A System of Logic

Ratiocinative and Inductive

Presenting a Connected View of the Principles of Evidence and the Methods of Scientific Investigation

John Stuart Mill

[Brackets] enclose editorial explanations. Small ·dots· enclose material that has been added, but can be read as though it were part of the original text. Occasional •bullets, and also indenting of passages that are not quotations, are meant as aids to grasping the structure of a sentence or a thought. Every four-point ellipsis .... indicates the omission of a brief passage that seems to present more difficulty than it is worth. In this work such omissions are usually of unneeded further examples or rewordings. Longer omissions are reported between brackets in normal-sized type.—When a word is spoken about in this version, it is usually put between quotation marks; Mill himself does that with phrases and sentences but not with single words.—Mill here refers to contemporaries by their surnames; in the original he is less abrupt—'Archbishop Whateley', 'Professor Bain', and so on.

First launched: June 2012

Contents

Glossary

accidentally: You have your height accidentally, meaning that your height could have been different without that affecting who you are.

art: In this work, 'art' is a vehicle for several related ideas: rules, skill, techniques.

assertion: Mill uses this in about the way we use 'proposition'. For there to be an 'assertion', in his sense, no person needs to have *asserted* anything. Mill sometimes speaks of propositions as asserting this or that.

basic: This replaces Mill's 'original' in some of its occurrences.

begging the question: Mill's sense of this phrase is the only sense it had until fairly recently: 'beg the question' was to offer a 'proof' of P from premises that include P. It now means 'raise the question' ('That begs the question of what he was doing on the roof in the first place.') It seems that complacently illiterate journalists (of whom there are many) encountered the phrase, liked it, guessed at its meaning, and plunged ahead without checking.

cardinal: principal, most important, leading.

co-extensive: Used here in the sense that it still has: when Mill says (page 4) that 'the field of logic is co-extensive with that of knowledge' he means that any pursuit of knowledge will involve issues about logic, and that any study of logic will bring in issues about knowledge.

data: Mill's readers will have understood 'data' as the plural of 'datum'. Many years later it degenerated into a singular mass-term, like 'soup'.

denote: In its root sense this mean 'stand for', 'refer to'—so that 'mankind' denotes the human race, your name denotes you, and so does any description of the form 'the. . . ' that is true of you and nothing else. On page 8, however, we see Mill stretching the word in two ways: in 'Abraham Lincoln was tall', Mill would say that

- 'Abraham Lincoln' denotes Abraham Lincoln;
- 'tall' denotes tallness, and
- 'was' denotes that something is being affirmed of something.

He doesn't comment on the vast difference between 'x denotes y' and 'x denotes that P'.

differentiae: Plural of 'differentia'.

division: classification

frame: To frame an idea is to form it, cause it to exist in your mind; how you frame a proposition or definition has to do with how you shape it or formulate it. When Mill speaks of framing a *class* he means forming or creating a class.

identical proposition: Strictly speaking, this is a proposition of the form 'x is x', where the subject and predicate are identical. But the phrase came also to be used for any proposition where the meaning of the predicate is a part of the meaning of the subject.

import: In Mill's use of it, this means about the same as 'meaning'; but he does use both those words, and the present version will follow him in that.

induction: At the start of III.2 Mill defines this as 'the operation of the mind by which we infer that what we know to be true in a particular case or cases will be true in all cases that resemble the former in certain assignable respects.'

meaning: In most places this is the word Mill has used, but sometimes it replaces his 'acceptation'. It sometimes appears in the singular though the plural would seem more natural; that's how Mill wrote it.

***mutatis mutandis*:** A Latin phrase that is still in current use. It means '(*mutatis*) with changes made (*mutandis*) in the things that need to be changed'. The use of it implies that it's obvious what the needed changes are.

name: Mill uses 'name' in such a way that 'Bentham' and 'gold' and 'the author of *Spies*' and 'yellowness' and 'yellow' are all names. The odd one out is 'yellow' but Mill insists that it names the same colour that 'yellowness' names. In the present version this usage of his will be strictly followed.

***noumenon*:** A Greek word, much used by Kant, meaning 'thing considered as it is in its own nature' in contrast with 'thing considered in terms of how it *appears*', i.e. phenomenon. The plural is *noumena*. You'll see on page 45 that Mill takes it for granted that noumena are the *causes* of phenomena.

popular: Even as late as Mill's time this mainly meant 'of the people', usually the not highly educated or very intelligent people. It didn't mean 'liked by the people'.

principle: Mill nearly always uses 'principle' as you and I do, to stand for a special kind of proposition. But the word used to have a common meaning, now obsolete, in which 'principle' means 'source', 'cause', 'driver', 'energizer', or the like; and Mill uses it just twice, in the same paragraph (page 28, in the phrase 'thinking principle'—meaning 'whatever it is that drives our mental processes'.

proximate kind: The lowest kind—corresponding to the smallest class—in an Aristotelian classification. See page 56.

real: On page 51 the word 'real' is tightly tied to its origin in the Latin *res* = 'thing'. So the contrast between 'real' propositions and 'verbal' ones involves the contrast between things and words.

science: Any intellectual discipline whose doctrines are are highly organised into a logical structure. It doesn't have to involve experiments, or to be empirical. Many philosophers thought that theology is a science.

signification: This seems to mean about the same as 'meaning', but Mill uses both words, and this version will respect his choices.

summa genera: The plural of *summum genus* = 'highest class'. Mill explains this well enough on page 19.

Introduction

§1. Writers on logic have differed as much in their definitions of it as in their handling of its details. This isn't surprising in a subject where writers have used the same language to convey different ideas. It's the same in ethics and jurisprudence. Almost every writer, having his own views about some aspects of these branches of knowledge, has framed his definition in a way that shows beforehand what his particular views are, sometimes begging the question [see Glossary] in their favour.

This diversity is an inevitable result—and to some extent a proper result—of the imperfect state of those sciences [see Glossary]. You can't expect people to agree about the definition of anything if they don't agree about the thing itself. To define something is to select from its properties the ones that are to be understood to be declared by its name; and we aren't competent to make that selection until the thing's properties are well known to us. And when the 'thing' is as complex as a *science*, the definition we start with is seldom one that we'll still think appropriate when we know more. Until we know the details we can't pick the most correct and compact way of gathering them under a general description. A reasonable definition of *chemistry* became possible only after men had acquired extensive knowledge of the details of chemical phenomena; and the definition of ·biology·—the science of life and organisation—is still a matter of dispute. . . . The definition that I'm going to give of the science of *logic* claims only to be a statement of the question that I have put to myself and that this book is an attempt to answer. You may object to it as a definition of logic, but it's a correct definition of the subject of this volume.

§2. Logic has often been called 'the art of reasoning'. Archbishop Whately, the writer who has done most to restore logic to the level of esteem which it used to have from educated people in England, has defined logic as *the science and* the art of reasoning; meaning

- by 'science': the analysis of the mental process that occurs when we reason, and
- by 'art' [see Glossary]: the rules, based on that analysis, for conducting the process correctly.

He was certainly right to add 'the science and': a system of rules governing the process must be based on a grasp of the mental process itself—the steps it consists of and the conditions it depends on. Art requires knowledge; art that has grown beyond its infant state requires scientific knowledge. Not every art bears the name of a science, but that's because in many cases a single art is based on several sciences. . . .

