

Chapter 2

The Formal Home of Identity: Mathematics and Logic

Introduction

There are good reasons for beginning a cross-disciplinary discussion of identity within the familiar but abstract realm of mathematics (or, more precisely, mathematical logic), chief among which is that mathematical logic supplies a succinct – if tautological – definition of identity. Granted, such a starting point may also deter some readers from reading on, particularly those who have managed skillfully to avoid anything overtly mathematical since their last compulsory maths class (and who probably never studied logic in the first place), or those who could not care less about the formal origins of a concept which, for them, comes to life only within such real-world contexts as social and political studies. But here I issue a plea for patience and understanding. After all, it is a core claim of this book that the concept of identity is used equivocally across disciplinary contexts and, moreover, that such equivocation *matters*. So it is surely appropriate to be as clear as possible, right from the start, about *which* concept we are talking about here. What, in its simplest and most unequivocal formulation, is identity?

Within the realm of integers and simple arithmetic operations like addition, the statement “ $2 + 3 = 5$ ” could hardly be simpler. But assuming that the truth of this statement reflects some-thing in the “real” world of numbers, what is this thing? Try this: take the number 2 (or any two objects), add it to the number 3 (any three objects), and the result is 5 (five objects). Fine, but this does not define identity. It merely reveals an interesting – and, as we shall see, quite misleading – grammatical quirk about English, namely, that the word “is” sometimes means “is *identical* to”. How about this: the number $2 + 3$ and the number 5 are not two numbers but one – and that’s what we mean by “identity”. But surely our ability to distinguish between one and two objects *presupposes* that we already understand what identity is, and so it cannot serve as a definition of it.

One problem, then, in finding a good definition of “identity” is that it seems so basic, so conceptually *primitive*, that it is already embedded in any definition we

might come up with. After all, think about what a typical statement of definition looks like: “A table *is* any object with a flat surface designed to prevent objects placed on it from falling off”. Again, what does “is” mean here, if not “identity”? Such a consideration led the German logician Gottlob Frege to declare that identity is, indeed, indefinable (Dummett 1973, p. 542).

Still, mathematical logic has not conceded this lack of definability without a struggle. Before outlining a couple of alternative attempts to, at least, shed some light on the concept of identity, let us agree to say that identity is an example of a *binary or two-place relation*, other examples of which are indicated by such expressions as “bites”, “hates”, “is larger than”, “is a compatriot of”, etc. Simply put, a two place relational expression requires the addition of two terms, each standing for an appropriate object, in order to produce a complete sentence, thus: “Funnel-web spider bites baby”, “She hates her father”, “An Aussie rules footy field is larger than a soccer field”,... And, at least, grammatically, we may add “The Morning Star is identical to the Evening Star”; “The number obtained by adding 2 and 3 is identical to the number 5”. Notice that these uses of “relation” are more general than the usual familial relations (mother of, cousin of, etc.); notice, also, the difference between a relation and the term or expression we use to refer to or express it. The relationship of relative size is expressed by the term “is larger than”, etc.

The concept of identity satisfies what I have elsewhere (see Splitter 2000, 2003) called “The 3Cs” (Common, Central, Contestable): a familiar (*common*) idea, *central* to our very understanding of just about everything, yet (to some of us, at least), puzzling and unclear (*contestable*). Consider: when interpreting a normal relational term, we just have to picture the relation referred to “in action” so to speak. *Biting* is a relation between some (nasty) creatures and other things, whereby the former sinks its teeth or fangs into the latter; *being larger than* is a spatial relation which allows us to rank objects in terms of their (relative) size, and so on. And identity? Well, it is that relation that holds between two things **a** and **b** when they are both the same (i.e. identical!), that is, when **a=b**. But of course, if the identity statement “**a=b**” is true, then there are not two things, there is only *one* thing, i.e. **a** (or **b**, it matters not). And what can the relation of identity be saying about this one thing except that it is what it is, i.e. **a=a**! But mathematical logic tells us – as if we didn’t already know – that there is a huge difference in meaning between “**a=b**” and “**a=a**”: the former may well be interesting, even surprising, whereas the latter is a *tautology*, a statement of the utmost triviality.

