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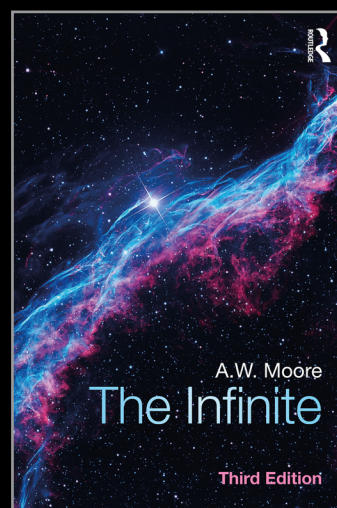
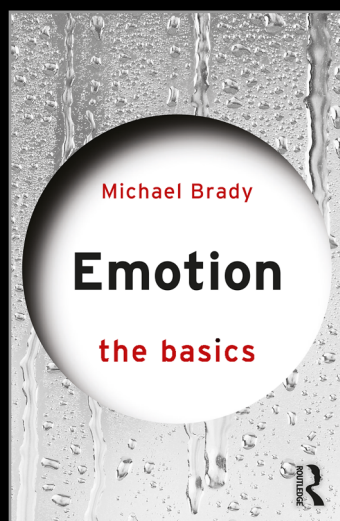
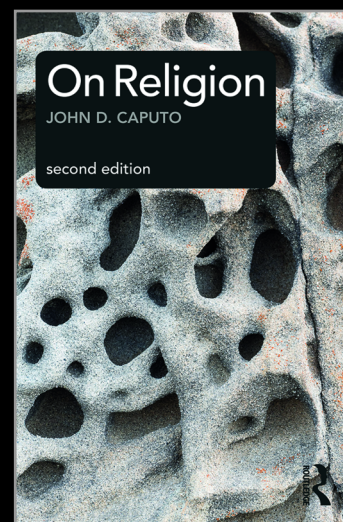
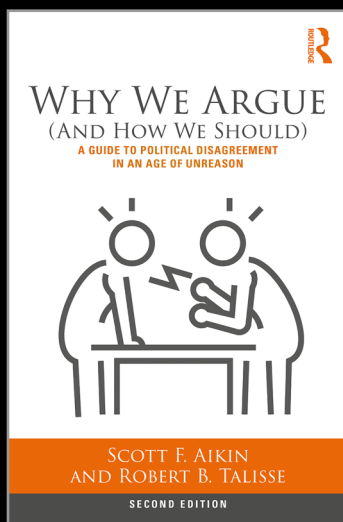
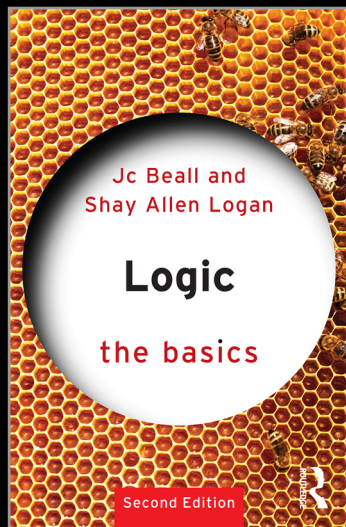


## TABLE OF CONTENTS

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-  Introduction
-  1 • Language, Form, and Logical Theories
-  2 • Why Do We Argue?
-  3 • Putting Religion in its Place
-  4 • Emotion, Knowledge, and Understanding
-  5 • Paradoxes of the Infinite

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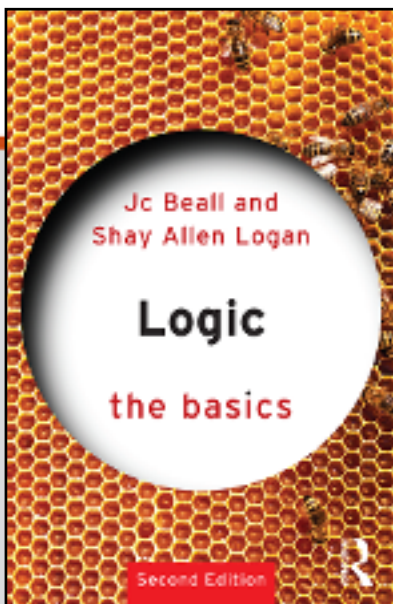


CHAPTER

1

# LANGUAGE, FORM, AND LOGICAL THEORIES

## CHAPTER THREE



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*Logic: The Basics*

by Jc Beall and Shay Allen Logan

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# LANGUAGE, FORM, AND LOGICAL THEORIES

*Traditionally, (formal) logic is concerned with the analysis of sentences . . . and of proof . . . with attention to the form in abstraction from the matter.*

– Alonzo Church 1956

The aim of this chapter is to cover three topics: features of language that are relevant to logic, the aim of ‘formal languages’ with respect to modern logic, and the idea of rivalry among logical theories. Subsequent chapters, following the brief ‘set-theoretic toolbox’ in Chapter 4, look at different logical theories and phenomena that motivate them. This chapter, like its predecessors, remains abstract; its aim is simply to lay out some big-picture ideas that will be useful for subsequent discussion.

## 3.1 LANGUAGE AND FORMAL LANGUAGES

Today, the discipline of logic is largely *formal logic*. In part, formal logic is so called because it often aims to specify valid argument *forms*, and it sees logical consequence as being largely a matter of such forms. We will get more specific about what this means in the course of the chapter, but for now you can take it to mean that formal logic is largely concerned with *shapes* of valid arguments,

rather than with the specific arguments themselves. (For analogy, think of the different shapes a *sturdy house* might take. One might be interested in particular houses themselves – for example, Agnes’s house at Catnip Lane or the like – regardless of their shape; but one might, along the aims of the formal logician, be interested more in the shape than the particular houses.)

Formal logic is also so called for another reason: namely, that contemporary logicians almost always construct ‘formal languages’ in their aim to specify logical consequence. Formal languages serve as models of a given natural language (or fragment thereof); they are intended to illuminate the behavior of logical connectives and, ultimately, the target consequence relation.

Logic, in the first instance, is about what follows from what in a given *natural language* (or some fragment thereof). Natural languages are familiar languages like English, Spanish, French, German, Polish, Mandarin, Italian, Strine, and so on.<sup>1</sup> Natural languages are powerful and useful tools; however, they are also rife with features such as ambiguity and vagueness. Such features, while perhaps partly contributing to the flexibility of natural languages, make the relation of logical consequence in any actual natural language a wildly complicated object of investigation. As we saw in the previous chapter, a standard approach to studying extremely complex systems is to specify a less-complicated *model* of the system. To do this, we must specify both a different system and a particular way in which the different system is taken to be similar to the target system of the investigation. In large part logicians do this by constructing artificial – or *formal* – languages.

### 3.2 LANGUAGES: SYNTAX AND SEMANTICS

Languages have a syntax and semantics. Syntax provides the uninterpreted sentences of language while semantics does the work of providing meaning. This might sound like a rather abstract distinction; so let’s make it concrete. In English, the word ‘cat’ is composed of three letters – ‘c’, ‘a’ and ‘t’, in that order. It rhymes with ‘mat’ and ‘bat’ and ‘drat’. It is possible to misspell the word ‘cat’, to mispronounce it, and so on. These are all *syntactic* features

of ‘cat’. Semantically, ‘cat’ picks out (among other things) a small, furry, domesticated mammal. The word ‘cat’ is neither furry nor domesticated. Cats cannot be misspelled or mispronounced. Cats don’t rhyme with anything because rhyming is something words do, not something cats do. The difference between syntax and semantics is as stark as the difference between the word ‘cat’ and actual cats.

### 3.2.1 SYNTAX

For our purposes a *syntax* provides

- *syntactic ingredients* – basic building blocks of the language;
- a set of (well-formed) *sentences* of the language.

The set of syntactic ingredients contains all of the items involved in the given language’s sentences. Consider, for example, the following sentence of English.

Agnes is sleeping.

There are various syntactic ingredients used in this sentence. To begin, there are the individual letters ‘A’, ‘g’, ‘n’, and so on. Such letters are ingredients for other ingredients, in particular, the name ‘Agnes’ and the predicate ‘is sleeping’ (which is spelled with an invisible letter called ‘space’, which falls between the two occurrences of ‘s’ in ‘is sleeping’). Finally, there is a punctuation mark, namely, ‘.’. These syntactic ingredients are put together in the appropriate way to form the given sentence, namely, ‘Agnes is sleeping’.

What if we took the above ingredients (e.g., the name ‘Agnes’ and predicate ‘is sleeping’) and put them together as follows?

is sleeping. Agnes

Is this a sentence of English? No. The given string of ingredients is not among English’s set of *sentences*. Of course, it’s conceivable that English could have evolved in such a way that ‘is sleeping.



Agnes' counted as a sentence; however, English's actual syntax – in particular, its grammar – doesn't count the given string as an English sentence.

The syntax of a natural language is, in general, quite complicated. What counts as a sentence can in many cases depend on the *way* in which it is said, and perhaps even on what else has already been said. For example, there is some debate about whether 'She got it' on its own counts as a sentence. On the other hand, in the following context, it seems clear that it does:

PERSON A: Did you hear about Jane's promotion?

PERSON B: No, what happened?

PERSON A: She got it.

PERSON B: Oh, that's great!

Logic wouldn't get off the ground if we needed to first deal with all the complexities of natural language syntax before we could do anything. Luckily, we can make a great deal of progress by examining *models* of parts of natural languages. For our purposes we shall think of a language's syntax as specifying which of its many strings of ingredients count as sentences of the language – and that's about it.

### 3.2.2 SEMANTICS

What about the *semantics* of a language? As above, a language's semantics has to do with the meanings of its parts. Meaning is a notoriously difficult matter. We will abstract away from the complexity and focus only on a simplified picture of semantics, where the semantics is nothing more than the 'truth conditions' and 'falsity conditions' (more precisely, truth-in-a-case conditions and falsity-in-a-case conditions) of a sentence – the conditions under which a sentence is true (in the given case) or false (in the given case). As we will see below, providing truth and falsity conditions (more precisely, truth-in-a-case and falsity-in-a-case conditions) for the sentences of a language will in general require

spelling out what we take cases to be. Thus, providing truth-in-a-case conditions and falsity-in-a-case conditions will generally give us enough information to allow us to fill in the two ingredients involved in the ‘recipe’ for logical consequence (see Chapter 1) – namely, *cases* and *truth in a case*.

Consider an example from the language *Enilef* (pronounced ‘En-ill-ef’, with accent on ‘En’).<sup>2</sup> Among the predicates of Enilef is ‘mew eow’. Among the names in Enilef is ‘Senga’. The questions are these: under what conditions is ‘Senga mew eow’ true, and under what conditions is ‘Senga mew eow’ false? What, in other words, does it take for ‘Senga mew eow’ to be true or to be false? Here is a natural thought:

- ‘Senga mew eow’ is true if and only if the referent of ‘Senga’ has the property expressed by ‘mew eow’.
- ‘Senga mew eow’ is false if and only if the referent of ‘Senga’ does not have the property expressed by ‘mew eow’.

How do we generalize this to *truth in a case* and *falsity in a case*? We first need to have some idea of what these ‘cases’ are.

For now, we will skip details and think of cases as ‘possible circumstances’ along familiar – though, admittedly, imprecise – lines. (For example, there’s a possible circumstance in which *Logic: The Basics* refers to a book other than the one you’re reading. There’s a possible circumstance in which ‘is a cat’ expresses the property of *being a horse*. And so on.) Letting  $c$  be any such possible circumstance we can generalize the condition above to get an example of truth-in-a-case conditions.

- ‘Senga mew eow’ is true in a possible circumstance  $c$  if and only if the referent of ‘Senga’ in  $c$  has the property expressed by ‘mew eow’ in  $c$ .
- ‘Senga mew eow’ is false in a possible circumstance  $c$  if and only if the referent of ‘Senga’ in  $c$  does not have the property expressed by ‘mew eow’ in  $c$ .

Pending further details about the ‘nature’ of  $c$  (the nature of our ‘possible circumstances’) the above account is an example of

truth and falsity conditions or, more relevantly, truth-in-a-case and falsity-in-a-case conditions.

We will also return to the topic of semantics in subsequent chapters after the interaction between truth-in-a-case and falsity-in-a-case conditions and logical consequence is made clearer. For now, one may think of semantics as above: whatever is involved in the truth and falsity conditions of sentences.

### 3.3 ATOMS, CONNECTIVES, AND MOLECULES

Chemistry recognizes a distinction between atoms and molecules. Atoms, at least in the original sense of the term, contain no parts (other than themselves if we want to count everything to be an improper part of itself). Molecules, on the other hand, are composed of atoms. Molecules are what you get by connecting atoms together.

In a similar way logic distinguishes between *atomic sentences* and *molecular sentences*. Consider, for example, the following sentences.

1. Max is running.
2. Agnes is running.
3. Max likes beans.
4. Agnes likes beans.

Typically, logicians treat (1)–(4) as *atomic*. For purposes of logic (or at least many standard logical theories) (1)–(4) have no significant ‘logical parts’, no ‘logical vocabulary’. Such sentences are simple subject–predicate sentences. Unless the given predicates (or, perhaps, names) are thought to carry special logical significance, the sentences are treated as basic atomics.

The distinction between atomics and molecular sentences, at least in logic, turns on the idea of *logical connectives*, which are a species of so-called *sentential connectives*.<sup>3</sup> Sentential connectives take sentences and make new (bigger) sentences. Sentential connectives have a ‘degree’ or ‘arity’, which marks the number of sentences a given connective requires in order to make a new sentence. For example, ‘...and ...’ is binary; it takes two (not necessarily

distinct) sentences to make a new sentence, while ‘it is false that . . .’ is unary, and so takes one sentence to make a new sentence, and so on.

Logicians generally recognize a foursome of connectives that make up the basic (so-called sentential or propositional) *logical* connectives, two unary and two binary. The connectives are:

- Falsity operator (unary): *It is false that . . .*
- Truth operator (unary): *It is true that . . .*
- Conjunction operator (binary): *. . . and . . .*
- Disjunction operator (binary): *Either . . . or . . . (or both).*

The falsity operator is often called *logical negation* and is expressed in English by what logicians call *logical ‘not’* – an elementary usage of the word ‘not’ considered to be within the basic logical vocabulary. To form a sentence using the falsity operator one begins with some sentence – say, ‘Agnes is nice’ – and forms the sentence *it is false that Agnes is nice*. In turn, the sentence *it is false that Agnes is nice* is true if and only if it is false that Agnes is nice; and it is false that Agnes is nice if and only if Agnes is *not* nice – where ‘not’ is here understood to be logical negation, corresponding, as far as logical consequences go, exactly with the falsity operator *it is false that . . .*<sup>4</sup> There may be (probably are) different usages of ‘not’ and ‘it is false that’ in English that demand more than what is involved in the basic logical connectives.

The falsity operator forms *logical negations* of a sentence; the truth operator forms *logical ‘nullations’*, to coin a term inspired by Anderson and Belnap (1975). As the philosopher Frank P. Ramsey (1927) observed, the truth operator is redundant: it is the null operator (Anderson and Belnap, 1975), which truly (falsely) applies to a sentence if and only if the sentence is true (false). After all, to form a sentence from the truth operator one begins with some sentence – say, ‘Agnes is nice’ – and forms the sentence *it is true that Agnes is nice*. But this new sentence, which explicitly adds the truth operator, is true (false) if and only if the original sentence (viz., ‘Agnes is nice’) is true (respectively, false). In this way, the operator is redundant – but it’s there in the background either way.

The null operator is in every language whatsoever but oftentimes is invisible. In English the explicit clothing of the null operator is as above: namely, *it is true that . . .*, which truly applies to all and only the true sentences.<sup>5</sup>

Because the truth operator is redundant many logicians only explicitly point to a trinity when they list the basic logical (sentential) connectives; but as revered as trinities may be in some contexts, nobody should reject that the standard stock of basic logical connectives is the symmetric foursome: two unary and two binary connectives, where the connectives in each pair are what might be called *duals* of each other – they are in some sense ‘opposites’, but we shall leave the relevant sense of ‘dual’ and ‘opposite’ to play out in subsequent chapters.

The truth operator, while redundant, is sometimes usefully made explicit in highlighting the binary logical connectives. There may be different sorts of binary ‘conjunction connectives’ in natural language. The *logical* conjunction is perhaps ideally expressed with the truth operator explicit:

- *It is true that . . . and it is true that . . .*

No matter which sentences one puts into the blanks (marked by ellipses) their logical conjunction is true if and only both sentences are true – and that’s all there is to it. By way of contrast consider the following (non-logical) conjunction:

- Max went downstairs and finished his tea.

It is natural to think that the ‘and’ in this sentence involves a temporal-ordering condition: the sentence is true if and only if it’s true that Max went downstairs and it’s true that Max finished his tea *and* it’s true that Max went downstairs *before* Max finished his tea. With this extra condition (requiring temporal ordering) the given conjunction shows itself to demand something more than merely the truth of the conjuncts. For *logical* conjunction, which cares only about the truth (falsity) of the conjuncts (i.e., the smaller sentences ‘conjoined’ by the binary conjunction connective), order of the conjuncts doesn’t matter; but for (let us call it) temporally

constrained conjunction connectives the following sentence is very different from the one above – indeed, the one can be true while the other not true (unlike if ‘and’ in such sentences were the logical conjunction):

- Max finished his tea and went downstairs.

Such a demand for order (temporal or otherwise) distinguishes this sort of conjunction connective from the basic *logical* conjunction connective. Similar observations may be made about logical disjunction. In general, the logical expressions, as standardly conceived, are neutral with respect to temporal or other such constraints.

Our concern in this book is chiefly with the logical connectives. Other sorts of conjunctions (or indeed other connectives explored in subsequent chapters, such as so-called modal connectives) are *extra-logical* connectives. The extra-logical connectives matter in philosophy and perhaps other abstract disciplines, and their formal behavior is often of interest in such disciplines; but they are beyond the logical expressions.

Exactly what makes a connective (or linguistic expression in general) a *logical expression* is a difficult – and in many ways still-open – question. While we shall not answer the question of *why* such and so expressions are logical we shall assume throughout the book a very standard answer to *which* expressions are logical: namely, the so-called basic (or propositional or sentential) foursome mentioned above and the rest of so-called standard first-order logical vocabulary (without identity), all of which you’ll learn about in subsequent chapters.<sup>6</sup>

With some sense of connectives in mind we can now officially define what it is to be an atomic sentence of a language, and similarly a molecular sentence of a language. To do this we assume that every language has some specified set of sentential connectives. We shall let  $\mathcal{L}$  be an arbitrary language (e.g., English or whathaveyou) and  $A$  any sentence of  $\mathcal{L}$ .

**Definition 4 (Atomic Sentence)** *A is an atomic sentence of language  $\mathcal{L}$  if and only if A contains none of  $\mathcal{L}$ ’s connectives.*

**Definition 5 (Molecular Sentence)** *A is a molecular sentence of language  $\mathcal{L}$  if and only if A contains one or more of  $\mathcal{L}$ 's connectives.*

Syntactically, these definitions serve to specify the role connectives play. We shall also make a semantic-related assumption about all connectives in our formal languages: namely, that they're *compositional* in the sense that a molecular sentence's 'semantic status' (e.g., truth or falsity) in a given case is determined by the semantic status of the *component sentences* in relevant cases. So-called *truth-functional* connectives are a special and common example of the sort of semantic-composition assumption; and such connectives shall be our primary focus. (So-called modal connectives, discussed in subsequent chapters, are not truth-functional; but they are still compositional in the target sense.)

Connectives in *natural* languages, as one might expect, are sometimes far from truth functional. For the truth-functional formal languages that we discuss we shall adopt *as a modeling hypothesis* that the formal languages we build are similar to natural language *in their truth-functional aspects*. Our (truth-functional) formal languages are similar to the truth-functional fragment of natural language, which is what results when we restrict the meanings of natural language terms in such a way that the connectives behave truth-functionally.

All of these ideas (e.g., syntax, connectives, composition constraints and more) will be much clearer once you have studied a concrete language. At this stage we keep the discussion abstract with an aim towards giving you a sense of the big picture.

### 3.4 CONNECTIVES AND FORM

With the idea of connectives comes the idea of *form* – in particular, *logical form*.<sup>7</sup> Each language has a set of connectives. In doing logic logicians traditionally focus on some subset of a language's connectives, namely, the ones that are deemed to be *logically significant*. Such connectives are called *logical connectives*; they are the ones in virtue of which 'logical form' is usually defined.

To get an idea of logical form consider some of the molecular sentences composed from sentences mentioned above:

5. Max is running and Agnes is running.

This sentence is a conjunction of two atomic sentences, namely, (1) and (2); however, we could have used our conjunction (our connective) to form the conjunction of *any* two sentences. And we can do the same with logical disjunction; for example:

6. Either Max likes beans or Agnes likes beans (or both).

This sentence is a disjunction of two atomic sentences, but we could've used *any* two sentences – molecular or not – to form their logical disjunction.

For convenience let us use the symbol ' $\wedge$ ' for logical conjunction. In turn, letting  $A$  and  $B$  be any two sentences, we can say that conjunctions have the following logical form.

$$A \wedge B$$

This isn't to say that every conjunction has the syntactic form  $A \wedge B$ . Quite often, conjunctions have a different surface form. (Consider, e.g., 'Max and Agnes like beans', which is a convenient way of expressing the conjunction 'Max likes beans and Agnes likes beans'.) When we talk about *form* we mean *logical form*, which is a syntactic 'form' relevant to logic.

Of course, a conjunction might have a more illuminating form if one digs a bit deeper into the given conjuncts.<sup>8</sup> To see this let us use ' $\vee$ ' for logical disjunction and use ' $\neg$ ' for logical negation (i.e., the falsity operator). Now consider the *conjunction* of (4) and (6). This is still a conjunction but its particular form is illuminated by the following.

$$A \wedge (B \vee A)$$

In this case, conjunction is the 'main connective', but instead of taking two atomics conjunction is now conjoining an atomic (viz., (4)) and a molecular sentence (viz., (6)).

