that postulate them best explain the observable phenomena under study. For example, many believe the universe contains what physicists call "black holes," in part because the best (perhaps only) way to explain a range of stellar phenomena is to suppose that black holes are responsible. Again, this is controversial, but if the explanation provided is the best (or only) explanation, many scientists and philosophers claim a right to believe the postulated unobservables exist.

In parallel, we now ask, "Are there any philosophical puzzles or problems that can best be solved by believing in universals?" In fact, universals have been called on to answer a range of philosophical questions. Recall our points about subjects, predicates and reference. Prima facie, a name wouldn't be a name if there weren't something for it to refer to. Some philosophers think that the meaning of a name just is its referent. What about general terms, terms that can be said of many things, such as "red" or "wise"? What gives those terms meaning? Some have said that predicates must have referents to be meaningful, and universals fit the bill.

Universals have also been called on to solve problems in the theory of knowledge. Plato, for instance, said that for us to know something, that which is known must be unchanging. Since material individuals are subject to change, Plato argued, there must be things that don't change,

suitable as objects of genuine knowledge, not just belief. Universals might fit the bill here, too.

Relatedly, some philosophers have argued that we need universals to understand the stable, unchanging laws of nature that govern individuals' changes. Indeed, it has been argued that a law of nature just is a relation among universals, by which one universal brings about, or necessitates, others.

Our focus in this essay concerns another role for universals, perhaps the most famous one. They are said to answer what seems a very simple question, but which turns out to be one of the most famous and long-standing issues in philosophy. This returns us to the so-called "Problem of Universals."

c. The Problem of Universals

Often we predicate properties of individuals. When we say that both cherries and rubies are red, for instance, we seem to say individuals share common properties, those that make cherries cherries, those that make rubies rubies, and those that make both red. Predicates are said of many subjects, then, but is there anything in reality to match the linguistic one-over-many? Are there general truths? Is there commonality in nature, in reality; or is commonality imagined and illusory, perhaps a mere product of language? If the latter, how can we accommodate the intuition that it is the world, and not our conventions, that make predications true or false? The Problem of Universals arises when we ask these questions. Attempts to solve this problem divide into three broad strategies: Realism, Nominalism, and Conceptualism. We'll take these in turn, and consider the pros and cons of each.

12.3 VERITIES

Given that nominalists about universals believe only in particulars, there are two strategies that they might implement regarding the question of the alleged existence of allegedly universal entities like properties and

relations. One strategy is to reject the existence of such entities. Another strategy is to accept that such entities exist but to deny that they are universals. Both strategies have been implemented in the history of philosophy. One way to implement these strategies is to provide nominalistically acceptable paraphrases or analyses of sentences that appear (a) to be true and (b) imply the existence of universals. Another way, more fashionable nowadays, is to give a nominalistic account of the truthmakers for sentences that are apparently made true by universals.

What follows is a brief review of the main nominalistic positions of this sort, and of some of the problems they face. For the sake of brevity I shall illustrate the positions only with respect to properties. The extension to kinds and relations is straightforward and only occasionally do I say what a certain theory says about relations.

Properties are entities that are meant to play different theoretical roles. For instance, one role they are meant to play is that of being the semantic values of predicates. Another role is that of accounting for similarity and the causal powers of things. But there is no reason why these different roles should be played by one and the same kind of entity. When philosophers nowadays discuss the issue of universals they normally think of properties as entities that account for the similarity and causal powers of things. Properties in this sense are sometimes called sparse properties, as opposed to abundant properties (the distinction between sparse and abundant properties comes from Lewis 1983). Sparse properties are those which would be sufficient to account for the similarity and causal powers of things, and to characterise them completely and without redundancy. In what follows it is assumed, for the sake of example, that properties like being square and being scarlet count as sparse.

The question that realists and nominalists about universals try to answer is: What makes F-things F (where "F" is a sparse property predicate)? For instance, what makes a square thing square? For the realist about universals if something is square, this is in virtue of the thing

instantiating the universal squareness. In general, for the realist about universals, things have the sparse properties they do in virtue of instantiating universals.

How do nominalists answer this question? A popular nominalist theory of properties is so-called Trope Theory, which has been held by Donald Williams (1953), Keith Campbell (1990), and Douglas Ehring (2011) among others. Trope theory does not reject the existence of properties, but takes properties to be certain entities usually called 'tropes'. Tropes are particulars, in the same sense in which individual people and individual apples are particulars. Thus when there is a scarlet apple the scarletness of the apple is not a universal but a particular scarletness, the scarletness of this apple, which exists exactly where and when this apple is scarlet. Such a particular scarletness is a trope. The apple is scarlet not in virtue of instantiating a universal but in virtue of possessing a scarlet trope.

But what makes scarlet tropes scarlet tropes? One possible answer here is that scarlet tropes are scarlet tropes because they resemble each other, where resemblance is not explained in terms of instantiating some same universal. Of course crimson tropes also resemble each other. What makes a trope scarlet is that it resembles these tropes (the scarlet ones) as opposed to resembling those ones (the crimson ones).

Another answer would be that scarlet tropes form a primitive natural class (this view has been forcefully defended by Ehring 2011: 175-241). But whether or not what makes scarlet tropes scarlet tropes is that they resemble each other, scarlet tropes do resemble each other. And the fact that they do raises an important problem. This is the problem of the resemblance regress. Suppose that a, b and c are scarlet apples. If so, each one has its own scarlet trope: call them sa, sb, and sc. Since sa, sb, and sc are scarlet tropes, every two of them resemble each other. But then there are three resemblance tropes as well: the resemblance between sa and sb, the resemblance between sa and sc, and the resemblance between sb and sc. But these resemblance tropes, since they are

resemblance tropes, resemble each other. So there are 'second-order' resemblance tropes: the resemblance between the resemblance between sa and sb and the resemblance between sa and sc, the resemblance between the resemblance between sa and sb and the resemblance between sb and sc, and the resemblance between the resemblance between sa and sc and the resemblance between sb and sc. But these 'second-order' resemblance tropes resemble each other. So there are 'third-order' resemblance tropes, and so on ad infinitum.

There are some ways out for the trope theorist. One solution is to argue that the regress is not vicious at all and that at most it represents an increment in the number of entities (not kinds of entities) postulated by the theory. Another solution is to deny the existence of resemblance tropes and make do only with resembling tropes (for further discussion see Daly 1997 and Maurin 2002, 96–115).

There are other forms of nominalism about universals, two of which are Predicate Nominalism and Concept Nominalism. The realist about universals admits that the predicate 'scarlet' applies to a scarlet thing. But he says that the predicate 'scarlet' applies to it in virtue of its being scarlet, which is nothing else than its instantiating the universal scarletness. Similarly he says that the thing in question falls under the concept scarlet in virtue of being scarlet, which is nothing else than the thing instantiating the universal scarletness. But for Predicate Nominalism there is nothing like scarletness. According to this theory a thing is scarlet in virtue of the fact that the predicate 'scarlet' applies to it. Similarly, according to Concept Nominalism (or Conceptualism), there is nothing like scarletness and a thing is scarlet in virtue of its falling under the concept scarlet. These two views entail that if there were no speakers or thinkers, things would not be scarlet. If only because of this many would feel inclined towards another view, called Ostrich Nominalism. This view, held by Quine, among others, maintains that there is nothing in virtue of which our thing is scarlet: it just is scarlet (Devitt 1980, 97). But many think that being scarlet cannot be a

metaphysically ultimate fact, but that there must be something in virtue of which scarlet things are scarlet.

Another theory is Mereological Nominalism, according to which the property of being scarlet is the aggregate of scarlet things, and for which something is scarlet in virtue of being a part of the aggregate of scarlet things. An aggregate, or mereological sum, is a particular. But the theory faces a difficulty with so-called extensive properties like mass and shape. Not every part of the aggregate of square things is square since, for instance, not every sum of squares is itself square, and not every part of a square is itself square. So it is false that square things are square in virtue of being parts of the aggregate of square things.

A better theory in the same spirit is Class Nominalism, a version of which was maintained by Lewis (1983). Whether abstract or not, classes are particular on this view. According to Class Nominalism properties are classes of things, and so the property of being scarlet is the class of all and only scarlet things.

One problem with this theory is that no two classes can have the same members, while it does not seem that properties with the same instances need be the same. So there is no guarantee that the identification of properties with classes is correct. And even if correct, the identification is clearly not necessarily correct. Furthermore, if every F is a G and vice versa, the theory forces us to say that what makes something F is the same as what makes it G. But while every F might be a G and vice versa, it does not follow that what makes things F is the same as what makes them G.

One solution to this is to embrace a version of Modal Realism, for instance David Lewis', according to which other possible worlds exist and contain things of the same kinds as the things in the actual world (see Lewis 1986a). Then properties get identified with classes whose members need not belong to the same possible world. Thus the property of scarlet things is the class of things that are scarlet in any possible

world.[15] And even if every actual F is a G and vice versa, since not every possible F is a G or vice versa, what makes something F, namely belonging to the class of actual and possible Fs, is not the same as what makes it G. The theory denies that there are and there could be necessarily coextensive properties.

Another version of Nominalism is Resemblance Nominalism. According to this theory, it is not that scarlet things resemble one another because they are scarlet, but what makes them scarlet is that they resemble one another. Thus what makes something scarlet is that it resembles the scarlet things. Similarly, what makes square things square is that they resemble one another, and so what makes something square is that it resembles the square things. Resemblance is fundamental and primitive and so either there are no properties or the properties of a thing depend on what things it resembles.

Thus on one version of the theory a property like being scarlet is a certain class whose members satisfy certain definite resemblance conditions. On another version of the theory there are no properties, but what makes scarlet things scarlet is that they satisfy certain resemblance conditions.

What are these resemblance conditions? Sometimes the resemblance conditions include some that must be satisfied, not by the things in question (e.g. not by the scarlet things), but by things suitably related to them. For instance, in the version of Resemblance Nominalism developed in Rodriguez-Pereyra 2002, what makes scarlet things scarlet is that they resemble each other, that there is a degree of resemblance d such that no two scarlet things, and no two nth-order pairs (two-membered unordered classes) whose ur-elements are scarlet things, resemble each other to a degree less than d, and that the class of scarlet things is or fails to be included in certain other classes defined in terms of resemblance conditions like the ones just mentioned (see Rodriguez-Pereyra 2002, 156–98, for details). Of course the crimson things also resemble each other and they also meet the other conditions having to do

with resemblance degrees and their class being or failing to be included in certain other classes. But this does not mean that what makes something scarlet is what makes something crimson: what makes a scarlet thing scarlet is that it resembles these things (i.e. the scarlet ones), which happen to satisfy the stated conditions having to do with resemblance degrees and their class being or failing to be included in certain other classes while what makes a crimson thing crimson is that it resembles those things (i.e. the crimson ones), which also happen to satisfy the stated conditions having to do with resemblance degrees and their class being or failing to be included in certain other classes.

The resemblance nominalist ontology is an ontology of resembling particulars like horses, atoms, houses, stars, men (and classes). But the resemblance nominalist does not reify resemblance. Thus that a and b resemble each other does not require that there are three entities there: a, b and a third, relational entity that is their resemblance. The only entities involved in that situation are a and b. In this respect, Resemblance Nominalism resembles Ostrich Nominalism. The difference is that whereas the latter admits many sorts of basic facts involving only particulars – 'a is scarlet', 'b is an electron' – the former admits only basic facts of the form 'a resembles b to such and such a degree'.

Like Class Nominalism, Resemblance Nominalism faces the problem about the identity of coextensive properties, and the solution is the same, namely to adopt some version of Modal Realism according to which merely possible particulars are as real as actual ones. Thus (part of) what makes a certain apple scarlet is that it resembles all scarlet things, including merely possible scarlet things.

Russell (1912, 96–7) and others think that Resemblance Nominalism faces the resemblance regress. But this regress presupposes that resemblances are entities that can resemble one another. Since Resemblance Nominalism does not reify resemblances, the regress does not arise (see Rodriguez-Pereyra 2002, 105–23, for further discussion).

Finally, there is Causal Nominalism, according to which what makes it true that a is F is that a would stand in certain causal relations given certain circumstances. In other words, the claim is that for a to be F is for the theory that which charts out the functional role of F-particulars to be true of a (Whittle 2009, 246). F-particulars will resemble each other in realising the same functional role, but this does not collapse Causal Nominalism into Resemblance Nominalism, since such resemblances are not what explains why a is F, but a consequence of what explains that, namely the fact that such particulars realise a certain functional role (Whittle 2009: 255). Similar reasons might also suggest that Causal Nominalism does not collapse into any of the other nominalisms. But it has been argued that to be thoroughly nominalistic, Causal Nominalism owes a nominalistic account of what it is for different particulars to realise the same functional role, and such an account can only be in terms of any of the nominalisms distinguished above, in which case Causal Nominalism collapses into some other form of nominalism (Tugby 2013).

Which one of these theories is the best has to be decided by comparing how they score with respect to certain theoretical virtues, like accommodating firm and stable intuitions and common sense opinions, avoiding the unnecessary multiplication of entities, reducing the number of undefined primitive concepts, etc.

12.4 ABSTRACT ENTITIES

Rather than simply ask "Do abstract entities like numbers and properties exist," a metaphysicist prefers to ask in what way they might exist that is different from the way in which "concrete" objects exist.

Concrete objects can be seen and touched by our senses. They are material, with causal relations that obey the physical laws of nature.

Abstract entities are immaterial, but some of them can still play a causal role, for example when agents use them to decide on their actions, or

when chance events (particularly at the quantum level) go this way instead of that.

Just as the mind is like software in the brain hardware, the abstract information in a material object is the same kind of immaterial stuff as the information in an abstract entity, a concept or a "non-existent object." Some philosophers say that such immaterial things "subsist," rather than exist.

Broadly speaking, the distinction between concrete and abstract objects corresponds to the distinction between the material and the ideal. Ideas in minds are immaterial. They need the matter of the brain to be embodied and some kind of energy to be communicated to other minds. But they are not themselves matter or energy. Those "eliminativists" who believe the natural world contains only material things deny the existence of ideas and immaterial information.

Some ideas may be wholly fictitious and nonsensical, whether mere possibles or even impossibles, but most ideas correspond to actual objects or processes going on in the world. In either case, we can usually specify the informational content of the idea.

Metaphysicists identify abstract entities with the information contained in them. They may be concepts that did not exist in the world until they were invented. Or the information may have existed in material structures and so we say they were discovered. For example, the idea of the moon includes the concepts of a distinct shape, color, and even the appearance of a face.

Many such ideas are mind-independent. Consider properties of the moon. Most observers agree the shape is round and the color is white. (Actually, the moon is blacker than most any terrestrial black object. It only appears white compared to the blackness of space.) Some metaphysicians deny the existence of a universal property such as roundness or whiteness. But metaphysicists see the information needed to specify circularity and the

wavelengths of radiation that correspond to whiteness. And that information is embodied in the moon, just as a software program is embodied in computer hardware, and a mental idea is embodied in a brain.

Many ideas or concepts are created by human minds by "picking out" some of the information in physical objects. Whether such concepts "carve nature at the joints" (Plato, Phaedrus, 265e) depends on their usefulness in understanding the world.

Plato's Theory of the Forms held that Ideas like the circle pre-exist material beings, where Aristotle argued that the Ideas are abstractions from the most general properties in all the actual circles.

Information philosophy restores so-called "non-existent objects" to our ontology. They consist of the same kind of information that provides the structure and process information of a concrete object. What we call a "concept" about an object is some subset of the information in the object, accurate to the extent that the concept is isomorphic to that subset. By "picking out" different subsets, we can sort objects.

Information philosophy settles deep philosophical issues about absolute and relative identity. All material objects are self-identical, despite concerns about vague boundaries. All objects have relations with other objects that can be interpreted as relative identities. All objects are identical to other objects in some respects and different qua other respects.

In modern times, many philosophers distinguish a third realm beyond the ancient idealism/material dualism. Beginning with early analytic language philosophy, the apparently mind-independent ideas were described as "objective" or "intersubjective" by contrast with the purely "subjective." See the "triads" of Gottlob Frege, Charles Sanders Peirce, Karl Popper, and others.

For Popper, this third realm includes all human knowledge and culture, including human artifacts. We call this the sum of human knowledge.The ideas in our books are not the ink and paper they are printed on.

We could also widen the definition to include the biological realm. It would include the genetic content of all living things, the product of four billon years of evolution. The genetic information is not the nucleotides of DNA that carry it. Both kinds of knowledge, human and biological, are abstract entities.

Human knowledge (information) and biological knowledge are created, stored, and communicated by similar means. New information requires chance events. Storage requires embodiment of abstract symbols or patterns in material information structures.

Communication of those symbols requires transmission through a medium, via sound and sight at a distance, or touch, smell, and taste by contact. These all are evolutionary refinements of the chemical interactions inside living things. Assembled from arbitrary symbols, the syntax and semantics of messages from a cell nucleus to the ribosomes, or messages between cells, even hormonal signaling from the amygdala to the prefrontal cortex, are the progenitors of human prose and poetry.

Many centuries ago, the neoplatonist philosopher Porphyry asked what some called his "fateful question, "what is the existential status of the Platonic ideas?" Metaphysicists see ideas as the information they contain. They have no existence as material, although they might be embodied in material, as its organization. The information can be communicated in the form of energy to other material things

12.5 NOMINALISM

Nominalists hold that universals are not real mind-independent entities but either merely concepts (sometimes called "conceptualism") or merely names. Nominalists typically argue that properties are abstract particulars (like tropes) rather than universals. JP Moreland distinguishes between

"extreme" and "moderate" nominalism. Examples of nominalists include the medieval philosophers Roscelin of Compiègne and William of Ockham and contemporary philosophers W. V. O. Quine, Wilfred Sellars, D. C. Williams, and Keith Campbell.