This semantic puzzle has commanded the attention of philosophers for centuries. Frege (1997) used it to support his famous distinction between the sense (*Sinn*) of an expression and its reference (*Bedeutung*) – i.e. what the expression stands for. For an expression of the form “**a=b**” to be significant and non-trivial, it is not enough to refer to the references of the terms involved (i.e. **a** and **b**) because there is only one object to be referred to. So the relevant difference must lie in the *sense* (roughly: the meaning) of the terms in question. And intuitively, it seems reasonable to assert that the sense of the term or phrase “The Morning Star” is quite different from that of “The Evening Star” (even though the Morning Star is actually identical with the Evening Star). But Frege’s semantic theory remains contentious and is rejected by

those who cannot countenance a third domain (senses, or meanings) located somewhere between the domain of language and that of the world to which the language refers.

Extending Identity into the World (Just) Beyond Mathematics and Logic: Indiscernibility, Equivalence, Types and Tokens

It will be useful, at this point, to add to our somewhat meager fund of examples, in case it be thought that the identity relation – and, in turn, the puzzles it generates – applies solely to mathematics and a few esoteric scenarios beloved of philosophers. Consider the following:

1. The man in the dock is the same man as (is identical to, or just *is*) the man I saw shoot the victim
2. That pen you are holding is (identical to) my pen (so give it back!)
3. I catch the same train every morning
4. (Parent to child) You can't wear that (the same) shirt 3 days in a row
5. (Attendee at a very expensive social event) Oh no! I paid a fortune for this jacket and s/he is wearing the very same one
6. Take a look at this old school photo; see if you can find (identify) *me*!

I take it that (1) these examples describe reasonably familiar and (to varying degrees) non-trivial situations or events; and (2) they are all identity claims of some sort or another. There is something interesting to be said about each of them but for now, to avoid straying too far into the subject matter of my later chapters, I just note that the statements listed can all be expressed in the logical form of the Predicate Calculus. Accordingly, such claims have a place in this chapter whose main concern is how we are to understand identity within the domain of mathematical logic. To cite just one example, #1 could be expressed as follows:

$$(\forall x)(\forall y)[((\textit{The man in the dock})x \ \& \ (\textit{The man I saw shoot the victim})y) \rightarrow x = y].$$

Back to the task of attempting to define or, at least, characterize, the relation of identity in a way which is not entirely trivial. Logic textbooks sometimes begin with the assertion that identity is a relation each thing bears to itself and to no other thing (see Deutsch 2007 referring to Zalabardo 2000; and Noonan and Curtis 2014; both in the *Stanford Encyclopedia of Philosophy*). But once again it seems that the very concept we are trying to characterize has been smuggled in to the description, rendering the latter circular, or worse (what does “other” mean here if not an object not identical to!). Deutsch (2007) offers the following pair of statements as representing what he calls the “standard account of identity”. Simplifying his formal notation, the identity relation satisfies both the Principle of Reflexivity (R: a thing is related to itself; i.e. in this case, **a=a**), and what is often referred to as Leibniz’s Law

(also known as the Principle of the Indiscernibility of Identicals: if **a** is identical to **b**, then any property or characteristic of **a** is also a property or characteristic of **b**). Leibniz's Law may also be expressed, conversely, as asserting that if **a** and **b** differ in any respect at all, then they are not identical. What can we say about such a characterization? Several things, actually, some of which will prove to be quite relevant later on.

1. Reflexivity has an air of triviality about it but the class of relations which are reflexive is by no means trivial. For example, all relations expressing sameness or similarity are reflexive, including such relations as "same color as", "same height as", "same nationality as", etc., but also relations like congruence and isomorphism in mathematics...
2. Reflexivity is one of three properties which, taken together, characterize what are termed "equivalence relations".¹ The other two properties are as follows:
 - (a) Symmetry: If **a** is related to **b**, then **b** is related to **a** (examples: "same color/height/... as", "near to", "far from", "cousin of");
 - (b) Transitivity: If **a** is related to **b** and **b** is related to **c**, then **a** is related (in the same way) to **c** (examples: "same color/height/religion/nationality...as, "smaller/larger/richer/poorer/...than, "brother of", "east of").²