Similarly, consider the logical negation of (1), namely,



7. It is false that Max is running.

Since (7) is the logical negation of (1) its form – letting  $A$  represent (1) – is simply  $\neg A$ . In turn, the disjunction of (1) and (7) has the following form.

$$A \vee \neg A$$

You can consider other examples involving all four basic logical connectives connectives, perhaps using ‘ $\dagger$ ’ for the truth operator.

### 3.5 VALIDITY AND FORM

Logical consequence (or validity), as in Chapter 1, is the absence of a counterexample:  $B$  is a logical consequence of  $A$  just if there’s no counterexample to the argument from  $A$  to  $B$ , that is, just if there’s no ‘case’ in which  $A$  is true but  $B$  not true. In contemporary logic (but also in much of traditional logic) a further feature of logical consequence is highlighted: *logical form*. Many standard logical theories maintain that validity is essentially tied to form. In particular the idea is that the validity of an argument is at least partially in virtue of form.

Sentences, as above, have logical forms. Arguments, in turn, immediately enjoy logical forms. After all, arguments, which are (ordered) sets of sentences, have a logical form that derives from the form of its constituent sentences. For example, consider the argument from premises (1) and (2) to conclusion (5). (The word ‘Therefore’ is inserted to mark the conclusion of the given argument; it isn’t really part of the argument.)

1. Max is running.
2. Agnes is running.
3. Therefore, Max is running and Agnes is running.

We can abstract away from the particular content of the above argument to get the following *logical form* of the argument – sometimes called *argument form*. Here, we use ‘P’ and ‘C’ to mark premises and conclusion; they are not really part of the given argument form.

- P.  $A$   
 P.  $B$   
 C.  $A \wedge B$

By using a comma to separate premises and using ‘ $\therefore$ ’ to separate the premises from the conclusion we can conveniently display the above argument form thus:  $A, B \therefore A \wedge B$ .<sup>9</sup>

Similarly, the argument from premises (6) and (3) to conclusion (4) has the following argument form:  $A \vee B, \neg A \therefore B$ .

Why bother thinking about argument forms? As above, logical consequence, according to standard thinking, has something to do with logical form. In particular, the validity of an argument is often thought to be at least partly due to its logical form. For example, consider, again, the following form:  $A, B \therefore A \wedge B$ . Regardless of what sentences you plug into ‘ $A$ ’ or ‘ $B$ ’, you wind up with a valid argument – at least according to standard logical theories. For example, let our ‘cases’, once again, be something like *possible circumstances*. Is there any possible circumstance in which both of  $A$  and  $B$  are true but their conjunction  $A \wedge B$  is not true? On brief reflection, it is difficult to conceive of such a case, at least if  $\wedge$  is understood as standard logical conjunction. To make this plain we can consider the natural truth and falsity conditions for conjunctions. A natural approach to the truth conditions for conjunction goes as follows.

- A conjunction  $A \wedge B$  is *true in a possible circumstance  $c$*  if and only if  $A$  is true-in- $c$  and  $B$  is also true-in- $c$ .

In turn, a natural approach to the falsity conditions for conjunction goes as follows.<sup>10</sup>

- A conjunction  $A \wedge B$  is *false in a possible circumstance  $c$*  if and only if  $A$  is false-in- $c$  or  $B$  is false-in- $c$ .

Pending further details about our given cases  $c$ , these conditions (i.e., *truth-in-a-case- $c$*  condition) ensure that any argument of the form  $A, B \therefore A \wedge B$  is valid. After all, an argument is valid if and only if it is without counterexample; it is without counterexample iff there is no case in which the premises are true but the conclusion

not true. Can there be a case in which  $A$  and  $B$  are both true but  $A \wedge B$  is not true? The truth condition above answers the question. According to the given truth condition, if  $A$  and  $B$  are both true-in-some given case  $c$  then  $A \wedge B$  is true-in- $c$  too. Hence, given the above truth condition, there cannot be a case in which both  $A$  and  $B$  are true but  $A \wedge B$  is not true. Whence, the given argument form, namely  $A, B \therefore A \wedge B$ , is valid – at least given the above truth condition for conjunction.

### 3.6 LOGICAL THEORIES: RIVALRY

It is generally thought that each natural language, on the whole, has exactly one consequence relation – or, in short, one logic. Assuming as much, the aim of a *logical theory* is to specify the logic of a given language. In doing so, a logical theory aims to clearly record all of the valid argument forms of the given language. With respect to English, for example, the aim of a logical theory is to specify English's consequence relation, to specify the valid argument forms of English.

Scientific theories – or theological theories, or psychological theories, and so on – often disagree about a given phenomenon. In such cases, the theories are said to be 'rival theories' of the given phenomenon. For example, one scientific theory might say that the earth revolves around the sun, while another might say that the sun revolves around the earth. The two theories give rival accounts of the same phenomenon – the sun's rising (as it were).

Can there be rivalry among logical theories? Yes. Not only can there be rivalry among logical theories; there *is* rivalry among logical theories. Subsequent chapters will discuss rival logical theories. For now, it is worth briefly clarifying two common ways in which logical theories might be rivals.

Logical theories, for our purposes, are always theories about the consequence relation of a particular language (or fragment thereof). We will say that logical theories cannot be rivals unless they are theories of the same language (or the same fragment of some language). Two common ways in which logical theories may

be rivals are as follows, but will only be illustrated in subsequent chapters.

- **Different Logical Connectives:** suppose that two theories aim to specify the logical consequence relation of some (natural) language  $\mathcal{L}$ . The theories might be rivals by disagreeing about  $\mathcal{L}$ 's set of logical connectives. (For example, both theories might say that 'and' is a sentential connective of  $\mathcal{L}$ , but the theories might disagree as to whether the given connective should be counted as properly *logical*, that is, whether 'and' plays any logically significant role in valid arguments.)
- **Different Logical Behavior:** suppose that two theories aim to specify the logical consequence relation of some (natural) language  $\mathcal{L}$ . Suppose, further, that both theories agree on which of  $\mathcal{L}$ 's connectives count as properly *logical* connectives. The theories might nonetheless be rivals by disagreeing about the *logical behavior* of the given connectives. (For example, one theory might say that  $\neg\neg A \therefore A$  is a valid form in  $\mathcal{L}$ , while the other theory disagrees by saying that some instances of the given argument form have counterexamples.)

For the most part, this book will only cover the second route towards logical rivalry.

### 3.7 SUMMARY, LOOKING AHEAD, AND FURTHER READING

*Summary.* Languages have a syntax and semantics. Syntax provides the basic ingredients of the language, and in particular a set of (uninterpreted) sentences. Semantics provides whatever is required for 'truth conditions' and 'falsity conditions' for all sentences of the language. Sentences have *logical forms*. Arguments, being (ordered) sets of sentences, likewise have logical forms – argument forms. Validity is often thought to be at least partly due to the logical form of arguments. Logic, qua discipline, aims to specify all valid forms of a given language (or fragment thereof). For convenience and clarity, artificial languages are constructed to illustrate the logical

forms of a given language. Logical theories give an account of the logical consequence relation of some given language. Rival logical theories disagree about the behavior of logical connectives (or disagree about which connectives count as logical). In subsequent chapters, we will look at rival logical theories, or at least the general idea involved in some such rivals.

*Looking ahead.* The next chapter discusses a few basic set-theoretic tools. We will use such tools to talk about various logical theories in succeeding chapters.

*Further reading.* For an accessible, related, but more involved discussion of this chapter's various themes, see Sainsbury (2001) and Read (1995), and also the highly classic 'Introduction' in Church (1956). (Also see bibliographies therein!)

### 3.8 EXERCISES

*Note:* For additional exercises and for worked exercises, please see the online supplement at [www.routledge.com/9781138852273](http://www.routledge.com/9781138852273).

1. What is a sentential connective? What is a unary connective? What is a binary connective? (What is the degree or arity of a sentential connective?)
2. In §3.5 we gave natural truth and falsity conditions for the logical conjunction. Give what you'd take to be natural 'truth conditions' and 'falsity conditions' (strictly, *truth-in-a-case* and *falsity-in-a-case* conditions) for the logical disjunction. Do the same for negation. (You'll need these conditions in the next exercise.)
3. Consider the argument that takes (6) and the negation of (3) as its premises and (4) as its conclusion. Using the symbolism introduced above, give its argument form. Taking 'cases' to be 'possible circumstances', and using the truth conditions that you provided for disjunction and negation (and, if need be, the condition in §3.5 for conjunction), is the given form valid? Justify your answer.

### 3.9 NOTES

1. Strine is the language spoken by many contemporary Australians.
2. This is a made-up language.
3. This is slightly narrow, but for present purposes will suffice. The broader category of 'logical expressions' is more accurate. We will return to this topic when we discuss Identity in Chapter 11.
4. Hence, one can't explain the logical use of 'not' in terms of 'it is false that ...' or vice versa; they come to exactly the same thing.
5. We note that while Ramsey's so-called redundancy theory of truth is absolutely correct about the logical connective – the null operator, the truth operator – it is very much wrong if taken to apply to a truth *predicate*, which is something altogether different. Truth operators are in every single language whatsoever inasmuch as the null operator is in such languages; and this includes paradox-free languages. But truth *predicates* are delicate items indeed, leading to such paradoxes as the infamous Liar paradox or similar truth-theoretic paradoxes. We briefly discuss some of these ideas in Chapter 14.
6. We note that from a purely abstract point of view one can treat any vocabulary as so-called logical vocabulary inasmuch as one cares only about charting the formal consequences of the vocabulary via some sort of entailment relation. On the background picture of this book we treat standard (first-order) vocabulary as logical, and everything else as extra-logical. On this account theorists interested in the extra-logical vocabulary are in fact interested in specifying extra-logical, theoretical closure (or consequence) operators for theories of the target phenomena (expressed by the extra-logical vocabulary). All of this is philosophically debatable; but this book is not the place for such debate.
7. There are ongoing debates about what, exactly, logical form amounts to. Given the aims of this book the current discussion

simplifies the situation a great deal, sidestepping many such issues.

8. The *conjuncts* of a conjunction are the sentences that are conjoined by conjunction:  $A$  and  $B$  are the conjuncts of the conjunction  $A \wedge B$ .
9. Note well: ‘ $\therefore$ ’ is used as a convenient way of representing an argument or argument form (separating premises from conclusion in the given form); we don’t use ‘ $\mathcal{X} \therefore A$ ’ to *say* anything. Still, if you’d like to pronounce ‘ $\therefore$ ’ you can use its standard pronunciation ‘therefore’. (Again, though, the symbol is not being used to *say* anything, but just to represent argument forms.)
10. Strictly speaking, we are giving *falsity-in-a-case-c* conditions, and above gave *truth-in-a-case-c* conditions. But it is cumbersome to always write this, and so sometimes we use ‘truth conditions’ and ‘falsity conditions’ as shorthand for *truth-in-a-case* conditions and *falsity-in-a-case* conditions, respectively.

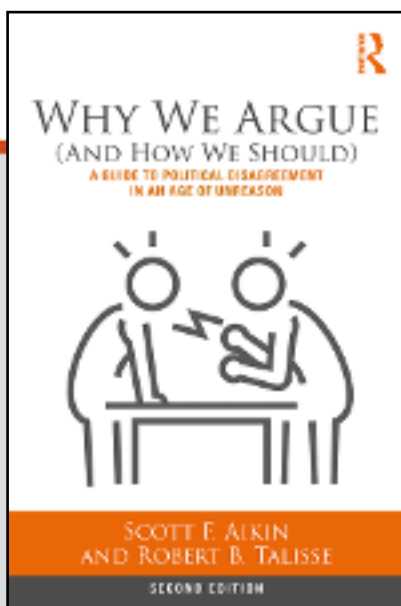


CHAPTER

2

# WHY DO WE ARGUE?

## CHAPTER ONE



This chapter is excerpted from

*Why We Argue (And How We Should): A Guide to Political Disagreement in an Age of Unreason*

by Scott E. Aikin and Robert B. Talisse.

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# 1 Why Do We Argue?

The ancient Greek philosopher Aristotle was an especially astute observer of human nature. Among his many famous pronouncements and ideas, the following two claims may already be familiar to you:

- 1 Humans by nature are political creatures.
- 2 Humans by nature desire to know.

The first of these quotations comes from Aristotle's book titled *Politics* (1253a2), and it is often interpreted as saying that humans are naturally "political" in our current colloquial sense of that term. To say that we are political in this sense is to say that we are competitive, ambitious, cunning, shrewd, manipulative, and perhaps ruthless. But this is not the sense of "political" that Aristotle intends. In claiming that we are by nature political, Aristotle means to say that we are by nature social and sociable beings. That is, Aristotle saw that it is no accident that human beings live together in families, neighborhoods, communities, and other social forms of association, including political associations.

Not only are we social in the sense that we enjoy the company of others, we also *depend* on each other in various ways. We need others if we are going to live lives that exhibit the familiar characteristics of a *human* life. From the time we are very young, we need others to nurture and care for us; we need others to teach us how to get along in the physical and social world. Moreover, there are certain distinctively human capacities—capacities for friendship, loyalty, love, gratitude, sincerity, generosity, kindness, and much else—that can exist only given the presence of others. For example, one cannot be a friend all by oneself, and generosity can be exercised only toward needy others. Finally, it seems that the ability to use language—to communicate, to express ourselves—is one of the most central features of human life, and communication presupposes a social life. In order to be fully human, we need others.

As Aristotle also observed, our dependence on others is not a one-way street. Others need us, too. Our dependence is mutual. This is most obvious in the case of friendship. Our friends need us, and, though it may

#### 4 *A Conception of Argument*

sound odd to say so, we not only need them, but *we also need to be needed by them*. That's just what friendship is. Even infants, arguably the most helpless among us, provide for adults occasions for the development and exercise of the distinctive dispositions and attitudes appropriate to caregivers, nurturers, and guardians. We depend on others even when they depend on us. Dependence is not necessarily a one-way street. As human beings, we are interdependent. We need each other, and we need to be needed by each other.

Importantly, this inevitable and pervasive mutual dependence is not a sign of weakness or deficiency in human beings. As Aristotle also claimed, interdependence is *proper* to human beings. That's simply who we are. We are the kind of creature that needs others of its kind. Our relationships with others are what *make us properly human*. In fact, Aristotle went so far as to say that any creature that is not dependent on others in these distinctively human ways is thereby not a human being at all, but rather something either greater than or less than human—a god or a beast, he said.

Although our dependence on each other is not a defect, our mutual dependency does make our social relations complex and sometimes even problematic. It's obvious that our interdependence means that we must *rely* on others. We *count* on others to be sincere, to think and behave rationally, to follow the agreed-upon rules, to play fair, and so on. Consequently, in order to have the humanizing effect we all need, our relations of mutual interdependence must be in some sense *reciprocal*. They must have as their aim some *mutual* benefit. Or, to put the matter in a different way, we are not made more human when our relations with others are one-sided and inequitable, aimed at dispensing benefits only to one party to the relationship at the expense of the other party. Takers need Givers and perhaps Givers need Takers, too; but unless the taking and giving are aimed at some kind of mutual benefit for *both* parties in the long run, their relationship becomes merely a case of someone taking advantage of another. We sometimes speak of one person *using* another. The term *using* captures the one-sidedness of the relationship's benefit.

Perhaps more importantly, if our relationships are to have a humanizing effect, they must involve more than a simple *quid pro quo* or exchange of benefits, as when you scratch your neighbor's back so that he will in turn scratch yours when the time comes. Living socially involves relying on others, and in relying on others we seek not only a *mutual* benefit, but a *common* benefit, a benefit that accrues to *us*. In other words, properly ordered social relations aim at a common good among those who participate in the relation.

Consider, for example, the norms for standing in line. When someone cuts the line, the people behind that person in line have been wronged to some degree, at least by the fact that they must now wait a little longer, or they may miss out on the finite resource being doled out. It is certainly right for those folks to object to this instance of line-cutting. But it does

not seem out of place for someone *in front* of the person cutting the line to object, too. This is because cutting in line is not simply a case of one person inconveniencing others; it also involves the breaking of a social rule, and following the rule in question provides for everyone a more peaceful and cooperative social environment than the one that would result from a mad scrum for counter service. A mark of civic-mindedness is that even those not wronged by an infraction can and will object to it.

The humanizing element of our social relations makes possible civic-mindedness, the disposition to think not merely of one's individual good (good for me), but to consider also the shared good of the group (good for us). Families are the first places where these group-minded goods begin to motivate humans, but that civic-mindedness grows to larger associations, and ultimately to the state.

As mentioned above, these features of our mutual interdependence make our social relations complex, and this complexity gives rise to complications. Our mutual dependence creates opportunities for some to take advantage of others. Sometimes people enter into relations with others that are in fact not nurturing and mutually beneficial, but instead are lopsided, manipulative, stifling, or even abusive. What is philosophically interesting (and personally vexing) about relations of this kind is that those who are on the losing end of them often do not realize that they are being harmed; they do not see that they are being manipulated and used by the other. Frequently these are cases of misplaced trust and outright manipulation. These cases are possible because of our mutual dependence, and it is often because of the dependencies that people who are exploited in these relationships cannot recognize their exploitation.

Consequently, our natural dependence gives rise to a kind of vulnerability. In relying on others, we place a degree of trust in them; we interact "in good faith," and we count on others to reciprocate. In some sense this initial expression of trust and good faith is made blindly. We trust others so that they may prove worthy of trust; we rely on others, at least initially, in the hope that they will prove to be reliable. As we know all too well, sometimes we trust the wrong people to the wrong extent. Hence we not only depend upon others, we depend on others to be worthy of our dependence; we trust them to be responsible, reciprocating, and cooperative. And sometimes we learn a difficult lesson, and we consequently know that some others, under certain circumstances, are not to be trusted. And there are certain people who not only should not be trusted, but rather should be positively distrusted. It's an unpleasant fact. But that's life.

We are inherently social creatures, we depend on each other. This, in turn, means that it often matters to us how others live their lives. Since the question of whether those upon whom we depend are in fact trustworthy is a recurring issue for us, we must make the lives of others our business. We must sometimes make it our business to discover and evaluate what others do, even in private, as it were. That your neighbor stores dangerous

## 6 *A Conception of Argument*

chemicals under unsafe conditions in her garage is your business. That the store-owner downtown engages in unfair hiring practices is also your business. Perhaps it is also your business how the couple across the street raises their children. Of course, it has been a main occupation of political philosophers to discern the limits to the concern we should have with the lives of others. We depend and rely on each other, and so the lives of others are our business, at least to some extent; nonetheless, we must not become busybodies. The philosophical project of drawing a proper line between having a healthy regard for others and being a nuisance or busybody is notoriously difficult. The history of philosophy is replete with varied attempts to do just this. Luckily, we need not undertake this task at present, because our concern is with an area of our shared social lives where we tend to think that the line is easier to discern.

To be more specific, one of the most obvious features of our social lives is that we depend on each other *epistemically*. *Epistemology* is the area of philosophy that examines the nature of knowledge, evidence, belief, and the like. Epistemologists are also concerned with the ways in which knowledge is transferred and accumulated, how new knowledge is achieved, and how knowledge differs from other phenomena, such as wishful thinking, blind faith, and lucky guessing. We need not delve deeply into the field of epistemology to make our central point, which is this: Much of what we believe and take ourselves to know derives in large measure from others.

Think about it. Apart from what you believe based on your own memories (“I had Cheerios for breakfast this morning”; “Tomorrow is my mother’s birthday”) and current bodily sensations (“I have a mild headache”; “I see an apple”), most of what you believe involves reliance on reports, information, findings, testimony, and data that are provided by others. You depend on these others to be reliable, accurate, sincere, and honest. Accordingly, we often regard what others think, and especially what others claim to know, as our business.

And this brings us to the second of Aristotle’s claims from the beginning of this chapter. In his book titled *Metaphysics* (980a22), Aristotle observes that we each desire to know. Aristotle is often taken to be saying that humans are naturally or insatiably curious and eager to learn. This is a claim that is obviously disputable. Some of our fellow professors would go so far as to say that, in light of their many years teaching college students, it is obviously false. According to a more plausible interpretation of the quotation, Aristotle is asserting that we take ourselves to know quite a lot, and we are disturbed when we discover that we are wrong about some thing or another. We do not like being mistaken. We hate being wrong. We all desire to know insofar as we desire to avoid being duped, confused, incorrect, or deluded. If this is what Aristotle meant, then it looks as if he may be correct. Again, we try to avoid error, and we do not like having to change our minds about things, especially when it comes to the things we think are important.

The interest we have in knowing, the importance we place on getting things right, and the corresponding discomfort and frustration we feel when we discover that we have erred are all easy to understand. Our actions, plans, and projections are to a large extent based upon the things we believe to be the case. Consider even the mundane example of planning to meet a friend for lunch at a local restaurant. In setting your plans, you take yourself to know the location of the restaurant at which you are to meet your friend. You also take yourself to know that the restaurant in question is open for lunch. And in setting your plan, you take your friend to also know the location of the restaurant, and to understand that you are to meet at the determined time of day. And so on. To be mistaken in any of these beliefs will likely result in a failure to meet your friend for lunch. So, if it is important to you that you succeed in meeting your friend for lunch, it is important that you actually know the things you take yourself to know. The same is true in examples involving more important matters. Suppose you think that your health is very important, and accordingly try to keep to a healthy diet. Now imagine that you (mistakenly) believe that banana-splits are extremely healthy, and so you eat one or more banana-splits every day. Your false belief about what foods are healthy undermines your attempt to preserve your health.