So logic is the science and art of reasoning. But the word 'reasoning'—like most scientific terms in popular [see Glossary] use—is highly ambiguous. In one of its senses it means *syllogising*, i.e. the type of inference in which we draw particular conclusions from general premises. . . . In another of its senses, to 'reason' is simply to infer any assertion [see Glossary] from assertions already accepted; and in this sense induction has as much right to be called 'reasoning' as have the demonstrations of geometry.

Writers on logic have generally preferred the former sense of the word, but I shall use it in the latter more extensive meaning. Every author has the right to define his subject, provisionally, in whatever way he pleases; but I think you'll come to see in the course of this work that this should be

not only the •provisional but also the •final definition. . . . It happens also to be the one that fits better with general usage of the English language.

§3. But 'reasoning'—even in its widest permissible sense—seems to be too narrow to cover the whole of logic, according to •the best conception of logic's scope, or even according to most current conception of this. The use of 'logic' to refer to the theory of argumentation comes from the Aristotelian logicians (the 'scholastics' as they are commonly termed). Yet even their textbooks present •Argumentation only in Part III, with Part I treating •Terms and Part II treating •propositions; and in one or other of these two Parts they included •Definition and •Division [see Glossary]. Some writers said that they were dealing with these previous topics only because of their connection with reasoning, and as a preparation for the doctrine and rules of the syllogism. But they treated them in much more detail. . . .than was required for that purpose. More recent writers on logic have generally understood the term 'Logic'. . . .as equivalent to 'the art of thinking'; and this sense of it isn't confined to books and scientific inquiries. Even in ordinary conversation, the ideas connected with the word 'logic' include at least •precision of language and •accuracy of classification; and we probably hear 'a logical arrangement' or 'logically defined' more often than 'logically deduced from the premises'. And a man is said to have 'powerful logic' not because of the accuracy of his deductions because

- •of the extent of his command over premises; because
- •he quickly comes up with many general propositions he needs to explain a difficulty or expose a fallacy;
- •his knowledge, besides being ample, is well under his command for argumentative use.

because, in short, So ordinary usage as well as the practice of experts support the inclusion in *Logic* of various intellectual operations other than reasoning and argumentation.

These various operations could be included in *Logic* in a very simple definition of logic as *the science that deals with the operations of the human understanding in the pursuit of truth*. For all the operations that logic has ever claimed to govern—naming, classification, definition etc.—can all be regarded as contrivances for enabling a person to know the truths he needs and to know them at the precise moment when he needs them. Those operations also serve other purposes, such as imparting our knowledge to others; but *that* doesn't put them into the domain of Logic. Logic is concerned only with the guidance of one's own thoughts: communicating them to others belongs to •Rhetoric in the broad sense the ancients gave to that term, or to the still more extensive art of •Education. Logic doesn't concern itself with such inter-personal matters. If there were only one thinking being in the universe, he might be a perfect logician. . . .

§4. Whereas the definition of *Logic* in terms of argumentation includes too little, the definition in terms of truth-seeking includes too much.

Truths are known to us in two ways—•directly, by themselves, and •through the medium of other truths. The former are the subject of intuition or consciousness;[1] the latter are the subject of inference. The truths known by intuition are the basic [see Glossary] premises from which everything else is inferred. Our assent to a conclusion is based on the truth

[1] I use these terms interchangeably because for my present purposes there's no need to distinguish them. Metaphysicians usually restrict 'intuition' to the direct knowledge we're supposed to have of things external to our minds, and 'consciousness' to our knowledge of our own mental phenomena.

of the premises; so we could never acquire knowledge by reasoning unless something could be known in advance of all reasoning.

We know by immediate consciousness our own bodily sensations and mental feelings. I know *directly* that I was angry yesterday and that I am hungry now. We know only through inference

(i) things that happened in our absence,
(ii) events recorded in history, and
(iii) the theorems of mathematics.

We infer **(i)** from testimony, **(ii)** from present traces of those past events, and **(iii)** from the premises laid down in books of geometry under the title of 'definitions' and 'axioms'. Anything we can know must belong among the basic data or among the conclusions that can be drawn from these.

Logic as I understand it has nothing directly to say in answer to questions about the basic data or ultimate premises of our knowledge—

- •How many are there?
- •What are they like?
- •How are they obtained?
- •What tests are there to determine whether something *is* ultimate?

Some of the answers to these concern sciences other than logic; others fall outside the range of any science.

We *can't* question anything that we know by consciousness. When we see or feel something—whether bodily or mentally—we can't help being sure that we see or feel it. No •science is needed to establish such truths; no rules of •art can make our knowledge of them more certain. There is no logic for this part of our knowledge.

But we may imagine that we are seeing or feeling when really we are inferring. Something that results from a very rapid inference may seem to be learned intuitively. It has long been accepted by thinkers of the most opposite schools that we make this mistake in the familiar business of eyesight. We appear to ourselves to be absolutely *directly* conscious of an object's distance from us. Yet it was discovered long ago

- •that what is perceived by the eye is merely a variously coloured surface;
- •that when we imagine we see •distance all we really see are •certain variations of apparent size and colour;
- •that our estimate of how far away the object is results partly **(i)** from a rapid inference from the muscular sensations we get from focussing our eyes on the object and partly **(ii)** from a comparison (made too fast for us to be aware of making it) between the size and colour of the objects as they appear now and the size and colour of the same or of similar objects as they appeared when close at hand or when their distance from us was known by other evidence.

The perception of distance by the eye, which seems so like intuition, is thus really an inference based on experience—an inference that we *learn* to make, getting better at it as our experience increases. . . .

A scientific study of how the human understanding goes about the pursuit of truth includes the question: Which facts are objects of intuition or consciousness, and which are merely inferred? But this has never been considered a part of logic. It belongs in another quite different department of science known as 'metaphysics'. That part of mental philosophy tries to discover what part of the mind's furniture •belongs to it basically and what part •is constructed out of materials that come to it from outside. This science tackles questions about

- •the existence of matter;
- •the existence of spirits;

- •the distinction between spirit and matter;
- •the reality of time and space, as external to the mind and different from the things that are said to exist 'in' them.

These days most people accept that the existence of matter or of spirit, of space or of time, is intrinsically incapable of being proved, and that anything known of them must come from immediate intuition. Metaphysics also include the inquiries into the nature of conception, perception, memory, and belief, which are all operations of the understanding in the pursuit of truth; but the logician as such isn't interested in them. Metaphysics also includes questions like these:

- •To what extent are our intellectual faculties and our emotions innate? and to what extent do they result from association?
- •Are God and duty realities whose existence is shown to us *a priori* by the constitution of our rational faculty? or are our ideas of them acquired notions, the origin of which we can trace and explain (so that their reality is to be settled not by consciousness or intuition but by evidence and reasoning)?