Equivalence relations lead to the creation of *equivalence classes*. Consider the relation specified by the term " is the same color as ", where the blanks are to be filled in with terms that stand for such everyday objects as tables, chairs, houses, human bodies, and so on (i.e. things that are usually colored). Then " is the same color as " is an equivalence relation because it is reflexive, symmetric and transitive. To keep things simple, let us assume:

- (i) That all colored objects constitute one large collection or class of objects;
- (ii) That each member of the "class of colored objects" has exactly one color (ignoring all those striped, spotted and other multi-colored objects out there), and,
- (iii) That we have at our disposal a complete list of colors (it could be quite general, comprising the major colors of red, yellow, blue, green, brown, etc., or it could be much more detailed comprising, in addition, lighter and darker shades of these colors, plus such variations as indigo, violet, light cyan, dark magenta, etc.).

Then the relational term 'same color as' "carves up" the class of colored objects into a number of discrete sub-classes, one for each color. These sub-classes are the equivalence classes for the equivalence relation "same color as". Each equivalence class contains precisely those objects that are of the same color.

¹Noonan and Curtis (2014) offer an alternative – but still circular – characterisation of identity, namely it is the "smallest equivalence relation".

²As can be easily shown, Reflexivity and Leibniz's Law, taken together, entail symmetry and transitivity, which explains why the latter do not need to be formally included in the above characterization of identity.

Notice that each colored object belongs to exactly one equivalence class – no more and no less. So the class of colored objects is *partitioned* (to use the appropriate mathematical term) into a series of non-overlapping sub-classes.

Two more points are worth noting. First, we can provide a formal definition of the concept of *color* – albeit a rather weak one – by reference to these partitions. Someone wanting to know what color light cyan is would be directed to that particular sub-class which contains precisely those objects which are light cyan in color, and so on. No doubt, science can give us more precise definitions in terms of wave lengths, but pointing out the relevant sub-class is not a bad way to proceed, especially for those who prefer to define things in terms of what they see (i.e. *ostensively*), rather than what they are told. Secondly, if our only interest were in the colors, not the colored objects, we could define a new collection or class at one level of abstraction beyond the original class of colored objects, viz. the class of *colors*. Generally speaking we could do the same for any equivalence relation, that is, abstract from a collection of objects that is *partitioned* by this relation to form a new collection, which consists in the partitions themselves. To anticipate a later topic, if a nation is constituted simply by the totality of its citizens, then the equivalence relation “same nationality as” could be taken to constitute the (more abstract) class of *nations* by partitioning the class of persons.

3. Leibniz’s Law seems reasonably intuitive (if **a** and **b** are genuinely identical, then there is only one object there to talk about), and is actually part of the foundation of basic algebra, albeit in a slightly different form, namely: if **a** and **b** are identical (**a=b**), then whatever operation you perform on one can, indeed must, be performed on the other (for example, *adding 5 to both sides*, to solve an equation, etc.). Still, there are some superficially contrary cases. To mention a couple, look again at the examples of identity statements offered above.
 - (a) Concerning #1, suppose the man in the dock is indeed the very same man I saw shoot the victim, but suppose that I do not know this. Then I may well believe that the man in the dock is innocent and should be released but that the man I saw shoot the victim is guilty and should be imprisoned. But Leibniz’s Law sanctions substitution here, which appears to yield the following absurdity: “I believe that one and the same man is both innocent and guilty.”
 - (b) Concerning #6, the 8 year old in the photo was cherubic-looking but extremely naughty, whereas I am wrinkled and haggard but a model citizen. It seems that “he” and I differ quite considerably, although we are, apparently, identical (the very same person or human being).

Some skeptics may regard such cases as sufficient reason for questioning, even rejecting, the concept of identity *per se*. But on more considered reflection, it seems that it is not identity that causes the problem here; rather, it is confusion about the person we claim to be referring to in each case. To take (b) first, we may insist on the identity statement being correct, but note that the properties or features in question – a certain appearance, a certain disposition, etc. – apply *at*

particular times. On this interpretation, *I am* (i.e. was), indeed, cherubic-looking 50 years ago, and that naughty child in 1958 *is* (i.e. will become) a model citizen 50 years later. There is still only one person involved and he does share all the same properties, as long as we understand that such properties change through time. In other words, I have changed over time, but – and this is the crucial point – it is still *me* who has changed. Who else could it be?