More generally, your behavior is based on what you believe to be the case. If your beliefs are false, you are more likely to act in ways that contravene your intentions and undermine your aims. In a very literal sense, when your actions are based on false beliefs, you don't know what you're doing. Hence we tend to think that knowledge is highly valuable, and, correspondingly, we think it is important to avoid error. Consequently, it makes sense that we attempt to *manage* our cognitive lives, to exercise some kind of control over the processes by which we form, evaluate, sustain, and revise our beliefs.

The main way in which we try to manage our cognitive lives is by trying to attend to our reasons. When we hold beliefs, we typically take ourselves to have good reasons for them, reasons that provide sufficient support for the beliefs we hold, while also suggesting that we should reject competing beliefs. Consider an example. You look out the window and see that it is sunny. You consequently form the belief that it is not raining outside. Your observation of the clear sky and the bright sun provides you with reasons for your belief that it is not raining, while also giving reason to reject the belief that it is raining. Moreover, your belief that it is not raining outside provides you with reasons to act in various ways. If you were planning to go outside, you would probably not wear your raincoat nor carry an umbrella, and so on. Additionally, you think that your reasons for thinking that it is not raining outside can readily be made available to others. Were someone to doubt that it is sunny, you could show her the clear sky and bright sun or you could tell her that you just saw it was a nice day, and then she, too, would have good reason to believe that it is not raining outside.

## 8 *A Conception of Argument*

It all seems rather easy, right? We believe for reasons. Or, to put the point more precisely, when we believe, we typically take our belief to be the product of what our reasons say we should believe. And this is exactly as it should be. There seems to be something odd, perhaps irrational or even idiotic, about believing *against* the reasons we have. Someone who insists that it is raining while gazing out the window onto a sunny day is not only making the error of believing what is false; she is also failing at rationally managing her beliefs. She not only fails to believe what her best reasons say she should believe; she also believes against them. That is, she not only denies what is obviously true, she denies something whose truth should be obvious *to her*. In such cases, we may say to her, “Look out the window! Can’t you see that it is sunny?” And if our interlocutor persists in asserting that it is raining outside, we are likely to conclude that she’s playing some kind of joke or just being stubborn. In either case, we take it that she doesn’t *really* believe that it is raining, but only *says* that she does. We may scratch our heads, and then move on.

The sunny day case involves a *low-cost error*. Our friend may be wrong about the rain, and so she may take her umbrella with her when she goes outside. No biggie—she carries an umbrella with her on a sunny day. However, change the case a bit. Imagine that it’s raining, it’s clear from the available visual evidence that it’s raining (that is, if she looked out the window she’d see a rainy day), and yet she believes it’s not raining but sunny. So she’s wrong, again. But now add one more thing to the case: she’s planned a large picnic. She’s taking the kids, some grandparents, the neighbors out to the park for a day in the grass and sun. Imagine she reasons as follows: *it can’t be raining, because rain would ruin the picnic*. Not only does our friend reason badly (this is a case of simple wishful thinking), this is a *high-cost error*, and the cost in this case isn’t paid only by her, but by the kids, the grandparents, and the neighbors. There they are in the rain with their cute little picnic baskets, which now are full of soggy sandwiches. That’s a biggie, and one that our friend should want to avoid not just for the sake of having true beliefs about the weather, but to avoid ruining a Saturday for her friends and family. Her beliefs and how she forms them, then, matter not just to her, but to all those folks involved.

Recall from earlier our point about civic-mindedness. Even those who aren’t directly impacted by those breaking the rules nonetheless have grounds for objecting to the violation. Originally our point was about the norms of standing in line, that even those *in front* of the person cutting the line are right to criticize the person who cuts the line behind them. Well, the same thing goes for cognitive norms, too. With the rainy picnic case, not only do the neighbors, kids, and grandparents who got wet have reason to criticize the reasoning, but even those who’d never go on the picnic are right to criticize it, too. And it’s not just because the picnic got ruined, but also because it was bad reasoning.

Again, consider the line-cutting case. Imagine that the inconvenience to those back in line was negligible, and the line moved quickly, and nobody missed out on anything. It still is reasonable to criticize the line-cutter for the simple reason that they broke the rule of lines—*no cuts, wait your turn*. That's because it was just a lucky accident that nobody was inconvenienced. The rule exists in order to make the inconvenience of line-standing equitable and so that we can reasonably manage our time. Well, the same goes for the picnic. Even if the picnic came out fine, the reasoning behind it was still worthy of criticism. This is because it put the picnic and others' Saturdays in jeopardy of ruin, and that ruin was avoided merely by a stroke of good luck. The reasoning was, in a word, careless. We depend on each other to make plans responsibly, follow the rules, and reason well. Those who don't do those things deserve criticism, even if things turn out just fine in the end. Why? Because in being careless, they break the trust we place in them as social creatures.

We are now in a position to pull Aristotle's two insights together. That we are social creatures means that we are interdependent; we rely on each other in various ways in order to develop the attitudes, dispositions, and capabilities most characteristic of human life. Our interdependence involves relations that are mutual and reciprocal. Hence our lives are, at least to some extent, properly the business of others. This is most obviously the case when it comes to the ways in which our beliefs are dependent on information provided by others. We depend upon others to be honest, precise, careful, and accurate. When we rely on others who turn out to be deceitful, malicious, careless, or sloppy, our lives can be damaged. The health of our cognitive lives depends in large part on the health of the cognitive lives of others.

Now, one of the persistent, and perhaps permanent, facts of social life is that people disagree with each other about many of the most important matters. To live socially is to encounter others who believe things that differ from what you believe. What's more, to live socially is to encounter others who believe things that you believe to be patently false. And on top of that, living socially involves encountering others who believe that the things you believe are patently false. In short, social life is rife with disputes and disagreements. This is evident to anyone who reads the newspaper or watches the news on television or has ever read a political blog. It is also evident that not all disputes can be solved by a casual glance out the window, as with the cases we discussed a moment ago. That is, not all disputes are cases in which one party has grasped the relevant facts and the other has simply failed to do so. When people disagree, often they also disagree about what their reasons say they should believe. And sometimes they disagree about what reasons there are.

Perhaps it is unsurprising to find that disagreements over the things we tend to think most important are often of this latter kind. When it comes to Big Questions—matters of how to live, the meaning of life and death,

the natures of justice, liberty, dignity, and equality, and the like—we often not only disagree about what to believe, we also disagree about what should count as a good reason to believe one thing rather than another. For sure, these are cases in which errors can be high-cost. If you're wrong about the nature of justice or the meaning of life, you're likely to do many unjust things and do things with your life that don't actually contribute to its meaning. It's important to figure such things out. The trouble is that disputes over Big Questions are often messy, and, consequently, seemingly interminable. Moreover, they are also *persistent*: that is, despite their messiness and seeming interminability, we nonetheless *continue* to debate these matters. Debate concerning these matters continues precisely because we want to get them right. In fact, even the view that Big Questions are nonsensical and that hence the debates over them are pointless is *itself* a view about which there is great and ongoing debate. Whether we should spend our time debating Big Questions is itself a Big Question! (And whether it's a very costly error to continue to discuss Big Questions is one too!) The point is that we can't stop caring about these matters, and so debate over them persists, despite the fact that it seems likely that no one will ever have the last word.

Imagine a trolley which just keeps going along its track, never reaching a destination. Would it be wise to board such a trolley? More importantly, once on the trolley, would it be wise to not get off if given the chance? Students in our courses sometimes contend that philosophy is like a trolley that just keeps going around in circles. They say that this means that philosophy is a pointless voyage that goes nowhere. Maybe they are correct in the simile. Philosophical debates do seem to go endlessly around and around. But we think our students are wrong to draw the conclusion that philosophy is for that reason *pointless*. Again, to claim that ongoing, perhaps never-ending, debate about things that matter is pointless is to take oneself to know something about what really matters. It is to take oneself to know something about what is a waste of time and what is worthwhile. The claim that philosophy is pointless is itself a philosophical position about a Big Question, one about which there is, as usual, lots of room for prolonged debate. Once again, we confront our puzzling, perhaps even mysterious, condition. We are creatures for whom argument over Big Questions is inescapable—some would say that it is irresistible—yet it is, it seems, without termination. To put the matter succinctly, we are incurable arguers. The question is why we bother.

So why do we bother? Why do we engage in argument? It might help to begin by asking what argument is. As it turns out, it is not easy to say what argument is. In fact, there are long-standing debates among philosophers about the matter. Yet we have to start somewhere. So we begin with the following. In the most general sense, argument is the attempt to make clear the reasons why we believe something that we believe. That's not bad for a start, but it is insufficient. Argument has an additional



dimension that must be introduced. Argument is the attempt not only to make clear what our reasons are, but also to *vindicate* or *defend* what we believe by showing that our belief is well-supported by compelling reasons. We may say, then, that argument has an *inward-looking* and an *outward-looking* aspect. On the one hand, argument is the attempt to articulate the basis for the beliefs we hold; it is an attempt to explain why we believe what we believe. On the other hand, argument is the attempt to *display to others* that they have reason to believe as we do.

Given this latter formulation, we see that argument is one kind of response to disagreement. Since it involves an attempt to respond to disagreement by stating and examining the weight of our reasons, we may say that argument is the *rational* response to disagreement. Argument addresses disagreement by trying to resolve it by means of reasons. To put the point in a different way, an argument is an attempt to put a disagreement to rest by showing those with whom you disagree that they should be compelled by reasons to adopt your belief.

Assuming that this is at least minimally acceptable as a starting-point, it is important to notice that an argument is not simply a verbal fight or a contest of words. To repeat, it is an attempt to *rationally respond to a disagreement*. But notice also that, when we argue, our aim is not simply to resolve a disagreement by winning agreement. Rather, the aim of argument is to win agreement *in the right way*, namely, by presenting reasons and compelling those who disagree with us to recognize their quality. Consequently, when you and your neighbor argue about, say, the death penalty, you do not aim for your neighbor to simply *say* that she believes what you believe; rather, you want her to come to actually believe what you believe. Moreover, you want her to come to believe what you believe *for the good reasons you (take yourself to) have to believe it*. You don't seek merely to persuade your neighbor, you want her to *rationally adopt* your belief. And so you must attempt to show her that the most compelling reasons support your belief (and not hers). To seek simply to persuade her to *say* that she believes what you believe is not to attempt to resolve the disagreement so much as to merely cover it up. But covered-up disagreement is disagreement nevertheless.

To return now to our main query, why should you care about whether your neighbor agrees with you about the best answer to some Big Question, such as, for example, the justice of the death penalty? Why should you care about what your neighbor thinks about anything, for that matter?

The insights from Aristotle that we discussed earlier can help us. We are by nature social creatures for whom believing the truth and avoiding error is of high importance. Consequently, disagreement is troubling to us. This is not only to say that we typically find disagreement uncomfortable, especially in face-to-face contexts. It is also to say that we often find the *fact* that others disagree with us to be troubling. The simple reason is that the fact that others believe things that you reject can sometimes be

evidence that you are wrong. To be sure, this is not to say that widespread agreement about some belief is evidence that it is correct (though it can be, especially when there is widespread agreement among those who have thoroughly investigated the belief in question); nor is it to say that when others disagree with you there is sufficient reason to take yourself to be wrong. The point rather is that when others who seem relatively intelligent, informed, sincere, and rational reject a belief that you accept, you have good reason to worry that you have made a mistake. Perhaps you have misjudged the force of your evidence? Maybe you have overlooked some important consideration or misunderstood the significance of some piece of data? Could there be some new reason or argument that you have not considered? Or perhaps you have been misinformed, misled, or deceived? In other words, disagreement is often an appropriate cause for concern about our beliefs.

But it is important to note that to be concerned about your beliefs is not to stop believing. That others deny what you accept is not in itself cause for skepticism, or the suspension of belief. Believing that Madrid is the capital of Spain is consistent with feeling the need to double-check or reassess the evidence you have for that belief. When one feels concern about a belief, and consequently reviews one's reasons and evidence, one engages in an act of *cognitive hygiene*, not self-doubt. In fact, in our next chapter, we will present reasons for thinking that cognitive health requires us to *maintain* our beliefs, rather than simply holding them steady. That is, we will argue that cognitive health is much like health of other kinds. For example, dental health requires us to make regular trips to the dentist, even when we have no special reason for thinking that our teeth are unhealthy. Other forms of physical health require us to exercise our muscles and consume healthy foods. We do these things even when we have no special reason to believe ourselves unwell. In fact, in the cases of dental and bodily health, if one does not engage in routine check-ups, one incurs certain risks; health problems that would otherwise be minor and easily treated can become serious if they are not diagnosed in their early stages. Moreover, we have regimens of maintaining the health of our teeth and our bodies—we brush regularly and have exercise regimens. Similarly, our cognitive health requires us to occasionally *check* and *maintain* our beliefs and the reasons we have for holding them.

And here's the rub. Cognitive health requires us to maintain a regimen of cognitive hygiene. In order to be healthy believers, we must on occasion reexamine, reassess, and reevaluate the reasons we have for holding our beliefs. Now, these processes are inevitably social in that our reasons, evidence, and data in large measure derive from the experiences, testimony, and expertise of others. We must rely on others in order to remain cognitively healthy. We need others in order to manage our cognitive lives.

People tend to see disagreements and the arguments they occasion to be signals of disharmony and unhealthy conflict. To be sure, face-to-face

disagreements sometimes are hostile and unfriendly affairs. But recall that in the sense we are employing here, argument is not necessarily aggressive or unsociable. Our claim is that properly conducted argument and reasoned disagreement is a normal and necessary feature of social life. In fact, we have suggested further that disagreement is a kind of cognitive resource, and thus a good. Those who disagree with the things you believe provide an occasion for you to check your beliefs and your reasons.

And this gives rise to two results that may seem surprising: There is a sense in which argument is an expression of our *respect* and *care* for each other. That is, when you argue with your neighbor, you exhibit concern not only for your own beliefs, but for hers. Again, in arguing, you not only try to win agreement from your neighbor, but you also address her as a fellow rational agent, a person both capable of following and being moved by reasons, and one who can be a source of reasons that can move you. In this sense, engaging in argument with others is a way of showing *respect* for them. But we also see that arguing is also a way of *caring* for others. In arguing, we help others to check their own beliefs and reasons; we provide the resources by means of which they can maintain their cognitive health. It does seem strange, we admit, to say that arguing with others is a way of showing that you care, but everything hangs on what argument is and how it is conducted. If you conduct yourself properly in argument, arguing with others indeed shows that you care for them. If you behave badly in argument, it most certainly alienates others and gets in the way of our cognitive health. And as a consequence, we'd say it's a failure of care. Consequently, arguing well is very important, and what we call the *dialectical* notion of argument captures this social element of arguing well.

So let us ask once more: Why do we bother with argument? We bother with argument because it matters to us that we believe responsibly, and it bothers us when we find that we have made a mistake or have been duped. The fact that others disagree with the things we believe occasions in us the concern that, in forming our beliefs, we have overlooked or misjudged some important piece of evidence or some compelling kind of reason. In cases where the beliefs in question are important, we often call upon those who reject what we believe to provide their own reasons, and we subsequently attempt to weigh their reasons against our own. Even though some arguments over Big Questions seem to go on and on, we engage in the activity of arguing for the sake of caring for our beliefs. You see, it is not so puzzling or mysterious after all.

Not all communication is argumentative. Sometimes people speak in order to haggle, bargain, jockey, compete, flatter, insult, amuse, inform, threaten, and charm. As was said earlier, argument is the attempt to resolve disagreement rationally. The discussion so far has emphasized the positive aspects of argumentation. However, as everyone knows, in the real world, things are not nearly as rosy. People often evoke the apparatus of argument in order to accomplish aims other than rational persuasion.

Under the guise of earnest reason-giving, they seek to embarrass, discredit, ridicule, humiliate, stigmatize, and silence those with whom they disagree. Further, there are those who are simple rationalizers; they have preferred beliefs and pretend to argue for them, but they do not put forth the reasons on the basis of which they truly hold their beliefs. They'll just say anything that they think will place their beliefs in a favorable light. Such is what might be called *pseudo-argument*. It is often difficult to tell the difference between proper argumentation and its counterfeits. In other words, there is a dark side to argumentation. The rest of this book consists of an attempt to provide guidance on how to argue properly, and how to distinguish proper argument from its imposters.

### **For Further Thought**

- 1 According to the view developed in this chapter, we argue primarily because we encounter disagreement, and we need to find a way to respond rationally to it. But maybe a better response to disagreement is simply to avoid it altogether. Is there any reason why one should not attempt simply to interact only with those with whom one agrees about the things that matter most?
- 2 Might the answers to certain Big Questions be a matter not of evidence but of faith? Does the answer to this question affect the overall view presented in this chapter?
- 3 Many philosophers think that almost no one forms beliefs on the basis of reasons, arguments, and evidence. They say that our beliefs are most frequently the products of non-rational phenomena, such as habituation and acculturation. Suppose they are correct. Does this render argument pointless? Might there be a difference between *how we come to believe* what we believe and *how we maintain* our beliefs?
- 4 Is it really other people's business what you believe? Is it your business how your neighbor forms her beliefs, even if they have nothing to do with you?
- 5 In this chapter we argue that if people think it's pointless to argue over Big Questions, they must take themselves to have answered a Big Question. Is that right? If we are right, does it mean that the view that it's pointless to argue about Big Questions is self-refuting? Or is there another option?

### **Key Terms**

Epistemology	The philosophical analysis of knowledge. The key questions are: What is Knowledge? What do we know? How do we show that we know?
Big Questions	Roughly, questions about central values and truths at the foundation of a meaningful human life. There is

wide and persistent disagreement about these questions and their answers.

Dialectical View  
of Argument

The take on argument that it is an attempt to rationally resolve a disagreement and answer critical questions. Argument is best seen as an instance of dialogue in search of truth.

Pseudoargument

The argumentative product of rationalization, where one finds a preferred conclusion and goes looking for premises to support it.

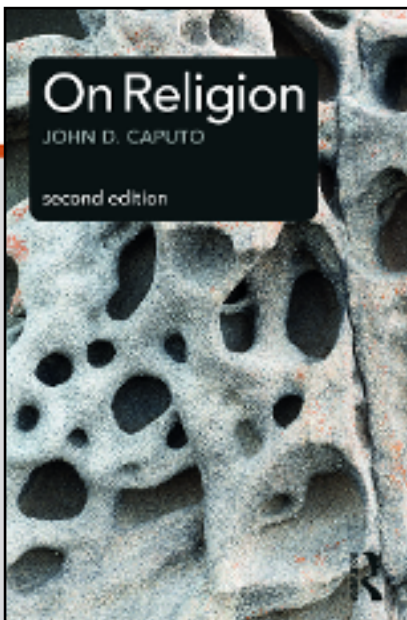


CHAPTER

3

# PUTTING RELIGION IN ITS PLACE

## CHAPTER THREE



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## Putting religion in its place

# Three

In our primal scene, Augustine praying and weeping over what he loves when he loves his God, love is given. Love is taken as a *fact*. The question is, *what* does he love? *That* he loves precedes the *what*. He starts out with the love of God, the love of what is going on in the name of God, in order to understand what he already loves. This is love seeking understanding, *amor quaerens intellectum*. How is he, how are we, to understand our love? How to think or give a name to what I love and desire with a desire beyond desire? That is the question we have been pursuing, or better, by which we are pursued. But just how are we supposed to go about answering this question if, as we have maintained, we are up to our ears in the secret, where the secret is, there is no Secret, no Big Theory of Everything? (We have no Big ToE.) That, replies love, is no excuse! Even if, especially if, this is a question that cannot be answered it would be all the more urgent—in the interests of love—to come up with a *response*! If I ask “*what*” is this or that, that requires an *answer*. But when presented with a *fact*, I am forced to *respond*, *no matter what*! No matter what the *what*!

### WHAT IS WHAT?

We get valuable advice in this matter from an unlikely source—a famous apostle, who did not suffer Greek philosophers gladly. There is an interesting scene staged by

Luke where Luke has Paul preaching to the Athenians in the Areopagus (“Mars Hill”), a place where Stoics and Epicureans and people of every stripe, Luke says, love to spend their time talking about the latest ideas. These days Luke would have chosen a café full of smoke and Parisian philosophers for the apostle’s speech. Luke has Paul take the occasion to comment on their statue to the unknown god. You got that one right, Paul told them. In the shrines made with human hands the God who has made the world will remain forever unknown, he says, but it is in and through the world that God created that God can be known. Just look around. God is all around, for all the peoples of the earth to find:

so that they would search for God and perhaps grope for him and find him—though indeed he is not far from each one of us. For “In him we live and move and have our being”; as even some of your own poets have said, “For we too are his offspring”.

Acts 17:27–28

Without commenting on Paul’s diplomatic skills, and without pointing out to him that things made with human words (like the Scriptures) are every bit as much man-made as things made of stone, his philosophical strategy here is on the money. As all these shrines prove, the Greeks love their gods, that is given, but the problem is they do not know what they love. Still, even if they do not know God, their own poets tell them God is more intimate to them than they are to themselves. As Paul Tillich puts it, they are *alienated* from God, but God is nothing *alien*, so the Athenian philosophers do not need to set off in quest of an alien being but to overcome their own alienation, which they can do here at home. As with Anselm,



the path is circular; from God to God with God's help (and St. Paul's).

Taking Paul's approach to God solves a big problem. We are finite beings and God an infinite one. Good luck trying to cross an infinite distance! Paul is saying God is *already* there, *already here*. God is all around, in all things, the very element of our lives. Knowing that they love their gods, but not what, they need to clarify something they *already have*, to grasp explicitly what they already know implicitly. A couple of millennia later the philosophers whom Paul was snubbing would end up dubbing this the "hermeneutic circle."

Still, something is eating at us—alienation from *what*?

"God," Paul announces with apostolic assurance.

"Being" Heidegger reports from his Schwarzwald hideaway.

"Spirit" the German Idealists reply, after a long and complicated discourse.

"Whatever" we say in American English, not dismissively, of course, but with a sense of who can say?