Logic deals only with the part of our knowledge that consists of inferences from previously known truths—general propositions or particular observations and perceptions. Logic is the science not of •belief but of •proof or evidence. Because belief professes to be based on proof, it is logic's job to supply a test for determining whether a belief is well grounded. But it has nothing to do with the claim that this or that proposition has to belief on the evidence of consciousness—i.e. without *evidence* in the proper sense of the word,

§5. It's generally agreed that most of our knowledge, whether of general truths or of particular facts, is reached by inference; so logic has authority over nearly all of science and of human conduct. . . . Everyone has daily, hourly, and momentary need to learn facts that he didn't directly observe. . . ., because the facts are important to his interests or occupations. The whole business of the magistrate, the military commander, the navigator, the physician, the agriculturist, is to judge evidence and to act accordingly. They all have to establish certain facts so that they can then apply certain rules. . . .; and how well they do this will settle how well they do their jobs. Inferring is the only occupation that the mind is engaged in continuously. It is the subject not ·only· of logic but of knowledge in general.

Logic is not the same thing as knowledge, though the field of logic is co-extensive [see Glossary] with that of knowledge. Logic is the judge and evaluator of all particular investigations. Its role is not to •find evidence but to determine whether something that has been found *is* evidence. Logic doesn't observe, invent, or discover—it *judges*. A surgeon/coroner wants to know whether this man died by violence; it's not up to logic to tell him what the signs of that would be; he must learn *that* from his own experience or from that of other surgeons. But logic judges the sufficiency of that experience to justify his rules, and on the sufficiency of his rules to justify his conduct. It doesn't give him proofs, but teaches him what *makes* them proofs, and how to judge them. It doesn't teach that fact P proves fact Q, but says what conditions *any* fact must satisfy if it is to prove other facts. . . .

It is in this sense that logic is—as it has been called—the science of science itself. All science consists of data [see Glossary] and conclusions from them, of proofs and what they prove; and logic says how data must relate to anything that can be concluded from them. . . .

§6. . . . .A science can be developed to quite an advanced stage without using any logic except what thoughtful laymen pick up in the course of their studies. Mankind judged evidence, often correctly, before logic was a science; if they hadn't, it could never have become a science. Similarly, they carried out great mechanical works before they understood the laws of mechanics. But there are limits to what engineers can achieve without principles of mechanics, and to what thinkers can do without principles of logic. There may be a few exceptions; but the bulk of mankind need either to •understand the theory of what they are doing, or to •have rules laid down for them by those who do understand it. In science's progress from easier problems to harder ones, almost every big step has been preceded or accompanied by a corresponding improvement in the notions and principles of logic accepted by the most advanced thinkers. Some of the more difficult sciences are still very defective—with very little proved in them, and controversy about that little—and the reason for this is perhaps that men's logical notions aren't yet broad or accurate enough for the estimation of the evidence proper to those particular sciences.

§7. Logic, then, is the science of the mental activities that are involved in the estimation of evidence: both •the inferential move from known truths to unknown ones, and •all other intellectual operations that support this move. So it includes the operations of **naming**, **defining** and **classifying**. Why? Because language helps us to •think as well as to •communicate our thoughts. Quite apart from their role in communication, the operations of defining and classifying help us not only •to keep our evidences and the conclusions from them permanent and readily accessible in the memory but also •to organize the facts that we may at some time want to investigate, so as to enable us to perceive more clearly what evidence there is, and to judge more accurately whether it is sufficient. . . . Other more elementary processes are involved in all thinking—e.g. conception, memory, and so on—but there's no need for logic to pay special attention to them, since they have no special connection with the problem of evidence. . . .

So I shall try •to conduct a correct analysis of reasoning, i.e. inference, and of whatever other mental operations as are intended to help reasoning, and also—along with this analysis and based upon it—•to collect or construct a set of rules or standards for testing the sufficiency of any given evidence to prove any given proposition.

In this analysis I shan't try to decompose the mental operations in question into their ultimate elements. All that's needed is for the analysis to be correct as far as it goes, and for it to go far enough for the practical purposes of the *art* of logic. If a proof doesn't get the whole way from the premises to the conclusion, it achieves nothing; but an analysis can be valuable even if it doesn't go the whole way down to the ultimate elements. Analytical chemistry's results wouldn't lose their value if it were discovered that all the supposedly 'simple substances' are really compounds. . . .

So I'll try to analyse the process of inference (and processes that depend on it) only as far as may be needed to mark off correct from incorrect performances of those processes. . . . Logic's opponents have said that we don't learn to use our muscles by studying their anatomy. Actually, we might: if any of our muscles became weak or otherwise defective, this might be incurable without some knowledge of their anatomy. But if in a treatise on logic I pushed the analysis of reasoning beyond the point where any inaccuracy that has crept into it must become visible, I would be open to the criticism involved in this ·muscle-weakness· objection. The analysis of bodily movements should go far enough to

enable us to distinguish movements that we ought to perform from the rest; and it's the same with logic. . . . Logic has no interest in pushing the analysis beyond the point where it becomes apparent whether the operations in any individual case been rightly or wrongly performed. . . . The range of logic as a science is determined by its needs as an art: whatever it doesn't need for its practical ends it leaves to ·metaphysics·, the larger science that corresponds not to any particular art but to all of them; it's the science that deals with the constitution of the human faculties ·generally·, and *it* has the job of deciding which facts are ultimate and which can be further analysed into more basic facts. Few if any of the conclusions I'll reach in this work are necessarily connected to any particular views about the further analysis. Logic is common ground on which the followers of Hartley and of Reid, of Locke and of Kant, can meet and join hands. They were all logicians as well as metaphysicians, so I may sometimes contradict things they say in the domain of logic; but the field on which their principal battles have been fought lies outside logic.

Logical principles aren't altogether irrelevant to those more abstruse discussions; and our preferred solution to the problem that logic proposes is bound to favour one rather than another opinion on these controverted subjects. That is because metaphysics must use means whose validity is the business of logic. No doubt metaphysics does as much as it can by merely by attending more closely and intently to our •consciousness (or, more properly speaking, to our •memory); and logic doesn't come into that. But when this method is insufficient to attain the end of its inquiries, metaphysics must like other sciences proceed by means of *evidence*; and the moment it begins to make inferences from evidence, logic stands in judgment over it. . . .

But this doesn't relate logic more closely to metaphysics than it is related to every other science. I can conscientiously affirm that no one proposition laid down in this work has been adopted because of its favouring some opinion in any department of knowledge or of inquiry on which the theoreticians are still undecided.[1]

[1] My view of the definition and purpose of logic stands in marked opposition to the position of a school of philosophy which is represented in England by the writings of Sir William Hamilton and of his numerous pupils. They see logic as 'the science of the formal laws of thought', a definition that they adopt so as to exclude from logic anything concerning belief and disbelief, or the pursuit of truth as such, thereby restricting it to one small area of its total province—namely the area having to do not with truth but with consistency. In my book *An Examination of Sir William Hamilton's Philosophy* I have said all that I think it is useful to say against this limitation of the field of logic. . . .

BOOK I: NAMES AND PROPOSITIONS

Chapter 1: The need to start with an analysis of language

§1. Writers on logic often start their treatises with a few general remarks (usually rather meagre ones, admittedly) about terms and their varieties. ·I'll be doing that too·, and perhaps you won't require from me a detailed justification for thus •following common practice, as you would if I were to •deviate from it.