The problem raised by (a) has led some commentators to adapt Frege's insight behind his distinction between *Sinn* and *Bedeutung*, without actually embracing the distinction itself.³ It is plausible to assert that in certain semantic contexts, terms such as proper names and descriptions *do not have their familiar or standard reference*. Such contexts were called “oblique” by Frege (or his translators) and “opaque” by later philosophers. To continue with the above illustration, the linguistic context of belief – as in “I believe that the man in the dock is innocent” – is *opaque* in that the “object” of belief – that which I believe – is not what it seems. It may seem that the man in the dock – that very individual – is part of the object of my belief, since my belief is, apparently, *about* him. But it is not. The object of my belief, if it is anything at all, is not something in the ordinary world of objects, which explains why Leibniz's Law does not apply to it (Leibniz's Law being a principle that applies to real world objects **a** and **b**, when **a** = **b**). But what, then, *is* the object of my belief, and where does it reside? There is a can of philosophical worms just begging to be opened here, and I invite anyone with a taste for *Vermes* to go right ahead. However, I shall resist the temptation for now (but see Chap. 5), except to point out that several candidates have been proposed as the “objects” of belief, ranging from propositions (abstractions from categorical statements) to mental entities of one kind or another. It seems that opacity is generated, not just in cases of belief, but in a large number of cases which have to do with our mental states, including desires, intentions, hopes, fears, and so on. I may yearn to eat that apple on the bench yet loathe the very idea of eating the large worm that I spotted earlier, at least before my realization that the one has taken up residence inside the other. But strict adherence to Leibniz's Law entails that I do, indeed, yearn for the worm as well. An even more obvious locution suggests, however, that mentality does not tell the whole story: if LJS is typing these words, then the eldest son of Jean and Leon Splitter is doing so (by a straightforward application of Leibniz's Law); but if I *utter the words* “LJS is typing these words”, I am most decidedly *not* uttering the words “The eldest son of Jean and Leon Splitter is typing these words”. Utterances, in their most literal form, allow for no substitution whatsoever, which indicates that whatever is being uttered is not an object in the normal sense.

4. Leibniz's Law, or the Principle of the Indiscernibility of Identicals, can be turned around to become the (distinct) Principle of the Identity of Indiscernibles, an even more troublesome claim which is open to several interpretations. Informally, the Principle of the Identity of Indiscernibles asserts that if objects **a** and **b** share

³For example, Dummett (1973).

all their properties or characteristics, then they are identical.⁴ As some commentators have pointed out, when it comes to considering ordinary medium-sized objects (i.e. those things which we can perceive under normal circumstances), the Principle of the Identity of Indiscernibles seems reasonable from a practical or empirical perspective. Many years ago, I had an interesting discussion with some kindergarten students about something closely related to it. I placed two chairs at the front of the room and asked the students if the chairs were “the same”. The ensuing conversation went something like this:

Child A: No, they are not the same; that one is scratched, see!

Teacher (LJS): OK, so let’s use our imaginations and imagine that we put a scratch on the second chair, which is exactly the same as the scratch on the first chair.

Child B: But that chair is more wobbly.

LJS: OK,... [I leave the reader to follow this line of thought through to the point where, at least in our imaginations, the two chairs are now indistinguishable, i.e. *indiscernible*]

LJS: So, now, are the chairs the same?

[General signs and nods of assent except for one child...]

Child C: They are *still* not the same, because this one is *here* [pointing] and that one is *there*!

Notice that the distinction revealed in this snippet of dialogue echoes the difference between examples 4 and 5 given at the beginning of this section. We may say that the sameness indicated by #4 is numerical (literally, “token”) identity, whereas that indicated by #5 is qualitative (“kind” or “type”) identity, and that once this distinction is acknowledged, we may readily agree that we often identify objects as being numerically distinct, but of the same type. (Strictly speaking, the complainant in #5 should have said “...s/he is wearing a numerically distinct shirt of the same kind or type”). Actually, the children were adhering to an even tighter standard of qualitative sameness: it was not enough for them that the two chairs were (of) the same type or kind (same manufacturer, same design, same size, same color, etc.); they insisted that the chairs match each other with respect to every (observable) characteristic, i.e. “warts and all”.