We live and move and have our being in a vague pre-understanding of *something*, *no matter what*, where the challenge is to make this implicit understanding explicit. Are we all the children of God? Or Being's offspring? Or maybe a bit of stardust that has curled up into a complex stardust ball of thinking stuff and has started asking questions (and unto stardust we shall return)? Or even, heaven help us, information processing systems? Given the plethora of possible answers, we might be well advised to follow the counsel of one of our own poets, John Keats, and cultivate our "negative capability," the ability to sustain an uncertainty, to embrace

the ambiguity, to remain “open to the mystery” (Heidegger again), to keep the question open. As we have been saying, this non-knowing does not stifle the passion of my love and desire but *intensifies* it all the more.

Openness to the mystery of what? *What* is going on? Love is given, and we will never give up on love. But what is love’s element? That’s the nagging question we want to take on here and the big reason I think the distinction between religious and secular ultimately belongs in a metropolitan museum of modernist bones. After protecting us from the threat of a theocracy (the modern bit), this distinction should be given a gold watch, thanked for its services and gracefully retired. It is becoming obsolete, undermined from within by something running underneath it (the post-modern bit). Notice my orientation. Unlike Hegel, who recommended looking “up” for a higher synthesis of the two, I advise digging down. If, so far, we have been sailing along rather breezily on the sunny surface of the sea, talking about God and love and religion, which all sounds rather sublime, I am now urging a plunge into the cold, dark deep, where we love and hate, hope and despair, live and die, move and are immobilized, and have our being while growing anxious over non-being.

But what is that? What is what, *the* what?

### **WHY THE WHY?**

Human life has a *dark center*, an *unlit core*, a *concealed depth*, to which we have at best limited access. That is the ultimate condition under which we live our lives.

That is my thesis. That is the sum total of a lifetime of study, teaching and writing, of attending academic conferences, including not a few impromptu but important late-night sessions in conference hotel bars. That is the ultimate

presupposition of this little book and—in my opinion—of just about everything else. I hasten to add that I am not singling out human beings for particular abuse—among whom I number my dearest friends and loved ones—because everything is beset by this condition. It’s just that in human beings the darkness of the deep is close to home, making for sleepless nights, a matter of concern, a matter for thought. Beings who do not have to think are not bothered by this point in the least. As Angelus Silesius, the great mystical poet says:

The rose is without why; it blossoms because it blossoms;  
It cares not for itself, asks not if it’s seen.

Roses blossom, rivers flow. Like the lovers in romantic novels, such things live happily ever after (unless we humans poison their air, soil and water), wholly unbothered by the why and wherefore. Roses live “without why,” whereas we human beings are driven hither and yon worrying over whither, why and whence, whether that gives us peace, which it usually does not, or drives us to distraction, which it usually does.

If you are willing to risk getting absolutely no sleep at all, try on this question, first framed by Leibniz:

Why is there something rather than nothing?

That is a good candidate for the question of all questions, the first and last question, and it has, alas, a stubborn unanswerability about it. It reveals a “that-than-which-there-is-no-whicher” wall in things against which the ball of thought inevitably bounces. That in turn reveals that it is a different sort of question. We have the right to ask any question but, as a rule, if a question is unanswerable in principle,

that proves there's something questionable about the question. But this question is different. It has a *sui generis* character about it, because it packs not merely an epistemic but an existential punch. It is not merely a particular question put by thought but a question that puts thought itself into question. It refers to the fact, the mother of all facts, that being gets there before thought, the priority, the a priori-ty of being. That is true historically: we puny upright thinking-speaking bipeds are a very recent arrival in the vast history that goes back to the Big Bang; and existentially: as soon as we come to be, we find that being is already up and running. Heidegger called that the "facticity" of Being: Being is just there, rather than not, period, full stop. Facticity means suck it up, like it or not, no matter what, no matter the what.

See Angelus Silesius, *The Cherubic Wanderer*, trans. Maria Shradý (New York: Paulist Press, 1986), 54, and for a provocative commentary, Martin Heidegger, *The Principle of Reason*, trans. Reginald Lilly (Bloomington: Indiana University Press, 1991), 32–40. Leibniz's question is found in his "The Principles of Nature and Grace, Based on Reason" (1714); the philosophers among us may hear me using F. W. J. Schelling, *The Grounding of Positive Philosophy: The Berlin Lectures*, trans. Bruce Matthews (Albany: SUNY, 2008).

Try sustaining that, the thought of the sheer facticity of being itself. It is like holding your breath under water, which they say we can only do for about three minutes. I have never tried that, but I have repeatedly tried thinking this thought and I dare you to try. You can do it for a minute, maybe two, but eventually—your intellectual lungs about to burst from lack

of explanatory oxygen—you blurt out *why*? But why do we give in? Why do we need to know *why*? Why not live a care-free, *why-free* life like the rose? Why the *why*? Well, there you are. You see the problem—we are *already* asking *why*. That is what we thinking things *do*. That is what we *are*. Asking *why* is like breathing. All of us desire to know, Aristotle said, and knowing *why* is a big part of knowing anything at all. Let's call this, slightly tweaking Kant, the mind's "pulmonary imperative." For thinking things, asking *why* is a categorical call to which we cannot plug our ears. The tree outside my window, on the other hand, is currently enjoying the morning sun completely unperturbed by all the turmoil going on inside my poor tormented philosophical skull.

The pious souls among us, sure they are exempt from all this trauma, are itching for their turn at the mic: Because *God* created the world. *God*, who is love, created it freely. Facticity is a gift of love, love's gracious gratuity. But in a book called *On Religion*, despite a lot of pressure from on high, we cannot give religion a free pass. Religion here is under the bubble. After all, this answer has been around for a while and it is not as though the philosophers did not see it coming. It invites the obvious retort, what is the whence and whither of *God*? To which the right response is that *God* is a *necessary* being. If we press the theologians about how *God* got to be a *necessary* being, they have no non-circular answer. That's just what *God* means. *God* is the one who is there, eternally, absolutely, necessarily. That is what *God* is. *God* is the being whose very essence is *to be*. *God's* being is *a se*, from itself—here counting on the hoary prestige of the Latin version to get us to stop asking questions! But I am no longer intimidated by Latin (as I used to be, when I was an altar boy). We have just seen what Kant (and Aquinas) pointed out to Anselm, you may

define God to be a necessary being from morning until night, but that does not mean that such a necessary being exists. A triangle has three sides by essential necessity, and a chiliagon a thousand sides, but that does not mean that there are any such critters. Existence is a *fact*, not an *essence*. Consequently, our question included God's existence as well. Why is there anything at all, including God?

Now the tough-minded scientists impatiently seize the mic. Drop all this supernatural poppycock, they say. It all started with the Big Bang. That is not so much an answer as a relocation of the question. And as for the Big Bang? After a period of some silence, hushed consultation and considerable shuffling of sober scientific feet, we are told that we have to do here with the laws of Nature, and Nature itself is the necessary being. That is all well and good, unless, of course, if we press the question, how did nature get its necessity? That's just what "nature" is, that's natural law, *de rerum natura*, comes the reply. Well, who passed this law? Was it a close vote? In both cases, what we get are conversation-stoppers, Latin intimidation, stipulative definitions. Neither side has a non-circular answer.

Essences do not exude existence. Essences do not spontaneously combust into existence. A *what*, no matter how glorious and sublime, does not get you a *that*. Quiddities are not worth a quid when it comes to sheer existence.

Have neither God nor Nature, in all their everlastingness, ever taken the time to ask themselves, *why* are they there rather than *not*? They do not get a pass. To say that being or world, or God or nature (*Deus sive Natura*) is because it must be is pretty much to confess that it is because it is, and we have reached the limits of our intellectual imagination. We are intellectually exhausted, out of breath. The sound you are hearing now

is that of the ball of thinking bouncing off the wall of being. At this juncture on the path of thought there are road signs all around reading “Warning, Road Out Ahead.”

Thinking cannot turn on the lights fast enough to see the dark. Thinking cannot catch up to being, which got there first. To put this in Hegel’s haughty high-brow language, thinking cannot quite come up with the pure “Concept,” from the Latin *con* + *capere*, which literally means to get a grip, to grasp round about, which nicely translates Hegel’s *Begriff*, from *greifen*, to grip or grasp. Whichever way we go, in Latin, German or English, thinking cannot get its head around Being. Thinking cannot catch being in its net. Kant, the greatest of all the modernists, said that at this point we have reached the “abyss of reason.” Paul Tillich, my favorite “official” theologian (I have several unofficial ones, including an atheist or two), said, “Thought must start with Being; it cannot go behind it.” Or, if you have never heard of Kant, Hegel or Tillich, let us say that Being has a bare-naked there-ness about it, an irreducible *that-it-is-ness*, an inexpugnable *that-ness*, whatever subsequent *what-ness* we come up with.

Paul Tillich, *Systematic Theology*, Vol. One (Chicago: University of Chicago Press, 1951), 163. I have also been making use in this chapter of Tillich’s *Theology of Culture* (London: Oxford University Press, 1959), “The Two Types of Philosophy of Religion.” There is a renewed interest among post-modern theologians in Tillich. See *Retrieving the Radical Tillich*, ed. Russell Re Manning (New York: Palgrave MacMillan, 2015).

Being’s existence precedes its essence. Being has an un-fore-graspable, “un-pre-thinkable” (Schelling) priority over thinking, which

leaves us structurally in the dark. Even when we finally give in, as we must, gasping for intellectual oxygen, grasping (conceiving) for a *what* to explain and contain the *that*, for a *why* to back up the *because*, we have not dispelled the deeper darkness. We have not removed the obstinate, irreducible ambiguity down at being's unplumbable bottom. It could, perhaps, be God, or Nature, or both (*Deus sive Natura*), or neither. By spelling out the need for a necessary being, we have not dispelled the "perhaps."

If, at this level, we ask, "what is what?" the best answer we have is, "that is that." If we ask "why," the best we can do is "because." To the question, "why is there something rather than nothing?" the mystical poet replies, "the rose is without why; it blossoms because it blossoms." This turns out to be qualitatively unlike other questions. It is not solely an act of intellectual inquiry; it puts into question the whole order of intellect itself, which is interested in the *what*. This question packs an existential punch, because it is interested in the *that*. Posing this question deposes the poser, delivering a traumatic blowback upon the questioner. It knocks us off our intellectual horse and pushes us into another—existential—order, a point of absolute wonder, where we are led to confess, to "circum-fess," as Derrida says, our existential limits. We are not going to come up with an essence that will be the match for this existence. Being, existence, is *a priori*, which is philosophy-speak for "it got there first," and thinking follows along afterwards, *a posteriori*, following the tracks left by being as it recedes from view like stars in the sky of an ever-expanding universe.

### THE MYSTICAL ELEMENT IN LIFE

But love is still standing. The love of God, or let us say now, the love of what is going on in the name of God, in the name



(of) “God,” is still given. So, we have circled back to where we started. Love is given, but if we ask, *what* do I love when I love my God, we are not going to get an *answer*. But that is not the end of it, only the beginning. I *begin* with the fact of the world, and the fact of *love*, of loving *something*, I know not *what*, something that goes under the name of God, which is a stand-in for something-I-know-not-what. Our question will not get an Answer, in caps and in the singular, but, being a matter of love, it urgently requires a *response*. Love insists—we exist, and love insists on a response. That response is called *religion*, remembering that there is a (quasi-Pauline) distinction between the historical religions *we make* and the love that *makes us*, that elicits our response. The response is our religion, our religion without religion—this is my hypothesis—the religion of anyone worth their salt, salt being my criterion.

If I defend a saline theory of truth, my saline solution to this conundrum is as follows. If, as I submit, the human condition is such that, at this deep level, the order of the “*what*” is knocked off its pins and deprived of its primacy, if our guiding question, “*What* do I love when I love my God?” runs into a stone wall, I further submit that instead of saying our cause has suffered a breakdown, we turn the tables on the conundrum and announce that we have made a breakthrough! Like an instant replay that reverses the call on the field, we declare victory just where it looked like defeat. The victory is lodged in the defeat. The trauma of the dead end, I proffer, unearths what I will call the *mystical element* of our lives. Love’s element is the elemental mysticism, the mystical ground or un-ground, the divine or mystical milieu of human life. By the mystical I do not mean yoga, meditation and a regular diet of organic food. That’s California, not mysticism. Nor do I have in mind levitations, visions of the Blessed Virgin

on the basement wall, statues of saints weeping or bleeding in Italian churches, out-of-body experiences, or alien abductions. That's mystification, not mysticism. I mean an experience of genuine non-knowing, of awe and wonder, mixed with no small measure of fear and anxiety, about a matter that concerns us all deeply, for which we lack a "concept," on which we have no handle. So, we may summarize the mystical element of our situation thus:

The irreducible human condition is to be concerned with something unconditional—thinking does not get there fast enough to lay down the conditions in advance that being must meet—and impossible, *the impossible*, because thinking does not get there in time to dictate in advance what is possible. We pass our days between the rock of the human condition and the hard place of the unconditional.

This primal and irreducible facticity represents a kind of absolute past, a past that was never present, a past that got there before we did, before *anybody* did, that goes along with the absolute future, the one that no one can see coming, that no one will be around to see when it does come. That makes for a mystery—a mystery of being and time, of time and being—that clings to our hides with fierce obstinacy. We seek the unconditional but everywhere encounter conditions. This is an obdurate mysticism buried deep in our bones over which the clerics have no jurisdiction, to which they, like the rest of us, also submit. This factual condition levels the playing field between the naturalists and the supernaturalists, the Bible-thumpers and snotty hard-nosed atheists, the Big Bangers and the creationists, dogmatists of every stripe and fashion. This mystical river runs beneath the distinction between

religious and secular, between science and art, fact and values, and any other distinction you come up with. It is the sort of thing that led Stephen Hawking to entitle the first chapter of one of his last books “The Mystery of Being,” which sounds more like Heidegger than Hawking. Men like Nietzsche and Camus approach it all puffed up with phallic heroism, shaking their defiant fist at it. Women like Luce Irigaray and Catherine Keller, with gentler grace, treat it as the great womb of being, as being’s nourishing element. But either way, there it is, big as life, deep as death, older than time: be-ing rather than not be-ing, a world without a why in sight. That it is in which we have life (*zoe*) and movement (*kinesis*) and being (*einai*) (Acts 17:28), rather than not. That, we might say, is the onto-zookinetic-logical constitution of our factual condition. That’s a mouthful, I agree, useful mostly for cocktail parties where you want to make an impression, but I think you see what I mean.

However we put it, by coursing its way along a subterranean stream underneath the several undertakings of humankind, of everything and anything, including “religion” in the confessional sense, the abyss beckons, inducing several religio-mystico-ontological effects:

- A kind of profound *humility*, over and above, or better, deeper than moral humility, a kind of cosmo-ontological humility, which appreciates that we are late arrivals on being’s sojourn, with a lot of catching up to do. Thinking is the raft tossed about on being’s infinite sea.
- A socio-ontological *empathy*, for we are all in this together, on the same raft, stranded on the same cosmic island, physicists and metaphysicians, theists and atheists, right-wingers and left-wingers, north and south, east and west, poets and used car salesmen.

- An ontological *gratitude* for the gratuitousness, giftedness, the grace of being. Gratitude to what or to whom? Is this facticity the doing of *Somebody*? Or is it just a random throw of the cosmic dice?
- A deeper ontological “*courage to be*” rather than not (Paul Tillich), the courage to *hope against hope* (the apostle Paul), beyond a particular hope and moral courage.
- And, last but not least, last because first, *love*, a love of being rather than not, which I sing and sign, symbolize and emblemize, under the name (of) “God,” like Augustine weeping over his God.

On the distinction between moral virtues and deeper ontological ones, see Paul Tillich, *The Courage to Be* (New Haven: Yale University Press, 1952). I referred to Stephen Hawking and Leonard Mlodinow, *The Grand Design* (New York: Bantam Books, 2010).

Love? How do I dare? Where is there anything to love in all this darkness? Well, do not lovers prefer the dark? The woods of being are lovely, dark and deep. The dark is love’s element, and love is religion’s element. Love’s element is a non-knowing, an unconditional love no matter what. Love’s passion is a passion of non-knowing. Love is like a little flare sent up against a dark night, a star against a blue-black sky, a negentropic protest against entropic dissipation. The mark of religion, of this religion, is that, instead of feeling defeated by all this ambiguity, instead of treating our inability to come up with a final why and wherefore as a failure, we turn the tables on our factual fate and treat it as an *insight* into a certain groundless ground; instead of a *breakdown*, a *breakthrough* into a

why-free life; instead of exhaustion, we affirm the inexhaustibility all around us; instead of a dead end, a living mystery.

If this non-knowing is a fault, let us say it is a happy fault! Life is a felicitous failure to come up with a *what* that is equal to the *that*. Much as we do know, and I am all for knowing as much as we can, this much we do not know—who we are or what is what or why the why or what this concealed depth is, which is why we call it a dark center, an unlit core, a concealed depth. The non-knowing does not enervate but energizes and impassions. Embracing this non-knowing is a feat, not a defeat. This indeed is *who we are*. We are questers energized by the quest in such questions. The gripping thing in our lives is to come to grips with the fact that we cannot get a grip (*Concept, Begriff*) on ultimate matters such as this.

Let us be like the rose, live and love like the rose, without why.

Then why bother with such a question at all? I do not—it is bothering me. Why call it God? I did not. It called upon me under this name. It does not care what you call it. Why raise the question? I did not. It raised me, disturbed me from my bed in the middle of the night. I didn't raise the question; the question has levelled me. God, what is going on in the name (of) "God," is not a projection, but a projectile; it is not in my head but heading right at my head. I did not pose the question; it has deposed me, unhorsed me like Paul on the way to Damascus. I have been thrown into question. By *what*? By the *that*. By the inbreaking of being's facticity upon my life.

Augustine put it perfectly: He does not say I make (*facio*) things questionable; he says, I am made (*factus sum*) a question to myself—by the facticity of being. That is the breakthrough. That is who we are, we who ask, what do I love when I love my God?

## THE PLACE OF RELIGION

My proposal is that the mystical element of life, the elemental mystery of facticity, of the without why, is the element of religion, the place of religion, the place of religion's love. This place is, to sharpen the paradox, a bottomless abyss. This mysterious place, or non-place, is where religion takes place while also leaving it a bit displaced. No need for cold, costly houses of worship to maintain, or candles, incense, preachy sermons, long robes, or tithing. This is religion run on a shoestring. Its true place is the (groundless) ground beneath the feet of both the discalced and the well-heeled (which, being shod, feels not), beneath the feet of both the philosophers and theologians. Ordinarily, if you want to clear a room full of philosophers, simply shout "theology" and you will have your choice of seats. But on my accounting, the mutual mistrust the two have of each other is a lovers' quarrel about how to address the dark center, the unlit core, the concealed depths. At such depths we require all our resources, and, unlike the modernists, we are not epistemologically fussy. We need to have all of our wits about us—both philosophical and theological, logical and pre-logical, scientific and pre-scientific, conscious and pre-conscious, cognitive and affective, theoretical and practical.

To such a list one would ordinarily add both religious and secular—but that is precisely my point. Here the bottom drops out of that distinction, for which a special wall in my modernist museum of dead white male philosophers has been reserved. It no longer cuts it (and never did), because something deeper cuts across or runs beneath that distinction. The place of religion, of this religion, is not an isolatable region of experience, which differs from science, politics, art, etc., as one place on a map differs from another, as if religion is something set aside for the Sabbatarians while secular types

can sleep in on Sundays. This religion does not have a national headquarters in Nashville, Canterbury or the Vatican; it does not have a college of cardinals or a board of elders, great cathedrals or valuable paintings, or feast days and days of fasting. That is the *regional* demarcation of religion which I call religion in the “confessional” sense, the one that gets a tax exemption, the one we tick off on a survey of our “affiliation”—where it is of some concern to the long robes that there are more and more “nones” and fewer and fewer nuns. Rather than a particular *region* in experience, this is the *deep* structure of experience itself, what is *fundamental* to all experience, the element in which experience takes place, where we face up to the mystery of our lives, to the dark center (unless we fail to show). This religion does take not place in experience; experience takes place in it. This is the source of religion’s salt.

But if this region is so hidden away in some subterranean stratum of our experience, then how are we ever expected to get access to it? How do we get there from here? That’s why I felt called upon to seek out no one less than the apostle Paul for help. We are already there! Or better, it is already here! It is the element in which we live and move and have our being. It is nearer to us than we are to ourselves. It is here if we can hear it. How? For that, I call upon no one less than the Beatles, who must have been reading Meister Eckhart: *let it be*. It happens. It happens to us. It happens in uncanny moments when it slips by the guard we have stationed over it. Hidden though it may be, it does not take an earthquake or a cataclysm to uncover it. It wears through the surface of everyday routines as when, driving down a long and empty highway, we start to wonder where we are going and what’s the big hurry. It steals upon us in the middle of an unsettling sleepless night. It happens to us under a starry sky when we realize we may be staring

at stars now long dead and we wonder if any of these stars once played solar host to inquiring beings like us. Then the uneasy thought steals over us that the same fate awaits our little star, and that maybe, many million millennia hence, other thinking beings may see the light of our star and think the same uncanny thought on some dark star lit night—about us!

It is then, in such “unguarded moments” that we allow ourselves to be exposed to the hidden depths of our being, to the unguardable groundlessness of our grounds, to the what-is-what?, to the no-matter-what, to the something-I-know-not-what, to the without-why-ness of things. This is the precise point where this religion is located, its point of origin, the underground stream that nourishes it. Here our tiny little finite selves make contact with the infinite. Here we are hinged with the infinite, which leaves us not a little unhinged. Here, in contact with this elemental something-I-know-not-what in which “we live and move and have our being”—whatever, no matter what, that may turn out to be—is a moment of salutary discomfort, of saving unease, of a healthy dis-ease. Our first instinct is to take flight from this uncanny feeling and hasten back to the whys and wherefores of everyday life. We wake the guards who have fallen asleep on the watch and warn them sternly, please, no more intrusions like this! No more spooky, nocturnal, uncanny visitations! If this is the place of religion, then this place is off-limits. We do not go gentle into that dark night.