A ‘nominalist’ is someone who argues that only particulars exist in any meaningful sense. Universals do not exist separately or independently from particulars. Words for ‘universals’ do not refer to any distinct thing. There is no (one and the same) thing, e.g. ‘blue’, ‘being a whale’, that is exemplified by two different particulars. Instead, the particulars simply resemble each other, and we pick this up in thought and language. Certainly, there are blue things – the sky, blueberries; these exist. But ‘blue’ itself doesn’t exist. Because a number of particulars resemble each other in a certain way, we call them all ‘blue’. William of Ockham, Berkeley and Hume all argued for this position. The meaning of general terms If we adopt nominalism, what do general terms mean? If universals don’t exist, do they refer to nothing at all? But then how do they get their meaning? There are two popular options. The first is that general terms mean the set of all those particular things to which they apply, e.g. ‘blue’ means ‘all blue things’. But there are three objections to this claim. First, many general terms such as ‘honesty’, are often used in ways that doesn’t allow us to substitute ‘all honest people’, e.g. ‘honesty is the best policy’ has not successfully been paraphrased in a way that refers only to sets of particular honest people. Surely it is simpler to say that ‘honesty’ refer to the universal, honesty. Second, which things are blue can change – so the set of all blue things can change. But this doesn’t change the meaning of ‘blue’. So the meaning can’t just be the set. Third, two predicates, e.g. ‘has a shape’ and ‘has a size’, can apply to exactly the same set of things, but have different meanings. The second option avoids these objections: general terms mean the concept, the abstract idea. We notice the resemblance between two or more particulars in our sense experience (e.g. in the way they look to us); we then abstract from our experience to form an abstract idea (blue (of no particular shade)), and this gives the general term its meaning. Consider: are we to suppose that all general terms get their meaning by referring to universals? What

about terms that aren't true of anything, e.g. 'is a witch'? Should we think that the property of being a witch exists, even though nothing is or ever has been a witch? That the term 'witch' stands for the idea of a witch seems more plausible than saying either that it means 'all those things that are witches' or 'the property of being a witch'. Generalizing this account, nominalists argue that 'universals' are nothing but minddependent classification systems; they simply reflect how we think.

a. Predicate Nominalism

How can we explain the qualitative identity of distinct individuals without relying on universals? One strategy begins by giving an account of what makes a single individual, which we will call "Tom," red. A minimal, but perhaps sufficient answer is to say that Tom is red because the predicate "is red" can be truly said of Tom. As for the predicate "is red" itself, it is just a particular string of words on a page (or this screen), or else a string of spoken sounds. Expanding this strategy we get the view that two individuals, say Tom and Bob, are red simply because the linguistic expression, the predicate "is red," is truly said of both. We account for commonality in nature by reference to individuals—in this case the individuals Bob and Tom, and also linguistic expressions such as the predicate "are red."

On this view then, all that exist are individuals and words for talking about those individuals. This seems metaphysically innocuous, but many philosophers charge that Predicate Nominalism ignores the Problem of Universals, and does not solve it. Why is it true to say that both Bob and Tom are red, for instance, and not green or blue? What is it about the world, the individuals, that explains why they are that way and not some other way? What explains their similarity? Predicate Nominalists just leave it as a brute fact that some things are red (or blue, or green). More precisely, what they leave brute is the fact that, for any given individual, some predicates correctly apply and others don't. But when it comes to explaining these facts, Predicate Nominalism will go no further. This

refusal to take the Problem of Universals seriously has even landed Predicate Nominalism the label "Ostrich Nominalism."

b. Resemblance Nominalism

Another Nominalist strategy is to collect individuals into sets based on resemblance relations, and then account for qualitative identity and resemblance by appeal to commonalities of set membership. An individual's redness, for example, is explained by the fact that it belongs to the set of red things. The fact that two individuals are both red is explained by their both belonging to the same set of red things. A given set, such as the set of red things, is constructed by adding to it individuals that resemble each other more closely than they resemble any nonmembers, that is, the individuals that aren't red. In this way, Resemblance Nominalists explain individuals' supposed shared qualities by talking only about resemblance relations. Things that resemble each other belong to a common set. Membership in a certain set defines what it is to have a certain property, and two members of a set can be said to share a property, or be qualitatively identical, in virtue of simply belonging to the same set of resembling individuals.

In the course of trying to account for two distinct properties, however, Resemblance Nominalists can end up constructing the same set twice. If two distinct properties were to pick out the same set, however, this would cause a serious problem. For instance, it is thought that everything that has a heart also has a kidney. If so, the set of individuals constructed for the property "has a heart" will have the same members as the set constructed for the property "has a kidney." Two sets with the same members are really just one set, not two, by the very definition of "set," so Resemblance Nominalists are forced to say that having a heart is one and the same property as having a kidney. But that is clearly false.

A second problem for the Resemblance Nominalist arises when we wonder about the method of set construction. Accounting for an individual's redness requires building a set with that individual and other resembling individuals as members. But, unfortunately for Resemblance

Nominalism, some members of the red-set actually turn out to not be red at all. To explain, remember that the construction of the set proceeds by grouping particulars that resemble each other, and, importantly, things can resemble each other in various respects. Our red apple resembles other red apples, red stop signs, and red books, and all those things would thus get into the set. But our red apple also resembles a green apple, of the same type, which isn't ripe yet. So that green apple would go in the set. Other things, too, will resemble our apple, but not by being red. As such, it seems that Resemblance Nominalism "explains" our individual's being red by reference to a set containing non-red things, which is just to say it doesn't explain it at all.

The tempting reply here is, "Sure, the green apple does resemble our red apple, but not in the right way. If you stop building sets with the wrong kinds of resemblance, you won't let non-red members into the set." The problem with this reply is that the only way to stop these "bad" resemblances is to include in the set only things that are red. But remember, being red is what the Nominalist is trying to explain in the first place, and so we can't use being red to guide set construction. To do so would be circular.

A third objection arises when we consider the resemblance relation itself. Resemblance Nominalism cannot succeed without this relation; it bears most of the explanatory load. Arguably, then, the position is committed to the existence of resemblance relations. This seems to generate a serious problem. Individuals resemble one another, of course, but resemblance itself is not an individual. So, if the position is committed to resemblance relations, and if resemblance relations are not individuals, then it seems that Resemblance Nominalism is a misnomer. Upon close inspection, the position looks to be a kind of Realism. Suppose three things (a, b, and c) resemble one another, and belong in the same set. We have three individuals in this case, but what about the instances of resemblance that hold among those individuals? Are they the same kind of resemblance? They had better be, if the previous objection is to be avoided! Resemblance Nominalists, then, need to posit instances of, and

kinds of, resemblance, all of which suggests we actually have a universal here—namely, the resemblance relation that holds between a and b, between b and c, and between a and c. If resemblance itself is a universal, Resemblance Nominalists are committed to at least one universal. Perhaps they should make life easier (if not simpler) and let them all in!

The above objections have moved some Nominalists to develop alternative accounts. Many have turned to Trope Nominalism, which we will discuss next. Trope Nominalism is committed to a new kind of entity, tropes. This may seem surprising, since Nominalists insist on ontological simplicity. But while Nominalists allow only individuals into their ontology, this doesn't preclude explanatory appeals to tropes. For tropes, as we will see, are a class of individuals. Perhaps with this innovation Nominalists will fare better.

c. Trope Nominalism

Though they were known to Medieval philosophers, tropes are relatively new to contemporary metaphysics, and have been called on to address a number of very different philosophical issues, including the Problem of Universals. Trope theory can be understood, somewhat paradoxically, as making properties into particulars. Tropes are a type of individual. While ordinary individuals are qualitatively complex, a trope is qualitatively simple, and is, in fact, a particular property instance. The blue of the sky is a particular trope numerically distinct from the blue-trope of your T-shirt, even if the two tropes are qualitatively identical.

For the tropist, ordinary individual objects can be conceived as bundles or collections of tropes; and an ordinary object, which is a complex particular, has a certain quality in virtue of having, as a member of the complex, a particular trope, which is that particular character. An apple thus is a complex of tropes—a red trope plus an apple-shape trope, plus a sweet trope, plus a crisp trope, and so forth. If the apple is red, that is because there is a red trope, a red individual, that is a member of that

bundle or complex. Red is not a property the trope has; rather, the red trope is the red itself. (Instead of treating an ordinary object as nothing more than a bundle of tropes, another option is to treat an individual as a substance that possesses a bundle of tropes. For simplicity, we will set that option aside. Whether an object is, or instead has, a bundle of tropes, the coming points hold.)

Trope Nominalism explains qualitative identity between two distinct ordinary individuals by saying that the first individual has a constituent trope that is qualitatively identical to, but numerically distinct from, a trope had as constituent by the second individual. Two apples are red, for instance, because each has a red trope "in" them, and these tropes themselves are individuals that exactly resemble each other. Importantly, because this is a version of Nominalism, we don't say the tropes resemble each other because they share a universal. Instead, they simply resemble each other. If we like, we can expand on the claim that red tropes resemble each other by constructing sets of resembling individuals. In this case, we would have a set of red tropes, the members of which resemble each other more closely than they resemble any other tropes. In summary, then, by appeal to qualitatively identical, but numerically distinct tropes, we can explain qualitative similarities among ordinary objects, all without reliance on universals.

How is this better than Resemblance Nominalism? Remember that Resemblance Nominalism was vulnerable because it explained qualitative identity of individuals by reference to sets of resembling individuals. The trouble was that the individuals collected into sets are ordinary objects, ones that have many properties, so they can resemble each other in many ways. For this reason, no noncircular criterion of set construction could exclude members with the wrong property. Tropes, however, have only one property, so if individual tropes are collected into sets, there won't be members that don't belong. The set of red tropes will have only red tropes in it. Trope Nominalists can now make unproblematic appeal to "resemblance among individuals." This has

convinced many that Trope Nominalism is a serious contender against Realism.

As well, recall that Resemblance Nominalism faced the charge that only a resemblance universal could account for resemblance relations among individuals. Trope Nominalism has a reply here too. (As always, in any complex philosophical discussion, there are various ways to reply to objections, just as there are many objections. We outline here just one of the ways Trope theories have responded to this objection.) Whereas Resemblance Nominalists seemed forced to countenance a resemblance universal, Trope Nominalists can appeal to resemblance tropes! Should we have, for example, three identical red tropes, then there will be a resemblance relation between a and b, a similar relation between b and c, and a similar relation between a and c. Trope Nominalism can treat each of these resemblances as distinct tropes. When three red tropes are mutually resembling, then, in addition to the red tropes themselves, there are three resemblance tropes. And just as the resemblance among the three red individuals is a basic fact, so too is the resemblance among these resemblance relations. Not all resemblances are alike, of course, but in this case they are. All properties are tropes, and properties include not just ones like "red," but also ones like "resembles."

But there are still problems, perhaps, for Trope Nominalism. Recall that we began by wondering how distinct ordinary things could be said to be qualitatively identical without introducing a universal common to both. Tropists instruct us to view ordinary particulars as complexes of tropes, and allow that there can be qualitatively similar but numerically distinct tropes present in different complexes. Qualitative similarity among ordinary objects is explained by the qualitative similarities of their constituent tropes. Finally, the qualitative similarity among distinct tropes is explained by the fact that some (for example, red) tropes resemble each other more closely than other (for example, non-red) tropes. The last point is the crucial one. We are told that it is simply a brute fact that some tropes resemble each other, and that others don't. That is just the way things are, and there is no further explanation to be

given. But tropes were meant to do explanatory work; so, at the level of tropes, we want and expect an account of generality. If trope theories are presented as a solution to the Problem of Universals, they should explain how there can be truths to explain the appearance of generality in reality. What we end up with, though, is brute and ungrounded qualitative identity among distinct tropes. In essence then, the tropist dismisses, but does not solve, a question about the nature of generality, by making generality a brute fact. Unlike Predicate Nominalism, the tropist goes to great lengths to develop a theory, but in the end seems to offer no more explanation of generality. We know that our original objects resemble each other. Why? Because they have tropes that resemble each other. But the latter resemblance is not explained. And so it seems we've not gone very far in explaining our original resemblance. What we want is an explanation of qualitative similarity. Accounting for it in terms of qualitative similarity—now at the level of tropes—does no more than relocate the question. The very relation we sought to understand reappears as our answer.

Again, qualitative similarity across ordinary particulars is explained by the relation of qualitative similarity holding among the tropes that constitute those particulars. But that seems either to postpone answering the question, or to answer it by appealing to the very fact we wanted explained. At best, this explanation is unsatisfying; at worst, it is circular. We are left with qualitative identity as a brute, unexplained phenomenon, triggering the reasonable question: What then have we really gained with trope theories?

Check Your Progress 1

Note: a) Use the space provided for your answer.
b) Check your answers with those provided at the end of the unit.

1. What is a universal?

   ……

   ……

……

……

……

2. What are Abstract entities?

……

……

……

……

……

3. What is Nominalism?

……

……

……

……

……

12.6 RESEMBLANCE AND CLASSES

However, this solution leaves us wondering where our classification system came from. What makes blue things blue? If it is just that we apply the term ‘blue’ to them, then what explains our concept? If there is nothing in virtue of which blue things are blue, our concept is completely arbitrary. The obvious answer is that blue things are blue because they resemble other blue things. What we have picked out with the term ‘blue’ is a pattern of resemblance. This pattern explains our concept. However, we should try to not explain this pattern of resemblance by appealing to a universal that those particulars share. There is no universal ‘blue’ in virtue of which blue things resemble each other. Their resembling each other is metaphysically fundamental. Bertrand Russell objected that nominalism ends up contradicting itself (Problems of Philosophy, p. 96). The resemblance between particulars (e.g. the similarity in colour) is a universal. Nominalists have focused too much on qualities, and forgotten relations! Resemblance is not a quality like ‘being blue’; it is a relation between particulars (x resembles y). But relations are just as much universals as qualities; the relation of ‘looks the same colour as’ holds between many particular blue things. Can

nominalists argue that the relation is just an abstract idea? Not on the account given so far, because they argue that we form the abstract idea by noticing the resemblance – so the resemblance must be real and comes before the idea. So we are bound to accept the reality of at least certain types of universal, viz. those relations that are resemblances. Nominalists respond that when two things resemble each other, the only things that exist are the two things that resemble each other. There is no third thing, 'resemblance', in addition. But take two pairs of blue things. We want to say the first pair resembles each other in the same way as the second pair. The resemblances are the same (or, at least, resemble each other). So we have to talk about resemblances.

12.7 REALISM

Platonic realism holds universals to be the referents of general terms, such as the abstract, nonphysical, non-mental entities to which words such as "sameness", "circularity", and "beauty" refer. Particulars are the referents of proper names, such as "Phaedo," or of definite descriptions that identify single objects, such as the phrase, "that bed over there". Other metaphysical theories may use the terminology of universals to describe physical entities.

Plato's examples of what we might today call universals included mathematical and geometrical ideas such as a circle and natural numbers as universals. Plato's views on universals did, however, vary across several different discussions. In some cases, Plato spoke as if the perfect circle functioned as the form or blueprint for all copies and for the word definition of circle. In other discussions, Plato describes particulars as "participating" in the associated universal.

Contemporary realists agree with the thesis that universals are multiply-exemplifiable entities. Examples include by D. M. Armstrong, Nicholas Wolterstorff, Reinhardt Grossmann, Michael Loux.

Plato and realism

Plato argued that since more than one thing can be beautiful, beauty is a property beautiful things share in common. Beauty manifests itself in all the different things, in all the different ways, we call 'beautiful'. (The Republic, Book V (476f.).) But beauty itself is not a particular thing, and Plato argued that it must be something distinct from particular things. For instance, all particular beautiful things could also be destroyed, yet that won't destroy beauty itself. Universals, therefore, exist independently of particulars, outside space, time, and the changing world of sense experience. While many realists about universals don't accept Plato's arguments or his claim that they exist completely independently of particular things, they do accept two points:

1. 'one-over-many': universals are general, so that many particulars can exhibit the same universal;

2. 'instantiation': what the particulars have in common is the universal – what makes all the things that are whales whales is the property of 'being a whale'; the universal explains, is, what they have in common. The most popular argument in favour of realism: without universals, we cannot explain or understand our abilities to recognise, categorise and generalise about particulars.

Our classifications are not arbitrary, yet particulars, of course, are particular, individual – for similarities we therefore need universals. Similarity is a matter of two (or more) particulars exemplifying one and the same property. This explains the ability to recognise new examples. If someone has never encountered this particular (e.g. this banana), how can they identify its properties (e.g. yellow)? Because they have encountered these very properties before, in other particulars. We should not say that part of a universal (e.g. yellow) exists in one object and a different part in another object. First, it is odd to think that yellow has parts. Second, we want to say that the same universal is exemplified by the two objects – referring to parts would undermine this. So we should say that yellow exists wholly in each yellow thing. Two problems with realism On the realist account, it seems a particular must either have a

universal or not – something is or isn't a banana, is or isn't yellow, and so on. But psychologists have recently argued that this 'either is or isn't' judgment isn't how our concepts work. Are plantain bananas or not? More or less? When does yellow become orange or green? Is a shark a fish? Many concepts seem to work by comparison with a prototype, a defining example (yellow, fish, banana), and other things are judged to be more or less similar to it – which is what a nominalist would say. Realism also faces two problems with how particulars and universals relate to each other. First, Aristotle argued that Plato's realism faces an infinite regress. Plato claims that particulars instantiate universals. 'Instantiation' is therefore a relation between the particular and the universal. But relations are universals. So the particular and the universal are both related to another universal, 'instantiation'. Whatever this relation is will also be a universal. And so on. One response is to deny that instantiation is a universal (just as nominalists answered Russell by denying that 'resemblance' is a relation).

Second, how do particulars 'instantiate' universals? How does a whale 'have' or 'exemplify' the property of 'being a whale'? This seems particularly challenging for Plato's theory, because universals are outside space and time. Other realist theories claim that universals are part of the spatio-temporal world (see below), though this doesn't tell us what instantiation is. Explanation We use general terms in explanations all the time. Realism argues that if they were dependent on our minds, rather than referring to universals, the explanations wouldn't work. Take change: when a particular changes, the particular persists; it is the same thing, but it has changed. So what has changed? The obvious answer is a universal – e.g. it had the property 'being blue' and now has the property 'being red'. The nominalist alternative, to say simply that it resembled blue things and now resembles red things, only describes the change; it doesn't explain it. When we explain why something changed, here too we refer to universals. For example, the weight of the particular thing placed on the scales causes the needle to move, to indicate '1 kg'. 'Being a weight of 1 kg' is a universal. And to explain a false measurement, we have to say that its real weight is different from what we measured; we

measured inaccurately. So 'being of a certain weight, x' is independent of us and our measurement. (Yes, the system of measurement we invented; but we don't create the lengths of things themselves. Being a weight of 1 kg is the same weight as being a weight of 2.2 lbs.) Again, nominalism seems weaker. Two particulars never have the same weight, just exactly similar weights. So an explanation that refers to the weight of one particular is a different explanation from an explanation that refers to the weight of the other, because it refers to a different thing. 'The needle moved to indicate "1 kg" because I put a 1-kg weight on the scale' would have to be changed to 'the needle moved to indicate "1 kg" because I put this 1-kg weight on the scale'; and this explanation wouldn't apply if I used a different 1-kg weight (I would have to give another, exactly similar, explanation). The place of universals in explanation provides the realist with answers to two common objections:

1. Do all predicates refer to universals? No, only those universals that appear in explanations (or perhaps 'causal explanations') exist; other predicates (such as 'witch') are 'merely' ideas.

2. How do we know about universals? Empirically, through experience – via the particulars that instantiate them, they affect us.