The reasons for it, indeed, are far too obvious to require a formal justification. Logic is a part of the art of thinking: and language is agreed by all philosophers to be obviously one of the principal instruments of thought; and any imperfection in the instrument, or in how it is used, is agreed to be liable. . . .to confuse and impede the process of thinking and destroy all ground of confidence in the result. For someone to try to study methods of philosophising before he has become familiar with the meaning [see Glossary] and right use of various kinds of words would be like someone trying to become an astronomical observer before he has learned to adjust the focal distance of his telescope!

Reasoning or inference, the principal subject of logic, is usually done by means of words, and in complicated cases it can't be done in any other way; so anyone who doesn't have a thorough insight into the signification [see Glossary] and purposes of words will almost certainly reason or infer incorrectly. Logicians have generally felt that unless they removed this source of error at the outset, their pupils wouldn't be able to learn anything useful from them. . . . That's why it has always been thought that the study of logic must start with as deep an inquiry into language as is needed to guard against the errors to which language gives rise.

But there's a deeper reason why the logician should start by considering the import [see Glossary] of •words—namely that if he doesn't start there he can't examine the import of •propositions; and *they* stand right at the threshold of the science of logic.

In the Introduction I said that logic aims to discover •how we come by the part of our knowledge (much the biggest part) that isn't intuitive; and •by what criterion we can distinguish what is proved from what isn't, what is worthy of belief from what isn't. . . . Logic is concerned with questions that can't be answered from direct consciousness, but only on the basis of evidence. But we *can't* inquire into how to answer questions until we have inquired into what questions there are—what inquiries are there that we might think could be answered? The best route to an answer to *that* is through a survey and analysis of *propositions*.

§2. The answer to any possible question must be contained in a proposition or assertion. Anything that can be believed—or even disbelieved—must when put into words have the form of a proposition. All truth and all error lie in propositions. When we speak of 'a truth', we mean 'a true proposition'; and errors are false propositions. . . . The questions

- •How many kinds of inquiries can be propounded?
- •how many kinds of judgments can be made?
- •how many meaningful kinds of propositions can be formulated?

are in fact merely different forms of a single question. So a good survey of propositions and of their varieties will tell us •what questions mankind have actually asked themselves

and •what answers they have thought they had grounds to believe.

We can see at a glance that a proposition is formed by putting together two names [see Glossary]. According to the common definition (which is good enough for my purposes)

> 'proposition' = 'discourse in which something is affirmed or denied of something'.

Thus, in 'Gold is yellow' the quality yellow is affirmed of the substance gold. . . .

Every proposition has three parts: the subject, the predicate, and the copula. The predicate is the name denoting x whatever it is that is affirmed or denied. The subject is the name denoting the person or thing of which x is affirmed or denied. The copula is the sign denoting that there is an affirmation or denial, thus enabling the hearer or reader to distinguish a proposition from any other kind of discourse. In 'The earth is round',

- •the predicate is 'round', which denotes the quality that is affirmed or (as they say) predicated;
- •the subject is 'the earth', which denotes the object of which that quality is affirmed; and
- •the copula is 'is', which is a connecting mark between the subject and the predicate, showing that one is affirmed of the other.

Set the copula aside for the present; I'll return to it later.

So we can say that every proposition consists of at least two names—brings two names together in a particular manner. This shows us that for an act of *belief* one object isn't enough; the simplest act of belief has something to do with two objects—two names and (since the names must name something) two nameable things. Many thinkers would cut the matter short by saying 'two *ideas*'. They would say that the subject and predicate are names of ideas, and that when someone believes that gold is yellow he is bringing one of these ideas 'under' the other (that's how they often express it). We're not yet in a position to evaluate this account of believing. At present we must settle for saying that *in every act of belief two objects are in some way attended to*—that anything that doesn't embrace two distinct subjects of thought, whether material or intellectual, can't be a belief or a question. Each of the subjects of thought may be conceived by itself or found to be inconceivable by itself, but there's no question of its being believed by itself.

[Mill illustrates this with 'the sun': this is meaningful, and gives a direction to the hearer's thought, but it can't be true and can't be believed. But if we move to 'the sun exists', which is] the assertion that involves the least reference to any object besides the sun, we now have something that a person can say he believes. And it involves *two* objects of conception—the sun, and existence. You may want to say that

> the second conception is involved in the first, ·so that really there is only one object here, not two·;

but this is wrong, because the sun can be conceived as no longer existing. . . . Similarly, 'my father' doesn't include all the meaning of 'my father exists', for he may be dead; 'a round square' doesn't include the meaning of 'a round square exists', because it doesn't and can't exist. . . .

§3. That first step in the analysis of the object of belief seems obvious but it will turn out to be quite important. We can't go further with that analysis until we have made a preliminary survey of *language*. If we tried to take more steps along that same path of analysing the import of •propositions we would find that we couldn't do this until we had looked into the import of •names. . . . Now, what happens in our mind when we affirm or deny one name of another must depend on what they are names of, because our affirmation

or denial isn't about the mere names themselves, but about what they stand for. So we have here a new reason why the signification of names, and the relation between names and the things they signify, must be the next thing we inquire into.

Here is something that might be said:

> The most we can get out of the meaning of names is a guide to the opinions—possibly foolish opinions—that mankind have formed concerning things. The object of philosophy is truth, not opinion; so the philosopher should dismiss words and look into things themselves to discover what questions can be asked and answered regarding them.

No-one could follow this advice. And, anyway, what it really does is to urge the philosopher to discard all the results of the labours of his predecessors, and behave as though he were the first person who had ever looked on nature with an inquiring eye! What does anyone's personal knowledge of *things* amount to after subtracting everything he has learned through the *words* of other people? Even after he has learned as much as people usually do learn from others, will the notions of things contained in his individual mind provide him with as good a basis for a *catalogue raisonné* as the notions in the minds of all mankind?

[Mill starts this paragraph with an odd warning against listing and classifying things without using their names. Then:] If we begin with names, and use them as our clue to the things, this brings before us all the distinctions that have been recognised by all inquirers taken together. I think it will be found that mankind have multiplied the varieties unnecessarily, mistaking differences in •the manner of naming things for differences among •things. But we aren't entitled to assume this at the outset. We must start by recognising the distinctions made by ordinary language. If some of these turn out not to be fundamental, the enumeration of the different kinds of realities can be abridged accordingly; but a logician can't reasonably start by imposing on the facts the yoke of a theory and reserving the evidence for the theory for discussion later on.

Chapter 2: Names

§1. 'A name', says Hobbes, 'is a word taken at pleasure to serve as a mark that may raise in our mind a thought like some thought we had before, and which being pronounced to others gives them a sign of what thought the speaker has. . . before in his mind.' This simple definition of a name, as a word or phrase that serves as

- •a mark to recall to ourselves the likeness of a former thought, and
- •a sign to make it known to others,

seems to be just right. Names do much more than this; but all the rest grows out of the two roles mentioned in Hobbes's definition. I'll show this in due course.

In ordinary contexts, names are taken to be names of things; but some metaphysicians have said that they are names of *our ideas of* things, and have thought this to be a highly important point. Hobbes, for example, writes:

> Seeing that names ordered in speech (as is defined) are signs of our conceptions, they are obviously not signs of the things themselves. 'The sound of the word *stone* is the sign of a stone' is true only if it means

> that the hearer gathers that the speaker is thinking of a stone.