Contrary to Hegel’s assurance, religion is not the Sabbath of life, not a safe harbor in life’s storm. Not this religion. This is an implacable place where the bottom drops out, or where, if we may say so in a book on religion, all hell breaks loose, which leave us with us a sense of being strangers in a strange place. It does not readily yield to the light of logic, of *theologic* or *ontologic*, which is why our contact with it is more likely



to be made with the rhythms of music, in the suggestive play of color in a painting, in the figures of a poem, in the tall tales told in a novel, all of them things that penetrate us to our bones. This ur-region does not yield to our consciously created concepts, but it does break through in a more pre-conscious or even unconscious way in a work of art, or in a quiet communication with a night sky, or a meditative moment beholding a mountain, or standing on an ocean's edge. Our pre-conscious and unconscious do not lock us inside ourselves narcissistically. Resonating with the deep dark forces without, they are ecstatic, exposed. The deeper down we go, the farther out things are spread. We go in, in order to go out, ec-statically, ek-sistently, rhizomatically.

Hegel describes religion as the "sabbath of life" in *Hegel's Lectures on the Philosophy of Religion*, One Volume Edition, "The Lectures of 1827," ed. Peter Hodgson (Berkeley: University of California Press, 1988), 75–77. This book is not a bad place to start reading Hegel. I sketched a phenomenology of this spookiness in "Proclaiming the Year of the Jubilee: Thoughts on a Spectral Life," in *It Spooks: Living in Response to an Unheard Call*, ed. Erin Schendzielos (Rapid City, S.D., Shelter50 Publishing Collective, 2015), 10–47.

The opposite of this religion is not "secular" but superficial, selfish, narrow, cowardly, no salt. If we lack this religion, we are afraid of the dark. If we refuse to go there, to that uncanny place, we are consigned to live a safe, shallow, saltless, lightweight life, entertained by things of passing curiosity, preoccupied with self-aggrandizement or amusements, entertaining *divertissements* to pass the time away between now and the grave. We would have made a choice, of a sort, but the choice is to

choose not to choose, to live without making a real choice, without engagement, exposure or abiding commitment. We would seek to live without risk, without being willing to put our finite selves in harm's way for something infinite, something greater than ourselves. So, when I sing a song to "religion without religion" I mean sounding the depths of life without signs or wisdom, without the support of the reassuring stories, songs and securities of the confessional religions or the arguments of the philosophers. The confessional religions are something made with human hands in response to love's insistence, because love demands a response, but this religion without religion is what makes us. It is the deep structure of a *faith* that runs beneath the *beliefs* that make up the credal statements of the confessional religions, of a *hope* that is not contracted to a credal expectation that we get to live forever in return for obeying all the rules.

Then, a faith and a hope in what? Well, in what we *love*. Love is given, but what do we love? What is that? That is that, the *that*, that in which we live and move and have our being. Love flourishes in *being* and *movement* and *life*, this life, *before* death, where religion is faith and hope and love of life. The physicists speak of the world as if we were dead, but religion is the response we are urged by love to make to the world while we are still alive. Religion means to dig down into that deep point, to make contact with that elemental stratum, where thinking's *why* is silenced, and we embrace *living and loving, moving and being without why*. That is what is celebrated in religion's dance and song, like the mystical poet's song, where life, like the rose, is lived without *why*. The mystical poet was not opposing us to the rose but posing the rose to us as our standard. He was telling us to pay attention to the rose, to learn to live and move and be like the rose, without *why*.

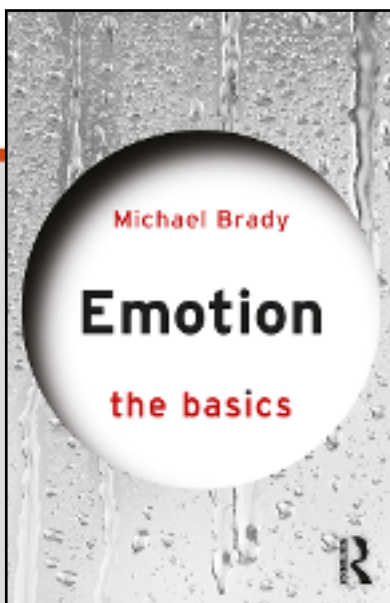


CHAPTER

4

# EMOTION, KNOWLEDGE, AND UNDERSTANDING

## CHAPTER TWO



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# EMOTION, KNOWLEDGE, AND UNDERSTANDING

## 2.1 INTRODUCTION

In the previous chapter we saw that emotions have certain components or elements. These are (i) a perception (or memory, or thought) of some object or event; (ii) an evaluation of that object or event; (iii) bodily changes, including autonomic responses and facial expression; (iv) feelings; (v) motives or action tendencies; (vi) changes to our attention, memory, and thinking. My aim in the next few chapters is to indicate how these different components of emotion play a vital role in serving particular needs and goals. In doing so, I hope to illustrate the nature of emotion in more detail, while at the same time showing how important emotions are. For, as we'll see, emotions help to bring about goods that are essential for a flourishing human life. In this chapter I will focus on the importance of emotion for our knowledge and understanding of the world and of ourselves. Knowledge and understanding are called 'epistemic' goods, where this term derives from the Greek *episteme*, which means 'knowledge', and which itself derives from the Greek verb *epistanai*, meaning 'to know or understand'. The element of emotion which is central to this story is that of *attention* and *thinking*; and the class of emotions which contribute most to knowledge and understanding will be those which have particularly powerful effects on our attention and thinking.

Now the idea that certain emotions can be helpful – indeed, arguably essential – for giving us knowledge and understanding might strike many people as mistaken. This is because emotions are often held to be *hindrances* to knowledge and understanding. On

this view, our belief-forming practices ought to be unencumbered by emotion as much as possible. It is not difficult to see why people think this. Often emotion hampers our attempts at clear thinking; we all know that it is difficult to concentrate and deliberate if we are overly emotional. Think of the damaging effects that rage, to take a negative emotion, and love, to take a positive one, can have on our capacities for considered thought and judgement. A common metaphor is that we are *blinded* by these things, such that we cannot see the world and other people correctly. It is equally true that our belief-forming practices, and other epistemic activities, ought not to be influenced by our desires or other 'non-cognitive' states; that way lies wish fulfilment and denial, and these are epistemic faults or vices. Even if emotion is not identical with or reducible to desire, it shares strong affinities with it – emotion, like desire, is 'goal-directed', motivates behaviour, expresses our cares and our values – and as a result we might think that allowing emotions a role in our believing is also epistemically dubious, because problematically related to what we care about.

This is not all. For many common biases and prejudices are emotionally grounded: fear of those who are different is plausibly at the heart of racist and homophobic beliefs and attitudes; dislike of women, or the prospect of gender equality, central to sexist and misogynistic thinking; pride in one's country often responsible for jingoistic and nationalistic outlooks; and so on. At the heart of many of these is a *particular* epistemic fault generated by emotion: a form of 'confirmation bias', where we only seek out information that fits in with or supports our pre-existing emotional attitudes. Thus the xenophobe only reads print and online media, and selectively picks out information that supports her fear and anxiety about those who are different. The sexist ignores information about women's abilities in order to maintain his prejudice that women merit lower status and pay than men.

It is not surprising, then, that we are often cautioned to remain calm and non-emotional when fact-seeking and checking, to not let emotion 'get in the way' of our evidence gathering and assessing, to keep a 'clear head' when coming to form opinions and judgements on some important issue. Clearly, such caution is in many cases warranted. However, it seems to me (and others) that there is a widespread tendency to focus solely, or at least too much, on the negative impact

emotion can have on our epistemic lives, and to ignore the very many positive contributions that emotions can make to our pursuit of truth, knowledge, and understanding. Indeed, it seems to me (and others) that many emotions are vitally important to the success of such pursuits, and that we would be considerably worse off, from the epistemic standpoint, in the absence of emotion. Emotions might not always lead us to epistemic goods; but in many instances, we won't attain these goods without the input of emotion. This seems particularly true when it comes to information about and understanding of *value*.

In this chapter I want to argue that emotions are of great importance to our truth-seeking activities – and are thus epistemically valuable – in a number of ways. (i) Some emotions – such as *curiosity* – are at the heart of a particularly valuable kind of information-gathering. In particular, they enable us to acquire potentially important information at relatively low cost. (ii) Many other emotions have a vital role to play in making things *salient* to us – in alerting us and directing our attention to important or significant objects and events in our environment, things that we might otherwise have missed. (iii) In general, emotions do more than direct our attention. They also *fix* it, and in so doing motivate the search for *reasons* that bear on our situation. In this way emotions can facilitate our *understanding* of value. Finally, (iv) a number of emotions are essential for the proper functioning of activities that constitute (i)–(iii). This is because our curiosity, attention, and search for reasons all need to be governed by excellent intellectual habits if the benefits alluded to are to be achieved. Such habits are *intellectual virtues*, and certain emotions play an essential role in the cultivation and development of these. Without emotions, therefore, our knowledge and understanding of the world – and hence our capacity to negotiate our way successfully through it, and to live a good life – would be severely impoverished. Let us turn, then, to the first of the ways in which emotions enhance our epistemic life, and consider the nature and value of curiosity.

## 2.2 CURIOSITY

### 2.2.1 IS CURIOSITY VALUABLE?

The idea that we can highlight the epistemic value of emotion by looking closely at curiosity might also seem rather strange. This is

because curiosity has long been thought to have dubious epistemic credentials. Augustine thought that curiosity was sinful, as did St. Thomas Aquinas, who held that it was, along with pride and lust, one of the main categories of sin. Neil Manson, in a paper from 2012, notes that although much of Augustine's opposition to curiosity – like Aquinas's – is grounded in his theology, he also has non-theological reasons to be suspicious. Manson writes:

In the *Confessions* Augustine relates how he was interested in gossip and trivia, and in finding out about false Gods. In Book 10 of the *Confessions* he introduces the idea of the 'lust of the eyes' (*concupiscentia oculorum*): a curiosity that led him ... to gaze at corpses, or at circus freaks.

(Manson 2012: 245–246)

An earlier, non-Christian writer, Plutarch, was also well aware of the evils of curiosity, since he thought that curiosity can lead to an interest in 'the treacheries of servants, the falseness of friends, the arts of poisoning, the fatal effects of envy and jealousy, the ruin of families, dethroning of princes, with many other such direful occurrences as may not only delight and satisfy' (Plutarch 1927: essay 39, book VI, note 13).

But this kind of scepticism about curiosity should be balanced with a more positive take on the emotion. Consider, for instance, the importance of encouraging curiosity in educational practices, on the grounds that students who are curious about some question or issue are better at learning about that question or issue. Thus Susan Engel, a developmental psychologist, writes: 'research shows unequivocally that when people are curious about something, they learn more, and better' (Engel 2013: 36). Experimental work in the 1950s by the psychologist Daniel Berlyne first showed this. Engel continues: '[Berlyne] read people lists of facts, including some that were surprising to them, and led them to ask questions. Later, when asked to recall those lists, subjects remembered the items that had piqued their curiosity better than the others' (ibid.: 36). Or take a more recent study in the journal *Neuron* by the neuroscientist Matthias Gruber and colleagues, which discovered that 'people find it easier to learn about topics that interest them ... In both immediate and one-day-delayed memory tests,

participants showed improved memory for information that they were curious about and for incidental material learned during states of high curiosity' (ibid.: 486). So perhaps curiosity is important for facilitating the right kind of learning and knowledge acquisition after all.

I want to contribute to this positive case for the epistemic importance of curiosity, while also being mindful of its vices. As it turns out, some of the criticisms about curiosity are more properly targeted at other forms of interest in or desire for the truth. To see this, and to see the nature and value of curiosity *properly so-called*, let us turn to what distinguishes curiosity as an emotion from these other kinds.

### 2.2.2 CURIOSITY VERSUS OTHER FORMS OF INTEREST IN THE TRUTH

Suppose someone says that curiosity is not, in fact, an emotion, but is instead a desire for the truth. Given that curiosity motivates inquiry and truth-seeking, and given that desires for the truth can also do this, such a claim would not be absurd. It would, however, not be very plausible. After all, sometimes – perhaps most of the time – we desire the truth on some issue because this promises to answer our *practical* concerns. Thus I want to know when the bar shuts because I don't want to miss last orders, or I want to know the names of the inert gases because I want to pass my chemistry exam. These are best understood as *instrumental desires* for the truth. It is very important that we have such desires, given our goals. But this kind of interest in the truth should be distinguished from curiosity. I'm not curious about when the bar shuts, nor am I curious about the names of the inert gases in the examination case. The fact that we sometimes want the truth for some ulterior purpose or instrumental reason suggests that we cannot simply identify curiosity with a desire for the truth.

If so, many of the examples of curiosity that Aquinas, Augustine, and Plutarch regard as sinful or vicious might not be, after all, genuine examples of curiosity. For the kind of morbid or cruel or salacious or gleeful interest in the truth that they describe is once again *instrumental*. To be sure, an interest in the sex lives of one's neighbours need not be an interest that a person has for some additional reason, such as an interest in blackmailing them.



Nevertheless, this, and most of the other examples detailed above, will be an interest in the truth *because* getting the truth on this issue promises to be pleasurable – because, as Plutarch says, such truths ‘delight and satisfy’. Getting the truth is thus a *means* to getting pleasure, and so should count as an instrumental desire in the truth. And while we sometimes *call* the prurient and morbid curious, it is not obvious that such interests merit the name curiosity. At least, such interests have no greater claim to the name than other instrumental interests, like the desire to find out if it’s going to rain later, or whether the curry is suitable for vegans.

A better candidate for curiosity is an interest in the truth *for its own sake*, and not for any practical purpose this serves, nor for any pleasure or gratification it brings. (This is sometimes termed, perhaps paradoxically, ‘disinterested’, although the term is meant to highlight that what is wanted is the truth itself, and not the truth insofar as it serves some other goal.) This kind of state aims at the truth, but not for any ulterior purpose or concern; we simply want to know the truth on some topic or the answer to some question *for the sake of knowing the truth* or *for the sake of knowing that answer*. Whereas the first kind of interest is generated by our practical concerns or our pursuit of pleasure, an interest in truth for its own sake seems to reflect our *natural* interest or what is sometimes called our *intellectual* curiosity. Thus, Carl Hempel talks of ‘sheer intellectual curiosity, [our] deep and persistent desire to know and to understand [ourselves] and [our] world’ (Hempel 1965: 333). And Alvin Goldman writes that ‘Our interest in information has two sources: curiosity and practical concerns. The dinosaur extinction fascinates us, although knowing its cause would have no material impact on our lives’ (Goldman 1999: 3). So it is more plausible to characterize curiosity as a kind of natural or intellectual interest, aimed at finding out the truth for the sake of the truth.

Now there is considerable evidence that curiosity, understood in this sense, is an *emotion*, rather than some non-emotional motivational state or trait. This is because curiosity would seem to share many of the components that are standardly used to characterize emotions. (i) There are distinctive bodily changes and facial expressions that are present when someone is curious. We can, for instance, usually recognize when people are curious about and interested in what we are saying, and can even more quickly

recognize when people are bored. Empirical support comes from a wide variety of experiments, including studies where parents can recognize interest, surprise and boredom on the faces of their young children when the children (and the children alone) are presented with a variety of objects. There also seem to be distinctive vocal expressions of interest and boredom. (ii) Curiosity has a distinctive feeling. The psychologist Carroll Izard writes:

At the experiential level interest ... is the feeling of being engaged, caught-up ... There is a feeling of wanting to investigate, become involved, or extend or expand the self by incorporating new information ... In intense interest ... the person feels animated and enlivened.

(Izard 1977: 216)

(iii) Curiosity involves changes to attention: when we are curious, our attention is focused on the relevant object or event. (iv) Curiosity involves a certain pattern of evaluation or appraisal, which represents what the emotion is about. When we are curious about something, we regard it as interesting or fascinating or something that it's worth knowing about, where these are all kinds of evaluation. (v) Even if curiosity is not to be identified with a desire for the truth, it certainly involves such a desire – which is why curiosity moves us to seek out answers to questions and issues that interest us or which engage our curiosity.

This is what curiosity is. But why is it important for us? There is obvious value in finding out the truth about things that satisfy our other needs – where the treasure is buried, what time the match starts, how much money is in the savings account. And there is obvious value in finding out truths that bring us pleasure – even if, as in the case of salacious or morbid desires, such pleasures might be morally suspect and so perhaps not ones we should encourage. But what is the value of the particular kind of curiosity that motivates inquiry for its own sake, that deep urge that people have to find things out for the sake of finding them out? To answer this question, we need to say a little more about the 'appraisal structure' of curiosity; to do so, I'll focus on recent work by the psychologist Paul Silvia in his 2006 book, *Exploring the Psychology of Interest*.

### 2.2.3 WHAT CURIOSITY IS ABOUT

Researchers have found that certain things systematically cause us to be curious; these are known as *variables* for the emotion, and underlie our appraising or evaluating some topic or question as interesting or fascinating or worth knowing. One of the main variables is *novelty*. As Silvia writes, people are curious about things that are ‘new, ambiguous, complex, obscure, uncertain, mysterious, contradictory, unexpected, or otherwise not understood’ (Silvia 2006: 24). The other main variable is what Silvia calls  *coping potential*. This refers ‘to estimates of resources, power, abilities, and control in relation to an event’. In the case of curiosity, this is a matter of a person’s assessing ‘whether they can understand the ambiguous event. Upon appraising something as unfamiliar, complex, and ambiguous, people probably appraise the likelihood that the poorly understood event will become coherent and clear’ (ibid.: 57). For Silvia, then, curiosity involves two appraisals or assessments: one of novelty, understood quite broadly, and one of one’s own capacity to understand or comprehend the novel object, event or topic.

There is considerable evidence for this view of curiosity, from both the armchair and the laboratory. Although we tend to find old, expected, familiar and straightforward things comfortable or enjoyable, and are for this reason attracted to such features, this attraction does not seem to amount to curiosity. We are, instead, curious about things which are unexpected, unfamiliar, and often uncomfortable: we are intrigued by the mysterious, the baffling, the peculiar, and the unexplained. This is often apparent in our reactions to the arts. Although we might enjoy seeing a good film for a second or third time, we are not curious about or interested in seeing how the story develops after the first showing; rather, curiosity or interest is generated by new films, which promise uncertainty and unpredictability. For this reason, we tend to *lose* interest in seeing a film or reading a book if the ending is revealed beforehand, despite being confident that the cinematic or literary experience would otherwise be enjoyable. The same is true of topics and questions: it is puzzles or anomalies – of the nature of consciousness in a material world, of how the universe could be infinitely large, of why there is something rather than nothing – that engage intellectual curiosity and interest.

By the same token, our interest would seem to vary with our capacity to understand or comprehend events or materials. We quickly lose interest if it becomes obvious that we're unable to understand some topic or subject – think of the most common reaction of readers to Stephen Hawking's *A Brief History of Time*, probably the least-read bestseller ever – while our curiosity is often piqued or increased by the fact that some truth or understanding is within our grasp. Think of how your interest is captured and consumed in the moments leading up to the fictional unmasking of the murderer, or just prior to the revealing of the winner of the reality TV show. Common-sense reflection on our experience provides evidence for the claim that we tend to be curious about novel, complex, unexpected events that we are capable of understanding, and tend to be bored by old, familiar, predictable or incomprehensible things. The former are what we evaluate as interesting or fascinating, the latter as boring or dull or mundane.

There is also empirical evidence for this take on the appraisal structure of curiosity:

people tend to find complex things interesting and simple things enjoyable. In some experiments, people ranked randomly generated polygons according to how interesting and how enjoyable they found each polygon. The complex polygons were the most interesting; the simplest polygons were the most enjoyable.

(Silvia 2006: 25–26)

This effect was also found for anagrams, randomly generated tunes, and videos. In addition, research suggests that repetition increases liking, but reduces curiosity: 'things become less interesting with more repetitions' (*ibid.*: 26). Experiments with literature also bear this out, as shown in one study:

people were interested in stories with high uncertainty (e.g., a surprise ending) that was eventually reduced; it didn't matter whether the story had a happy or sad ending. In contrast, people enjoyed stories that had happy endings regardless of the story's uncertainty.

(Silvia 2006: 26)

Similarly, studies show that interest varies with appraisals of coping potential. For instance, experts in art and music rate their capacity

to understand their relative fields highly, and are more interested in complex images (such as those in abstract art) and melodies than novices in art and music. A similar pattern is found when comparing what adults and children find interesting. Silvia writes that these findings ‘fit the hypothesis that the appraisal structure of interest involves appraisals of coping potential. Experts relative to novices, and adults relative to children, should have higher appraised ability to understand art and music’ (ibid.: 59). By the same token, studies in aesthetics show that providing meaningful information (such as a biographical sketch of the artist or what the artist said about the work) increases curiosity; it is plausible to assume that it does so, at least in part, because it makes the artwork more understandable to the viewer. A recent set of experiments conducted by Silvia indicated that increases in appraised ability to understand complex art corresponds to picking more complex polygons as the most interesting from a range of shapes. Other experiments indicate that interest in works of modern visual art depends ‘on both complexity and coping potential ... [f]or complex pictures ... ability strongly predicted interest – interest increased as appraised ability increased’ (ibid.: 61). If this is correct, then we can conclude that there is good empirical evidence to support an appraisal theory of curiosity, along the dimensions of novelty and coping potential.

Let us suppose that this is what curiosity is. Why then is curiosity, understood in this way, important for truth-seeking and knowledge-gathering?