Versions of Realism

We'll begin by examining versions of Realism, all of which claim that yes, there are universals; yes, there are truths about the general; yes, there is commonality in nature. Unless we accept universals into our world view, the Realist argues, we will be unable to explain a fundamental and apparent fact, namely, that there is genuine commonality and systematicity in nature. Again, experience suggests that the individuals we encounter share properties with other individuals. Some are red, and some are not; some are blue, and some are not; some are emeralds, and some are not. Realists claim what makes it the case that these individuals seem to share properties is that in fact they do. There is an entity, a

universal, present in each of these individuals at once, which in turn explains our right to say that they are qualitatively identical.

a. Extreme Realism

The oldest, and most famous, variant of Realism comes from Plato. Plato's position is that in order to explain the qualitative identity of distinct individuals, we must accept that there is another entity besides the resembling individuals, an entity we've called a universal, and which Plato would call a Form. If two apples, for example, are both red, this is because there is a Form of Red that is able to manifest itself in both those apples at once.

Really there are three different components in this picture. There is the individual, a particular apple; there is the red of that apple - which exists right "in" or with that apple; and finally, there is the Form of Red, which manifests itself in the red of this apple (and of course, the red of other apples). What, then, is the nature of the Form itself, which provides for the bit of red we see in this apple or in that?

On Plato's view, Forms are immaterial. They are also outside of space and time altogether. They are wholly abstract, we might say. Of course, for the Form of Red to make an individual apple red, the Form must somehow be related to the apple. Plato postulates a relation of participation to meet this need, and speaks of things "participating" in Forms, and getting their qualities by virtue of this relation of participation. One last point about the nature of Forms proves crucial. For the Form of Red to explain or ground the redness of an apple, the Form of Red must itself be red, or so it seems. How could a Form make an apple red, if the Form were not itself red?

As we noted, Plato's account of generality was the first one, and it has held great appeal ever since. But it is also subject to serious criticisms. Interestingly, one of the most devastating objections to the theory of Forms comes from Plato himself. We will return later to this famous

objection, which has come to be known as the Third Man Argument. Because of the power of this argument, many philosophers sympathetic to Realism have looked elsewhere for a solution to the Problem of Universals. We'll explore one alternative now.

b. Strong Realism

Although the first position is credited to Plato, this next one is widely thought to be inspired by Aristotle. The key in this position is its rejection of independently existing Forms. As we noted in Section 2a., Extreme Realists posit an explanatory triad involving an individual, the quality of this individual, and the Form that grounds the quality of this individual (and that one, and others). Strong Realists, in contrast, resist this triad. When an individual has a quality, there is simply the individual and its quality. No third, independent thing is needed to ground possession of the quality. A universal, on this view, just is the quality that is in this individual and any other qualitatively identical individuals. The universal red, for example, is in this apple, that apple, and all apples that are similarly red. It is not distinct and independent from the individuals that have this color. Because it is a universal it can exist in many places at once. According to Strong Realism, the universal red in my apple is numerically identical to the red in yours; one universal is in two individuals at once. It is wholly present in each place where it exists.

As we'll see, Strong Realism is immune to the Third Man Argument. It also reduces the strangeness of Realism. We need not have Forms that are abstract, in the sense of being outside of space and time, mysteriously grounding the qualities of material individuals. The Strong Realist's universals are in space and time, and are able to be in many places at once. Multiple exemplifications may be considered strange, but it not as strange as existence outside space and time.

c. Objections to Realism

We turn now to objections. We've already seen what might be called the Strangeness Objection. This is the intuition some philosophers have that universals are just too odd-natured to be accepted into our world view. These philosophers typically countenance only what is material, spatiotemporal, and nonrepeatable; and universals just don't fit the bill. Philosophers who believe in only individuals are known as Nominalists. We'll return to them later. We should note, however, that there are other versions of Realism in addition to the two we've discussed. Medieval philosophers spent much time exploring these issues, and formulated many versions of Realism. This introduction to the Problem of Universals will not explore these other variants, though they too are vulnerable to the objection that closes this section.

Extreme Realism is challenged by the Third Man Argument. Recall the essentials of that position, in particular, what is said about the nature of the Forms. For any given quality had by an individual there is a Form of that quality, one that exists separately from individuals, and also from the quality found in each particular individual. There is the apple, the red of this apple (and the red of that apple), and the Form of Red. By participating in the Form of Red, the apple gets its particular bit of redness. And finally, as we saw, the Form Red must itself be red. Otherwise it couldn't provide for the redness of the apple. Suppose we now ask, "What explains the red of the Form of Red, which itself, as we said, is red?" Coming to believe in the existence of Forms begins with the urge to explain the redness of apples and other material individuals, but once this step is taken, the Extreme Realist is forced to explain the redness of the Form of Red itself.

To explain the redness of the Form of Red, in Extreme Realist fashion, we will have to say that the Form of Red participates in a Form. After all, a fundamental tenet of Extreme Realism is that possession of a quality always results from participation in a Form. Presumably, a Form cannot participate in itself. Therefore, if the redness of the Form of Red is to be explained, we'll need to say that the Form of Red participates in a higher-order Form, Red2 . Moreover, participation in Red2 will explain

the redness of Red1 only if the higher-order Form, Red2, is itself red. Of course, now we will have to explain the redness of the Form of Red2, and that will require us to introduce yet another Form, in this case, the Form of Red3, which the Form of Red2 participates in to get its redness.

It is clear that this will go on indefinitely. So it seems that we will never have an explanation of why or how the Form of Red is actually red. That means we'll never be able to explain why our original apple is red. That was what we wanted initially, and so it seems that Plato's theory is unable to provide an answer. This has led many to reject Plato's theory. (There is, not surprisingly, a large body of secondary literature which explores whether Plato's theory can survive this objection and what Plato himself thought about it, since, as we've mentioned, it was Plato himself who first raised the objection.)

The Third Man Argument threatens only Extreme Realism. Strong Realists do not rely on independently existing Forms to explain the redness of individuals, and so they need not explain why an independent existent - the Form of Red - is itself red. Instead, Strong Realists can simply note that the universal present in each apple is itself red, and the red of this universal explains the red of each apple, and also their similarity with respect to color.

However, the objection to which we now turn threatens all variants of Realism. This final objection is not so much an argument that Realism is intrinsically flawed, but rather that Realism is unnecessary. A general principle governing many metaphysical debates is that, other things being equal, the fewer types or kinds of entities in one's ontology, the better. Those opposed to Realism argue that they can meet the explanatory demands we've discussed without relying on universals. If qualitative resemblance and identity can be accounted for without universals, and if any other work done with universals can be done as well without them, then, the opponents of Realism argue, we should do without them. We will then have fewer categories in our ontology, which, other things being equal, is to be preferred.

For this reason, opponents of Realism try to solve the Problem of Universals without universals. The question we will track is whether such solutions are in fact adequate. If not, perhaps commitment to universals, however unpalatable, is necessary.

3. Versions of Anti-Realism

We'll call any proposed solution to the Problem of Universals that doesn't endorse universals a version of "Anti-Realism". Anti-Realists divide into two camps: Nominalists and Conceptualists. Nominalists maintain that only individuals exist. They argue that the Problem of Universals can be solved through proper thinking about individuals, and by appeal to nothing more than the natures of, and relations among, individuals. Conceptualists, in contrast, deny that individuals suffice to solve the Problem, but they also resist appealing to mind-independent universals. Instead, qualitative identity and resemblance are explained by reference to concepts or ideas. We will explore this Conceptualist strategy at the conclusion of our discussion of Anti-Realism. First we will survey a range of Nominalist theories.

12.8 CLASSICAL AND CONTEMPORARY

An inventory of reality's most fundamental entities would almost certainly include individuals. Individuals are singular objects. They can exist over time, but in only one place at a time. Individuals also have properties (also called qualities), at least most of which can vary over time. A ripening apple goes from being green to being red, for instance. Almost everyone agrees that individual apples exist, and that they are colored, but are redness and greenness entities themselves? If so, what are they like? And if redness and greenness are not real entities, how could our apple be colored at all? Without its distinctive qualities, an apple wouldn't even be an apple.

Let us use the term "universal" for properties (or qualities). In a philosophical tone of voice we can now ask, "Are there really such

universals? If so, what is their nature? How are they related to individuals?" These questions start us down a road philosophers have been exploring since philosophy itself was young.

We can approach the question about the existence of universals from a linguistic perspective. Consider how often we speak of things having properties: "That apple is red;" "The oven is hot;" or "My shirt is dirty." Such sentences have a subject-predicate structure. The subject term refers to the individual described in the sentence. The predicate, on the other hand, describes; it tells us something about the way that individual is, how it is qualified. Do predicates also refer? Some philosophers think they do. Alongside the individuals picked out by subject terms of sentences, it is thought, there are entities of a different kind, picked out by predicates. Once again we can call these "universals".

Prima facie, there seems to be every reason to believe in universals. They look to be just as much a part of our experience as individuals are. Philosophical questions and problems arise, however, when we try to specify their natures. If universals are real, but are not individuals, what are they? Some philosophers contend that universals are too strange to accept into our world view. In a similar vein, it has been alleged that any philosophical work done by universals can be done just as well without them; whether they are strange or not, many argue, universals are simply unnecessary. Of course, it would need to be shown that universals really can be dispensed with, and we'll return to this controversy. But first we will examine competing Realist conceptions of the nature of universals.

A final strategy for avoiding universals comes by making generality not a feature of reality, but instead a feature of our minds and the concepts or ideas in minds. Conceptualism thus seeks a third way, as they see it, between the excesses of Realism, and the unilluminating resemblance relations of Nominalism. Because many individuals can fall under the same concept, Conceptualism hopes to accommodate the intuition that qualitative identity and resemblance are grounded in the sharing of something, but in a way that doesn't appeal to dubious items such as universals. According to this view, individuals a and b are red because

the concept of redness applies to both. The concept red is general, not because it denotes a real non-individual, but only because many diverse particulars fall under, or conform to, that concept.

As tidy as this seems, it too suffers from problems. To see this, we need to realize that concepts can be misapplied in some cases, such as when we say of a cat that it is a dog. And misapplied concepts explain nothing deep about generality. Conceptualism's appeal to concept application must concern only correct concept application. As such, it is fair to ask, "What makes it the case that the concept red is rightly applied to both a and b, but not of some third individual, c?" To treat this fact as brute and inexplicable is to revert to problematic Predicate Nominalism. So it seems the Conceptualist must say that the concept red applies to a and b, but not c, because a and b share a common feature, a feature c lacks. Otherwise, the application of red is unconstrained by the individuals to whom it applies. But simply noting that a and b resemble each other isn't going to help, because that just is the fact we originally sought to explain, put differently. The Conceptualist might now say that a and b share a property. But if this isn't to amount to a restatement of the original datum, it must now be interpreted as the claim that some entity is in both a and b. That, of course, turns our supposed Conceptualist strategy back into Realism.

Critics say Conceptualism solves no problems on its own. In trying to ground our right to predicate the concept red of a and b, we are driven back to facts about a and b themselves and that leaves Conceptualism as an unstable position. It teeters back and forth between Realism, on the one hand, and Nominalism, on the other.

12.9 LET US SUM UP

Universals are a class of mind-independent entities, usually contrasted with individuals (or so-called "particulars"), postulated to ground and explain relations of qualitative identity and resemblance among individuals. Individuals are said to be similar in virtue of sharing universals. An apple and a ruby are both red, for example, and their

common redness results from sharing a universal. If they are both red at the same time, the universal, red, must be in two places at once. This makes universals quite different from individuals; and it makes them controversial.

Whether universals are in fact required to explain relations of qualitative identity and resemblance among individuals has engaged metaphysicians for two thousand years. Disputants fall into one of three broad camps. *Realists* endorse universals. *Conceptualists* and *Nominalists,* on the other hand, refuse to accept universals and deny that they are needed. Conceptualists explain similarity among individuals by appealing to general concepts or ideas, things that exist only in minds. Nominalists, in contrast, are content to leave relations of qualitative resemblance brute and ungrounded. Numerous versions of Nominalism have been proposed, some with a great deal of sophistication. Contemporary philosophy has seen the rise of a new form of Nominalism, one that makes use of a special class of individuals, known as tropes. Familiar individuals have many properties, but tropes are single property instances. Whether Trope Nominalism improves on earlier Nominalist theories is the subject of much recent debate. In general, questions surrounding universals touch upon some of the oldest, deepest, and most abstract of philosophical issues.

12.10 KEY WORDS

Abstract: a general concept formed by extracting common features from specific examples. **Abstraction entity** - that which is perceived or known or inferred to have its own distinct existence (living or nonliving)

Nominalism: Nominalism is a philosophical view which comes at least in two varieties. In one of them it is the rejection of abstract objects, in the other it is the rejection of universals

Universal: relating to or done by all people or things in the world or in a particular group; applicable to all cases.

12.11 QUESTIONS FOR REVIEW

1. What is a universal?

2. What are Abstract entities?
3. What is Nominalism?

12.12 SUGGESTED READINGS AND REFERENCES

- Feldman, Fred (2005). "The Open Question Argument: What It Isn't; and What It Is", Philosophical Issues 15, Normativity.
- Loux, Michael J. (1998). Metaphysics: A Contemporary Introduction, N.Y.: Routledge.
- Loux, Michael J. (2001). "The Problem of Universals" in Metaphysics: Contemporary Readings, Michael J. Loux (ed.), N.Y.: Routledge, pp. 3–13.
- MacLeod, M. & Rubenstein, E. (2006). "Universals", The Internet Encyclopedia of Philosophy, J. Fieser & B. Dowden (eds.). (link)
- Moreland, J. P. (2001). Universals, McGill-Queen's University Press/Acumen.
- Price, H. H. (1953). "Universals and Resemblance", Ch. 1 of Thinking and Experience, Hutchinson's University Library.
- Rodriguez-Pereyra, Gonzalo (2008). "Nominalism in Metaphysics", The Stanford Encyclopedia of Philosophy, Edward N. Zalta (ed.). (link)
- Armstrong, D.M. Universals: An Opinionated Introduction (Boulder: Westview Press, 1989).
- An excellent survey of nearly every position in the debate over universals, by one of the most important contributors to this century's version of the debate.
- Armstrong, D.M. What is a Law of Nature? (Cambridge: Cambridge University Press, 1983).
- An overview of the debate over the laws of nature, with a defense of univerals as the required elements in an adequate account.
- Campbell, K. Abstract Particulars (Oxford: Basil Blackwell Ltd., 1990).
- An important introduction to the theory of tropes, showing the versatility and potential of this metaphysical category.

- Loux, M. Metaphysics: A Contemporary Introduction (London: Routledge, 1998).
- Covers foundational debates on a number of areas, with particular attention to the Problem of Universals.
- Simons, P. "Particulars in Particular Clothing: Three Trope Theories of Substance," Philosophy and Phenomenological Research 54 (1994), pp. 553-75.
- A sophisticated exploration of various trope theories with important proposals for advancing this theory. Reveals the potential power of this position as an alternative to Realism.
- Spade, P.V. (trans.) Five Texts on the Mediaeval Problem of Universals (Indianapolis: Hackett Publishing Co., 1994).
- Indispensable collection of important Medieval texts with useful guides and comments.
- Vlastos, G., "The Third Man Argument in the Parmenides," Philosophical Review 63 (1954), pp. 319-49.
- A landmark article on Plato's Third Man Argument, one that rekindled widespread interest in Plato's metaphysics.

12.13 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. If realism is true, and universals exist, then we should be able to say something about what it is for a universal to exist. This is a very problematic question. Plato argued that universals are Forms. They exist completely independently of all particulars, and therefore outside space and time. This led to the problems of instantiation discussed above. Aristotle argued that exist only in and through the particulars that exemplify them. (Metaphysics Z) There is no redness independent of all red things. So universals exist in space and time – but at many points in space at the same time. The argument from explanation above develops this idea, using science to establish what universals exist. However, we can

object that it is a little peculiar to say that, if two red things are ten feet apart, then redness exists ten feet away from itself! Second, there are some universals that are not (currently) instantiated, e.g. 'being 250,000 miles long'. Do they exist? We could argue that a universal exists if it is instantiated at some time. Otherwise, we have to say that universals come in and out of existence – which is peculiar, given the role they play in explanations.

2. The abstract/concrete distinction has a curious status in contemporary philosophy. It is widely agreed that the distinction is of fundamental importance. And yet there is no standard account of how it should be drawn. There is a great deal of agreement about how to classify certain paradigm cases. Thus it is universally acknowledged that numbers and the other objects of pure mathematics are abstract (if they exist), whereas rocks and trees and human beings are concrete. Some clear cases of abstracta are classes, propositions, concepts, the letter 'A', and Dante's *Inferno*. Some clear cases of concreta are stars, protons, electromagnetic fields, the chalk tokens of the letter 'A' written on a certain blackboard, and James Joyce's copy of Dante's *Inferno*.

   The challenge is to say what underlies this dichotomy, either by defining the terms explicitly, or by embedding them in a theory that makes their connections to other important categories more explicit. In the absence of such an account, the philosophical significance of the contrast remains uncertain. We may know how to classify things as abstract or concrete by appeal to intuition. But in the absence of theoretical articulation, it will be hard to know what (if anything) hangs on the classification.

   It should be stressed that there need not be one single "correct" way of explaining the abstract/concrete distinction. Any plausible account will classify the paradigm cases in the standard way, and any interesting account will draw a clear and philosophically significant line in the domain of objects. Yet there may be many equally interesting ways of accomplishing these two goals, and if

we find ourselves with two or more accounts that do the job rather well, there will be no point in asking which corresponds to the *real* abstract/concrete distinction. This illustrates a general point: when technical terminology is introduced in philosophy by means of examples but without explicit definition or theoretical elaboration, the resulting vocabulary is often vague or indeterminate in reference. In such cases, it is normally pointless to seek a single correct account. A philosopher may find himself asking questions like, 'What isis idealism?' or 'What isis a substance?' and treating these questions as difficult questions about the underlying nature of a certain determinate philosophical category. A better approach is to recognize that in many cases of this sort, we simply have not made up our minds about how the term is to be understood, and that what we seek is not a precise account of what this term already means, but rather a *proposal* for how it might fruitfully be used in the future. Anyone who believes that something in the vicinity of the abstract/concrete distinction matters for philosophy would be well advised to approach the project of explaining the distinction with this in mind.

3. The word 'Nominalism', as used by contemporary philosophers in the Anglo-American tradition, is ambiguous. In one sense, its most traditional sense deriving from the Middle Ages, it implies the rejection of universals. In another, more modern but equally entrenched sense, it implies the rejection of abstract objects. To say that these are distinct senses of the word presupposes that universal and abstract object do not mean the same thing. And in fact they do not. For although different philosophers mean different things by universal, and likewise by abstract object, according to widespread usage a universal is something that can be instantiated by different entities and an abstract object is something that is neither spatial nor temporal.