But how sharp is the distinction between numerical and qualitative sameness? Suppose a particularly precocious kindergartener (PPK) were to continue the dialogue, thus:

⁴See Forrest (2010); equivalently, but somewhat more intuitively, if objects are not identical, then there is at least one property or characteristic by which they differ. Notice that combining Leibniz’s Law with the Principle of the Identity of Indiscernibles serves to underscore the difference between numerical (quantitative) and qualitative identity. If object **a** is numerically identical to object **b**, then **a** and **b** share all their properties and qualities at all times of their existence. This accommodates the everyday phenomenon of **a** changing (many of) its properties (typically, for physical objects, over time) as long as it be allowed that **b** must also change in precisely the same manner. Qualitative identity, by contrast, draws attention to properties that distinct objects have in common.

PPK: But that just means that we have not yet completed our task of making the chairs (qualitatively) the same, since “being in this particular place/space” is, itself, a quality. Once we eliminate this qualitative difference, then surely the chairs will, indeed, be the very same.⁵

True enough, except that now we no longer have two chairs at all, so it is far from clear that we have adhered to the original task of finding a counter-example to the Principle of the Identity of Indiscernibles, by way of making the two chairs the same in every respect. Some philosophers have speculated over the conceptual possibility of having two spheres located symmetrically such that they really did share all their qualities, including their (relative) position in space and time. However, I shall not explore this idea any further here. I am more interested in making sense of the assumption – which lies behind even hypothesizing the Principle of the Identity of Indiscernibles – that a particular object could be uniquely characterized – *defined*, we might say – by the totality of its properties or attributes.⁶ This assumption brushes over a fundamental syntactic and semantic distinction: that between an object or thing which *has* properties, and the properties themselves which, properly speaking, must always and only be considered as being *of* something else. If I am holding an orange, I am holding an object which is (roughly) round, orange in color, sweet-tasting, rich in vitamin C, and so on. In picking out, *referring to or identifying* that object, I am doing more than referring to a collection or bundle of properties (roundness, orange-ness, sweetness, etc.). Those properties, taken singly or together, somehow fail to capture the very *thing-ness or object-ness* of the orange itself. But now the question arises: “What or where is this object-ness if it is not in the properties of the object?” Could we, perhaps, locate it by stripping away – conceptually at least – *all* these properties, so that what is left must be the object itself? Two images come to mind here: an onion and a piece of fruit with a core or nut inside. Unfortunately neither is of much help: when we peel the onion, thereby removing its “outer layers”, we end up with nothing at all! And if we consider an apple and think of the apple core as the desired “inner” object, freed of its “outer” properties, then our PPK from the earlier dialogue will just laugh and say: “But the core still has such properties as a certain shape, color, texture, etc.... so you have not located the real – the *essential* (as some philosophers have called it) – thing yet”. Fair enough, we reply, so we need to delve inside the apple core to find the real core – it will, at the very least, have to be *much* smaller. At this point, a scientist (fruitologist?) may offer to assist: “What you are searching for, my ignorant friends, is that from which this particular apple sprung; we used to think it was a seed, but we now know that there is a genetic story to be told here, one which links your apple to its ancestral apple tree. The genes of this apple constitute the real core or essence of the

⁵Is spatio-temporal positioning a form of qualitative determination of the objects positioned? This question, in various forms, has a venerable pedigree in the history of philosophy, going back to Aristotle and including Hume and Kant. As the book proceeds, I shall follow Wiggins’ (2001) own preference for characterizing each determinate object as a *this-such*, where “this” pins down, in space and time, the object that is identified as a “such (and such)” kind of thing.

⁶See reference to the German philosopher Ludwig Wittgenstein, in Wiggins (2001, p. 63).

apple". Well, I doubt that our scientist would add this last sentence, and for good reason: for even genes are not things without properties (albeit unobservable properties) and so the conceptual or semantic core for which we are searching remains elusive.