#### 2.2.4 HOW CURIOSITY SOLVES AN INFORMATIONAL PROBLEM

As we have seen, a lot of our epistemic activity – our inquiries, information-seeking, evidence-sifting – is done in the service of practical goals. The picture here is that we have some desire or end in mind, and then need to figure out how to satisfy that desire or achieve that end – hence the need for accurate and well-supported beliefs about the world. Such knowledge will be valuable precisely insofar as it serves our practical ends.

However, our needs and goals would, in the longer term, be badly served if the only motivation we had to gather information was generated by particular desires for particular ends. From a

developmental standpoint, it makes good sense for the subject to acquire a large amount of potentially important information at an early stage, which information can then be put to use both in the formation of and in the service of more particular goals.

To see this, note that creatures obviously need to learn about their environment, and their own abilities, and from a very early age. They need to learn how to navigate their world, its perils and rewards, what they can and cannot do, what options are available to them, what works and what doesn't. For this they need a *general* information-acquiring mechanism, a motivation to search for the *new* and *useful*. But there are good reasons for creatures to amass a large amount of *potentially* useful information as well: information whose point might not be apparent at the time, but which could well be of significant use in the future. For one thing, possessing a large store of potentially useful information would enable the subject to respond more quickly should the need for that kind of information arise. And speed of response is of adaptive value: suppose the situation is one where the subject encounters a threat and needs to deploy information about how to deal effectively with that threat. Better that the subject has the information to hand and can act quickly, rather than have to delay while seeking the information out and increasing the risk of attack. For another, possessing a large store of potentially useful information can illuminate options, goals, and ends that the subject did not previously have. An unmotivated or accidental encounter with something or someone can illustrate new possibilities, new sources of pleasure and enjoyment, can generate new goals and plans and intentions. Sometimes our lives change for the better, not because of things that we intentionally do, but because we stumble across something, in our random search for meaning, that constitutes a core value of our lives. (In my case it was philosophy when – utterly bored one afternoon as a teenager – I picked up a copy of Descartes's *Meditations* that my father was using for his Open University degree course, and was pretty much hooked. Think for yourselves about a case where something like this has happened to you.) So amassing more experiential information and knowledge can generate new options and desires, and so enhance the range of things that we have reason to pursue and the range of things that enable us to flourish. We therefore have a need to acquire new and potentially important

information, in addition to information that directly serves our conscious practical goals and ends.

How is this need best met? What would a good system for gathering such information, and generating such truths and knowledge, look like? One option would be for creatures to possess a strong desire for new and accurate information about themselves and their world. But this, on the face of it, would be a very ineffective way of ensuring that humans amass potentially *important* information. After all, a strong desire for new and accurate information could be satisfied by pretty much any inquiry or knowledge-seeking activity. I could spend long hours counting the pages in all of my books, thus finding out the total number of pages in my office library. I could endeavour to discover the truth about the longest distance I can hop. I could devote months to learning the names of everyone who has ever played for Partick Thistle Football Club. So a strong desire for new information won't do the job.

Why not appeal, then, to a system that involves a desire to amass only potentially important truths, thus ruling out the kind of pointless inquiries into trivia above? However, such a desire would both be too restrictive – for there are potentially important or significant truths whose importance will not be apparent to the subject – and also too costly, since the operation of such a desire would seem to require the subject's assessment of whether some truth or inquiry was indeed potentially important.

For these reasons, our informational needs would be better served by the kind of quick and automatic novelty check that is central to curiosity – a check as to whether something is new, ambiguous, complex, obscure, uncertain, mysterious, contradictory, unexpected, or otherwise not understood. This rules out the kind of activity directed towards boring and mundane information described above. But it is also open-ended enough not to require any assessments of the potential importance of the information, and thus doesn't run the risk of being too costly. (Indeed, experimental evidence indicates that curiosity can *diverge* from assessments of importance that the subject is inclined to make.) The negative assessments involved in this evaluative profile – that something is obscure, unexpected, and the like – are clearly much less costly and much quicker to arrive at than a positive assessment of the potential importance of some issue or inquiry, especially one

of the potential importance of finding out the truth in this area for its own sake. (How often do we make those kinds of explicit judgements?) As a result, an information-gathering mechanism that moves us to seek out the new and unexpected, as curiosity does, seems well-placed to generate the right kinds of truths and knowledge that will serve our epistemic and practical needs.

What of the other appraisal variable central to curiosity, that of coping potential? This variable, I want to suggest, ensures that we don't waste cognitive resources in seeking to discover the truth about what is new, ambiguous, complex, obscure, uncertain, mysterious, contradictory, unexpected, or otherwise not understood. Even if finding out the truth on certain matters is potentially important, a truth-seeking mechanism that prioritized this *at all costs* would clearly be suboptimal. After all, the truth on these matters is only *potentially* important, and so this warrants a degree of caution when it comes to the investment of resources. Even if the prospect of importance or significance is high, there needs to be a trade-off between devoting resources here, and devoting resources to other important aspects of our deliberative and practical lives. So an assessment of our capacity to discover the truth, to understand and comprehend new, ambiguous, and unexpected objects and events, plays an important limiting role in the allocation of resources, by restricting our efforts to cases where we have the greatest chance of epistemic or intellectual success. So assessments of novelty motivate truth-seeking behaviour directed at potentially important information, while assessments of coping potential play a regulatory role in directing our efforts to cases where the benefits are more easily won.

Still, a final worry persists. Why can't a simple desire – suitably constrained – do the motivational job equally well? Why do we need an *emotional* system or mechanism to play the relevant role? Here we encounter an idea that I will discuss in detail in the next chapter. This is the fact that emotional elements are considerably more effective, when it comes to motivating appropriate behaviour, than non-emotional. Because of this, the emotional elements involved in curiosity – the fact that it involves an element of strong feeling, indeed a *felt need* to find out – make it likely that an emotional system will be more effective in motivating the relevant kind of inquiry than a bloodless, non-emotional desire. The basic



idea is that curiosity unsatisfied *feels bad*, and thus provides a negative ‘hedonic’ motive to discover the truth. By the same token, curiosity satisfied *feels good*, which constitutes positive reinforcement for search and discovery. It’s not that non-affective desire lacks motivational force; desires are, after all, motivational states if nothing else. The point, instead, is that feelings provide considerably more motivational energy through their connections with pleasure and unpleasure. This is not all. For emotions also – as we saw in the last chapter, and will see again shortly – focus attention and keep it fixed. In the case of curiosity, attention is drawn towards and remains fixed upon on the issue or topic or question at hand. This means that curiosity helps us to *persevere* in our inquiries – it keeps our attention fixed on the problem and increases the likelihood that a solution will be arrived at. Desires, on the other hand, have much less effect on our attention. Finally, curiosity – through its facial expression – can enlist assistance and help from allies in the truth-seeking endeavour. Noticing that someone else is curious, we often become curious ourselves, and engage in collaborative effects to reach the truth. None of these, by themselves, *guarantees* that curiosity will be a more effective force when it comes to generating truth-seeking inquiries. But taken together, they raise the likelihood that an emotional disposition to seek the truth, when one encounters novel and mysterious events, will be more effective than a mere non-affective desire.

If all of this is right, then the emotion of curiosity will play a considerable role in motivating inquiry into potentially important objects and events. We need to increase and expand our set of potentially important truths, and ensure that the new acquisitions are sufficiently unlike our current set – otherwise why waste efforts to acquire them? But we also need to balance the benefits of acquisition with the potential costs – which is why we don’t pursue understanding of things that would cost too much to grasp. The emotion of curiosity thus plays a vital role in helping to amass a store of potentially important information, in a way that doesn’t overextend our resources. In the next section I’ll move beyond the particular emotion of curiosity, and consider the epistemic benefits that emotion in general can bring, through the effect of emotion on attention.

### 2.3 EMOTION, ATTENTION, AND UNDERSTANDING

In the previous section I illustrated the importance that the emotion of curiosity can have when it comes to our possession of potentially significant information about the world and about ourselves. In this section I'll broaden the picture to look at the epistemic importance of emotions *in general* when it comes to our knowledge of *value*. I will argue that our access to the evaluative world would be significantly hampered without emotional experience, and that certain important epistemic goods would be unavailable to us in the absence of emotion. The account I propose has a number of elements. I'll maintain (i) that most emotions by their very nature tell us about value; (ii) that emotions make important objects and events salient to us; and (iii) that emotions facilitate understanding of the evaluative world and of ourselves. Taken together, these three claims constitute a strong case for the idea that emotions are at the heart of our truth-seeking and knowledge-acquisition.

#### 2.3.1 EMOTIONS TELL US ABOUT VALUE

The idea that emotions are informative would seem to follow from our discussion about the 'components' of emotion in the last chapter. There we saw that many or paradigmatic emotions involve an element of evaluation or appraisal – an assessment of the *value* of some object or event or person. Thus when we are in love, we appraise another as *lovable*; when guilty, we evaluate what we did as *wrong*; when proud, we appraise something as an *achievement* of ours; when jealous, we evaluate someone else as a *threat* to our relationship. (We also saw that some emotions arguably don't involve assessment or appraisal: startle and bodily disgust, for instance. So the story to be told in what follows is more plausible with respect to the kinds of emotion that certain theories, and in particular the perceptual theory, focus on.) The italicized terms – *lovable*, *wrong*, *achievement*, *threat* – all represent values: in the case of being *lovable* or an *achievement* these are positive values, whereas in the case of being *wrong* or a *threat* these are negative values. As a result, we might think that by feeling certain emotions, we immediately get evaluative information about the

world: fear gives us information about danger, anger about wrongs done to us, shame about violation of social norms, and so forth. Since such information is of great importance to us – because it relates to the bearing that some object or event has to one of our cares or concerns – then emotions themselves are extremely important to us as well, insofar as they are often the means by which such information is conveyed. The link between emotions in general, and important information about value, therefore seems easily secured.

Unfortunately, things are not quite as straightforward as this suggests; when it comes to emotions, they rarely are. For this brief account of the epistemic importance of emotion might strike many people as too quick, and for a number of reasons. The first is this: even if emotions involve an element of appraisal or evaluation, why think that emotions *therefore* provide us with helpful information? There's no guarantee, after all, that our emotional appraisals are accurate or reliable. Suppose that I'm the kind of person who is afraid of harmless Scottish house spiders, or who gets indignant when pedestrians walk at a slow pace. Fear in this case clearly doesn't give me information about danger – because Scottish house spiders are not dangerous – and nor does my indignation give me important information about a way in which I have been wronged – because slower-walking pedestrians are not wronging me. (Such pedestrians might be *annoying*, but there's a difference between something's being annoying and its being the appropriate target of indignation. The latter implies fault on another's part, or blameworthiness, whereas the former doesn't. I might, as a citizen of Glasgow, be regularly annoyed at the rain, but I can't be indignant about it, since there's no sense in which the weather is wronging me or is to blame.) Given this, we might think that emotions, more often than not, hamper or hinder our truth-seeking – they lead us astray, making us see things like threats and insults where none exist.

Suppose we ignore this for the moment, and assume that some emotional responses can be accurate or some emotional mechanisms reliable. Even if this is true, we might doubt that the *emotion* has particular or distinctive value when it comes to providing us with the relevant information. For it is clearly possible for us to acquire the relevant information by other means. I might work

out, for instance, that there is a threat to my relationship not by feeling jealous, but by non-emotionally reflecting on the evidence and coming to form a judgement as a result. Here I deliberate about certain signs of infidelity, and rationally come to the conclusion that the relationship is in trouble. Or I might work out that I'm in danger not by feeling fear, but by recognizing that I'm walking alone late at night through a part of town with a high crime rate. Since we can come by the relevant information non-emotionally, then the mere fact that emotion *can* give us evaluative information (when accurate, reliable, etc.) hardly shows that it has *particular* importance from the standpoint of informing us about value, or that we would be worse off without emotion from this perspective. Given the deleterious effects emotions often have on our believing, perhaps we'd be better off, from the standpoint of gaining knowledge about the world, if we were less, rather than more, emotional.

In order to push back against this criticism, in the next subsection I'll explain how emotions really do enhance our epistemic lives, in spite of the worries expressed above. And in the last part of this chapter I'll address how emotions themselves are vital in counteracting the deleterious effects on our believing that emotions sometimes have. To put things in a slogan: emotions provide the solution to an emotional problem.

### 2.3.2 EMOTIONS MAKE THINGS SALIENT

It seems to me that certain emotions play *vital* roles when it comes to information-gathering and knowledge-achievement. One such role is to inform us about values that we arguably couldn't access any other way. Another is to draw our attention, quickly and at little cost, to significant objects or events in our environment. Emotions are needed to make things *salient* to us, in other words. In so doing, emotions help to solve a problem when it comes to our information gathering; and this suggests that without emotion, we would be considerably worse off from the epistemic standpoint.

In an important paper from 2001, the philosopher Mark Johnston nicely captures the idea that emotions not only inform us about or give us access to values, but also that without emotions a whole realm of value would be lost or inaccessible to us. Similar

views are expressed by other philosophers, including Julien Deonna and Fabrice Teroni (2012), and Christine Tappolet (2016). For Johnston (2001), feeling is *the way in which* certain values are presented or disclosed to us; as a result, certain emotions are *necessary* for us to have information about value. An analogy here is the necessity of *visual* experiences for information about colours. Without visual experience of redness, for instance, we would lack access to what redness is: the way some red object appears to us in visual perceptual experience cannot be captured by some other mode or manner of representation. As a result, the kinds of emotions that Johnston and others have in mind here are those that are best explained by the perceptual theory of emotion. So emotions *like these* – but perhaps not all emotions – are vital in this way for knowledge of value.

Johnston makes his case by focusing on a particular class of values, which include ‘the beautiful, the charming, the erotic ... the banal, the sublime, the horrific and the plain old appealing and the repellent’ (Johnston 2001: 182). Johnston thinks that ‘[i]f one has never been moved or *affected* by the determinate ways in which things are beautiful or charming or erotic or banal or sublime or appealing, then one is ignorant of the relevant determinate values’ (ibid.: 183). The idea that we need affective engagement is ‘most vivid’, states Johnston, ‘in cases in which one can only effectively convey to another the considerations in favor of, say, a style, a song or a friend’s manner by having the other sense it, in part by feeling as one does’ (ibid.: 183). If this is right, then we can’t get information about what is charming or erotic or repellent without having the relevant emotions or feelings: we can’t get information that someone is charming without being charmed by them, for instance. Or consider another example that bolsters Johnston’s case: to know that something is amusing, it would seem that we have to experience feelings of amusement in response to it – here the emotional response of amusement is necessary for us to get information. Think, after all, how baffling it would be if one spent a night at the comedy club with a stony-faced friend, who afterwards professed to have found the comedy highly amusing. You would obviously think that they were being sarcastic or in some other way not being sincere. How, you might well think, *could* they have found it amusing, without feeling amused?

If Johnston is right, then information and knowledge about certain values requires emotional experience. That's one way in which emotions have a distinctive role to play when it comes to information-gathering and knowledge-acquisition. But there is another, perhaps more important, role that emotions play as well. For certain emotions have epistemic value in so far as they enable us to *detect* potentially important objects and events. There are two elements to this picture: first, such emotions alert us to the presence of such objects and events quickly and at little mental cost; second, these emotions alert us to objects and events that we would otherwise have missed. So without certain emotions, we would often fail to notice things that we ought to notice; and without these emotions, the costs of noticing things that we do notice will typically be higher. The idea that emotions have value along this dimension is often cashed out as the thought that particular emotions help to make important things *salient* for us, that they capture our *attention*. (Note that I have stressed that this is true of *certain* emotions. It might not be true in general, since other emotional experiences like boredom don't seem to involve our paying attention to anything. The fact that our attention is not focused or occupied is part of the problem with being bored, after all.)

Now the idea that emotion and attention are closely linked is a very common one. When I'm in love I'm attentive to my beloved and her qualities, at the expense of other possible objects of attention. But it is also a feature of everyday experience that emotions can draw our attention, quickly and automatically, to potentially significant objects and events. Consider, for instance, how one's attention automatically and reflexively shifts to the source of the loud noise when startled by a firework, or to the spider crawling across the wall when one is afraid. It is thus a common feature of our lives that emotions have this kind of effect on attention: fear alerts us to danger, startle to loud noises, and so on. The idea that emotions direct our attention to potentially important or significant objects, in a quick, reflexive, automatic way is, moreover, a staple of psychological and philosophical theorising. Fear, for instance, is taken to be an automatic, reflexive response to potential danger, which results from a system or mechanism which has evolved to deal with threats. As the philosopher Aaron Ben Ze'ev put it, 'like burglar alarms

going off when an intruder appears, emotions signal that something needs attention' (Ben Ze'ev 2000: 13).

The idea that emotions are (often) passive, reflexive, non-voluntary, and automatic responses is important here. For it seems that there is significant epistemic benefit in having our attention drawn to some object or event in this way. One obvious benefit is that such shifts are effortless: if our attention is automatically and passively drawn to things that are potentially important, then we do not need to actively, continually, and consciously scan the environment in order to detect these things. Such voluntary attentiveness is typically very costly from the standpoint of our cognitive resources, and so it will be better, other things being equal, if attentional shifts were non-voluntary. The psychologists Clark and Watson put this point as follows: 'Without an 'automatic' judgement system, all situations would have to be evaluated cognitively for their survival value, which would severely tax resources' (Clark & Watson 1994: 131). It is therefore important for us to have ways of registering or noticing potentially important objects and events that are not (as) costly from the standpoint of cognitive resources – a point we saw earlier, in our discussion of curiosity. Moreover, the fact that such attentional shifts are automatic and reflexive suggests that there are advantages with respect to the *speed* of response, when compared with attentional shifts that are voluntary and active. Reflexive, automatic shifts of attention would seem to be quicker than conscious, voluntary and effortful shifts, and there can be obvious practical advantages in a fast response to potential danger and the like.

There is considerable evidence that it is emotion that constitutes this automatic appraisal system, and thus enables these epistemic goods. Such evidence is generated by 'pop-out tasks', which are intended to track how emotional stimuli attract attention. Subjects in experiments are asked to pick out a stimulus from among a mass of other stimuli – for instance, one image that is among eight similar images. Researchers find that subjects locate an emotional object – such as a spider or a snake – more quickly than a neutral object. As Faucher and Tappolet note, 'it is as if the spider or snake is "popping out" from the background, capturing attention automatically' (Faucher & Tappolet 2002: 119). Since subjects are generally quicker at identifying emotion-relevant objects, the

thought is that it is emotion itself that is responsible for this automatic orientation or capture of attention. Emotions, in other words, make the relevant objects salient for us; they enable us to quickly and effortlessly notice things that are potentially important for us to notice. And importantly, they are less costly, from the standpoint of cognitive resources, than a system that requires the voluntary attentional scanning of one's environment in order to identify objects and events that are relevant to one's concerns. As a result, we would be worse off, from the standpoint of noticing such things, without emotion.

### 2.3.3 EMOTIONS FACILITATE UNDERSTANDING

There is a third way in which emotions are important when it comes to the provision of epistemic goods: emotions help us to *understand* the evaluative world and ourselves, as I'll now explain.

Emotions such as fear and shame do not just direct our attention. In addition, fear, shame, and certain other emotions tend to *capture* and *consume* attention. To say that attention is captured and consumed by emotional objects and events is to say that such objects and events hold sway over us, often making it difficult for us to disengage our attention and shift focus elsewhere. So fear and jealousy and guilt and disappointment stay with us; they are not simply short-term reflexive interruptions to our mental life, but often persist and dominate that life so that we remain focused on and attentive to danger, infidelity, wrongdoing, and frustrated goals.

In my view, one of the important things that attentional persistence can do is to motivate reflection on the relevant objects and events, which itself has two important outcomes. First, such reflection enables us to discover reasons which bear on the accuracy of our initial emotional appraisals; in this way, emotions, through their effects on attention, seek to enhance our perspective on the world, and mitigate some of the evaluative faults we saw earlier. In other words, emotions can motivate the search for and discovery of reasons, and in so doing can help to bring about a more accurate judgement as to whether emotional appearance matches evaluative reality. In this way we can come to realize that there are no reasons to be afraid of house spiders in Scotland, or to be indignant at slow-moving pedestrians, and come to realize that



our initial emotional take on the situation was mistaken. Emotions are, in a sense, *self-correcting* as a result of keeping attention fixed on our situation.

The idea that emotion motivates the search for reasons is well-supported by reflection on our own experience, by philosophical theorizing, and by empirical evidence. Consider first 'phenomenological' evidence: we often *feel the need* to discover reasons and evidence when we are experiencing some emotion. Think, for instance, of the person experiencing jealousy, who feels motivated to discover whether her partner really is being unfaithful, and as a result whether her feelings of jealousy are warranted or accurate. Or think of the detective's feelings of suspicion for the suspect, which motivate her to investigate the suspect's alibi and movements on the night in question. It is not just that we feel the need to discover reasons and evidence when emotional; it is also true that when we are no longer emotional we usually *lack* the motivation get a better grasp of what is happening. If, for instance, a person no longer feel jealous, then it is unlikely that she'll bother herself much with seeking evidence as to whether or not her partner is being unfaithful. Why should she, in the absence of *feeling* jealous?

Our experience of emotion 'from the inside' fits in nicely with views in psychology which suggest that appraisal and reappraisal of our environment is an ongoing process in emotional experience. Klaus Scherer, for instance, argues that 'emotion *decouples* stimulus and response', allowing a 'latency period between stimulus evaluation and reaction' (Scherer 1994: 128). On his view, 'the first major function [of the latency period] is the ongoing analysis of the stimulus event, which allows the organism to arrive at a more detailed or more realistic conclusion and may lead to a re-evaluation and consequently a revision of the original appraisal' (ibid.: 129).

The idea that emotion facilitates reappraisal through the capture of attention also finds philosophical support in the writings of the Scottish philosopher Thomas Reid:

attention may be given to any object, either of sense or of intellect, in order to form a distinct notion of it, or to discover its nature, its attributes, or its relations and so great is the effect of attention, that,

without it, it is impossible to acquire or retain a distinct notion of any object of thought.