   Thus there are (at least) two kinds of Nominalism, one that maintains that there are no universals and one that maintains that

there are no abstract objects. Realism about universals is the doctrine that there are universals, and Platonism is the doctrine that there are abstract objects.

But Nominalism is not simply the rejection of universals or abstract objects. For if that were the case, a nihilist, someone who believed that there are no entities at all, would count as a nominalist. Similarly, someone who rejected universals or abstract objects but were agnostic about the existence of particulars or concrete objects would count as a nominalist. Given how the term 'Nominalism' is used in contemporary philosophy, such philosophers would not be nominalists. The word 'Nominalism' carries an implication that the corresponding doctrine asserts that everything is particular or concrete, and that this is not vacuously true.

Thus one kind of Nominalism asserts that there are particular objects and that everything is particular, and the other asserts that there are concrete objects and that everything is concrete.

UNIT 13: MIND AND BODY

STRUCTURE

13.0 OBJECTIVES

After this unit, we can able to know:

To introduce the students to the complex notion of mind-body relationship and see its significance for our self-understanding.

• To make a survey of the various contemporary positions on this complex issue.

• To relate the mind-body problem to the contemporary phenomenological understanding of "lived body" and thus to appreciate the body as profoundly more than material.

13.1 INTRODUCTION

The unit surveys the seven metaphysical strategies in understanding the mind in contemporary philosophy. A brief evaluation of the different positions in contemporary philosophy is taken. Then we ask if the mind-body problem is a false problem which should be "dissolved away". Finally, we take up the continental tradition and see the significance of

"lived body" there. Here the body is taken much more seriously and not apart from the mind.

The surprise and confusion regarding the nature of man has baffled philosophers of all ages. The world seemed full of contradictions. The mind and body did not seem to be one and the same substance or properties of one. A dualistic stand was there even in the earliest philosophical traditions. In the Cartesian philosophy, this distinction became so systematic that its effects got so rooted into various aspects of human life and thinking. Problem of understanding reality as two had its own problems. Though the interaction between the two seemed quite natural to common sense but to state it in a solid theory, it became difficult. There were other theorists who with equal conviction argued that there were not two different substances but the world was full of properties and appearances of the one and the same reality. The modern period of western thought was in fact preoccupied with the debates on the nature of reality and understanding the relation between both mind and matter.

13.2 MIND AND BODY

The mind–body problem is the problem of giving an account of how minds are related to bodies, or how mental states and processes are related to bodily states and processes. That they are intimately related seems beyond doubt, and has not been seriously disputed. Evidently, our perceptual experiences depend on the way external physical stimuli impinge on our sensory surfaces, and, ultimately, on the processes going on in the brain; our desire for a drink of water somehow causes our body to move in the direction of the water-cooler; a bruised elbow causes me pain when it is touched, and the pain in turn causes me to groan and wince; and so on. But how do conscious experiences emerge out of the electrochemical processes in a grey mass of neural fibres? How do our beliefs and desires manage to get the appropriate neurons to fire and thereby cause the right muscles to contract? Schopenhauer called the

mind–body problem 'the world knot', a puzzle that is beyond our capacity to solve (Kim 2011).

The mind–body problem as it is now debated, like much else in contemporary philosophy of mind, has been inherited from Descartes. Descartes conceived of the mind as an entity in its own right, a 'mental substance', the essential nature of which is 'thinking', or consciousness. In contrast, the defining nature of material bodies, or material substances, was claimed to be spatial extendedness—that is, having a bulk in physical space. Thus, Descartes envisaged two disjoint domains of entities, one consisting of immaterial minds with their mental properties (e.g. thinking, willing, feeling) and the other of material bodies with their physical properties (e.g. size, shape, mass, motion). For Descartes, not only did minds lack spatial extension; they were not in physical space at all. However, the two domains are not to be entirely unconnected: a mind and a body can form a 'union', resulting in a human being. Although the nature of this 'union' relationship was never made completely clear, (Descartes claimed it to be a primitive notion that is intelligible in its own right), it evidently involved the idea that a mind and a body joined in such a union are involved in intimate and direct causal interaction with each other.

The mind-body problem, i.e. how the mind and the body are interrelated, is commonly seen as the most centric problem in the philosophy of mind. The other relevant issues discussed in the philosophy of mind are about the nature of the mind and it may not be much concerned about the nature of the physical body. Throughout history, be it in philosophy, religion or myth, there have been representations of a separation between the corporeal and spiritual and prominence have always been given to mind or the spiritual. It has been considered more enduring, efficacious and valued. For long, in the history of philosophy, the mind body problem did not exist with such a severe dichotomy as happened in the modern period. The reigning mode of explanation sorted out reality and causality along quite different lines or, rather, without the sort of lines associated with a sharp dichotomy between the mental and the physical.

Neither was there any serious difference between ideas of causality, of what is ultimately real, and how we can know with certainty - ontology and epistemology respectively. These concerns were all rather neatly integrated in to an Aristotelian, organismic framework of things. But during the renaissance, the group of causes started drifting towards two poles, putting this framework under strain. The material and efficient causes were drifting towards one pole and the formal and final ones towards another. Though we do not take them to be extremes in a mind-body dichotomy, yet, along with concepts like substantial form or pre-Aristotelian understanding of matter must have given rise to the problems that we saw in the modern world. If we try to locate the beginning of the problem of mind-body dualism, as we understand it today, it would be doubtlessly in the writings of Rene Descartes. We find the full-blown paradox of the mind-body dichotomy in the Cartesian writings. In thinking, his method of radical doubt reaches a single certainty. A class of existence gets derived as the thinking substances. Mind was being put forward as a self-contained sphere of enquiry. This pole of the dualism was linked to an equally strongly-held belief that causality in the material world is based on matter in motion, 'extended substances', obeying their own material laws. Introspection became the basis of certainty, while scientific knowledge of the external world depended on the laws of matter and motion. These two bases for knowing introduced two closely-linked chasms in modern thought: the gap between mind and body in Ontology and the gap between the subject and the object in epistemology. Matter was considered something that was available for dealing in mathematical terms and to experimental method. Hence came the notion that what science deals with should be in terms of bodies having extension and shape. Similarly the non-extendable substance was understood in the negative, something that could not be treated mathematically and experimentally.

13.3 DUALISM AND MATERIALISM

13.3.1 Dualism

Each and every culture has its peculiar views about what the soul or the mind is, where is it "seated", what is it made of, and how does it function. Contemporary debates reflect in many respects the distinction between mind and body made by the early modern philosopher Rene Descartes. Descartes has bequeathed to the next generations of philosophers the very language in which we often talk about minds and bodies. This language, according to the English analytic philosopher G. Ryle has prevented philosophy and psychology from a satisfactory solution of the problems that arise from the mind-body dichotomy (Karageorgiev 2008). Moreover, the Cartesian language speaks about minds with the same words used to speak about bodies: as if our thoughts, desires, and beliefs are 'things" or substances on a par with tables, chairs, and houses. This is a category mistake G. Ryle which makes the mind look as something impossible to catch, 'a ghost in the machine' G. Ryle of the human body. Many contemporary philosophers and scientists object to ghosts of whatever kind and their debate with adherents of Cartesianism has gave birth to the three major strategies in the metaphysics of mind: dualism, reductionism, and eliminativism. In what follows we will take up the major features of these strategies in comparison to each other. Then we will sketch the explanatory approaches which supervene the metaphysical strategies – functionalism (dualistic and reductionistic), connectionism (eliminativistic), and the emerging view of the so called dynamic systems theory. Dualism Modern dualism has been stated most clearly by Descartes, who insists: 'The rational soul could not be in any way extracted from the power of matter but must be expressly created." More recently, the Austrian philosopher F. Brentano replaces the soul with the phenomenon of intentionality and turns it into the most important and un-eliminable feature. Of consciousness: 'the reference to something as an object is a distinguishing characteristic of all mental phenomena. No physical phenomenon exhibits anything similar." This has become known as 'Brentano's thesis' and many contemporary dualists like Thomas Nagel accept it. What dualism – beside superstition, religious belief in angels and immortal souls, and other historical roots – amounts to, is that mind is a 'brute metaphysical fact' which cannot be explained in non-mental

terms like physical or biological ones. Nagel adds that mind could be never known in the way we know material things, i.e. from an objective perspective. We will never be able to understand what it's like to be a bat, because 'some things can be known only from the inside' (Karageorgiev 2008).

Thus, Descartes's mind–body doctrine combines substance dualism, i.e. a dualism of mind and body, each conceived as an independent substance, with the idea that there is causal interaction between the two. Many of his contemporaries, like Leibniz and Malebranche, were substance dualists, but they rejected the idea of mind–body causal interaction. They found it difficult to make sense of the idea that immaterial minds with neither extension nor mass, and not even in physical space, could somehow move material bodies with mass and inertia. Substance dualism, however, has largely dropped out of contemporary discussions, although it has by no means disappeared; few philosophers now find the idea of minds as immaterial substances coherent or fruitful. There has been a near consensus, one that has held over almost a century, that the world is essentially physical, at least in the following sense: all that exists in the space-time world are bits of matter and complex structures aggregated out of bits of matter, and the space-time world is the whole world. If all matter were to be removed from this world, nothing would remain—no minds, no 'entelechies', no 'vital forces', and not even an empty space-time. According to this physical monism (or 'ontological physicalism'), mental states and processes are to be understood as states and processes occurring in certain complex physical systems, such as advanced biological organisms, not as states of some ghostly immaterial beings. This means that the principal remaining project for contemporary discussions of the mind–body problem is that of explaining how the mental character of an organism or system is related to its physical nature (Kim 2011). Recently, the Schopenhauerian pessimism has been resurrected by some philosophers, who argue that the mind–body problem is insoluble, and that we will never be able to understand how consciousness, subjectivity, and intentionality can arise from material processes. In any case, one thing that is certain is that the mind–body

problem is one of the deepest puzzles in contemporary philosophy, and that it will continue to test our philosophical intelligence and imagination (Kim 2011).

The history of dualism could be traced as back as to Plato and Aristotle. But until in the seventeenth century, it was not precisely formulated and presented. This systematization we see happening in the writings of Rene Descartes. In philosophy of mind, dualism is considered to be any of those views about the relationship between mind and matter, which goes on to claim that the two are ontologically different and separate categories. Dualists are strong in claiming that neither mind nor matter could be reduced to the other. There are different kinds of dualistic theories and grades corresponding to the extremity of their claims. The predicate dualists claim that there should be more than one predicate to make sense of the world. It is to ask if everything could be reduced to the physical. Suppose, one has to say that he/she is happy, can the experience of being happy be reduced to a physical predicate, such as one explaining it in terms of the brain states? If we cannot do that, then it means we need more than a single predicate to explain about the world. Almost all the psychological experiences may point to dualism this way. The arguments of the property dualists are stronger. The property dualists would argue that the two may not be substantially different but the mental and physical properties are categorically distinct and not reducible to each other. This is commonly called as mind and matter and is in opposition to monism which tends to treat both mind and matter as ultimately the same thing. They claim that whatever there is in the world, it must have more than one property, such as the property of being physical. It proposes that, although the world is constituted of just one kind of substance - the physical kind – there exist two distinct types of properties: The physical properties and the mental properties. To say it differently, it is the claim that non-physical, mental properties such as beliefs, desires and emotions inhere in some physical substances, such as in the brains. Another kind of dualism, substance dualism, claims that there are just different types of substances, not just predicates or properties. Here substance is understood as something more than the

collection of the properties it possesses; it is the thing which possesses them. So the mind is not just a collection of thoughts, but is that which thinks, that which has them, an immaterial substance over and above its immaterial states. The substance dualists argue that the mind is an independent substance and the property dualists argue that the mind is a group of independent properties that emerge from and cannot be reduced to the brain.

13.3.2 Materialism

Materialism is a form of philosophical monism that holds that matter is the fundamental substance in nature, and that all things, including mental states and consciousness, are results of material interactions. According to philosophical materialism, mind and consciousness are by-products or epiphenomena of material processes (such as the biochemistry of the human brain and nervous system), without which they cannot exist. This concept directly contrasts with idealism, where mind and consciousness are first-order realities to which matter is subject and material interactions are secondary.

Materialism is closely related to physicalism—the view that all that exists is ultimately physical. Philosophical physicalism has evolved from materialism with the theories of the physical sciences to incorporate more sophisticated notions of physicality than mere ordinary matter (e.g. spacetime, physical energies and forces, and dark matter). Thus the term physicalism is preferred over materialism by some, while others use the terms as if they are synonymous.

Philosophies contradictory to materialism or physicalism include idealism, pluralism, dualism, and other forms of monism.

Monism comes from the Greek word monas, meaning one. Monism is the strong argument that the mind and body are not ontologically distinct entities. This was first advocated by Parmenides 3 in the West and then in the seventeenth century, this stream of thought was further taken to

greater significance by Baruch Spinoza. There are three strands of thought under this mode of thought. The physicalists claim that entities postulated by physical theories exist and the mind and its properties will be explained eventually as the physical theories evolve further. Idealists maintain that the mind is all that there is and the external world is either the mind itself or only an illusion created by the mind. And the neutral theorists maintain that there is some other neutral substance and both mind and matter are but two different properties of the same. As we understand monism, it responds to the mind body problem stating that there are no two distinct substances. It would go on to mean that in fact there is only body or mind. These thoughts are contrary and the consequences of the two are quite distinct. We will look at some of the further explanations of the monistic thought.

Physicalism

To state in quite general terms, the theory proposes that everything is physical. The contemporary philosophers state the same as that everything supervenes on, or is necessiated by, the physical. The actual world, the universe and everything in it, conforms to a certain condition, the condition of being physical. Physicalists but never deny that there are many items in the world that do not appear physical in the first glance like the items of biological, or psychological, or moral, or social. But they hold on to the view that in the ultimate case, these items turn out to be either physical or supervene on the physical. It is important to understand the concept of supervenience here. It is a central notion in analytic philosophy and claims that aesthetic, moral and mental properties supervene upon physical properties. If we consider two pictures on a computer screen, composed of pixels, we can say that the pictures supervene on the pixels. Or if we were to analyse closely a painting, going closer to it, we no longer see the painting but the brush strokes. Then we could say that the painting depends on the brushstrokes, but is not identical with them – the painting supervenes on them. Here we may have two possible theories: reductive and non-reductive. The reductive theorists might say that every mental concept can be reduced,

somehow or other, to a physical concept and the non-deductive theorists might say that instead of trying to reduce the mental to the physical, the mental supervenes on the physical, as we saw above. It is a hope based enterprise that as science progresses, physics and neuroscience may be able to explain everything that is there.

Identity Theory

The identity theory of mind holds that states and processes of the mind are identical to states and processes of the brain. For example, if we feel pain somewhere in the body, then it is equal to say that the appropriate activity is going on in the brain, and if we feel love for someone, then it is another state in the brain. It may not be that the mind is identical to the brain. To ask, when we experience something green, does it mean that the brain state is green too, does not make much sense. Mind and brain remain a matter of identifying processes. The identity theory of mind is to the effect that these experiences just are brain processes, and not merely correlated with brain processes.

Functionalism

It is a questioning as to "how" rather than "what". It is to wonder what the function of the mind is, or how the mind works, and to distinguish it from the body by saying that this function is different from those performed by the body. According to functionalism that which makes something a mental state of a particular type does not depend on its internal constitution, but rather on the way it functions, or the role it plays, in the system of which it is a part. It is a philosophical thesis about the nature of mental states. According to these theorists, mental states can be identified with the function they have on behaviour. Instead of questioning about what a mental state is, i.e. what it's composed of, or where it is, we call it mental because of what it does. The fact may be that we identify different bridges by the same concept for the function they do though they may be different in size, shape and strength.

Eliminativism

Eliminative materialism or eliminativism is the radical claim that many of our common sense understanding about the mind is deeply wrong and that some or all of the mental states posited by common-sense do not actually exist. The theorists claim that folk psychology, our ordinary common-sense understanding of the mind is hopelessly flawed and will eventually be replaced or eliminated by an alternative. This is usually taken to be an accomplishment that will be made by neuroscience, the study of the brain and nervous system. Eliminative materialism dates back to the 1960s and perhaps earlier. Descartes famously challenged much of what we take for granted, but he insisted that, for the most part, we can be confident about the content of our own minds. Eliminative materialists go further than Descartes on this point, since they challenge the existence of various mental states that Descartes took for granted. They might agree that folk psychology "works" to a certain satisfaction, but claim it will be replaced. For instance, the existence of malevolent spirits was invoked to explain some mental disorders in the past, but now we say that this account has given way to psychological and other explanations. Thus we generally note that malevolent spirits turned out to be not real after all. In a similar way, notes the eliminativist, the folk psychologist's theories will give way soon as mental states do not exist.

Idealism

Idealism offers an explanation to the reality or human experience in which ideas or spiritual, non-materialistic elements are central. The most famous idealist, perhaps, was George Berkley. This theory considerably differs from all the other monistic explanations that we saw before. In idealism the argument is that, instead of all mental concepts being actually physical, whatever be the way, the opposite may be true. Only minds and the mental are true and exist, and the physical should be explained in terms of the mental. Idealism, like any other monistic theory, does not need to explain the problem of mind-body interaction as ultimately there is only one substance. Monism, particularly physicalism,

is not without its share of criticism. We often find that there is something beyond all that is physical. In the famous article "what Mary didn't know" by Frank Jackson a situation is presented. Herein Mary is given all possible information about colour, though she has never seen any colour for herself. Her world is in black and white. The day she is out in front of something red, she comes to know about the colour red that was not available to her before. From the two claims from this situation, i.e. 1. Mary had all the information about the physical before she was released and that 2. Mary learned some new information after she was released; we may come to conclude that after all everything may not be physical.

Check Your Progress 1

Note: Use the space provided for your answers.

1) What is basically the mind-body problem?

   ……
   ……
   ……
   ……
   …….

2) What is Brentano's thesis?

   ……
   ……
   ……
   ……
   …….

Reductionism

Not all philosophers agree with Nagel. Some raise the question whether any phenomenon can be known in some other way different from the first person perspective, insofar as we cognise ultimately as persons, not

from an objective perspective as e.g. telescopes or thermometers. These philosophers believe that mental phenomena can ultimately be explained -in one way or another - as physical phenomena. It is a matter of scientific development and philosophical analysis of mental concepts like 'mind', 'belief', or 'hope' to achieve such explanation. This doesn't mean that belief is a physical thing. It means that the word 'belief' refers to something in our lives that can also be referred to by non-mental terms like 'propositional representation that leads to a certain movement, e.g. avoiding negative stimuli'. By analogy, when chemists speak of H2O, i.e. when they have reduced 'water' to 'H2O' it doesn't mean that water doesn't exist. Dualists claim that no proper reduction of the mental to the physical is possible, while some philosophers take the reduction to be actually elimination: not of the term by which we refer to the mind and its derivatives, but of the very thing itself. They are called eliminativists.