If the point is merely that what is brought back into the speaker's mind or conveyed to the hearer is not *a stone*, there's no denying it. But here is a good reason for sticking by the common usage—as Hobbes himself does in other places—and take the word 'sun' to be the name of •the sun and not of •our idea of the sun. Names are intended not only to make the hearer conceive what we •conceive but also to inform him of what we •believe. Now, when I use a name to express a belief, it's a belief about the thing itself, not about my idea of it. When I say 'The sun causes daylight' I don't mean that my idea of the sun causes in me the idea of daylight; I mean that a certain physical fact (the sun's presence). . . .causes another physical fact, namely daylight. . . . In this work names will always be spoken of as the names of things and not merely of our ideas of things.

What things? To answer this we must look into the different kinds of names.

§2. It is usual to preface a study of names by distinguishing them from words that aren't names but only parts of names. These are taken to include

- •particles, e.g. 'of', 'to', 'truly', 'often';
- •the inflected cases of nouns and pronouns, e.g. 'me', 'him', 'John's'; and even
- •adjectives, e.g. 'large', 'heavy'.

These words don't stand for things of which you can affirm or deny anything. We can't say

> '(A) heavy fell', 'A truly was asserted', '(An) of was in the room'.

Unless of course we are speaking about the words themselves:

> '"Truly" is an English word', '"Heavy" is an adjective'.

In that case they are complete names of those particular sounds or series of written characters. Except in that kind of use, these words can only be *part* of the **subject** of a proposition, as in 'A heavy body fell', 'A truly important fact was asserted'. . . .

But an adjective can stand by itself as the **predicate** of a proposition, as in 'Snow is white'. [Mill then discusses cases where an adjective functions as the subject of a proposition, as in 'White is an agreeable colour'. This could be done much more freely in Greek and Latin that it can in English, Mill says:] We may say 'The earth is round' but not 'Round is easily moved' rather than 'A round object is easily moved'. But this distinction is grammatical rather than logical: 'round' has exactly the same meaning as 'a round object', and it's only custom that prescribes which is to be used in a given context. So I shan't hesitate to call adjectives *names*. . . . The other classes of subsidiary words have no claim whatever to be regarded as names. An adverb or an accusative case can't in any context figure as one term in a proposition unless it's a proposition about that sound or sequence of letters.

[Mill mentions some scholastic technical terms with which he hasn't much patience. The main content of this paragraph is a sorting out of •words that can be used only as *parts* of names; •one-word names, i.e. words each of which can, unaided, serve as subject or predicate of a proposition; and •'many-worded names', i.e. phrases each of which contains words from each of the other two categories and is itself a name, i.e. can serve as subject or predicate of a proposition. Mill goes on to discuss many-worded names.] A number of words often compose one single name, and no more. A logician will see this phrase:

> 'the place which the wisdom or policy of antiquity had destined for the residence of the Abyssinian princes'

as only one name. A test for whether any phrase constitutes one name or more than one is to predicate something of it and then see whether we make only one assertion or several. Consider these:

(a) 'John Nokes, who was the mayor of the town, died yesterday.'

(b) 'John Nokes and the mayor of the town died yesterday.'

Of these, **(a)** makes one assertion, **(b)** makes two. It's true that **(a)** *includes* another assertion, namely that John Nokes was mayor of the town. But this assertion was already made: we didn't make it by adding the predicate 'died yesterday'.

That's enough about many-worded names. Let us now look into ways of classifying names on the basis not of the words they're composed of but of their signification.

·FIRST DIVISION: 'UNIVERSAL' AND 'SINGULAR'·

§3. All names are names *of* something, real or imaginary; but many things haven't been given individual names. Others *have*—e.g. persons and remarkable places. And when we want to pick out something that doesn't have its own individual name, we construct one out of two or more words, each of which could be used by itself to name an indefinite number of other objects. Example: I say 'this stone' to designate x, one particular stone; 'this' and 'stone' are each names that can be applied to many things other than x, though in combination in this particular context they pick out x.

That is *one* use of names that apply to more than one thing; if it were their only use, they would be mere contrivances for economising the use of language. But it's obviously *not* their only function. They also enable us to assert general propositions, affirming or denying a predicate of an indefinite number of things at once. So the distinction between **general names** and **individual** or **singular** names is fundamental, and can be considered as the most basic classificatory split in names. Here's how it is standardly understood:

- 'general name' = 'name that can be truly affirmed, in the same sense, of each of indefinitely many things'.
- 'individual or singular name' = 'name that can be truly affirmed, in the same sense, of only one thing'.

Thus, 'man' can be truly affirmed of John, George, Mary, and other persons without limit; and it is affirmed of all of them in the same sense; for 'man' expresses certain qualities, and when we predicate it of those persons we assert that they all have those qualities. But 'John' can be truly affirmed of only one person, at least in the same sense. Many persons have that name, but it isn't given to them to indicate anything they have in common; it can't be said to be affirmed of them in *any* sense, so it's not affirmed of them in *the same* sense. 'The king who succeeded William the Conqueror' is also an individual name, because the meaning of the words in it imply that there can't be more than one person of whom it can be truly affirmed. Even '*the* king', when the occasion or the context picks out the person of whom it is to be understood, can fairly be regarded as an individual name.

Quite often people explain what 'general name' means by saying that a general name is the name of a *class*. This is a convenient thing to say for some purposes, but it won't do as a *definition*, because it explains the clearer of two things by the more obscure. It would be more logical to reverse the proposition so that it defines the word 'class': 'A class is the indefinite multitude of individuals denoted by a general name.'

General names must be distinguished from collective names. A general name can be predicated of each individual in a multitude; a collective name can be predicated only of the multitude as a whole. 'The 76th infantry regiment in the

British army' is a collective name, not general but individual; it can be predicated of a multitude of individual soldiers taken jointly, but not of any individual soldier. . . .

Whereas 'the 76th regiment' is a collective name but not a general one, 'a regiment' is both collective and general. It's •general with respect to all individual regiments, of each of which it can be affirmed, and •collective with respect to the individual soldiers in any regiment.

·SECOND DIVISION: 'CONCRETE' AND 'ABSTRACT'·

§4. Our next division of names is into •concrete and •abstract. A concrete name is one that stands for a thing; an abstract name stands for an attribute of a thing. Thus 'John', 'the sea', 'this table', are names of things. 'White' is also a name of things, and 'whiteness' is the name of a quality or attribute they all have. 'Man' is a name of many things; 'humanity' is a name of an attribute of those things. 'Old' is a name of things; 'old age' is a name of one of their attributes.

I have used 'concrete' and 'abstract' in the sense given them by the scholastics, who—despite the imperfections of their philosophy—were unrivaled in the construction of technical language. They didn't go very far into logic, yet their definitions in logic have seldom been altered without being spoiled. But more recently a practice has grown up—introduced or at least encouraged by Locke—of applying 'abstract' to all names that result from •abstraction or •generalisation, thus counting as 'abstract' all general names rather than only the names of attributes. The metaphysicians of the Condillac school have followed Locke in this (they have generally accepted the weakest parts of his philosophy and ignored the best work of that truly original genius), popularising his use of 'abstract' to the point where it isn't easy to restore the word to its original signification. This was a reckless and irresponsible change in the meaning of the word: it leaves us with no compact distinctive name for an important class of words, the names of attributes; and it gives 'abstract' a role that was already being performed by the phrase 'general name', which has an exact equivalent in every language I am acquainted with. The old meaning, however, hasn't disappeared so completely that those of us who still adhere to it have no chance of being understood. By 'abstract', then, I shall always in logical contexts mean the opposite of 'concrete'—taking an abstract name to be the name of an attribute, and a concrete name to be the name of an object.