(Reid 1969: 76–77)

So for Reid, paying attention seems necessary for us to form an accurate ('a true and stable') judgement about that object or event.

Finally, there is neuroscientific evidence that speaks in favour of the proposal. A central part of this evidence rests upon the idea that emotions involve increased *cortical arousal*, and that this is a central element in attentiveness. Thus, Joseph LeDoux writes:

the systems that are processing information are able to make the most use of [increased cortical arousal]. For example, if arousal is triggered by the sight of a snake, the neurons that are actively involved in processing the snake, retrieving long-term memories about snakes, and creating working memory representations of the snake are going to be especially affected by arousal.

(LeDoux 1996: 287–288)

There is, therefore, a raft of evidence supporting the idea that emotions can bring about reappraisal of our situation, by motivating a search for reasons that bear on the accuracy of our emotional response. (Of course, emotions don't always do this; sometimes there is no need, when we already have a good grasp of how things stand and so there is no point in further reflection. Even if we don't have a good grasp on our circumstances, perhaps we're not particularly reflective, and so our emotional experience doesn't move us to reassess how things stand. These facts don't undermine the idea that the point of attentional persistence is to generate a more discriminating assessment of our situation – any more than the fact that our eyes sometimes mislead us undermines the idea that the function of visual experience is to tell us about the size, colour, distance, and nature of objects in our visual field.) If all of this is true, however, then there is strong support for the idea that emotion helps us to *understand* our evaluative situation. For awareness of the considerations that bear on whether, e.g., my situation really is dangerous, or my behaviour shameful, just *is* awareness of the factors or features that *make* my situation dangerous (or not), or shameful (or not). For instance, if upon waking in

the dead of night I hear a noise downstairs, am consumed with fear, and search for reasons that bear on whether I am in fact in danger, then the discovery of such reasons *constitutes* my understanding of why I am in fact safe – because, for instance, I discover that the noise was just my drunk partner coming in from the pub, and so understand that the situation is harmless. Similar things apply for other cases of emotion: my love consumes my attention and motives me to understand the many ways in which my partner is (otherwise) lovable; my guilt consumes my attention and motivates me to understand the wrongness of my actions. As a result, emotion can motivate the kind of reflection that is vital for an understanding of the world and ourselves.

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Even though this might go some way to temper our scepticism about the epistemic value of emotion, grounds for doubt remain. For the fact that emotions *can* motivate reflection and lead to understanding clearly does not suggest that they always, or indeed mostly, do. Maybe the fixing of my attention doesn't move me to reflect impartially, but instead moves me to seek confirming evidence for my emotional prejudices. Maybe I'm not much motivated to reflect at all about the accuracy of my emotions, tending to take them at face value and not question them. Maybe my emotions cause me to reflect too much, so that I don't end up with stable judgement but am constantly second-guessing myself and changing my mind. This is not all. For the fact that certain emotions can make things salient for us is compatible with the fact that often the very same emotions make the wrong things salient: as when fear of the other causes racial characteristics to seem relevant to one's treatment of another person, or when jealousy draws our attention to innocuous conversations and work habits, or when anger triggers us to see non-insulting behaviour as insulting, and so on. The value of emotion in alerting us to important objects and events might be swamped by the disvalue of emotion in making salient to us things that shouldn't be salient, in drawing our attention to things that are not relevant.

In the final section of this chapter I want to respond to this kind of scepticism by arguing that the kinds of faults mentioned above can be fixed if our inquiring and believing is governed by *intellectual virtues*, and that this further highlights the epistemic importance

of emotion. This is because particular emotions are at the heart of the development and expression of intellectual virtue. As a result, emotions enable higher-level regulatory guidance of lower-level emotional processes. Emotions therefore play a central role in getting us to think *well*, to amass the right kinds of information, to pay attention as and when we should, to reflect and deliberate accordingly, and to come to know and understand ourselves and our world.

## 2.4 EMOTION AND INTELLECTUAL VIRTUE

In the first section of this chapter, I explained why curiosity was particularly valuable when it came to generating potentially important truths in a cost-effective way. In the second section I expanded this account of the epistemic value of emotion by arguing that some emotions are essential for us to access value, that emotions are effective in making potentially important objects and events salient to us, and that emotions facilitate our understanding of such objects and events, through capturing attention and motivating reflection. In this way emotion plays a central role in the provision of important epistemic goods. Our store of knowledge and understanding, of the world and of ourselves, would be severely hampered in the absence of emotion.

We also saw reasons to be sceptical about the epistemic value of emotion. Sometimes our emotional evaluations or appraisals are mistaken and fail to inform. Sometimes our attention is drawn to things that it ought not to be drawn towards (as in cases of prejudice, for instance). Sometimes attentional capture and reflection will lead us away from knowledge and understanding, rather than towards such things. Given this, it is not clear that the influence of emotion on believing can be said to be all-things-considered good, or that we are in general better off as a result of our emotions. However, in this section I'll explain how this scepticism can be tempered. This is because certain emotions are central to those habits of character, thought, and reasoning which enable us to get on the right path, and as a result are essential for us to know and understand at all. These are the intellectual virtues, and at their heart we find an important range of emotions.

In the last chapter we saw what emotions are. What of virtue? The Greek term for virtue, *arete*, basically means ‘excellence’. So virtues are excellences; more particularly, they are qualities that make something excellent. Very many things have virtues. Some are physical objects that have been designed to do certain things. Consider Aristotle’s example of a knife. This has been designed to cut. Cutting is what we can call the knife’s ‘function’ or ‘characteristic activity’. The excellence or virtue of a knife is that quality which enables the knife to perform this function well – and so we can identify *sharpness* as the virtue of a knife, what makes it a good or excellent knife. For Aristotle, people also have a function or characteristic activity – he thought that it was rational activity – and the human excellences or virtues are those qualities that make humans perform their function well. We don’t need to go into any further detail of Aristotelian thought on this point, but the basic idea is that, as Heather Battaly says, ‘Virtues are qualities that make one an excellent person’ (Battaly 2014: 5).

We can characterize human virtues in terms of two components; here I follow the work of the philosopher Linda Zagzebski. The first is a ‘motivational component’: the virtuous person is moved to act in certain ways, to bring about some valuable goal or end. The second is a ‘success component’. The virtuous person isn’t just someone with good motives or good intentions. In addition, the virtuous person is someone who is reliably successful in bringing about the valuable goal or end. Consider, to illustrate, the virtue of compassion. The compassionate person is characterized as having certain compassionate motives: she is moved by these to help others who are in need. But in order to count as genuinely virtuous, the compassionate person must be very *effective* in helping others: she must make a positive difference to their lives, actually attend to their needs and make them better off. Kind hearts and good intentions don’t by themselves suffice for virtue, then; in addition, you have to be reliable in achieving what you set out to do. As Zagzebski herself puts it: ‘Virtue possession requires reliable success in attaining the ends of the motivational component of the virtue’ (Zagzebski 1996: 134).

What, then, of *intellectual* virtue? Well, it is traditional to divide virtue into two different kinds or categories: moral virtue and intellectual virtue. And we might, again following tradition,

identify these, respectively, as qualities that make a person a good agent and a good thinker. Of course, the line or distinction between moral and intellectual virtues might on many occasions be somewhat blurred: good thinking seems very important for effective action, and good agency might be centrally involved in what it is to believe well. Still, the traditional distinction between these kinds of virtues is clear enough, and we can in what follows focus on the qualities that make someone excellent intellectually. What sorts of qualities are these? Good candidates for intellectual virtues include open-mindedness, fair-mindedness, conscientiousness, thoroughness, perseverance, curiosity, and intellectualized versions of moral virtues, such as intellectual courage, autonomy, and humility.

Now that we have a better picture of what intellectual virtues are, I want to argue for two claims. The first is that certain emotions can motivate intellectual inquiry, and in so doing can constitute the motivational components of intellectual virtues. These emotions are themselves virtuous motives, in other words. The second claim I want to make is that other emotions, rather than motivating intellectual inquiry, instead play a vital role in the regulation and control of intellectual activities. As a result, such emotions enable the virtuous person to be reliably successful in attaining intellectual goods. Taken together, these claims show how emotion is at the heart of intellectual virtue, and hence at the heart of what it is to be a good thinker and knower. And if, moreover, one is a good thinker and knower, one will not be susceptible to the kinds of emotional disorders and problems that we encountered earlier. It is in this way that emotions are part of the solution to an emotional problem.

To make the case for the first claim, let us return to consider curiosity. Now curiosity is an emotion, but it isn't a virtue. Sometimes we are curious about useless or trivial things. And there is evidence that what we are curious about diverges, in principled ways, from what we regard as (intellectually) important or valuable. Nevertheless, it can be argued that a disposition to be curious about the right kinds of questions or subjects is a constitutive part of open-mindedness, and possibly other intellectual virtues. For one thing, the 'appraisal variables' of curiosity are not characterized by any particular kinds of truth, or truths which promise to serve

some practical goal or desire: so there is reason to think that something like curiosity is the motivational component of intellectual virtues that are characterized by a disinterested or unbiased search for truth. By the same token, one of the appraisal variables for curiosity is *novelty*, and open-mindedness, according to John Turri, Mark Alfano, and John Greco (2018), ‘is the virtue according to which a person is motivated to be receptive to new ideas, and is reliably successful at achieving the end of this motivation’. It is not implausible, then, to think that curiosity, stimulated by appraisals of novelty, is the motivational component in open-mindedness, understood in terms of a motivation for truth and knowledge of novel issues, and a willingness to seek out truth in a disinterested manner.

But why think that the emotion of curiosity is an essential part of open-mindedness? Might not open-mindedness simply involve or require a positive *but non-emotional* evaluation or appraisal of new ideas and a willingness to consider them? Given the above account of the relation between emotion and attention, however, we can also make the case that curiosity will be a more effective motivational force. As with other emotional states, curiosity engages attention, and keeps the novel question or issue in mind. This makes dealing with the issue a deliberative priority. If we are curious about some truth or issue, then we become focused on or locked into an investigation or inquiry; it occupies our attention and other cognitive resources. This explains why curiosity is a significantly more effective motivator than mere evaluative judgement or belief of the intellectual importance of some topic or subject. There are *very many* topics or subjects or questions that I will readily admit are intellectually important or significant – a quick trawl through the syllabi of subjects at my university tells me this. But I am not motivated to find out about them or to seek to understand them, given other operant motives: the truth for its own sake comes pretty low down my list of priorities in the absence of emotional engagement. Faced with competing motives, mere evaluative judgement often falters, or often doesn’t give rise to motivation in the first place. When I’m curious about some subject, however, getting the truth on that subject for its own sake becomes a priority, occupies my attention, becomes something that I have to factor into my decision-making: by focusing

attention and keeping the topic or subject in mind, curiosity is thus more effective as a motivational force than mere judgement that some topic or question is of intellectual worth.

The second important motivational element is that curiosity, examined closely, isn't a straightforwardly positive emotion, but involves a significant element of negative feeling. If we are curious we seek out the truth on some novel issue, remain in a state of *frustration* if we do not attain it, and enjoy the positive affective state of relief and intellectual satisfaction when we do. This is why intellectual inquiry often involves an emotional life that is ambivalent: there is the positive feeling of intellectual excitement, and the negative feeling of the intellectual need and compulsion to know. As a result, curiosity provides an additional motivational force: it does not merely keep the topic or subject at the forefront of our attention; it also promises a pleasurable reward, when the relevant question is answered or the relevant intellectual issue is understood. And what is true of curiosity is equally true of similar emotions: fascination, intrigue, and more broadly love of truth. These, too, will play a significant role in capturing attention, focusing it on some (fascinating, intriguing) issue or subject, in such a way that getting the truth about that issue or subject becomes a deliberative priority. Without the emotion, therefore, attention would either not be elicited in the first place, or would quickly wane. And without attention, it is highly likely that attaining intellectual goods and values would quickly disappear from our list of live behavioural options, especially in the face of competing motivations.

If something like this is correct, then a central role of emotion in intellectual virtue is to provide an effective motivational force for the achievement of intellectual goals or ends. A tendency to have some emotion, in the right circumstances, and directed towards the right ends, thus constitutes the motivational element of intellectual virtue. But this is by no means the only important role that emotion has, when it comes to our epistemic or intellectual ends. For emotion is also vital for the existence what we might call *regulatory intellectual virtues*. In particular, it is vital for the executive virtue of intellectual wisdom, as I'll now explain.

Earlier we saw that virtue involves a motivational component, and also an element of *reliable success*: the intellectually virtuous



person is someone who succeeds in knowing and understanding what it is good to know and understand. The sorts of emotions that constitute the motivational component of intellectual virtues like curiosity do not guarantee reliability, however. One reason for this is that even motives that are more effective than mere evaluative beliefs can run aground, especially in the face of other strong motives: various forms of bias, prejudice, bad habits, temptations, and the like. To counter these, the virtuous thinker will need to possess certain *regulatory* virtues, which enable her emotions to motivate her to do what she intellectually ought. She will, for instance, need to be intellectually *strong*, to resist forms of bias and prejudice that might derail her pursuit of truth, knowledge, and understanding. Here virtues such as intellectual courage and fortitude, intellectual perseverance, and conscientiousness will prove to be important. These forms of intellectual virtue will themselves involve the right kinds of emotional disposition: intellectual courage, for instance, will involve a disposition to experience positive emotions, focused on the value of some particular end, in the face of temptation. By the same token, the negative feelings of repugnance and shame have an important role to play here when it comes to preventing our giving in to bias, bad habits, and prejudice; they provide powerful emotional disincentives to intellectual vice.

Perhaps the most important instance of a regulatory virtue is that of intellectual wisdom. One reason why emotions such as curiosity might not be reliably successful in bringing about important intellectual goals is that they are misdirected: we might be curious about, and hence motivated to attain knowledge and understanding of, a topic or issue or question that does not, for one reason or another, *merit* interest or curiosity. Suppose that we are intrigued about the lifestyles of celebrities, or are into trainspotting and spend our days collecting the numbers of various locomotives in UK stations. Our emotions in these cases are targeted at epistemic ends, but not at valuable ends.

It is here that our emotions must be guided by the 'executive' virtue of intellectual wisdom. For the wise person knows which topics and subjects and questions merit investigation, inquiry, and understanding, and is someone whose epistemic emotions are guided and regulated by this kind of evaluative knowledge. By the

same token, the wise person knows when to *stop* inquiring and investigating: she knows when the level of knowledge and understanding she has attained is enough, relative to the topic or question at hand. The wise person is not, in other words, *obsessive* about intellectual topics or questions, but balances the need to know and the disinterested search for truth with her other intellectual goals and ends. In this way the virtuous person attends to the right topics, in the right way, and for the right amount of time, and is intellectually *satisfied* when her inquiries reach their natural limit.

We have already seen, however, the importance that emotion has for motivating reflection and deliberation about reasons, and in doing so facilitating understanding. Since, moreover, understanding is a central component of wisdom, then the case can be made that emotions are essential for the development and cultivation of the highest intellectual virtue of them all. So once again, emotions are vital for the development of intellectual virtue, which is itself vital to the effective regulation and control of emotions like curiosity themselves. Emotional regulation is not a matter of the influence of reason alone on our curiosity and our emotionally motivated inquiries. Instead, emotions are part and parcel of the regulatory story itself. So not only are certain emotions important motivational forces when it comes to intellectual inquiries – as our discussion of curiosity throughout has hopefully illustrated. In addition, a range of emotions are essential in the development of regulatory virtues that enable curiosity and other epistemic motives to operate as they should.

## 2.5 CONCLUSION

Many people think that emotions are hindrances to knowledge and understanding, and that our epistemic lives are worse off because of them. In this chapter I have argued that such a view is mistaken. Although emotions can lead us astray when it comes to gaining accurate information about the world, our knowing and understanding would be seriously impoverished without emotion. For emotion is vital for our access to certain values, to making important things salient to us, to keeping attention fixed and generating understanding, and to the cultivation and development of

intellectual virtues that are at the heart of good thinking. All-things-considered, emotions greatly assist, rather than hinder, our epistemic endeavours.

## FURTHER READING

In this chapter I spend some time discussing Paul Silvia's excellent book *Exploring the Psychology of Interest* (Oxford University Press, 2006). Although the book is primarily a research book in psychology, it is clearly written and accessible, and would be a very good place to start if one's curiosity about the topic has indeed been piqued. Julien Deonna and Fabrice Teroni's 2012 book *The Emotions* contains important discussions of the epistemic role and value of emotion. My 2013 book *Emotional Insight: The Epistemic Role of Emotional Experience* presents in greater detail some of the ideas in this chapter, especially those to do with the role of attention in emotional experience, and how this can help to generate understanding of value. *Emotions and Beliefs: How Feelings Influence Thoughts*, edited by Nico Frijda, Antony Manstead, and Sacha Bem (Cambridge University Press, 2000), is an interesting collection of research in psychology in the relation between emotions and beliefs; a good collection of philosophical research on the topic is *Epistemology and Emotions*, edited by Georg Brun, Ulvi Doguoglu, and Dominique Kuenzle (Ashgate, 2008). Like the Frijda volume, this is often rather difficult, but worth pursuing for some important insights about the relation between emotions and epistemic goods. Finally, Linda Zagzebski's *Virtues of the Mind* (Cambridge University Press, 1996) is a splendid work in epistemology, and has done much to explain the nature of, and revive interest in, intellectual virtues. If you want to know what (intellectual) virtues are, this is as good a place as any to begin.

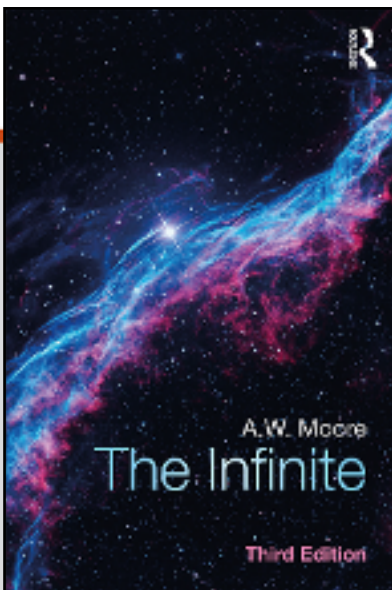


CHAPTER

5

# PARADOXES OF THE INFINITE

## INTRODUCTION



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# Introduction

## Paradoxes of the infinite

The infinite has always stirred the emotions of mankind more deeply than any other question; the infinite has stimulated and fertilized reason as few other ideas have; but also the infinite, more than any other notion, is in need of clarification.  
(David Hilbert)

The aim of this book is to arrive at an understanding of the infinite – via an understanding of how it has been understood by other thinkers in the west over the past two and a half millennia.

It would be inappropriate to try to begin with a crisp, substantive, uncontroversial definition of the infinite. There are two special reasons for this. First, one of the central issues concerning the infinite is whether it *can* be defined. Many have felt that it cannot; for if we try to define the infinite as that which is thus and so, we fall foul of the fact that being thus and so is already a way of being limited or conditioned. (It is as if the infinite cannot, by definition, be defined. This is one of the paradoxes that we shall be looking at later in this introduction.) Despite this, there have been many attempts throughout the history of thought about the infinite to define it, or at least to explain why it cannot be defined by those persuaded that it cannot. And these supply the second reason why it would be inappropriate, in a book where historical impartiality at the outset is crucial, to try to begin with a preferred definition: these attempts have revealed a striking lack of consensus. It is not just that different thinkers have focused on different aspects of the infinite. Again and again we find new accounts of the infinite being presented in the firm conviction that what had been handed down as orthodoxy was just wrong.

Two clusters of concepts nevertheless dominate, and much of the dialectic in the history of the topic has taken the form of oscillation between them. Within the first cluster we find: boundlessness; endlessness; unlimitedness; immeasurability; eternity; that which is such that, given any determinate part of it, there is always more to come; that which is greater than any assignable quantity. Within the second cluster we find: completeness; wholeness; unity; universality; absoluteness; perfection; self-sufficiency; autonomy. The concepts in the first cluster are more negative and convey a sense of potentiality. They are the concepts that

## 2 Introduction

might be expected to inform a more mathematical or logical discussion of the infinite. The concepts in the second cluster are more positive and convey a sense of actuality. They are the concepts that might be expected to inform a more metaphysical or theological discussion of the infinite. Let us label the concepts '*mathematical*' and '*metaphysical*' respectively.

It would be hyperbolic to say that there is no connection between the two clusters of concepts. An obvious link is the concept of being unconditioned. This could naturally be classified in either way, carrying overtones both of unlimiteness and of autonomy. Nevertheless the concepts are not obviously of a piece (which is why those philosophers who have seen the infinite in terms of one cluster have been able to accuse those who have seen it in terms of the other of being in error). There is even a hint of conflict. The concepts in the first cluster carry a sense of uncompleatability, those in the second of actual completion. There may not be any deep incompatibility here. (Think about time, as a whole: it seems to be complete, but not, at any point within it, completable.) But still, if we are to understand the infinite, particularly if we are to understand it through its history, then one thing we must try to do is address the puzzle of why there should be this curious polarization and what exactly the concepts have to do with one another.

The puzzle is exacerbated by the fact that what we have labelled the mathematical concepts, though they do inform the most recent formal mathematical accounts of the infinite, certainly do not do so by acting as its equivalents in the way that we might have expected. Once concepts like boundlessness, or endlessness, or being greater than any assignable quantity, have themselves been made precise in various (now) standard ways, they prove to be different, one from another and each indeed from the concept of infinity (in its own appropriately technical sense).<sup>1</sup> To take a simple example, the surface of the earth is not bounded, but nor is it infinite. Again, there are infinite sequences that have a bound, and there are infinite sequences that have an end (and there are some that have one but not the other); and there are infinite sets whose sizes are not only assignable quantities but smaller than other assignable quantities. Much of this is elucidated in the course of the book. It should already be clear, however, that if we are not to prejudice any issues and abrogate the very concerns and problems that are supposed to be animating this enquiry, then we must be content to start with raw, unarticulated intuitions.