Eliminativism

Eliminativism holds that our commitment to different mental states is nothing more than an outdated folklore, and that it is certain to be superseded by a more scientific understanding of our nature. Thus, the standard eliminativist argument begins with the assumption that vernacular ('folk') psychology—in particular, the psychology of beliefs, desires, and other 'propositional attitudes'—is infested with massive and irremediable systemic errors and gaps, and concludes that it will be made obsolete as the scientific—in particular, neuroscientific—understanding of our behaviour continues to advance. Beliefs and desires will ultimately meet the fate that befell phlogiston and magnetic effluvia, the forgotten posits of discarded theories. This eliminativist argument is sometimes advanced against intentional psychology countenancing cognitive states that are analogous to propositional attitudes of vernacular psychology(Kim 2011).

Eliminativists propose that we may go on using the mental vernacular (words like 'depression', 'soul' or 'hope') in everyday communication, but such a language must be abandoned in science. This is similar to the

situation in which we speak in everyday situations about sunsets and sunrises, although we know from physics that the sun does neither set, nor rise. Functionalism It is the approach which dominates contemporary research in not only philosophy of mind, but in the emerging interdisciplinary enterprise called cognitive science. The latter coordinates the efforts of philosophers, psychologists, linguists, artificial intelligence theorists, neuroscientists, and anthropologists to understand the nature of mind. Functionalism is arguably the most influential position on the mind–body relation during the past four decades. Functionalism conceives of mental kinds as 'functional kinds', not physical kinds. Pain, for example, is to be understood in terms of its function as a causal intermediary between sensory input (e.g. tissue damage), behaviour output (e.g. wincing, groaning, and escape behaviour), and other mental states (e.g. desire to be rid of it). An internal state of an organism that serves this function, which can vary from species to species (and perhaps from individual to individual), is said to be a 'realizer' of pain. Most functionalists are physicalists in that they hold that only appropriate physical states could serve as realizers of mental states functionally conceived. But they differ from type-physicalists in holding that, on account of their variable realizability, mental states cannot be identified with physical–biological states. Functionalism construes psychology as an autonomous science of these functional properties and kinds, specified in terms of their causal roles and abstracted from their specific physical-biological realizations. This view of psychology has been influential; it can be considered the received view of the nature of cognitive science. The question whether or not functionalism is a non-reductive form of physicalism depends crucially on exactly what physical reduction requires, and it must be considered an open question. (Kim 2011)

Computationalism

Computational version of functionalism has been established due to the works of the English mathematician Allan Turing in 1940. The basic idea of his Turing Machine is that operations in the neurons which either fire

an impulse or don't, can be represented as digital units, say of 1s and 0s. Performing computations on such symbols, a purely mechanical device can add 3 to 2 and get as a result, which is correct. More complex operations can be digitalized and implemented in a Universal Turing Machine, so we can say that mind is similar to a computer in that minds process information by the same rules as computers. This view has become known as the computer metaphor of the mind. However, there remains the broad and difficult question how those representations are being embodied in the nervous system of organisms (Karageorgiev 2008).

Check Your Progress 2

Note: Use the space provided for your answers.

1) Briefly explain the "most influential position on the mind-body relation"?

   ……
   ……
   ……
   ……
   ……

2) What is computationalism?

   ……
   ……
   ……
   ……
   ……

Connectionism

Symbolic representation which we encounter in language does not seem possible for embodiment by the neurons which die too often to be able to use their growth or metabolic changes as a means for encoding information. Therefore connectionism evoked the concept of neural

networks which implement in their sustainable patterns of activation memory and knowledge, even conceptual knowledge. Neural networks are being modeled in computers, and quite successfully – robots which keep balance when kicked by the experimentator are constructed on this basis. 'Connectionism can be distinguished from the traditional symbolic paradigm by the fact that it does not construe cognition as involving symbol manipulation. It offers a radically different conception of the basic processing system of the mind/brain. This conception is inspired by our knowledge of the nervous system. The basic idea is that there is a network of elementary units or nodes, each of which has some degree of activation. These units are connected to each other so that active units excite or inhibit other units. The network is a dynamical system which, once supplied with initial input, spreads excitations and inhibitions 6 among its units. In some types of networks this process does not stop until a stable state is achieved.' According to connectionism, representation in the mind is distributed among neurons that form a network, so that if an individual neuron die, the pattern of activation persists as far as a new neuron joins the network to carry on the function of the dead one. You can see that connectionism is a variation of the functionalist approach. It is called also 'the brain metaphor of the mind.'(Karageorgiev 2008).

13.4 CONTEMPORARY DEBATES

MIND-BODY PROBLEM AS CATEGORY ERROR Each attempt to answer the mind-body problem encounters substantial problems. Some philosophers argue that this is because there is an underlying conceptual confusion. These philosophers, such as Ludwig Wittgenstein and his followers in the tradition of linguistic criticism, therefore reject the problem as illusory. They argue that it is an error to ask how mental and biological states fit together. Rather it should simply be accepted that human experience can be described in different ways—for instance, in a mental and in a biological vocabulary. Illusory problems arise if one tries to describe the one in terms of the other's vocabulary or if the mental vocabulary is used in the wrong contexts. This is the case, for instance, if one searches for mental states of the brain. The brain is simply the wrong

context for the use of mental vocabulary—the search for mental states of the brain is therefore a category error or a sort of fallacy of reasoning (PoM 2011). Today, such a position is often adopted by interpreters of Wittgenstein such as Peter Hacker. This view is also supported by Hilary Putnam. 4.5 PHYSICAL BODY AND LIVED BODY In this section, in order to understand mind better, we study some distinct characteristics of body, developed by two phenomenologist thinkers: Merleau-Ponty and Gabriel Marcel. Both have focused on the vulnerability as well as on the uniqueness of human body, seeing it not merely as a "physical body" or material object. Maurice Merleau-Ponty, one of the pioneers of phenomenology, has contributed much to a deeper perception of human body. In Phenomenology of Perception (1945) this French thinker developed a rich variety of phenomenology emphasizing the role of the body in human experience. In his phenomenological approach of the body, Merleau-Ponty looked to experimental psychology, analyzing the reported experience of amputees who felt sensations in a phantom limb. Rejecting associationist psychology, which focused on correlations between sensation and stimulus, as well as intellectualist psychology, which focused on rational construction of the world in the mind, his phenomenological approach focused on the "body image". That is, our experience of our own body and its significance in our activities. Phenomenologically the "lived body" is my own body as experienced by myself, as myself. My own body manifests itself to me mainly as the possibilities of acting in the world. It is what lets me reach out and grab something, for instance, but it also, and more importantly, allows for the possibility of changing my point of view. This helps me differentiate one thing from another by the experience of moving around it, seeing new aspects of it (often referred to as making the absent present and the present absent), and still retaining the notion that this is the same thing that I saw other aspects of just a moment ago (it is identical). My body is also experienced as a duality, both as object (I can touch my own hand) and as my own subjectivity (I am being touched). The experience of your own body as your own subjectivity is then applied to the experience of another's body, which, through apperception, is constituted as another subjectivity. I can thus recognize the Other's intentions, emotions, etc.

This experience of empathy is important in the phenomenological account of intersubjectivity. In phenomenology, intersubjectivity is what constitutes objectivity (i.e., what you experience as objective is experienced as being intersubjectively available - available to all other subjects. This does not imply that objectivity is reduced to subjectivity nor does it imply a relativist position, cf. for instance intersubjective verifiability). In the experience of intersubjectivity, one also experiences oneself as being a subject among other subjects, and one experiences oneself as existing objectively for these Others. Here one experiences oneself as the noema of Others' noeses, or as a subject in another's empathic experience. As such, one experiences oneself as objectively existing subjectivity. Intersubjectivity is also a part in the constitution of one's Lebenswelt, that is, “lifeworld” or "homeworld." (LB 2010) Extending Husserl's account of the lived body (as opposed to the physical body), MerleauPontywent beyond a dualistic or dichotomous approach of mind and body. For the body image is neither in the mental realm nor in the mechanical-physical realm. Rather, “my body is, as it were, me in my engaged action with things I perceive including other people,” according to him. In fact, his phenomenology addressed the role of attention in the phenomenal field, the experience of the body, the spatiality of the body, the motility of the body, the body in sexual being and in speech, other selves, temporality, and the character of freedom so important our human existence. Merleau-Ponty succinctly captures his embodied, existential form of phenomenology, when he asserts: “Insofar as, when I reflect on the essence of subjectivity, I find it bound up with that of the body and that of the world, this is because my existence as subjectivity [= consciousness] is merely one with my existence as a body and with the existence of the world, and because the subject that I am, when taken concretely, is inseparable from this body and this world.” (LB 2010) In short, consciousness is embodied (in the world), and equally body is infused with consciousness (with cognition of the world). That is the insight one gathers from a phenomenological appreciation of the body (Smith 2008). Understood thus, we can perceive our body as much more than material. The deeper dimensions of our being may be embedded in the very bodily dimension of ourselves. So we can hope

that we will have a deeper understanding of body that will take into consider the lived dimensions of our existence.

Check Your Progress 3

Note: Use the space provided for your answers.

1) What is a "category error"?

   ……
   ……
   ……
   ……
   ……

2) What is the "lived body" phenomenologically?

   ……
   ……
   ……
   ……
   ……

13.5 LET US SUM UP

In this unit we have seen various theories on the relationship between mind and body in today's philosophy, including the assumption that it is a category mistake. We also saw the phenomeonological understanding of the body, that to some extent, eliminates the mind-body dualism. The objective of the unit is to introduce to the students a basic understanding of the mind- body problem in the modern Western Philosophy. Here the nature of reality from two viewpoints – monism and dualism has been talked about. The interrelation between mind and body and the various theories regarding the interaction between the two have been dealt with. Also a brief look at the standpoint of various modern philosophers on this particular issue has also been discussed.

13.6 KEY WORDS

Brentano's Thesis: The thesis proposed in Brentano's Psychology from an Empirical Standpoint (1874) that it is the intentionality or directedness of mental states that marks off the mental from the physical. In other words: 'It is of the very nature of consciousness to be intentional'

Category error: It is a semantic or ontological error in which "things of one kind are presented as if they belonged to another." Here a property is ascribed to a thing that could not possibly have that property.

Computationalism: The computational theory of mind is the view that the human mind ought to be conceived as an information processing system and that thought is a form of computation. Connectionism: Connectionism is a set of approaches in the fields of artificial intelligence, cognitive psychology, cognitive science, neuroscience and philosophy of mind that models mental or behavioral phenomena as the emergent processes of interconnected networks of simple units.

Eliminativism: This theory holds that our commitment to different mental states is nothing more than an outdated folklore, and that it is certain to be superseded by a more scientific understanding of our nature. Thus, the standard eliminativist argument begins with the premise that vernacular ('folk') psychology is infested with massive and irremediable systemic errors and gaps, and concludes that it will be made obsolete as the scientific understanding of our behaviour continues to advance.

13.7 QUESTIONS FOR REVIEW

1) What is basically the mind-body problem?
2) What is Brentano's thesis?
3) Briefly explain the "most influential position on the mind-body relation"?
4) What is computationalism?
5) What is a "category error"?
6) What is the "lived body" phenomenologically?

13.8 SUGGESTED READINGS AND REFERENCES

- Chalmers, D. Ed. Contemporary Philosophy of Mind. New York: 2002.
- Churchland, P.M. Matter and Consciousness. Cambridge: Mass, 1988.
- Honderich, T. Mind and Brain. Oxford: University Press, 1988.
- Karageorgiev, Aneta. Tendencies in Contemporary Philosophy of Mind, Tendencies in Contemporary Philosophy of Mind. 2008/10 37 http://www20.uludag.edu.tr/~kaygi/dergi/articles/10_33-38.pdf
- Kim, J. Philosophy of Mind. Colo: Boulder, 1996.
- Kim, Jaegwon. "mind–body problem." 2011. http://science.jrank.org/pages/22440/mind%E2%80%93bodyproblem.html#ixzz1MaV7o8kL.
- LB ("Lived Body") Wikipedia: The Free Encyclopedia, Available at http://en.wikipedia.org/wiki/Lived_body.Accessed on December 12, 2010.
- McGinn, C. The Problem of Consciousness. Oxford: 1991.
- PoM (Philosophy of mind). In Wikipedia, The Free Encyclopedia. Retrieved 03:20, May 17, 2011, from http://en.wikipedia.org/w/index.php?title=Philosophy_of_mind&oldid=428916752
- Robinson, H.M. "The Mind-Body Problem in Contemporary Philosophy" Zygon, vol. 11, no. 4 (December 1976).
- Rosenthal, D. Ed.The Nature of Mind. Oxford: 1991.
- Smith, David Woodruff. "Phenomenology" Stanford Encyclopedia of Philosophy, Jul 28, 2008. http://plato.stanford.edu/entries/phenomenology/#6. Accessed on December 12, 2010.
- Williams, Garry. "Is the mind identical to the nervous system?" Minds and Brains: Musings from a Neurophilosophical Perspective, May 3, 2011 http://philosophyandpsychology.com/?p=1643.

13.9 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. Every other philosopher has something to say about the mind body problem and there does not seem to be a conclusive theory yet. Thinkers even today face the hard problem of consciousness, i.e. how the physical neural properties give rise to the mental faculties. How body and the mind interact with each other? How do thoughts cause actions or how do unconscious fantasies cause psychosomatic illnesses? How do thoughts impact on particles of matter and how do material impacts cause thoughts? Why do we have any experience at all, especially the experience of other minds? The problem of mind and matter influencing each other has been one of great magnitude. There have been many theories proposed to explain the same. Considering the claims of dualism, we will look at certain solutions proposed to the problem of mind – body interaction and see how far they are viable.
2. Brentano's main goal was to lay the basis for a scientific psychology, which he defines as "the science of mental phenomena" (PES, 14) ["Wissenschaft von den psychischen Erscheinungen"]. In order to give flesh to this definition of the discipline, he provides a more detailed characterization of mental phenomena. He proposes six criteria to distinguish mental from physical phenomena (PES 61–77), the most important of which are: (i) mental phenomena are the exclusive object of inner perception, (ii) they always appear as a unity, and (iii) they are always intentionally directed towards an object. (The other three criteria are: psychological phenomena – and only those – are presentations or phenomena based upon presentations; they seem to have no spatial extension; and have not only intentional, but also actual existence.)

Answers to Check your progress 2

1. The mind–body problem is a debate concerning the relationship between thought and consciousness in the human mind, and the brain as part of the physical body. It is distinct from the question of how mind and body function chemically and physiologically, as that question presupposes an interactionist account of mind-body relations. This question arises when mind and body are considered as distinct, based on the premise that the mind and the body are fundamentally different in nature.

The problem was addressed by René Descartes in the 17th century, resulting in Cartesian dualism, and by pre-Aristotelian philosophers, in Avicennian philosophy, and in earlier Asian traditions. A variety of approaches have been proposed. Most are either dualist or monist. Dualism maintains a rigid distinction between the realms of mind and matter. Monism maintains that there is only one unifying reality, substance or essence, in terms of which everything can be explained.

Each of these categories contains numerous variants. The two main forms of dualism are substance dualism, which holds that the mind is formed of a distinct type of substance not governed by the laws of physics, and property dualism, which holds that mental properties involving conscious experience are fundamental properties, alongside the fundamental properties identified by a completed physics. The three main forms of monism are physicalism, which holds that the mind consists of matter organized in a particular way; idealism, which holds that only thought truly exists and matter is merely an illusion; and neutral monism, which holds that both mind and matter are aspects of a distinct essence that is itself identical to neither of them. Psychophysical parallelism is a third possible alternative regarding the relation between mind and body, between interaction (dualism) and one-sided action (monism).

Several philosophical perspectives have been developed which reject the mind–body dichotomy. The historical materialism of Karl Marx and subsequent writers, itself a form of physicalism, held that consciousness was engendered by the material contingencies of one's environment. An explicit rejection of the dichotomy is found in French structuralism, and is a position that generally characterized post-war Continental philosophy.

2. Computational version of functionalism has been established due to the works of the English mathematician Allan Turing in 1940. The basic idea of his Turing Machine is that operations in the neurons which either fire an impulse or don't, can be represented as digital units, say of 1s and 0s. Performing computations on such symbols, a purely mechanical device can add 3 to 2 and get as a result, which is correct. More complex operations can be digitalized and implemented in a Universal Turing Machine, so we can say that mind is similar to a computer in that minds process information by the same rules as computers. This view has become known as the computer metaphor of the mind. However, there remains the broad and difficult question how those representations are being embodied in the nervous system of organisms (Karageorgiev 2008).

Answers to Check your progress 3

1. It is a semantic or ontological error in which "things of one kind are presented as if they belonged to another." Here a property is ascribed to a thing that could not possibly have that property.
2. That is, our experience of our own body and its significance in our activities. Phenomenologically the "lived body" is my own body as experienced by myself, as myself. My own body manifests itself to me mainly as the possibilities of acting in the world. It is what lets me reach out and grab something, for instance, but it also, and more importantly, allows for the possibility of changing my point of view. This helps me

differentiate one thing from another by the experience of moving around it, seeing new aspects of it (often referred to as making the absent present and the present absent), and still retaining the notion that this is the same thing that I saw other aspects of just a moment ago (it is identical). My body is also experienced as a duality, both as object (I can touch my own hand) and as my own subjectivity (I am being touched). The experience of your own body as your own subjectivity is then applied to the experience of another's body, which, through apperception, is constituted as another subjectivity

UNIT 14: SELF-KNOWLEDGE AND SELF-IDENTITY

STRUCTURE

14.0 OBJECTIVES

After going through this unit, you will be able to:

- To know about self knowledge;
- To define and describe identity and identity crisis in adolescents;
- To explain Marcia's identity crisis;
- To analyse social development and egocentrism in adolescents; and

14.1 INTRODUCTION

Adolescence is known to be a period of exploratory self-analysis and self-evaluation ideally culminating in the establishment of a cohesive and integrative sense of self or identity. The search for identity, during the adolescent period, is very much affected by the social world: peers, parents, schools, and neighborhoods. Identity formation involves the successful negotiation of a variety of activities and relationships during adolescence, including school achievement, social relations with others,

and development of career interests and choices, along with a great deal of exploration of different activities and roles. One's gender, ethnicity, and sexual orientation all are important to adolescents' developing identity. Integrating these experiences and characteristics into a coherent sense of self is fundamental to identity formation, and researchers have proposed different phases of the identity development process. Adolescents' focus on identity as their understanding of that childhood is ending and the adult phase of their life is about to begin. Identity development involves two steps. First, the adolescent must break away from childhood beliefs to explore alternatives for identity in a particular area. Second, the adolescent makes a commitment as to their individual identity in that area. Some aspects of identity, especially among young adolescents, may be foreclosed. The foreclosure status is when a commitment is made without exploring alternatives. Identity achievement during adolescence serves as a basis for our adult expectations and goals for us. As individuals enter early adulthood they use their current understanding of whom they are to develop a lifespan construct which serves as the link between the identity developed in adolescence and the adult self. The lifespan construct is an integration of an individual's past, present, and culture.