Are abstract names general or singular? Some are general, namely those that are names of a class of attributes. [Mill gives examples, and works his way to the point that he'll have to count as 'general' any word that names an attribute that could be further specified, so that an abstract name is 'singular' only if it designates an absolutely utterly specific attribute. He then backs out:] To avoid merely verbal disputes, the best course would probably be to consider these names as neither general nor individual, and to place them in a class apart.

[Mill anticipates the objection that attributes are named not only by the names he has called 'abstract' but also by adjectives. He denies this, maintaining that when the noun 'whiteness' is used it is to say something about that colour, but that in (for instance) 'Snow is white' the topic is not the colour but snow. He concludes:] We'll soon see that every name that has any signification—any name such that when it is applied to an individual x some information about x is given—implies an attribute of some sort; but it isn't a *name* of the attribute, which has its own proper abstract name.

·THIRD DIVISION: 'CONNOTATIVE' AND 'NON-CONNOTATIVE'·

§5. This leads to our next topic, a third great division of names, into those that are and those that are not *connotative*. . . . This is one of the most important distinctions that I'll discuss, and is among those that go deepest into the nature of language.

- •A term is connotative if it denotes a subject, and implies an attribute.
- •It is non-connotative if it merely signifies a subject or an attribute without implying anything about its attributes.

By 'subject' here I mean anything that has attributes. Thus 'John', 'London', and 'England' are names that signify a subject only. 'Whiteness', 'length' and 'virtue' signify an attribute only. So none of these names is connotative. But 'white', 'long' and 'virtuous' are connotative. The word 'white' denotes all white things—snow, paper, sea-foam etc.—and implies or (in scholastic terminology) connotes[1] the attribute whiteness. The word 'white' is not predicated of the attribute but of the things that have it, and we convey that they have it when we predicate 'white' of them. This holds also for the other words I have cited. 'Virtuous', for example, is the name of a class that includes Socrates, ·prison reformer John· Howard, the ·philanthropist known as the· Man of Ross, and an indefinable number of other past, present and future individuals. 'Virtuous' denotes these individuals; it is their name; but it applies to them because of an attribute they are all supposed to have, namely virtue; it is applied to all and only beings that are thought to have this attribute.

All concrete general names are connotative. The word 'man' denotes Peter, Jane, John and an indefinite number of other individuals, and is their class-name. Applying it to them is signifying that they have certain attributes—corporeity, animal life, rationality, and what we call (for short) the 'human' external form. . . . The word 'man' signifies •all these attributes and •all subjects that have them. But it can be predicated only of the subjects. . . . It signifies the subjects directly, the attributes indirectly; it denotes the subjects and implies or involves or indicates or as I shall say from now on **connotes** the attributes. It is a connotative name.

[Then a paragraph saying that (for example) because snow is given the name 'white' because it has the attribute whiteness, the attribute 'denominates' snow. That's the last we hear of that unpromising thought.]

All concrete general names, then, are connotative. Even abstract names, though they name only attributes, may in some cases also be connotative. That's because attributes may *have* attributes, and a word that •denotes an attribute may •connote an attribute *of it*. Consider the word 'fault' = 'bad or hurtful quality'. This word is a name common to many attributes, and connotes hurtfulness, an attribute *of* them. When we say that slowness in a horse 'is a fault', we don't mean that the slow movement, the actual change of place of the slow horse, is a bad thing, but that the property or peculiarity of the horse, from which it derives that name, the quality of being a slow mover, is an undesirable peculiarity. [The last sentence of that is verbatim from Mill.]

In regard to concrete names that aren't general but individual, a distinction must be made.

Proper names are not connotative: they don't indicate or imply anything about the attributes of the individuals who bear them. When we name a child 'Paul' or a dog 'Caesar', these names are simply marks enabling us to say things

[1] *Notare* [Latin], to mark; *con*notare, to mark *along with*; to mark one thing *with* or *in addition to* another.

about those individuals. We presumably had some reason for our selection of a name for a given individual, but the name it has been given it is independent of the reason. . . . A town may have been named 'Dartmouth' because it is at the mouth of the river Dart, but its name doesn't *mean* that. If an earthquake changed the river's course, putting a distance between it and the town, the town's name would not have to be changed. . . . A proper name is attached to *the object itself*, and doesn't depend on the continuance of any attribute of the object.

An individual name—i.e. one applicable to only one object—may be really connotative. We *can* give an individual a utterly unmeaning name, a proper name that serves to pick a thing out without saying anything about it, but a name applying to just one individual isn't necessarily like that. [Mill mentions 'the sun', and 'God' in the mouth of a monotheist, and says they may look like examples of what he is talking about but really aren't. That's because it's not a fact about either of those names that it applies to only one individual. We can imagine a world where there are *many suns*, and some people believe that there actually are *many gods*. He then moves ahead:] It is easy to produce real instances of connotative individual names. The very meaning of the connotative name may imply that there can't be two individuals with the attribute it connotes: e.g. 'the only son of John Stiles', 'the first emperor of Rome'. Or the attribute connoted may be a connection with a particular event, and it may be that only one individual *could* have that relation to that event ('the father of Socrates') or that only one individual actually *did* have it ('the author of the *Iliad*', 'the murderer of Henri IV'). What is here done by the word 'the' is done in other cases by the context: 'Caesar's army' is an individual name if the context shows that what is meant is the army that Caesar commanded in a particular battle. . . . And I have already mentioned another quite common case: A many-worded name can consist of •a general name that can be applied to more than one thing *plus* •other words that limit the general name so that the entire expression can be applied to only one object. An example: 'Prime Minister of England' is a general name; but at any given time 'present Prime Minister of England' can pick out only one person. Taking it that it's a fact about the meaning of 'Prime Minister of England' that it can't apply to two people at once, we can say that the singularity of 'present Prime Minister of England' is secured by •its meaning, without bringing in •any extrinsic facts; so it is strictly an individual name.

It's easy to see from all this that whenever the names given to objects convey any information—i.e. whenever they have properly any meaning—the meaning resides not in what they denote but in what they connote. The only names of objects that connote nothing are proper names; and strictly speaking these have no signification.

. . . .When we give something a proper name, what we are doing is like what a robber does when he puts a chalk-mark on a house so that he will recognise it when he next comes into this street. We put a mark not actually on the object itself, but on the idea of the object, so to speak. A proper name is just an unmeaning mark that we connect with the idea of the object, so that when the mark meets our eyes or occurs to our thoughts we will think of that object. . . .