The idea that there is a uniquely defined object or *thing* which constitutes the essence of those ordinary objects we perceive around us – whether as the totality of their properties or the elusive thing *behind* all those properties – has been called *haecceity*, i.e. the basic or core *this-ness* that every object possesses. As unattractive as both the term and its connotations may be, I shall need to come back to them later (see especially Chaps. 3 and 7), because something akin to them (and/or the Principle of the Identity of Indiscernibles) may be lurking behind recent debates in *Identity Politics*. Common to these debates is the idea that our very identities are defined, somehow, by our qualities – in particular, by those qualities which connect us to such larger entities (which I call "*supra-persons*") as nations, religions, cultures, sexualities, tribes, traditions and the like. As we shall see, this idea commits the logical fallacy of *equivocation*, whereby the truth of a particular claim relies on an ambiguous term or concept – "identity" in this case – shifting, unannounced as it were, from one meaning to another (as in "I am going to the bank because I need to withdraw some money, so I need to be careful not to fall in the river").⁷ In this case, the term "identity" is the culprit: our literal, or *numerical*, identities are taken to be determined by one or more of those qualities that characterize our *qualitative* identities.

Do the kinds of philosophical or conceptual identity-related puzzles that I have raised cause any problems in our everyday lives? Rarely, it seems. One potential area of ambiguity arises in connection with *counting*, because counting objects presupposes an understanding of the kind or type of object under consideration. Counting the number of *objects* (or things) in a room may seem fairly straightforward, but the lack of any *identity conditions* associated with the concept of an object *per se* means that, strictly speaking, we could not even *begin* the task, let alone complete it. Does the telephone on my desk count as one object (it is certainly one phone)? How about the cord connecting the hand piece to the main console, or the display screen, or the key pad, etc.? Are these all separate objects (for counting purposes) or are they all subsumed under *phone* simply because they are physically attached to it? But my arm is now leaning on my desk; does it follow that I should count the desk+my arm as one object? If you find such examples unrealistic – in the sense of being of interest only to philosophers – then how about this? Try counting the number of books on a book shelf? Normally we proceed copy by copy, but precisely how we do this may depend on our interests. Granted, the removalist counts in this manner because he needs to determine how much space will be required to ship the books. But how about a librarian, book-seller or someone seeking to make

⁷The online posting on this subject from one Philosophy Department includes the following example, immortalized in a famous *Monty Python* sketch in which a person seeking to "buy" an argument gets more than he bargained for: "Sure philosophy helps you argue better, but do we really need to encourage people to argue? There's enough hostility in this world". (<http://www.txstate.edu/philosophy/resources/fallacy-definitions/Equivocation.html>)

an academic appointment based on the number of publications attained by the applicant? In these cases, twenty copies of the same text still only count as one.

In a lovely whimsical story called *The Doll Hospital*, written by my late colleague Ann Margaret Sharp (Sharp and Splitter 2000), the “doctor” at the doll hospital offers to fix Jesse’s doll Roller which (who?) had lost its head as the result of a tricycle accident (Roller was in the carry-basket; she was not actually doing the pedaling). “Don’t worry” says the doctor to a distressed Jesse; “We’ll make Roller as good as new; we’ll just get her a new head.” In response, Jesse can do nothing except stand there gaping in horror. Her father, in a vain attempt at reconciliation, insists that “the new head will be exactly the same as the old one; you won’t be able to tell the difference”, but this comment succeeds only in aggravating Jesse’s emotional state. Still, the doctor is as good as his word, and a few days later, Roller(?) is back home with Jesse. Jesse, after careful consideration, places a chair next to her chest of drawers, climbs up and places Roller on the very top shelf. The final paragraph of the story is as follows: “Days come and go. My doll is still up on the shelf. I can see her up there. But I’ve never taken her down since the day I brought her home from the doll hospital.” The reader is left with many questions about the significance of Jesse’s actions, not least in regard to her (changed?) understanding of just what a doll really is.