An identity crisis is a term in an epigenetic and social psychological theory in which an individual loses a sense of personal sameness and historical continuity. The term was coined by the psychologist Erik Erikson. According to Erikson, an identity crisis is a time of intensive analysis and exploration of different ways of looking at oneself. According to Erikson, an identity crisis is a time of intensive analysis and exploration of different ways of looking at oneself. Erikson's interest in identity began in childhood. Erikson described identity as "a subjective sense as well as an observable quality of personal sameness and continuity, paired with some belief in the sameness and continuity of some shared world image. In Marcia's model, identity involves the adoption of

1) a sexual orientation,

2) a set of values and ideals and

3) a vocational direction.

A well-developed identity gives on a sense of one's strengths, weaknesses, and individual uniqueness. The self-concept is the accumulation of knowledge about the self, such as beliefs regarding personality traits, physical characteristics, abilities, values, goals, and roles. In adolescence, the self-concept becomes more abstract, complex, and hierarchically organised into cognitive mental representations or self-schemas, which direct the processing of self-relevant information. Self-concept or self-identity is the sum total of a being's knowledge and understanding of his or her self. The self-concept is different from self-consciousness, which is an awareness of one's self. Components of the self-concept include physical, psychological, and social attributes, which can be influenced by the individual's attitudes, habits, beliefs and ideas. These components and attributes cannot be condensed to the general concepts of self-image and the self-esteem. Self-concept refers to self-evaluation or self-perception, and it represents the sum of an individual's beliefs about his or her own attributes. Self-concept reflects how an adolescent evaluates himself or herself in domains (or areas) in which he or she considers success important. An adolescent can have a positive self-concept in some domains and a negative self-concept in others. Adolescent egocentrism is also characterized by an imaginary audience with an increased self-consciousness.

They consider that their people around them especially peers observe their activities and may comment on them. They are extremely conscious of what others think of them, their appearance and everything related to them. This way they perceive themselves as seen by them contributing to the development of self confidence

14.2 SELF-KNOWLEDGE AND SELF-IDENTITY

Self-Knowledge

In philosophy, "self-knowledge" standardly refers to knowledge of one's own sensations, thoughts, beliefs, and other mental states. At least since Descartes, most philosophers have believed that our knowledge of our own mental states differs markedly from our knowledge of the external world (where this includes our knowledge of others' thoughts). But there is little agreement about what precisely distinguishes self-knowledge from knowledge in other realms. Partially because of this disagreement, philosophers have endorsed competing accounts of how we acquire self-knowledge. These accounts have important consequences for a broad range of philosophical issues, especially issues in epistemology and the philosophy of mind.

This entry focuses on knowledge of one's own particular mental states. A separate topic sometimes referred to as "self-knowledge", knowledge about a persisting self, is addressed in a supplement: Knowledge of the Self.

What is special about self-knowledge, compared to knowledge in other domains? Self-knowledge is thought to differ from other sorts of knowledge in one or more of the following ways.

- Self-knowledge is especially secure, epistemically.
- Self-knowledge is (sometimes) acquired by use of an exclusively first-personal method.
- Self-knowledge is special because of the distinctive agential relation one bears to one's own mental states.
- One's pronouncements about one's own mental states carry a special authority or presumption of truth.

The differences between these are subtle. Statement

(1) identifies the distinctive feature of self-knowledge as the epistemic status of a certain class of beliefs, whereas statement

(2) identifies it by the method one uses in forming these beliefs. Statement

(3) emphasizes the subject's cognitive agency. Statement

(4) rejects purely first-personal characterizations, focusing instead on the way utterances like "I'm in pain" are treated by others. Statements

(1) and (2) are ways of cashing out the notion that we enjoy "privileged access" to our own mental states. Only these first two statements construe the distinctive feature of self-knowledge as plainly epistemic; however, most who endorse (3) also claim that this agential relation grounds a special epistemic relation. A minority of philosophers denies that self-knowledge is special at all.

1.1 Epistemic security

The strongest epistemic claims on behalf of self-knowledge are infallibility and omniscience. One is infallible about one's own mental states if and only if (hereafter, "iff") one cannot have a false belief to the effect that one is in a certain mental state. One is omniscient about one's own states iff being in a mental state suffices for knowing that one is in that state. (This omniscience thesis is sometimes expressed by saying that mental states are self-intimating or self-presenting.) Contemporary philosophers generally deny that we are infallible or omniscient about our mental states. Here is a simple counter-example to the claim of infallibility. Kate trusts her therapist's insights into her own psychology, and so she believes him when he tells her that she resents her mother. But the therapist is mistaken—Kate does not resent her mother. Hence, Kate has a false belief about her own attitude. This case also undercuts the claim of omniscience, assuming that Kate is unaware of her genuine (non-resentful) attitude towards her mother.

In the case described, Kate's belief about her attitude is based on the testimony of another person. Relying on testimony is, of course, a way of

gaining knowledge about all sorts of things, including knowledge of others' mental states. As mentioned above, some philosophers believe that one has a special way of knowing about one's own states, a way that others cannot use to apprehend one's own states. If we restrict the relevant domain to beliefs formed by use of a method that is exclusively a method of attaining self-knowledge—perhaps introspection—we can formulate a more plausible infallibility thesis. We can generate an even more plausible thesis by limiting this restricted infallibility claim to pains and other sensations. Descartes endorsed a limited infallibility thesis of this sort. He says:

There remains sensations, emotions and appetites. These may be clearly perceived provided we take great care in our judgments concerning them to include no more than what is strictly contained in our perception—no more than that of which we have inner awareness. But this is a very difficult rule to observe, at least with regard to sensations. (Descartes 1644/1984: I.66, p. 216)

This thesis is still quite controversial. A common objection to even limited infallibility claims is the idea, often attributed to Wittgenstein, that where one cannot be wrong, one cannot be right either. For instance, Wright maintains that the possibility of error is required for concept application, which is in turn required for substantial self-knowledge."[E]rror—if only second-order error—has to be possible, if a genuine exercise of concepts is involved" (Wright 1989: 634).

The omniscience thesis seems even less plausible than the unqualified infallibility thesis. But consider the following passage from Locke.

[It is] impossible for any one to perceive, without perceiving that he does perceive. When we see, hear, smell, taste, feel, meditate, or will any thing, we know that we do so. (Locke 1689/1975 II.27.ix)

Is Locke really saying that all of our thoughts and sensations are accompanied by (justified, true) beliefs about those thoughts and

sensations? It is more likely that Locke means that we are always conscious of our thoughts and sensations. This statement is plausible on the "higher-order" theory of consciousness, according to which conscious states are states one is conscious of.

In any case, the omniscience thesis may also be qualified. Some modify the omniscience thesis by claiming that, for some states, anyone who is in a state of that kind is justified in believing that she is, even if the thinker doesn't actually have this belief (Peacocke 1999; Siewert 1998; Smithies 2012). Horgan and Kriegel (2007) use a modified omniscience thesis, restricted to sensations (or "phenomenal experiences"), to argue for a qualified infallibility thesis:

The basic idea behind our approach to phenomenal infallibility is that, because the occurrence of a phenomenal experience already involves the subject's awareness of it, for the subject to acquire a belief about the experience may involve little more than an act of shifting or redirecting attention. (2007: 135)

Claims of infallibility and omniscience concern general relations between beliefs about mental states and those mental states themselves. What is relevant to the most famous philosophical argument involving self-knowledge is not these general relations but, rather, the certainty of a particular instance of belief. This is Descartes' cogito argument (Descartes 1641/1895), which aims to demonstrate that, so long as you are carefully attending to your own thoughts, nothing—not even a supremely powerful evil genius who controls your thoughts and seeks to deceive you—can render misleading your evidence that you are thinking (and that, therefore, you exist).

Perhaps the most widely accepted view along these lines is that self-knowledge, even if not absolutely certain, is especially secure, in the following sense: self-knowledge is immune from some types of error to which other kinds of empirical knowledge—most obviously, perceptual knowledge—are vulnerable. Some theorists who take this line maintain

that there is a causal gap between a perceptual state and its object, and this gap introduces sources of error that are absent in direct introspective apprehension of a sensation (Gertler 2012; Horgan 2012; Siewert 2012).

Those who maintain that beliefs about one's own mental states are especially secure, epistemically, typically account for this fact by citing the distinctiveness of the method used to determine our own mental states. We now turn to this "special method" claim.

Doubts about the distinctiveness of self-knowledge

2.1 General doubts

The idea that self-knowledge is not profoundly special was especially prevalent during the heyday of behaviorism. For instance, Ryle (1949) suggests that the difference between self-knowledge and other-knowledge is at most a matter of degree, and stems from the mundane fact that each of us is always present to observe our own behavior. He argues that if self-knowledge were epistemically direct, then the higher-order mental state that constitutes immediate grasp of one's own mental state would have to be grasped as well. This would quickly lead to a regress, which could be blocked only by positing a state that somehow comprehends itself. But Ryle regarded this sort of reflexivity as impossible. Interestingly, skepticism about reflexive self-awareness was already present in James (1884).

Self-consciousness, if the word is to be used at all, must not be described on the hallowed paraoptical model, as a torch that illuminates itself by beams of its own light reflected from a mirror in its own insides. (Ryle 1949: 39)

No subjective state, whilst present, is its own object; its object is always something else. (James 1884: 2)

Doubts about self-knowledge are also fueled by more general epistemological concerns, such as the familiar worry that the observational process unavoidably alters the target of observation (Hill 1991),[1] and doubts about the possibility of theory-free observations (Dennett 1991). Others argue that while self-attributions may constitute self-knowledge, they are not epistemically superior to other kinds of beliefs.

I suspect … [that our] judgments about the world to a large extent drive our judgments about our experience. Properly so, since the former are the more secure. (Schwitzgebel 2008: 268)

In the same vein, some (including Stich 1983) deny that self-knowledge is special, relative to knowledge of others' states, by claiming that ordinary ("folk") concepts of psychological states are theoretical concepts. If psychological states are theoretical entities, both self-attributions and other-attributions will proceed by inference from observed data—presumably, behavior. (See the entry on folk psychology as a theory.)

Skepticism of a different kind stems from a puzzle raised by Boghossian (1989). According to some prominent accounts, mental states—in particular, attitudes such as desires and beliefs—are individuated in part by their relations to other states and/or the environment. On standard views, desiring that q partly consists in being disposed to A when one believes "A-ing is an effective means of achieving q"; believing "A-ing is an effective means of achieving q" partly consists in being disposed to A when one desires that q. Some philosophers take attitudes to be relational in another way as well, namely that attitude contents depend on relations to the environment: e.g., one cannot desire water unless H2O is (or was) present in one's environment. Boghossian's puzzle concerns how we could have privileged access to our relationally-defined mental states. He notes that there seem to be three ways we might know our mental states: (a) on the basis of inner observation, (b) on the basis of inference, or (c) on the basis of nothing. But, he argues, each of these

options presents difficulties. Regarding (a): inner observation seems to reveal only intrinsic features of a desire or a belief, not relational features. Regarding (b): that we must rely on inference, to know our own mental states, seems to imply that we lack privileged access to them. Regarding (c): knowledge on the basis of nothing is rare at best. For example, the self-attribution "I'm now thinking that writing requires concentration" involves thinking that writing requires concentration. It is thus self-verifying, and hence may constitute knowledge on the basis of nothing beyond that thought (Burge 1988). But most cases of self-knowledge are not like this. Boghossian concludes that we face a trilemma regarding self-knowledge.

Philosophers have responded to Boghossian's trilemma in a variety of ways. Some deny the assumption that recognizing a relationally defined state requires identifying the relational properties that make it the state that it is (Burge 1988; Heil 1988). Others argue that self-knowledge can be privileged even if it rests on inference (Dretske 1994; Byrne 2005). And some maintain that we can know our attitudes through introspective observation, and that this weakens the case for relational construals of attitudes (Pitt 2004).

2.2 Doubts based on empirical results

Empirical work in psychology constitutes another source of doubt about the epistemic status of self-attributions. In a widely cited paper, Nisbett and Wilson (1977) present studies showing that subjects routinely misidentify the factors that influenced their reasoning processes. For instance, subjects in one study explained their preference for a product by its apparent quality, when in fact the product's spatial position relative to its competitors seemed to drive the preferences.

The accuracy of subject reports is so poor as to suggest that any introspective access that may exist is not sufficient to produce generally correct or reliable reports. (1977: 33)

While these studies are instructive, their results are limited in that they apply only to the unconscious sources of decisions; they are silent as to our privileged access to our current states. Wilson now acknowledges this limitation.

[T]o the extent that people's responses are caused by the conscious self, they have privileged access to the actual causes of these responses; in short, the Nisbett and Wilson argument was wrong about such cases. (Wilson 2002: 106)

Schwitzgebel (2002) has marshalled other sorts of empirical evidence to show that introspective reports are unreliable. But Schwitzgebel has also suggested that our attitudes about introspection may be particularly obstinate. This conclusion is borne out by his collaboration with a psychologist (Hurlburt and Schwitzgebel 2007). The authors collect introspective reports from a single individual, who carries a beeper that sounds at random moments; when it sounds, she is to note what she is currently thinking and feeling. The two authors sometimes differ as to the correct interpretation of the test subject's reports, and as to her introspective accuracy. Strikingly, their disagreement about the reliability of introspection remains even after their lengthy discussion of the results. Schwitzgebel attributes this disagreement, in part, to their respective prior attitudes about introspection (Hurlburt is "optimistic" while Schwitzgebel is "a skeptic").

This outcome suggests that not only careful empirical work, but also difficult conceptual work, is required for determining introspection's reliability—or, in Goldman's terms, "calibrating" it.

A crucial problem for the theory of introspection is to fix its range of reliability. This is the problem of calibration, which arises for any scientific instrument and cognitive capacity. I would subdivide the problem into two parts. One would seek to specify the operational conditions under which introspection is (sufficiently) reliable. The

second would seek to specify the propositional contents for which it is reliable. (Goldman 2004: 14)

As Goldman notes, we can fix the range of introspective reliability only by using introspection and evaluating its results for internal coherence and for consistency with other sources. But since there is no clear consensus as to how to evaluate the results of introspection, or what weight to accord other sources of evidence about mental states, such as external stimuli and behavior, introspection faces an especially thorny and complex problem of calibration.

2.3 The anti-luminosity argument

Williamson (2000) has argued against a particular, seemingly plausible thesis regarding self-knowledge: that someone experiencing a sensation can know that she is experiencing that sensation. (That is, sensations are "luminous".) Williamson imagines a subject who feels cold at dawn, but gradually warms until she feels warm at noon. At some point she feels barely cold, and truly believes that she feels cold. At the next moment, she feels only very slightly warmer than at the previous moment; but since she felt barely cold at the previous moment, at this later moment she may not, in fact, feel cold. The fact that the thought "I feel cold" at the later moment would be false implies that the previous (true) thought is not "safe" enough to qualify as knowledge. Given that sensations are usually regarded as especially accessible, the fact that one is not always in a position to know whether one is experiencing a given sensation suggests that one is not always in a position to know whether one is in any given mental state.

I will briefly sketch two prominent responses to Williamson. The first highlights the limits of Williamson's argument. That argument appears to show that one is not always in a position to know all of one's own sensations; in particular, one is not always able to detect sensations that are marginal or near-marginal, like being barely cold. But the argument seems not to threaten knowledge in less marginal cases: if one is now

very cold, the belief "I feel cold" would not be false, in a nearly identical situation (DeRose 2002). So Williamson's argument doesn't show that no sensations are luminous.

In another response, Weatherson (2004) argues that sensations may be constituents of corresponding self-attributions: the subject may think "I'm having this sensation", where that thought incorporates the sensation as part of its content. (This response dovetails with acquaintance accounts.) If having a sensation generally allows the subject to form a self-attributing belief that appropriately incorporates that sensation, then feeling cold may be luminous after all. For even a slight difference between feeling cold and feeling not-cold will make a difference in the corresponding self-attributions.

3. Accounts of Self-Knowledge

3.1 Acquaintance Accounts

The idea that we know our mental states through acquaintance with them is usually associated with Russell (1917), but such accounts trace their lineage at least to Descartes. According to these accounts, our awareness of our mental states is sometimes peculiarly direct, in both an epistemic sense and a metaphysical sense. It is epistemically direct in that I am not aware of my mental state by being aware of something else. It is metaphysically direct in that no event or process mediates between my awareness and the mental state itself. By contrast, I may be aware that it rained last night only by being aware of the wet pavement; and, more controversially, my visual experience may mediate between my awareness of the pavement and the pavement itself.

The claim that introspective access is both epistemically and metaphysically direct is most plausible for phenomenal states like pain. This is because how a phenomenal state appears (epistemically) and how it actually is (its ontology or nature) are, according to many philosophers, one and the same.

> Pain … is not picked out by one of its accidental properties; rather it is picked out by the property of being pain itself, by its immediate phenomenological quality. (Kripke 1980: 152–3)

> [T]here is no appearance/reality distinction in the case of sensations. (Hill 1991: 127)

Limiting acquaintance accounts to self-knowledge of phenomenal states—or, more strictly, self-knowledge of mental states individuated by phenomenology—does not entirely fix their scope, as philosophers disagree as to which kinds of mental states are individuated by phenomenology. Recently, the idea that thoughts have a distinctive phenomenology has received renewed attention (Bayne and Montague 2011; Kriegel 2013; see the entry on consciousness and intentionality). Pitt (2004) uses the fact that we seem able to know what we're thinking in a direct, highly secure way—one that is best explained by an acquaintance model of introspection—to argue that thoughts have distinctive phenomenological properties with which we are acquainted. Some philosophers also argue that conscious attitudes, such as judgments, have distinctive phenomenologies.

The purported epistemic and metaphysical directness of introspection does not imply that we are either infallible or omniscient about our own states, since it is an open question whether we routinely engage in introspection. But if introspection involves epistemically and metaphysically direct access to one's phenomenal states, then its proper use may allow the relevant self-attributions to achieve a high degree of certainty.

Acquaintance accounts hold special appeal for epistemic foundationalists, who claim that all of our knowledge rests on a foundation of beliefs that are justified, but not justified by other beliefs. Acquaintance accounts provide for highly secure beliefs that are justified by experiences rather than by other beliefs. For example, Fumerton (2005) argues that an experience can directly justify the belief that one is

having that experience. In this context, the truth-maker for a belief is the mental state that makes it true: e.g., the truth-maker for "I'm in pain" is the pain itself. (Terms in square brackets are mine).