When we apply a proper name to a thing—'That's Smith over there', 'This is York'—we aren't giving the hearer any information about Smith or York except that those are their names. You may come to have more information, e.g. because you knew already that York contains the Minster. But your new knowledge that this town here contains the Minster doesn't come from anything implied in the name. With connotative names it's a different situation. 'This town

is built of marble'—that may give the hearer new information that comes from the signification of the many-worded connotative name 'built of marble'. Such names. . . .aren't mere marks; they are *significant* marks, and the connotation is what constitutes their significance.

A connotative name should be thought of as a name of all the various individuals that it is predicable of, i.e. that it denotes, and not of what it connotes. (I have given reasons for this; another reason is that it preserves a certain analogy between connotative and proper names.) But by learning •what things it names we don't learn •the meaning of the name. [Mill discusses the different descriptions—'connotative names'—that we could give to Sophroniscus, the father of Socrates. His main point is to highlight the difference between •knowing that a certain expression applies to Sophroniscus and •knowing what the expression means. He sums up:] It could even happen that I know every single individual to whom a given ·connotative· name applied and yet not know the name's meaning. . . .

It's sometimes hard to decide precisely how much a particular word connotes: we don't know exactly—because we haven't needed to decide—how much difference in the object would require a different name for it. Obviously 'man' connotes along with animal life and rationality, a certain external form; but exactly *what* form? How different from us, physically, would a newly discovered race have to be for it not to count as 'human'? Again, rationality is a quality that admits of degrees, and it has never been settled what is the lowest degree of rationality that would entitle any creature to count as a human being. In any case like this the meaning of a general name is unsettled and vague because mankind haven't come to any positive agreement about it, I'll show later (when discussing classification) the conditions in which this vagueness is not inconvenient; and I'll present cases where vagueness serves language's purposes *better* than complete precision. . . .

But this partial uncertainty about the connotation of names is troublesome unless guarded against by strict precautions. Lax habits of thought are largely due to the custom of using connotative terms. . . .with no more precise notion of their meaning than can be loosely gathered from seeing what objects they are used to denote. This is how, inevitably, we get our first knowledge of our first language: a child learns the meanings of 'man' and 'white' by •hearing them applied to a variety of objects, and •discovering (by a process of generalisation and analysis that he can carry out but couldn't describe) what those objects have in common. In many cases, including those two words, the process is so easy that it doesn't need assistance from culture [Mill's phrase]. . . . But in many other cases, objects are classified together in common speech because of their general resemblance to one another, but it's not easy to say exactly *what* the attributes are that create this resemblance; working that out requires more analytic habits than most people possess. When this is the case, people use the name without any precise meaning; they talk—and therefore think—vaguely, giving about as much significance as a three-year-old attaches to 'brother' and 'sister'. [The child, Mill says, isn't in trouble here because in cases of doubt there's usually an authority to *tell him* whether a new individual is a brother or sister. Not so, however, in most cases of meaning-doubt, when each of us has to decide for him- or herself how a new item is to be classified. He continues:] So we do this on the basis of superficial similarity between the new object and familiar objects already named. For example, an unknown substance found in the ground will be called 'earth', 'sand', or 'a stone', according to its texture. And so names creep on from subject to subject until (sometimes) all traces of a common meaning disappear and

the word comes to denote a number of things. . . .that have no attribute in common—or only an attribute shared by other things to which the name is arbitrarily refused. [A footnote here quotes from Bain's *Logic* a lively passage about the irrationality of the facts about how the word 'stone' is/isn't applied.] Even scientific writers have joined in this pushing of general language away from its purpose; sometimes because. . . .they knew no better, and sometimes because of a general reluctance to admit new words. This attitude leads mankind in non-technical subjects to try to make the original stock of names serve with little augmentation to express an increasing number of objects and distinctions, and thus to make an increasingly bad job of expressing them.

Anyone who has thought hard about the present condition of mental and moral philosophy knows how far this loose way of classifying and naming objects has impeded accurate thinking in those areas. Should we then introduce a new technical language to use in theorising in them? No: that would be extremely difficult to do, and would have considerable drawbacks if it were done, because the topics of mental and moral philosophy are also topics of everyday informal conversation. So the philosopher faces the problem—one of the hardest he has to solve—of retaining the existing phraseology while lessening its imperfections. The only way to do this is to give to every often-used general concrete name a definite and fixed connotation, so that when we call an object by that name it will be known what attributes we mean to predicate of it. This will be a delicate operation if the newly fixed connotation is to

- make the least possible change in the objects the name is habitually employed to denote—the least possible addition to or subtraction from the group of objects which it has, perhaps imperfectly, served to mark off and hold together; and to
- do the least damage to the truth of any propositions that are commonly accepted as true.

That's what people are aiming at when they try to define a general name that is already in use. . . . No questions in the moral sciences have aroused keener controversy than the definitions of almost all the leading expressions, which shows what a large problem this is.

Names with •indeterminate connotation musn't be confused with names that have •more than one connotation, i.e. with ambiguous words. A word may have several meanings, but all of them fixed and recognized—for example 'post' and 'box', the various senses of which it would take for ever to enumerate. And because demand for names often outruns supply, it is sometimes advisable—even *necessary*— to retain a name with all these meanings, distinguishing the meanings clearly enough to prevent their being confused with one another. We can regard such a word as two or more names that happen to be written and spoken alike. [At this point Mill has a long footnote disagreeing with James Mill, his father, an authority that 'I am less likely than any other person to undervalue', about the best way to use 'connotation'. The subsequent history of the word followed the son rather than the father, and the details of the disagreement are not now interesting.]

·FOURTH DIVISION: 'POSITIVE' AND 'NEGATIVE'·

§6. The fourth principal division of names is into •positive and •negative. Positive like 'man', 'tree', 'good'; negative like 'not-man', 'not-tree', 'not-good'. To every positive concrete name N_p we could have a second name N_n to apply to all and only the things that N_p doesn't apply to. . . . When the positive name is connotative, the corresponding negative name is also connotative, but in a special way, connoting not the *presence* but the *absence* of an attribute. Thus, 'not-white' connotes

the attribute of *not possessing whiteness*—yes, that is an attribute too.. . . .[1]

Many names that are positive in form are negative in reality, and others are negative in form but really positive. The word 'inconvenient', for example, doesn't express the mere absence of convenience; it expresses a positive attribute—that of being the cause of discomfort or annoyance. So the word 'unpleasant', despite its negative form, doesn't connote the mere absence of pleasantness, but a lesser degree of what is 'painful', which is obviously positive. And 'idle' is positive in form, expressing nothing but what would be signified either by 'not working' or 'not disposed to work'; and 'sober' by 'not drunk'. . . . [Mill seems to have committed himself to allowing that the moon is convenient, the number 99 is pleasant, beach sand is idle, and the Nile is sober. *These* positive/negative oppositions seem to fit Bain's account (preceding footnote) rather than Mill's.]

There's a class of names called 'privative'. A privative name has the same signification as a •positive and a •negative name taken together: it's the name of something that used to have (or might have been expected to have) an attribute that it actually doesn't now have. An example is 'blind': it doesn't mean merely the negative 'doesn't see' or 'can't see', because sticks and stones aren't literally 'blind'. Something isn't usually said to be 'blind' unless **(a)** the class of things it is related to, either usually or on this particular occasion, is chiefly composed of things that can see—e.g. 'blind man' or 'blind horse'; or **(b)** it is supposed for some reason that it *ought* to see—e.g. saying that a man 'rushed blindly into an abyss', or that most philosophers or clergy 'are blind guides'. So 'privative' names connote •the absence of certain attributes and •the presence of others from which the presence also of the former might naturally have been expected.