Shifting gears somewhat, consider an earlier example: “I catch the same train every morning.” What I find puzzling about such a familiar scenario is precisely that we ordinarily do *not* find it puzzling or ambiguous at all, even though the least reflection reveals that its exact meaning is far from clear. Since I physically board and sit in the train, it must itself be a physical object; it is, in fact, oblong in shape, about 3 m in width and height, and variable in length, usually comprising a number of like objects joined together, at least one of which has an engine which allows the train to be driven. But in so far as this description characterizes the train I took this morning, it was almost certainly *not* the same train as the one I took yesterday. Nor can the usual abstraction to the *type* of train help us here, for what is the type in question, other than that which characterizes just about *all* trains? Notice that here, as earlier, the interests of those who make the identity claim in the first place need to be considered. A child who has not yet lost interest in wondering about mundane things may well point out to her mother that “This is not the same train as the one we were on yesterday; look, this carriage has 40 seats and they are made of metal, but yesterday the carriage had only 25 seats and they were soft and comfortable.” But as the harried commuter in our story, I have little interest in such matters. All I care about (apart from getting a seat, whether hard or soft) are the *departure and subsequent arrival times* of whatever physical contraption turns up, and *that* involves an even greater degree of abstraction. In short, the sameness of the train in question reduces, strictly speaking, to sameness of *schedule*. But now my original identity claim looks decidedly shaky: the sameness in question refers to a particular time of day, but, to repeat, the thing I actually board and ride on is not a time, but a physical object as per the description offered above. All things considered, it is a wonder that I make it to work at all! And yet, I do make it (almost) every day!

If there is a moral here, it may seem somewhat self-destructive; something like: “If you want to succeed in such mundane tasks as commuting to work, don’t think about it too much.” In my own defense, however, I suggest that the kind of conceptual puzzle which might, but does not actually, bother us in the everyday practice of commuting, does generate real problems in such contexts as classifying persons as citizens and linking citizenship to nationality (thereby defining persons, at least in part, in terms of their nationality). If my (personal) identity derives from my citizenship – or, indeed, from any such collectivist notion, taken in isolation or in combination (ethnicity, culture, religion, ...), as the train’s identity derives from its place in a timetable (at least from the commuter’s point of view), then it may seem that my own physical, intellectual and moral personhood becomes as immaterial in the broader social scheme of things as the number and composition of the seats in a train carriage are in the commuter’s scheme. This is an issue to which I shall return.

The Logic of “Is”

Before ending the chapter, I need to clarify some semantic or logical points which are easy to miss when using languages, like English, which employ the term “is” (or “are”, “was”, etc.) to express any of (at least) three ideas⁸:

- (i) The “is/are” of *predication* (also called “copula”): when a property (more precisely, a predicate, which is a linguistic term) is attached to a subject (term), to form a complete sentence or thought, as in “Splitter is wise”, “Splitter is a great scholar”, etc. (for our purposes, the truth of the statements in question is irrelevant!);
- (ii) The “is” of *existence*: as in “In the actual world, Mt Everest *is*, but Mt Doom *is not*; this idea is difficult to express in formal terms because the *existential quantifier* is not, itself, a predicate – at least, not what is called a “first-order” predicate which we use to describe ordinary objects (intuitively, as David Hume realized, existence is not a property of things), but we could say, at least, that the existence of Mt Everest is implicit in the simple statement “Mt Everest is 29,000 ft high”); conversely, there is no true statement of the form “Mt Doom is x feet high”, assuming that non-existent entities have no genuine properties;
- (iii) The “is” of *identity*: as in “That fellow over there is Laurance Splitter”, “Nine times thirteen is one hundred and seventeen”, “The inventor of bifocals is (or was) the first Postmaster General of the United States”, etc.

⁸The ideas and distinctions referred to in this section were discussed somewhat more elegantly – but also more cryptically – by the logician W. V. Quine in his landmark 1960 work *Word and Object* (1960, pp. 114–118)

Both conceptually and within the formal system referred to, these interpretations of “is” are mutually *irreducible*. In particular, this simple but powerful system provides no support for the thesis of the *Identity of Indiscernibles*, discussed above; nor for a version of it which I discuss below when looking at issues of identity in socio-cultural contexts (this version, as noted, states that a person’s “identity” emerges from her involvement, whether voluntary or not, in the various groups, associations and collectives that are part and parcel of normal life). The point to emphasize here is that no amount of predication *per se* constitutes true or literal identity.