One wants the truth-maker 'before' consciousness [metaphysical directness] in a way that provides complete intellectual assurance [epistemic directness] concerning the truth of what one believes. (Fumerton 2005: 122)

One approach to explaining how experiences can directly justify beliefs about them draws on the phenomenon of demonstrative reference (Gertler 2001; Chalmers 2003). Demonstrative reference often involves literal pointing: by pointing to my desk, I can demonstratively refer to it as "that (desk)". Of course, we don't literally point to our experiences. But as Sosa aptly observes, "Selective attention is the index finger of the mind" (2003: 279). By attending to how an experience feels (or appears), one can use this appearance—e.g., the itchiness of an itch—to refer to the feature demonstratively, as "this quality". One can then register the presence of the itch by thinking "I'm now experiencing this quality" Since reference is secured by attending to the itchiness, one grasps the feature in question, as itchiness. Chalmers, who has an especially well-developed theory of phenomenal concepts along these lines, refers to this grasp of phenomenal features as a "direct phenomenal concept".

The clearest cases of direct phenomenal concepts arise when a subject attends to the quality of an experience, and forms a concept wholly based on the attention to the quality, "taking up" the quality into the concept. (Chalmers 2003: 235)

Some critics charge that acquaintance accounts construe introspective beliefs as too close to their objects to qualify as genuine, substantial knowledge. In effect, this objection denies that introspective attention to an instance of a phenomenal quality can provide for an understanding of that quality adequate for genuine factual knowledge.

Another worry about acquaintance accounts stems from the observation that we sometimes err about our experiences. In a famous example, a fraternity pledge is blindfolded and told that his hand will be burned with a cigarette. An icicle is then applied to his hand, and the pledge responds by screaming as if in pain. On the relevant interpretation of this case, the pledge mistakes coldness for pain: it epistemically seems to him that his phenomenology is that of pain. This kind of error is the basis for Schwitzgebel's objection to acquaintance accounts.

> Philosophers who speak of "appearances" or "seemings" in discussing consciousness invite conflation of the epistemic and phenomenal senses of these terms. … "It appears that it appears that such-and-such" may have the look of redundancy, but on disambiguation the redundancy vanishes: "it epistemically seems to me that my phenomenology is such-and-such". No easy argument renders this statement self-verifying. (Schwitzgebel 2008: 263)

To answer this objection, acquaintance theorists will concede that we can be wrong about our own phenomenal states. These accounts require only that, under certain conditions, the phenomenal reality of an experience constitutes its epistemic appearance (Horgan and Kriegel 2007; Gertler 2012).

The idea that we know (even some of) our sensations by acquaintance remains highly controversial; the idea that we know our thoughts, or our beliefs or other attitudes, by acquaintance is even more controversial. As James (1884) observed, self-knowledge requires more than mere contact with a mental state: it requires that one properly conceptualize the state, classifying it as a state of a particular kind (e.g., as pain or coldness). The most difficult hurdle for acquaintance accounts is to explain how this conceptualization occurs. In particular, the difficulty is to explain how awareness of a mental state can be direct and immediate, yet epistemically substantial—a genuine grasp of the state as a state of a certain kind.

3.2 Inner Sense Accounts

While acquaintance accounts construe self-knowledge as strikingly distinctive in its directness and epistemic security, inner sense accounts take the opposite tack: they construe introspection as similar to perception in crucial respects.

Locke, an early inner sense theorist, described the introspective faculty as follows.

This Source of Ideas, every Man has wholly in himself … And though it be not Sense, as having nothing to do with external Objects; yet it is very like it, and might properly enough be call'd internal Sense. (Locke 1689/1975: II.1.iv.)

Inner sense accounts construe introspection as similar to perception in that it involves a monitoring mechanism or "self-scanning process" (Armstrong 1993: 324) that takes mental states as input and yields representations of those states as output. On such accounts, and in contrast to acquaintance accounts, the connection between the introspected state (the input) and the introspective state (the output) is causal and contingent. But inner sense accounts allow that introspection also differs from perception in significant ways. Perception is achieved through dedicated organs such as eyes and ears, whereas there is no (literal) organ of introspection. "The 'organ' of introspection is attention, the orientation of which puts a subject in an appropriate relation to a targeted state" (Goldman 2006: 244). Perception ordinarily involves sensory experiences, whereas "No one thinks that one is aware of beliefs and thoughts by having sensations or quasi-sense-experiences of them" (Shoemaker 1994: 255).

The monitoring mechanism involved in inner sense must form representations of the mental states it takes as input. But how does this process ensure that the output (the representation of the scanned mental state) matches the input (the scanned state itself)? On some inner sense accounts, the output representation "redeploys" the content of the input

state (Nichols and Stich 2003; Goldman 2006). But as Goldman points out, the redeployment of content—even when "content" is used broadly, to include sensory-experiential contents—cannot fully explain the transition from the scanned mental state to the representation thereof. A complete account must also explain how the introspective process correctly classifies the type of mental state at issue: as, e.g., a visual experience, belief, or desire. Goldman proposes that the introspective process uses the neural properties of states to type-identify them (Goldman 2006: ch. 9).

Inner sense accounts' construal of introspection as a causal process makes them particularly well-suited to reliabilist (or, more broadly, epistemically externalist) approaches to self-knowledge. For example, Armstrong characterizes the introspective process as "a mere flow of information or beliefs" (Armstrong 1993: 326). The causal connections involved in self-monitoring need not be known by the subject in order to deliver self-knowledge, and inner sense accounts generally regard knowledge based in introspection as non-inferential. Since the relevant scanners or monitoring mechanisms are directed only towards one's own states, introspection is an exclusively first-personal method. But at least some inner sense theorists note that the asymmetry of access is merely contingent, as it is possible, in principle, for one's "inner sense" mechanism to be linked to someone else's mental states. Armstrong finds it "perfectly conceivable that we should have direct [read: non-inferential] awareness of the mental states of others", through a kind of telepathic scanning (1993: 124).

Perhaps the chief benefit of inner sense accounts is that they are especially conducive to a broadly naturalistic picture of mentality, according to which mentality is part of nature broadly continuous with the nonmental realm. By assimilating introspection to perception, inner sense accounts construe mentality as epistemically continuous with the nonmental, and thus allow a single overarching epistemology to apply to both self-knowledge and knowledge of external things. Since most of the leading arguments for mind-body dualism depend on the claim that our

epistemic relations to mental states diverge in crucial ways from our epistemic relations to physical objects, the claim that the mental is epistemically continuous with the nonmental paves the way for assimilating mentality to the nonmental realm ontologically as well.

Shoemaker (1994) offers a sustained critique of inner sense accounts. His main objection centers on the charge that, if we knew our own mental states through a perception-like mechanism, then the following scenario would be possible. A rational creature with ordinary mental states like pains and beliefs, and possessing concepts of pain and belief, might be "self-blind": that is, unable to recognize its own thoughts and sensations. But, he says, self-blindness in a rational creature is impossible. Inner sense accounts imply that self-blindness is possible, Shoemaker thinks, because they regard the capacity for self-knowledge as on a par with sensory capacities like vision, and hence as a capacity that a rational person might lack. Shoemaker's discussion has been as influential for its positive suggestion—that our capacity for self-knowledge is closely tied to rationality (see 3.6 and 3.7)—as for its critical treatment of inner sense accounts.

Shoemaker presents three main arguments to show that self-blindness is impossible in a rational creature. First, mental states like pains are defined, in part, by the behaviors they rationalize, such as taking aspirin; such behaviors aren't rational unless the subject is aware of the pain. Second, one is not a rational subject unless one can recognize, in certain circumstances that one's beliefs (or other attitudes) should be modified; and this recognition requires awareness of one's attitudes. Third, rational subjects will, necessarily, generally behave as if they are aware of their beliefs: e.g., they will not assert "snow is white" unless they are also disposed to assert "I believe that snow is white". And this suggests that, necessarily, rational subjects are generally aware of their beliefs.

I am tempted to say that if everything is as if a creature has knowledge of its beliefs and desires, then it does have knowledge of them. (Shoemaker 1988: 192)

Kind (2003) contends that these arguments do not directly threaten inner sense accounts. At most, she thinks, Shoemaker has shown that rational creatures will generally be capable of self-awareness. But since this conclusion is silent as to how such awareness occurs, it does not rule out the possibility that it is achieved through inner sense. Gertler (2011a: ch. 5) contends that the inner sense theorist can block Shoemaker's objection by stipulating that no creature qualifies as rational unless it has the characteristics Shoemaker sees as "essential to being a rational being": this may mean that having a well-functioning inner sense (or something equivalent) is required for being rational. Shoemaker's challenge to inner sense views requires a stronger thesis, namely that rational beings must be capable of self-knowledge in order to exist at all.

Another objection to inner sense accounts targets their epistemic externalism. Peacocke notes that while these accounts postulate "a genuine explanation [of one's self-ascription] at the sub-personal level", this explanation does not explain why we have any reason to endorse the self-attributions it generates (Peacocke 1999: 224). Inner sense accounts are not likely to appeal to those who take self-knowledge to rest on internal or accessible reasons for belief.

Self Identity

Adolescence is known to be a period of exploratory self-analysis and self-evaluation ideally culminating in the establishment of a cohesive and integrative sense of self or identity. This process involves the exploration and testing of alternative ideas, beliefs, and behaviours, marking this period as one of both dramatic change and uncertainty. Erikson provided perhaps the most widely recognised theoretical framework for conceptualizing the transformation of the self during adolescence. This framework provides for the development of a sense of one's individuality (self-sameness) and continuity with significant others. Identity is a new way of thinking about oneself that emerges during adolescence. Identity involves a sense of self-unity, accompanied by a feeling that the self has continuity over time. A firmly established identity also provides a sense of uniqueness as a person. According to Erikson's psychosocial model of

development, identity must be perceived by the individual, but also recognised and confirmed by others. Thus, the process of establishing an identity involves "Integrating into a coherent whole one's past experiences, ongoing personal changes, and society's demands and expectations for one's future" The process of developing an identity begins with the infant's discovery of self, continues throughout childhood, and becomes the focus of adolescence. Erik Erikson, identified the goal of adolescence as achieving a coherent identity and avoiding identity confusion. Identity is multidimensional and may include physical and sexual identity, occupational goals, religious beliefs, and ethnic background. Adolescents explore these dimensions, and usually make commitments to aspects of their identity as they move into early adulthood. Identity development begins with children's awareness that they are separate and unique individuals. First indications of this awareness are evident in infancy when children begin to recognise themselves. They recognise the reflected image as themselves. Also, the words "me," "I," and "mine" emerge very early in children's language. These findings are consistent with Erikson's psychosocial stage of autonomy versus shame and doubt, when infants establish their identity as independent persons. During childhood, self-awareness grows and changes. Preschoolers describe themselves in terms of observable characteristics and behaviours, including physical attributes ("I have brown eyes"), preferences ("I like to ride my bike"), and competencies ("I can sing 'Itsy, Bitsy Spider"'). Between ages six and twelve, children begin to include less concrete aspects of the self in their descriptions. Schoolaged children talk about their feelings ("I love my dog") and how they fit into their social world ("I'm the best fielder on my team"). During Erikson's stage of initiative versus guilt children explore their skills, abilities, and attitudes and incorporate the information into their view of self. As children edge closer and closer to adulthood, it seems they reach a point where they want to be defined by anything BUT their parents. They stop wanting to spend time with family, and may even detest being seen with their parents. "Please drop me off a block from school, Mom. I want to walk the rest of the way." These words are painful to a mother who has devoted many years of her life to meeting all

of her teenage son's needs. Suddenly, he's embarrassed to be seen in the same car with her. The process of separation from parents is a natural one. Erik Erikson was the first major psychological theorist to develop the notion of an adolescent "identity crisis." In his view, all of the earlier crystallisations of identity formed during childhood come into question during adolescence with the overwhelming combination of physical changes, increased sex drive, expanded mental abilities, and increasing and conflicting social demands. To develop a sense of identity amidst the confusion, Erikson stated in Identity: Youth and Crisis that adolescents need to try on a variety of roles and "must often test extremes before settling on a considered course." At this stage, adolescents often reject their parents, and all that they stand for so that they can make a clean break from childhood as they attempt to form an identity of their own. They are hungry for role models and can be rather indiscriminate about where they find them. With their sense of identity in flux, teens will often turn to peer groups for that missing sense of belonging. This explains some of the cult-like tendencies amongst early adolescents to worship the same heroes (movie stars, singers), wear the same clothes and "rebel" against traditional authority. The interesting thing about this so-called rebellion is that it's often actually another form of conformity — Gina wants a tattoo or a navel ring because everyone else is getting them. Everyone has platform shoes so she'll feel like an outcast if she's not wearing them. At this stage of development (usually early teens), role models can make a critical difference in choices adolescents make, choices that could affect the course of their lives. At this age, teens have a strong need to idealize others, especially those who are older and more worldly, qualities they desperately want to possess. They can be as easily awed by an older (that is, 18- or 19 year-old) guy who drives a fancy car and pushes drugs, as by a sports hero who espouses clean living, hard work and dedication. The physical, cognitive, and social changes of adolescence allow the teenager to develop the identity that will serve as a basis for their adult lives. During Erikson's stage of identity versus role confusion, adolescents' description of self expands to include personality traits ("I'm outgoing") and attitudes ("I don't like stuck-up people").

Identity Crisis

Are you unsure of your role in life? Do you feel like you don't know the 'real you'? If you answer yes to the previous questions, you may be experiencing an identity crisis. Theorist Erik Erikson coined the term identity crisis and believed that it was one of the most important conflicts people face in development. An identity crisis is a term in an epigenetic and social psychological theory in which an individual loses a sense of personal sameness and historical continuity. The term was coined by the psychologist Erik Erikson.. According to Erikson, an identity crisis is a time of intensive analysis and exploration of different ways of looking at oneself. According to Erikson, an identity crisis is a time of intensive analysis and exploration of different ways of looking at oneself. Erikson's interest in identity began in childhood.

Erikson described identity as "a subjective sense as well as an observable quality of personal sameness and continuity, paired with some belief in the sameness and continuity of some shared world image. As a quality of unself-conscious living, this can be gloriously obvious in a young person who has found himself as he has found his communality. In him we see emerge a unique unification of what is irreversibly given—that is, body type and temperament, giftedness and vulnerability, infantile models and acquired ideals—with the open choices provided in available roles, occupational possibilities, values offered, mentors met, friendships made, and first sexual encounters." In Erik Erikson's stages of psychosocial development, the emergence of an identity crisis occurs during the teenage years in which people struggle between feelings of identity versus role confusion. Researcher James Marcia (1966, 1976, and 1980) has expanded upon Erikson's initial theory. James Marcia argued that identity could be viewed as a structure of beliefs, abilities and past experiences regarding the self. "The better developed this structure is, the more individuals appear to be of their own strengths and weaknesses. The less developed this structure is, the more confused individuals seem to be about their own distinctiveness from others and the more they have to rely on external sources to evaluate themselves." Identity is a dynamic,

not static psychological structure. The formation of identity in adolescence sets the stage for continual changes in the content of identity through the adult years.

Check Your Progress 1

Note: Use the space provided for your answers.

1. Discuss about Self Identity?

……

……

……

……..

14.3 MEMORY CRITERION

Locke famously wrote "And as far as this consciousness can be extended backwards to any past action or thought, so far reaches the identity of that person, it is the same self now with this present one that now reflects on it, that this action was done."1 This and similar passages have been interpreted as providing a memory criterion for personal identity. Lockeans, as well as their critics, have pointed out that the memory criterion is likely to mean that none of us were ever fetuses or even infants due to the lack of direct psychological connections between then and now. But what has been overlooked is that the memory criterion leads to either backward causation and a violation of Locke's own very plausible principle that we can have only one origin, or backward causation and a number of overlapping people where we thought there was just one. I will argue that such problems cannot be avoided by replacing direct psychological connections with overlapping chains of connectedness – what has been called "psychological continuity."2 The most famous account of psychological continuity, that of Derek Parfit, will still fall prey to these problems for he understands psychological continuity to consist of overlapping chains of strong psychological connectedness, the latter defined as involving "at least half the number of direct connections that hold, over every day, in the lives of nearly every

actual person."3 Moreover, even if these problems can be avoided by some revamped account of psychological continuity, it will not do justice to what is Locke's insight - recognized by David Lewis as well as Parfit - about the importance to our identity of our consciousness being directly extended into the past.

Assume you have memories extending back to your early childhood. Then through either a natural process of forgetting (or a minor stroke or a blow to your head), you lose your earliest memory of something that happened to you. Let's say that this memory was of an experience of an event at T1 (1937). Your earliest memory is now of a later time T2 (1938). That means you are not identical to a being that existed in 1937– at least according to the unreconstructed Lockean memory criterion. Locke wrote: "For whatever any substance has thought or done which I cannot recollect and by my consciousness make my own thought and action, it will no longer belong to me.4 If the earliest experience you can recall is now 1938, and you are not identical to any person that existed earlier, then that actually means you have changed your origins! You have come into existence at a later time than was true before. Thus an event in the present, a memory loss, causes your first moment of existing in the past to change. Even if that is not incoherent, it sounds like a very unwelcome sort of backward causation. Someone might protest that the alleged backward causation is as benign as the arrival of the Second World War making the First World War become just that – the first of the world wars. But the case stated above seems to be more than an acquisition of an unproblematic relational property. It isn't that something which existed acquired another relational property (as in the case of the first of two world wars), but that something which presently exists obtained a new and different origin. The more appropriate comparison is World War I ceasing to be the first world war because of a later event. Imagine the date of the beginning of the First World War changing from one time to another because of later events. So what has happened in the case of your memory loss - according to Locke's memory criterion - is that you have ceased to be as old as you were for your first moment of existence on this planet has been changed by an

event long after the time of your origins. You had existed at T1 (1937), but that is no longer true. You now existed no earlier than 1938. Not only does Locke's memory criterion turn out to imply that you have two origins but it violates his own principle that: "When therefore we demand, whether any thing be the same or no, it refers always to something that existed such a time and in such a place, which 'twas certain, at that instant, was the same with its self and no other: From whence it follows, that one thing cannot have two beginnings of Existence, nor two things one beginning, it being impossible for two things of the same kind, to be or exist in the same instant, in the very same place; or one and the same thing in different places. That therefore that had one beginning is the same thing, and that which had a different beginning in time and place from that, is not the same but divers."

An alternative to claiming that someone can come into existence twice is to instead describe the memory loss as the introduction of a new person. 7 As a result, there is now a person existing from 2004 to 1938. But that means the other person who originated in 1937 has ceased to exist when the memory of the 1937 experience was lost. So the memory loss would result in a new person coming into existence while another person going out of existence. That is quite bizarre. And there still seems to be a backward causation in that a contemporary mental event now determines exactly what moment in the past was a person's origins. It seems obvious that something should not happen to a brain in 2004 which results in someone coming into existence years earlier in 1938. That is not the harmless sense of a world war becoming the First World War when there occurrs a second.