The problem is that these themselves are riddled with paradoxes. I shall use this introduction to present a sample of these paradoxes. (Many more will crop up in the ensuing historical drama.) If the concept of the infinite is not ultimately to be dismissed as incoherent, then they represent the most serious threat that it faces, the abyss of absurdity from which it must be rescued. It is true that throughout the history of the topic there have been those who have looked upon the concept with suspicion, or incomprehension, or worse. But there have also proved to be continuing and irresistible pressures against eschewing it completely, felt most keenly, as often as not, by the same people. It is not a serious

option to react to the paradoxes that I am about to outline by simply jettisoning the concept of the infinite as one that we are well rid of.

These paradoxes fall into four groups: paradoxes of the infinitely small; paradoxes of the infinitely big; paradoxes of the one and the many; and paradoxes of thought about the infinite. The first two groups reflect an important distinction within the mathematically infinite between what Aristotle called the infinite by division and the infinite by addition<sup>2</sup>: a straight line, for example, is infinite by division if between any two points on it there is a third (so there is no limit to how small a segment of the line you can take); it is infinite by addition if beyond any two points on it there is a third (so there is no limit to how large a segment of the line you can take).

## 0.1 Paradoxes of the infinitely small

### (i) *The paradox of Achilles and the tortoise*

Suppose that Achilles, who runs twice as fast as his friend the tortoise, lets her start a certain distance ahead of him in a race. Then before he can overtake her, he must reach the point at which she starts, by which time she will have advanced half the distance initially separating them. Achilles must now make up this distance, but by the time he does so the tortoise will have advanced again. And so on *ad infinitum*. It seems that Achilles can never overtake the tortoise. On the other hand, given the speeds and distances involved, we can calculate precisely how long it will take him to do so from the start of the race.

Comment: This is perhaps the most celebrated and also one of the oldest of all paradoxes concerning the infinite. It is due to Zeno – if not in exactly this form. (None of Zeno’s original writings on the so-called paradoxes of motion has survived. And although the tortoise appears in nearly all accounts of this paradox, going back at least as far as Simplicius, she does not appear in the earliest surviving account, in Aristotle.<sup>3</sup>) This paradox will be placed in its historical context later in the book (see below, §1.3).

### (ii) *The paradox of the staccato run*

Suppose that Achilles runs for half a minute, then pauses for half a minute, then runs for a quarter of a minute, then pauses for a quarter of a minute, and so on *ad infinitum*. At the end of two minutes he will have stopped and started in this way infinitely many times. Yet there is something repugnant about admitting this possibility, even as a conceptual – let alone a physical – possibility. For example, suppose that each time he pauses he performs a task of some kind, there being no limit to how quickly he can do this. Then at the end of two minutes he will have performed infinitely many of these tasks. He might, say,

#### 4 Introduction

have written down the complete decimal expansion of  $\pi$  (3.141592 ...), for which he needs only a finite sheet of paper and the ability to write down digits that get smaller without limit, as Figure 0.1 testifies. We are loath to admit this as a conceptual possibility, yet we seem bound to do so.

Comment: This paradox also creates unease about what would otherwise be a very natural reaction to the first paradox: namely, to insist that there is nothing incoherent in the idea of Achilles' performing infinitely many tasks in a finite time (in particular, covering the infinitely many sub-distances between his starting point and the point at which he overtakes the tortoise).

#### (iii) The paradox of the gods

Suppose that Achilles wants to run straight from  $A$  to  $B$  but there are infinitely many gods who, unbeknown to one another, each have a reason to prevent him from doing so. The first god forms the following intention: if and when Achilles gets half way, to paralyse him. The second god forms the following intention: if and when Achilles gets a quarter of the way, to paralyse him. And so on *ad infinitum*. All the gods are able to carry out their intentions. Achilles cannot make any progress without violating the intention of at least one of them – indeed the intentions of infinitely many of them. Yet, if he is unable to move, it is not clear why; until he makes *some* progress, none of the gods will have actually paralysed him.

Comment: This paradox is essentially due to Benardete.<sup>4</sup>

#### (iv) The paradox of the divided stick

Suppose that an infinitely divisible stick is cut in half at some point in time, and that each half is in turn cut in half, half a minute later, and that each quarter is in turn cut in half, a quarter of a minute later than that, and so on *ad infinitum*. What will remain at the end of the minute? Infinitely many infinitesimally thin pieces? Do we so much as understand this?

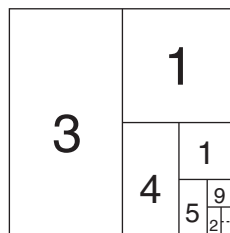


Figure 0.1



Comment: Does an infinitesimally thin piece have *any* width? If so, how come infinitely many of them do not make up an infinitely long stick? If not, how can (even) infinitely many of them make up a stick with any length at all? The paradoxes that arise from envisaging the infinite division of a body were noted and discussed by Aristotle (see below, §2.4).

## 0.2 Paradoxes of the infinitely big

We now turn to the second group of paradoxes. Consider Figure 0.2. Are there as many apples here as bananas? Or, if you like, does the set of apples have as many members – is it the same size – as the set of bananas? We can see that the answer is yes, because we can see that there are seven of each. But to see this we must count; and counting is itself an operation that presupposes such comparisons of size. To say that there are seven apples is to say that there are as many apples as there are positive whole numbers up to and including seven. (So to count the apples and the bananas is simply to bring a third set into the reckoning.)

We could, however, have answered the question from scratch, without recourse to counting – by pairing the apples and bananas off with one another, in such a way that each apple corresponds to a unique banana and each banana to a unique apple, as shown in Figure 0.3. For it to be possible to pair off the members of two sets with one another in this way seems to be what it is for the two sets to have as many members as each other. Applying this principle to the infinite, however, yields further paradoxes.

Before I proceed to these paradoxes I need to explain what I mean by a *natural number* and a *rational number*. (There are frequent references to these two kinds of numbers throughout the book.)

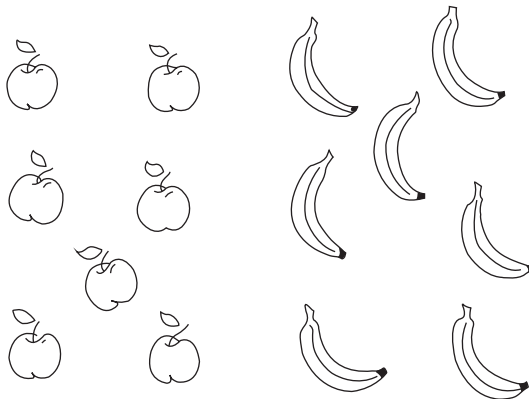


Figure 0.2

6 Introduction

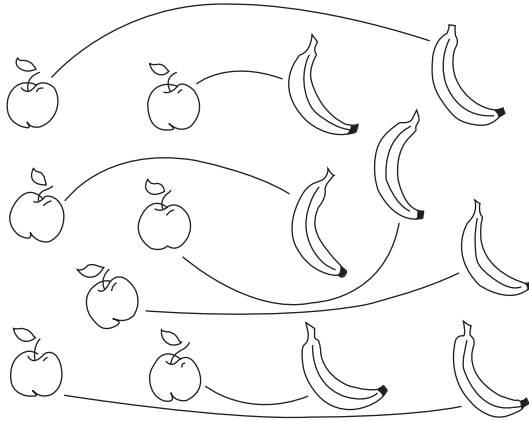


Figure 0.3

- (a) The *natural numbers* are the non-negative whole numbers  
0, 1, 2, ...
- (b) The *rational numbers* (or *rationals*) are the quotients, or ratios, of whole numbers, negative and non-negative. Thus the rationals are all the numbers of the form  $p/q$ , where  $p$  and  $q$  are whole numbers and  $q$  is not 0. Examples are:

$\frac{1}{2}$  (this is  $1/2$ ; it is also, for that matter,  $2/4$ ,  $3/6$ ,  $-2/-4$ , ...);

$1\frac{1}{2}$  (this is  $3/2$ );

2 (this is  $2/1$ ; it is also, of course, a natural number as well);

and

$-1\frac{1}{2}$  (this is  $-3/2$ ).

**(i) The paradox of the even numbers**

Figure 0.4 shows that we can pair off all the natural numbers with those that are even. If we apply the principle enunciated above, this shows that there are as many even numbers as natural numbers altogether. On the other hand it seems obvious that there are fewer (though we may be wary of saying that there are half as many).

Comment: Quite apart from this paradox our intuitions here are in a state of turmoil. For even if this pairing had not been brought to our attention, there would have been an urge to say that there are as many even numbers as natural numbers altogether; after all, there are infinitely many of each. (There is something highly counter-intuitive about the idea that one infinity can be greater than another.) It seems that however we describe the situation we shall be left feeling dissatisfied.

0	1	2	3	·	·	·	$n$	·	·	·
0	2	4	6	·	·	·	$2n$	·	·	·

Figure 0.4

**(ii) The paradox of the pairs**

Consider Figure 0.5, in which every possible pair of whole numbers occurs once. Starting at the centre with the pair  $\langle 0, 0 \rangle$  we can trace out a path as shown in Figure 0.6. Every pair eventually occurs on this path, and this is enough to show – again, counter-intuitively – that we can pair them all off with the natural numbers; for we can count as we go along.

Comment: Part of the force of this paradox, which is similar to a result established by Cantor, is that there are at least as many pairs as rationals. For each rational can be represented by a pair. (For example,  $\frac{1}{2}$  can be represented by the pair  $\langle 1, 2 \rangle$  and  $-1\frac{1}{2}$  by the pair  $\langle -3, 2 \rangle$ .) Yet it seems obvious that there are more rationals than natural numbers since the former include the latter and a lot more besides.

**(iii) The paradox of the two men in heaven and hell**

Suppose that one man has been in heaven and another in hell for all of past eternity, except that for one day in each year (say Christmas Day) they have swapped positions. Despite our intuition that one of them has spent much longer in heaven than the other, we can, in the same way, pair off the days that one of them has spent in heaven with the days that the other has spent there, and therefore indeed the days that each has spent in heaven with the days that he has spent in hell.

Comment: It is clear that many other variations on this theme could be devised, and such variations have long been familiar, as we shall see. This one derives from a suggestion made by Denyer.<sup>5</sup>

**(iv) The paradox of the hotel**

Suppose there is a hotel with infinitely many rooms, each occupied at a particular time. Then a newcomer can be accommodated without anybody having to move out; for if the person in the first room moves into the second, and the person in the second room moves into the third, and so on *ad infinitum*, this will release the first room for the newcomer. Indeed infinitely many newcomers can be accommodated without anybody having to move out; for if the person in the first room moves into the second, and

8 Introduction

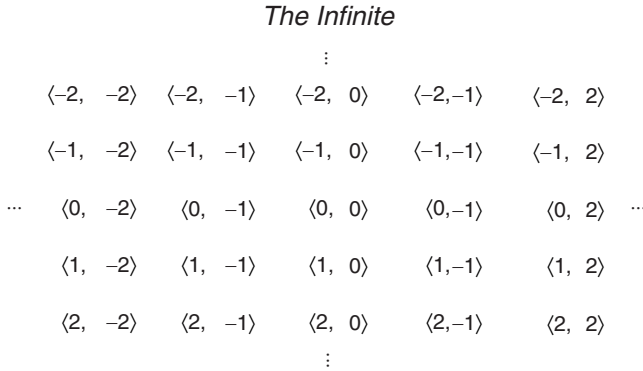


Figure 0.5

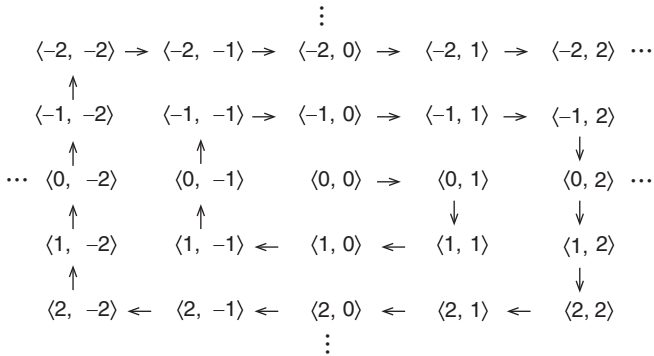


Figure 0.6

the person in the second room moves into the fourth, and the person in the third room moves into the sixth, and so on *ad infinitum*, this will release the infinitely many odd-numbered rooms. And if, when all the guests have settled into their new rooms, each is dismayed by how small a bar of soap has been left in the wash-basin, then they can systematically shunt bars of soap along the rooms to ensure that each has two bars instead, or indeed a hundred. All of this puts, to say the least, a strain on our intuitions.

Comment: Hilbert used to present this paradox in his lectures, though some of the embellishments are due to Benardete.<sup>6</sup> The hotel need only occupy a finite amount of space, incidentally. For if each successive floor is half the height of the one below it, then the entire hotel will be only twice the height of the ground floor. This does however raise the problem of what somebody would see who looked at the hotel from above with the roof prised off. (This point is also due to Benardete.<sup>7</sup>)

### 0.3 Paradoxes of the one and the many

These are paradoxes that pivot on the very idea of considering *one* collection of *many* things, the idea that lies at the heart of set theory and therefore, many would say, at the heart of mathematics – certainly at the heart of contemporary formal work on the infinite. The crispest of these paradoxes are technical paradoxes that arise within set theory, and they require stage-setting that will not be available until the relevant historical background has been supplied (see below, §§8.2, 8.4 and 10.1). But it is already possible to say something about them.

Let us return to the idea of a set. Cantor defined a set as follows:

By a ‘set’ we mean any gathering into a whole . . . of distinct perceptual or mental objects . . .

Again:

A set is a many which allows itself to be thought of as a one.<sup>8</sup>

One important consequence of the underlying intuition here is that a set is determined by its members. Typically the members are specified in one of two ways: by citing some condition that they, and they alone, satisfy; or by simple enumeration of them. Thus, for example, we might characterize a set as the set of months that have fewer than thirty-one days. Or we might characterize the very same set as the set whose members are February, April, June, September, and November, which we can write as follows:

{February, April, June, September, November}.

These are two characterizations of the same set, because a set is the set it is solely in virtue of which things belong to it, irrespective of how they have been specified.<sup>9</sup>

The idea of a set is basic and intuitive. This is borne out by the fact that Cantor’s definitions are hardly more fundamental than what they serve to define. It is therefore particularly alarming to discover that the idea is intimately associated with certain deep paradoxes. But it is, and they are in many respects the purest of the paradoxes of the infinite.

We can gain a feel for them simply by considering the question: are there any infinite sets? On the one hand we seem bound to say that there are. Take the natural numbers. These are well-defined mathematical entities, forming a totality about which we can make various generalizations. There can surely be no objection to our considering the set of them, and this set must surely be infinite. On the other hand it seems that for there to be infinitely many things of a given kind is precisely for them to *resist* being collected together in this way. Even the paradoxes of the infinitely big suggest this; for a set is something with a determinate size, but it is precisely when we think of the infinite as having a

determinate size that those paradoxes get a grip. Is not an infinite totality a many that is too *big* to count as a one – a many that is ineluctably such?

Although the (semi-technical) idea of a set helps to put the paradoxes of the one and the many into particularly sharp focus, such paradoxes are liable to arise whenever there is a question of trying to recognize unity in infinite diversity. Given the power of the mind to abstract and to unify, it will always look as if this must be possible. Yet at the same time, given the nature of the infinite, it will never look as if it *can* be. Here, perhaps, is an early clue as to why there should have arisen these two conceptions of the infinite, the metaphysical and the mathematical. For it may be that the metaphysical conception is a response to the first of these apparent demands and the mathematical conception a response to the second. (Hence the sense of conflict between them.) At any rate, the paradoxes of the one and the many, in their different guises, will prove to be a linchpin of the whole enquiry.

#### **0.4 Paradoxes of thought about the infinite**

We turn now to the final group of paradoxes. These are much less clearly delineated than those in the other three groups, but also more fundamental. At their root there is a kind of second-order paradox, parasitic on all the others so far considered. One radical solution to all of them would be to abandon the concept of the infinite as incoherent. (Without it none of them arises.) So they put collective pressure on us to do that. On the other hand we can feel equally strong pressure from elsewhere to retain the concept. It is true that reflection on the nature of space and time now seems less decisive than it might once have done, because, now that we have greater scientific insight, we are no longer sure that either space or time is infinitely big (infinite by addition) or infinitely divisible (infinite by division).<sup>10</sup> Still, it at least seems to make perfectly good sense, mathematically, to suppose that they are, even if it is false; and this is enough for the concept of the infinite to be coherent. Again, consider the natural numbers: whether or not they can be collected together into a single set, we surely want to be able to say that there are infinitely many of them. But perhaps the strongest pressure to retain the concept of the infinite comes from a rather nebulous, though powerful, sense of our own finitude. This is something that cuts deeper than our awareness that we are mortal and limited in size, constrained in various ways, and ignorant of so much (though it incorporates all of these). It is a sense of being cast into a world that is completely independent of us, most of which confronts us as something alien, something *other* than us, something that impinges on us from without and limits us. (I am not denying that there can be value in overcoming this sense. I shall return to this point at the very end of the book.<sup>11</sup>) This instils in us the idea of a contrast: the idea that the world as a whole – the universe – cannot, in its self-contained totality, be similarly limited by something beyond it, because it includes everything. It must be infinite. One

of the paradoxes of thought about the infinite, then, is that there are reasons both for and against admitting the concept of infinity.

A possible solution to this paradox would be to admit the concept of infinity, but to acknowledge (what the earlier paradoxes show) that we cannot do anything with it. That is, we cannot get our minds around the infinite, or discuss it, or define it, or come to know anything about it, or say anything coherent about it. For if we attempt to do any of these things, we automatically abrogate it – because of our own finitude – and become embroiled in contradiction. Any attempt to define the infinite, for example, is an attempt to bring it within our conceptual grasp, but, given our own limitations, we can only bring within our conceptual grasp what is itself suitably limited.

There is something very compelling about this line of thought. But it gives rise to a paradox of its own, perhaps the most serious of all. This paradox is that it seems impossible to reconcile such a line of thought with our having just pursued it. Consider: if we cannot come to know anything about the infinite, then, in particular, we cannot come to know that we cannot come to know anything about the infinite; if we cannot coherently say anything about the infinite, then, in particular, we cannot coherently say that we cannot coherently say anything about the infinite. So if the line of thought above is correct, then it seems that we cannot pursue it and assimilate its conclusion. Yet this is what we appear to have done. We appear to have grasped the infinite as that which is ungraspable. We appear to have recognized the infinite as that which is, by definition, beyond definition. This is the paradox that provides the main focus for this book. It seems to me that a proper reaction to it is a key to the whole enquiry.

So much for paradoxes of the infinite. I now want to say something about the shape of this book. It is divided into two parts.<sup>12</sup> It is in Part I that I outline the history of thought about the infinite.<sup>13</sup> In Part II I try to address the important issues that arise along the way, including those that have been brought to light in this introduction.

We shall see in Part I that almost all the great philosophers had something important to say about the infinite, and in many cases it was of deep concern to them. Much of what they said was guided by a desire to avoid one or another of the paradoxes outlined above. None of those paradoxes will be very far from the surface at any point in what follows.

It will not have escaped notice that the paradoxes lean to the mathematical side of the topic. And indeed many of those who feature in the history of the topic do so because of the importance of their mathematical work, consisting often of brilliant technical innovations that had repercussions in the very foundations of mathematics. Nevertheless, this book is concerned with all aspects of the infinite, mathematical and non-mathematical alike (as my remarks about the centrality of the fourth kind of paradox ought to have suggested; for paradoxes of thought about the infinite are certainly not – exclusively – mathematical). Metaphysical concepts are to the fore in the book alongside mathematical concepts. For one thing, one of the main tasks that I have said needs to be undertaken is to try to give an account of how these relate to one

another. Insofar as there is an apparently disproportionate emphasis on mathematical issues, it is simply because I take them to provide a particularly clear model of the broader issues. The source of our difficulties with assimilating the mathematically infinite is after all the same as the source of our difficulties with assimilating the infinite more generally: our own finitude.

Our own finitude must be prevalent in any enquiry we conduct into the infinite – if only because, given the paradoxes of thought about the infinite (however they are to be solved), it is clear that we are better able to confront the infinite through analogies and contrasts than head-on. But this is also why the main focus of the book is provided by the last of those paradoxes. For that paradox is itself primarily a matter of the difficulties we have, as finite beings, in trying to assimilate the infinite. What we are seeking then is nothing less than an account of our own finitude, and of our relation to the infinite.

## Notes

- 1 Cf. J. Thomson (1967).
- 2 *Physics*, III, 4, 204a in Aristotle (1984).
- 3 *Physics*, VI, 9 in Aristotle (1984).
- 4 Benardete (1964), pp. 259–60.
- 5 See Sorabji (1983), p. 218.
- 6 Benardete (1964), pp. 113ff.
- 7 Benardete (1964), ch. VI, in the discussion of the ‘serrated continuum’.
- 8 Respectively: Cantor (1932), p. 282 (also Cantor 1955, p. 85); and Cantor (1932), p. 204.
- 9 Cf. Enderton (1977), pp. 1–2.
- 10 See below, §9.2; and see Chapter 9, notes 6 and 7 for references.
- 11 This is a reference, in the first edition, to material in Chapter 15, although, as it happens, the issues are pursued in the two new chapters at the end of the third edition too.
- 12 This remark and its amplification in the rest of the paragraph survive from the first edition. For an account of Part III, see the preface to the third edition.
- 13 Russell (1946) and (1978) provide helpful background, and I am indebted at various points to both.