Conversely, to assign a property or characteristic to an object – which is what the act of predication achieves – is *not* to assert a relationship of identity between that object and some other object (e.g. in the examples above, between Splitter and a wise person, or a great scholar). Predicate logic, as developed by Gottlob Frege, Bertrand Russell *et al.* requires a semantics which assigns entities, as referents, to *subject* but not *predicate* terms; i.e., in the above examples, to “Splitter” (whose referent is the person typing these words), but not to any of the terms “wise”, “is wise”, “great scholar”, “a great scholar” or even “wisdom”. Part of the issue here is an ancient one about the difference between first-level *particulars* (such as me) and higher-level *universals* (such as the quality, ideal or Platonic *form* of wisdom, etc.). In ordinary predicate logic, independently of any argument in favor of accepting universals into our ontology, they are simply not needed semantically. Indeed, it is difficult to see how two such disparate entities as the particular object which I am and the abstract universal *wisdom* could “fit” together in order to form a meaningful assertion or thought, as expressed by the sentence “Splitter is wise”. It is as though the copula, “is” could function as *glue* here, but such a metaphor is hardly illuminating (it is more like trying to fit a peg into another peg, rather than into the hole that is made for it). Within the semantics of predicate logic, the sentence in question may be understood simply as expressing the thought/assertion that *Splitter is wise*. We need just one entity in order to understand this, and in order to determine the truth of the statement, we need to determine whether or not that entity is wise.

The semantic question of how to interpret simple statements of predication is different from that of whether or not to accept universals into our ontology. P. F. Strawson (1959), on whose work I shall draw later in this book, held staunchly to the view that there are particulars *and* universals in the world, but this view did not thereby commit him to reject the most common way of interpreting predicate logic. We may refer to the quality of wisdom (indeed this sentence does so!), while accepting that there is no reference to that quality made by someone who utters the sentence “Splitter is wise”.

The distinction between predication and identity may be summarized as follows. Interpreting identity statements of the generic form “**a=b**” requires two independent acts of reference (or *identification*): one to **a** and one to **b**, which follows from the notion that identity itself is a two-place relation. Predication, on the other hand, involves just one act of identification, as explained above. Now this may seem unremarkable in the case of such examples as those cited (“Splitter is wise”, etc.) – although even simple predication entails a weak form of identity in the sense that if Splitter is wise then there is a particular wise person with whom Splitter is

identical – but consider something that looks more like a statement of identity, e.g. “Splitter is the wisest person in the room”. Does the tiny word “is” play the role of identity or predication here? The answer may depend on how many acts of reference are involved in interpreting this statement. If, in addition to referring to the person Splitter, there is also an independent reference to “another” person, viz. the wisest person in the room (as determined by an independent test, for example), then it seems plausible to interpret the statement in terms of identity: Splitter and the wisest person in the room – those two individuals – are actually one and the same (which, as noted above, still retains a slightly paradoxical air). If, on the other hand, we are asserting that Splitter not only is wise, but is wiser than everyone else in the room, then we may interpret our statement as a sophisticated – albeit familiar – form of predication, involving not just a descriptor (“wise” or “is wise”) but a *definite* descriptor (“is not only wise but wiser than everyone else in the room”). Unfortunately, however, the issue is not entirely resolved, because according to at least one celebrated account of how we should understand definite descriptions (as given by Russell and, in due course, opposed by Strawson in an exchange that has become a classic in analytic philosophy), the concept of identity sneaks in again via the back door, so to speak.⁹ The example under consideration does not make this apparent because we may understand the superlative “wisest” in terms of just being wiser than everyone else. We need a different kind of example, such as the infamous “The King of France is wise” (spoken any time after the abdication of Louis Philippe I) or even “Splitter is the King of France” where, on Russell’s account, in order to accommodate the descriptor “the King of France” in the language of predicate logic, we reduce it to a combination of simple predication (“Splitter is a King of France”), and an *identity* statement which declares that if anyone has the property of being a King of France, then that person is identical to Splitter.

So where does this brief excursion into the logic of identity leave us? As a student of both philosophy and mathematics, I find it oddly reassuring that in spite of first appearances – whereby logic is seen as a branch of mathematics, with definite and final solutions to all its questions – we find the same kind of contestability as exists everywhere else in philosophy, and for the same reason: that the key concepts involved, no matter how simple or basic, are just not entirely clear.

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⁹Bertrand Russell: “On denoting” (1905, reprinted in his 1956); P. F. Strawson: “On referring” (1950, reprinted in his 2004)

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