It might be thought the backward causation problem can be eliminated just as Reid's transitivity puzzle was by adopting psychological continuity rather than direct psychological connections as the criterion for personal identity.8 A number of philosophers have sought to patch up various problems in Locke by appealing to psychological continuity. All that is supposedly needed are overlapping chains of memory: at TN (now) one can recall T2 (1938) and at T2 one can recall T1 (1937) even

though at TN one can't recall the events of T1. Overlapping chains of memory (or intentions, desires etc.) would seem to imply that there would be no loss of a person, no new origins, and no present event changing your first moment on the planet. But it isn't clear that such a move is in the spirit of Locke for it lacks the intuitive appeal that one goes back in time as far as one's consciousness extends. Mayra Shectman makes this point well: "Certainly a view that places identity in the ancestral relation of psychological connection rather than in direct connection does not have Reid's transitivity problem, but it is also not clear that it captures the relation we take to underlie the importance of personal identity. Locke's observation is, roughly speaking, that it is my direct conscious access to experience makes it mine. This is not, however, the relation in terms of which psychological continuity theorists define identity. With Reid's objection in mind, these theorists place identity in a weaker relation that does not demand direct conscious access to the actions and experiences that are ours – the ancestral relation of direct access. It is not obvious, however, that this weaker relation can rightfully claim to have all the intuitive appeal as the bearer of identity that the original relation had.

In fact psychological continuity theorists make it clear that they attach much more importance to direct connections than to the weaker relation of continuity."9 The importance of direct psychological connections rather than the overlapping chains of psychological continuity is evidenced in the claims of modern day neoLockeans like Parfit and Lewis. They stress psychological connectedness more than continuity. Parfit writes "of these two general relations, connectedness is more important (than continuity) in both theory and practice." Lewis makes a similar point in his account of Methuselah. He writes that "We sometimes say: in later life I will be a different person. For us short-lived creatures, such remarks are an extravagance. A philosophical study of personal identity can ignore them. For Methuselah, however, the fading-out of personal identity looms large as a fact of life. It is incumbent on us to make it literally true that he will be a different person after one and one-half centuries or so." Leaving aside for the moment that appeals to

psychological continuity seem to be missing something important about identity across time, it is worth noting that the revised Lockean account Parfit offers can handle Reid's objection but not the backward causation problem. Partfit understands psychological continuity to consist of "the holding of overlapping chains of strong connectedness."

And strong psychological connectedness between any two days, involves at least half the number of direct connections that hold, over every day, in the lives of nearly every actual person. So if a blow to the head today leaves you with slightly less than half the normal psychological connections between today and yesterday, then there is not enough connections to establish psychological continuity between you today and any person yesterday, thus your origins have changed and you did not exist in the last century or even the previous week. Your origins were much more recent. One can avoid this problem by claiming that any degree of memory connections is sufficient for continuity but only if one is willing to accept that one doesn't survive a stroke that is of sufficient severity that one is left a permanent amnesiac regarding any pre-stroke aspects of one's biography. If one does survive such a stroke, then one has new origins given that psychological continuity doesn't extend back to a time before the stroke. However, one might try to claim that the psychological continuity account allows that we survive such stroke induced amnesia in a way that preserves our earlier origins because psychological continuity persists through other psychological states than autobiographical memory. For instance, one may have the memory of how to speak English, do long division and read a map. There also may be continuity of impersonal beliefs (the world is round) and generic desires (for food and shelter). But these seem to have little to do with your identity, i.e., what distinguishes you from any other adult. And notice that adopting such an approach means not only that we would have moved away from the original Lockean memory criterion, but we would be working with even a more watered down version of psychological continuity than before. If a psychological identity criterion must involve some appeal to psychological connectedness as Locke, Lewis, Parfit and Schectman imply, the threat of backward causation can

be avoided only by adopting a modal rigidity and a rather embarrassing overpopulation. If one believes there are a lot of overlapping persons as does Lewis, then a blow to the head that eliminates one person whose earliest memory was of 1937 doesn't introduce a new person. The second person already existed connected from 2004 to T2 (1938). But not only does this mean accepting that counterintuitive explosion of embedded people but it will necessitate it being impossible for someone, rather than their counterpart, to have lived any differently.15 If the actual person hit on the head could have avoided the blow, then the normal forgetfulness of aging or some later trauma to the head would likely mean a change in the earliest psychological connection and thus the return of the problems of backward causation and someone having two origins.

14.4 BODY CRITERION

One of the main problems of personal identity is supposed to be how we relate to our bodies. A few philosophers endorse what is called a 'bodily criterion of personal identity': they say that we are our bodies, or at any rate that our identity over time consists in the identity of our bodies. Many more deny this--typically on the grounds that we can imagine ourselves coming apart from our bodies. But both sides agree that the bodily criterion is an important view which anyone thinking about personal identity must consider. I have never been able to work out what the bodily criterion is supposed to be. Despite my best efforts, I have not found any clear position that plays the role in debates on personal identity that everyone takes the bodily criterion to play. What role is that? What is the bodily criterion supposed to be? Well, it is supposed to be a thesis about our bodies and how we relate to them. Second, it is supposed to be, or imply, an account of what it takes for us to persist through time. Specifically, it should imply that we go where our bodies go: it should rule out our having different bodies at different times, or surviving without a body. Third, the bodily criterion is supposed to be a substantive metaphysical claim that is neither trivially true nor trivially false. That we have bodies is uncontentious, or at least no more contentious than the existence of other physical objects; but there is supposed to be room for disagreement about whether we are our bodies.

This is not just the old debate between dualism and materialism. It is supposed to be possible for a materialist--someone who thinks that we are made entirely of matter--to reject the bodily criterion by denying that we are identical with our bodies. Any thesis that deserves to be called the bodily criterion of personal identity ought to have at least these three features. It should also be compatible with the things that virtually all philosophers say about our bodies in other contexts. For instance, both those who accept the bodily criterion and those who deny it agree that a person's body does not cease to exist simply because that person loses the ability to think. The bodily criterion should respect this; otherwise both sides of the debate would say, 'that's not what I meant by the bodily criterion.' Let us try to formulate a thesis that meets this modest standard.

The bodily criterion suggests two different thoughts: that a person's identity consists in the identity of something called her body, and that we are identical with our bodies. These are not the same: Ayer, for instance, held the first but not the second "1936: 194#. But they are closely related, and it is no accident that they are commonly affirmed or denied together. They are certainly supposed to be compatible.

The bodily criterion is not meant to be a definition of 'person', but rather an account of our identity through time. Moreover, if the bodily criterion is to be in competition with other accounts of personal identity, those accounts must all give identity conditions for people in the same sense of the word; otherwise they will simply be about different things. And what non-psychological account of personhood could advocates of the bodily criterion give? Now since a human vegetable has no mental properties and no capacity to acquire them, it is presumably not a person. So the Standard Criterion implies nothing about whether you could come to be a human vegetable--even supposing that your body could come to be a vegetable. For the same reason, it implies nothing about what happens to you when you die. Your body may persist as a corpse when you die; but if a corpse is not a person; the Standard Criterion does not imply that you persist as a corpse. It simply does not apply here, for this is not a case in which we have 'a person x existing at a time t and a person y existing at

another time t*'. The Standard Criterion even allows for you to have different bodies at different times, if at one of those times you are not a person. Suppose you get a bad case of senile dementia--so bad that you no longer count as a person. For all the Standard Criterion says, you may end up as a demented non-person with a different body from the one you have now. The Standard Criterion tells us far less than the bodily criterion was supposed to tell us. In fact the Standard Criterion is not really an account of what it takes for us to persist through time at all, but only an account of what it takes for us to persist as people-- that is, what it takes for us to persist as long as we remain people. It tells us nothing about what would happen to us if we ceased to be people and became vegetables or corpses

14.5 THE PRIMITIVENESS OF THE CONCEPT OF THE PERSON

SELF CONCEPT AND SELF ESTEEM IN ADOLESCENCE

The self-concept is the accumulation of knowledge about the self, such as beliefs regarding personality traits, physical characteristics, abilities, values, goals, and roles. In adolescence, the self-concept becomes more abstract, complex, and hierarchically organised into cognitive mental representations or self-schemas, which direct the processing of self-relevant information. Self-concept-the way in which one perceives oneself-can be divided into categories, such as personal self-concept (facts or one's own opinions about oneself, such as "I have brown eyes" or "I am attractive"); social self-concept (one's perceptions about how one is regarded by others: "people think I have a great sense of humor"); and self-ideals (what or how one would like to be: "I want to be a lawyer" or "I wish I were thinner"). Self-concept or self-identity is the sum total of a being's knowledge and understanding of his or her self. The self-concept is different from self-consciousness, which is an awareness of one's self. Components of the self-concept include physical, psychological, and social attributes, which can be influenced by the individual's attitudes, habits, beliefs and ideas. These components and attributes cannot be condensed to the general concepts of self-image

and the self-esteem. Self-concept refers to self-evaluation or self-perception, and it represents the sum of an individual's beliefs about his or her own attributes. Self concept reflects how an adolescent evaluates himself or herself in domains (or areas) in which he or she considers success important. An adolescent can have a positive self-concept in some domains and a negative self-concept in others. Teachers, administrators, and parents commonly voice concerns about students' selfesteem. Its significance is often exaggerated to the extent that low self esteem is viewed as the cause of all evil and high self-esteem as the cause of all good. Promoting high self-concept is important because it relates to academic and life success. Although the terms self-concept and self-esteem are often used interchangeably, they represent different but related constructs. Self-concept refers to a student's perceptions of competence or adequacy in academic and nonacademic (example, social, behavioural, and athletic) domains and is best represented by a profile of self-perceptions across domains. Self-esteem is a student's overall evaluation of him- or herself, including feelings of general happiness and satisfaction.

Check Your Progress 2

Note: Use the space provided for your answers.

1. Discuss about Body criterion?

   ……

   ……

   ……

   ……

   ……

2. What is self-concept?

   ……

   ……

   ……

   ……

   ……

14.6 LET US SUM UP

This process involves the exploration and testing of alternative ideas, beliefs, and behaviours, marking this period as one of both dramatic change and uncertainty. Erikson provided perhaps the most widely recognised theoretical framework for conceptualising the transformation of the self during adolescence. As children edge closer and closer to adulthood, it seems they reach a point where they want to be defined by anything BUT their parents. They stop wanting to spend time with family, and may even detest being seen with their parents. “Please drop me off a block from school, Mom. I want to walk the rest of the way.” These words are painful to a mother who has devoted many years of her life to meeting all of her teenage son’s needs. Suddenly, he’s embarrassed to be seen in the same car with her. The process of separation from parents is a natural one. Erik Erikson was the first major psychological theorist to develop the notion of an adolescent “identity crisis.” In his view, all of the earlier crystallisations of identity formed during childhood come into question during adolescence with the overwhelming combination of physical changes, increased sex drive, expanded mental abilities, and increasing and conflicting social demands. To develop a sense of identity amidst the confusion, Erikson stated in Identity: Youth and Crisis that adolescents need to try on a variety of roles and “must often test extremes before settling on a considered course.”

14.7 KEY WORDS

Memory: **Memory** is the faculty of the brain by which data or information is encoded, stored, and retrieved when needed. It is the retention of information over time for the purpose of influencing future action.

Self Knowledge: Self-knowledge is a term used in psychology to describe the information that an individual draws upon when finding an answer to the question "What am I like?". While seeking to develop the answer to this question, self-knowledge requires ongoing self-awareness and self-consciousness.

Self Esteem: Self-esteem is an individual's subjective evaluation of their own worth. Self-esteem encompasses beliefs about oneself as well as emotional states, such as triumph, despair, pride, and shame.

14.8 QUESTIONS FOR REVIEW

1. Discuss about Self Identity?
2. Discuss about Body criterion?
3. What is self-concept?

14.9 SUGGESTED READINGS AND REFERENCES

- David Pruitt, M.D (2000). Your Adolescent: Emotional, Behavioural, and Cognitive Development from Early Adolescence Through the Teen Years, Imprint: Harper Paperbacks, NY
- Burns, R. B. (1979). "The self-concept in theory, measurement, development and behaviour." London:
- Anscombe, G.E.M., 1981, "The First Person", in The Collected Papers of G.E.M. Anscombe, vol. II: Metaphysics and the Philosophy of Mind, Minneapolis: University of Minnesota Press.
- Armstrong, D., 1968/1993, A Materialist Theory of the Mind, London: Routledge.
- Arnauld, A., 1641/1984, excerpts from "Fourth Set of Objections and Replies", in Cottingham, Stoothoff and Murdoch (trans.), The Philosophical Writings of Descartes Volume II, Cambridge: Cambridge University Press.
- Ashwell, L., 2013a, "Deep, Dark, …or Transparent? Knowing Our Desires", Philosophical Studies, 165: 245–256.
- ——, 2013b, "Review of Jordi Fernández, Transparent Minds: A Study of Self-Knowledge", Notre Dame Philosophical Reviews, 2013.08.34, available online.

- Aydede, M., 2003, "Is Introspection Inferential?", in Gertler 2003: 55–64
- Bar-On, D., 2004, Speaking My Mind: Expression and Self-Knowledge, Oxford: Oxford University Press.
- Bayne, T. and M. Montague (eds.), 2004, Cognitive Phenomenology, Oxford: Oxford University Press.
- Berker, S., 2008, "Luminosity Regained", Philosophers' Imprint, 8: 1–22.
- Bermúdez, J.L., 1998, The Paradox of Self-Consciousness, Cambridge, MA: MIT Press.
- Bilgrami, A., 2006, Self-Knowledge and Resentment, Cambridge, MA: Harvard University Press.
- Boghossian, P., 1989, "Content and Self-Knowledge", Philosophical Topics, 17: 5–26.
- Boyle, M., 2009, "Two Kinds of Self-Knowledge", Philosophy and Phenomenological Research, 78: 133–164.
- ——, 2011, "Transparent Self-Knowledge", Aristotelian Society Supplementary Volume, 85: 223–241.
- Brewer, B., 1995, "Bodily Awareness and the Self", in Bermúdez, Marcel, and Eilan (eds.), The Body and the Self, Cambridge, MA: MIT Press, pp. 291–303.
- Burge, T., 1988, "Individualism and Self-Knowledge", The Journal of Philosophy, 85: 649–663.
- ——, 1993, "Content Preservation", The Philosophical Review, 102: 457–488.
- ——, 1996, "Our Entitlement to Self-Knowledge", Proceedings of the Aristotelian Society, 96: 91–116.
- Byrne, A., 2005, "Introspection", Philosophical Topics, 33(1): 79–104. [Byrne 2005 available online]
- ——, 2011a, "Transparency, Belief, Intention", Aristotelian Society Supplementary Volume, 85: 201–221.
- ——, 2011b, "Knowing That I Am Thinking", in Hatzimoysis (ed.) 2011: 105–124.
- ——, 2012a, "Review of Peter Carruthers, The Opacity of Mind", Notre Dame Philosophical Reviews, 2012.05.11, available online.

- ——, 2012b, "Knowing What I See", in Smithies and Stoljar 2012: 183–210.
- Carruthers, P., 2011, The Opacity of Mind: An Integrative Theory of Self-Knowledge, Oxford: Oxford University Press.
- Cassam, Q., 1997, Self and World, Cambridge, MA: MIT Press.
- ——, 2011, "Knowing What You Believe", Proceedings of the Aristotelian Society, 111: 1–23.
- Castañeda, H-N., 1966, "'He': A Study in the Logic of Self-Consciousness", Ratio, 8: 130–157.

14.10 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check your progress 1

1. The emergence of abstract reasoning abilities allows adolescents to think about the future and experiment with different identities. Identity development involves two steps. First, the adolescent must break away from childhood beliefs to explore alternatives for identity in a particular area. Second, the adolescent makes a commitment as to their individual identity in that area. Some aspects of identity, especially among young adolescents, may be foreclosed. The foreclosure status is when a commitment is made without exploring alternatives. Identity achievement during adolescence serves as a basis for our adult expectations and goals for us. As individuals enter early adulthood they use their current understanding of whom they are to develop a lifespan construct which serves as the link between the identity developed in adolescence and the adult self. The lifespan construct is an integration of an individual's past, present, and culture.

Answers to Check your progress 2

1. Let us call this the Standard Bodily Criterion or Standard Criterion for short. Is this the bodily criterion? Well, suppose you

were to lapse into an irreversible vegetative state: your upper brain is destroyed, while the lower parts that direct your 'vegetative' functions remain intact. The result is an animal that is fully alive in the biological sense--as alive as an oyster is alive--but with no mental features whatever. Most philosophers, I think, would say that your body still exists in this case. Of course, the Standard Criterion does not itself say this. It doesn't say when something is the same body as an earlier one, and when not. This raises a problem: the bodily criterion will tell us nothing about our identity through time unless we have at least some idea of what it takes for a person's body to persist; yet no one has ever produced a serious account of the identity conditions of human bodies. But never mind. In order to give the bodily criterion a run for its money, let us pretend that we know what it takes for a person's body to persist. Specifically, let us accept that your body persists as a vegetable when you lapse into an irreversible vegetative state. Now what happens to you in this case? The bodily criterion ought to imply that you go where your body goes. If your body persists as a vegetable, then according to the bodily criterion you too ought to persist as a vegetable. But the Standard Criterion implies no such thing. That is because it applies only in cases where we have a person existing at one time and a person existing at another time; and there is no person left behind after your upper brain is destroyed. The usual view of personhood, anyway, is that a thing needs certain mental properties, or at least the capacity to acquire them, in order to count as a person. You might think that advocates of the bodily criterion should reject any account of what it is to be a person that involves mental properties. But there is no reason why they should. Such an account ought to be perfectly compatible with the bodily criterion. There is no evident contradiction in saying that beings with such-and-such mental properties are identical with their bodies, or that they persist if and only if their bodies do.

2. Self-concept and academic achievement: Self-concept is frequently positively correlated with academic performance, but

it appears to be a consequence rather than a cause of high achievement. This is a common assumption that an individuals high academic performance results in their self concept. Whereas, the high academic performance is the result of individual's self concept. Self-concept and aggression: Another popular assumption is that aggressive students have low self-concept and use aggression as a means of raising it. Self-concept, depression, and use of illegal substances: Low self-concept is often considered a defining characteristic of depression, but the evidence for this is weak. Similarly, although some evidence suggests that low self-concept may be a weak risk factor for smoking in girls, the relationship between self-concept and the use of alcohol and illegal drugs has little support. An adolescent's self-concept is dynamic, and causality is complex. That is, problems and difficulties can lower self-concept; but low self-concept can also cause problems. For adolescents, having a high academic self-concept is associated with positive academic performance and having a high physical self-concept is related to increased physical activity.