·FIFTH DIVISION: 'RELATIVE' AND 'NON-RELATIVE'·

§7. The fifth leading division of names is into •relative and •non-relative. Names of the latter kind are sometimes called 'absolute'; but this word is so hard at work in metaphysics that we should spare it when we can do without it. It resembles the word 'civil' in the language of jurisprudence, which stands for the opposite of •'criminal', of •'ecclesiastical', •of 'military', •of 'political'—in short, the opposite of any positive word that lacks a negative.

Here are some relative names:

'father', 'son';
'ruler', 'subject';
'like', 'unlike';
'equal', 'unequal;
'longer', 'shorter'
'cause', 'effect'.

They are always given in pairs: Every relative name N_r that is predicated of an object presupposes another object (or objects) of which we may predicate either N_r or some relative name that we take to be the correlative of N_r. Calling someone a 'son', we suppose other persons who are his parents. Calling an event a 'cause', we suppose another event that is an effect. . . . When we call someone 'a sibling' we suppose someone else who is also a sibling. In this last case the relative term is its own correlative. [The 'sibling' example replaces one of Mill's which is no longer correct English.]

[1] Bain in his *Logic* says that negative names are names only of some particular class of things that aren't denoted by the corresponding positive name. He holds, for instance, that 'not-white' applies only to *every coloured thing* that isn't white. But here, as everywhere, the test of •what a name denotes is •what it can be predicated of; and we can certainly say of a sound or a smell that it is not white. The affirmation and the negation of the same attribute have to divide the whole field of predication between them.

Concrete names of this kind are, like other concrete general names, connotative; they •denote a subject and •connote an attribute; and each of them has or could have a corresponding abstract name to denote the attribute connoted by the concrete. Thus the concrete 'sibling' has its abstract 'siblinghood'; 'father' and 'son' do or could have the abstracts 'paternity' and 'sonship'. The concrete name connotes an attribute, and the corresponding abstract name denotes that attribute. But what sort of attribute? What's the special feature of the connotation of a relative name?

Some say that the attribute signified by a name is a *relation*. Even if this doesn't explain much, they think, it is the best answer we can get. If we ask 'Well, then, what *is* a relation?' they don't profess to have an answer. It is generally thought that a relation is something particularly specialised and mysterious; but I can't see what makes it more so than any other attribute—it seems to me indeed to be somewhat *less* obscure than other attributes. In my opinion, the best way to get a clear insight into the nature of all attributes (i.e. of all that is meant by an attribute) is through an examination of the signification of relative names (i.e. of the nature of the attribute that they connote). [Mill's odd phrase 'all that is meant by an attribute' probably means 'all that is meant by "attribute"'.]

Take the correlative names 'father' and 'son': they denote different objects, but in a certain sense they connote the same thing. They don't connote the same attribute, but the two propositions

- •A is the father of B and
- •B is a son of A

say *exactly* the same thing, express the very same fact. When that fact is analysed, we find that it consists of a series of physical events. . . .in which both A and B are involved and from which they both derive names. What those names really connote is *this series of events*: that is the whole meaning that each of them is intended to convey. The series of events can be said to constitute the relation. . . . It seems that all we need to account for the existence of relative names is that whenever there's a fact in which two individuals are involved, each individual has an attribute grounded on that fact.

Here are three *equivalent* accounts of what it means to say that a name N of something x is 'relative':

- •in addition to x, N implies in its signification the existence of another object which also gets a name from the fact that is the ground of N;
- •N is the name of x but its signification can't be explained without mentioning something else;
- •N can't be meaningfully employed in discourse unless the name of something other than x is also expressed or presupposed.

These definitions are all basically equivalent, being different ways of expressing this one distinctive circumstance: if we think of a state of affairs in which everything except x goes out of existence,[1] we can consistently suppose that x still keeps all its non-relative attributes but we can't consistently suppose that it keeps any of its relative attributes.

§8. Names have also been further distinguished into unambiguous and ambiguous; these, though, are not two kinds of •names but two •ways of using names. A name is applied unambiguously with respect to all the things it can be applied

[1] Or rather, everything except x and the percipient mind. I'll show later that to ascribe any attribute to an object necessarily implies a mind to perceive it.—The simple and clear explanation I have given relations and relative names, a topic that has for so long been vexatious in metaphysics, was first given, I think, by James Mill in his *Analysis of the Phenomena of the Human Mind*.

to in the same sense; it is applied ambiguously with respect to the things that it is applied to in different senses. You hardly need examples of a phenomenon as familiar as a word with a double meaning. In reality, as I remarked on page 16, an ambiguous word is not one name but two that happen to sound the same: 'file' meaning a steel instrument and 'file' meaning a line of soldiers have no more right to be regarded as one word because they are written alike than 'grease' and 'Greece' have because they sound alike. . . .

[Mill mentions the case where a word's different meanings have something in common, and where one of the two strikes us as primary, and the other as secondary or metaphorical; for example the adjective in 'brilliant light' and 'brilliant achievement'. He continues:] In these cases, however, the two-names-with-the-same-sound diagnosis applies just as well as in cases of perfect ambiguity. A very common form of fallacious reasoning arising from ambiguity is that of arguing from a metaphorical expression as if it were literal. . . .

Chapter 3: Things that are denoted by names

§1. Let's retrace our steps up to here. Logic is the theory of proof, which presupposes something provable, which must be a proposition or assertion. . . ., which is discourse that affirms or denies something of something else. These two things are signified by two names which when joined by a copula constitute the proposition. I reviewed in chapter 2 the various kinds of names so as to ascertain what each signifies, taking this far enough to be able to. . . .enumerate all the kinds of things that can be predicates or of subjects of predication. With that done, it can't be very hard to determine the import of predication, i.e. of propositions.

The scholastics were aware of the need to enumerate *existences* as the basis of logic, and so was their master Aristotle, the most comprehensive of the ancient philosophers if not also the wisest. The *Categories*. . . .were believed to be an enumeration of all the things that could be named; an enumeration by the *summa genera* [see Glossary], i.e. the most extensive classes into which things could be distributed; which, therefore, were so many highest Predicates, one or other of which they thought could be truly affirmed of every nameable thing whatsoever. Here are the classes into which (according to this school of philosophy) things in general might be reduced [Mill gives them in Greek and Latin]:

substance
quantity
quality
relation
action
passivity
position in space
position in time
posture
state

The imperfections of this system are too obvious to need a detailed examination, and it isn't good enough to make such an examination worthwhile. It's a mere list of the distinctions roughly marked out by the language of everyday life, with little philosophical analysis to reveal their rationale. Even a superficial analysis would have shown the list to be both redundant (it contains some things more than once) and defective (it omits some objects that should be there). ·**Redundancy:**· It's like a division of animals into men,

quadrupeds, horses, asses, and ponies! It puts action and passivity alongside relation. . . . [Mill makes similar remarks about some of the others; but they aren't very clear, and we can do without them.] ·**Omissions:**· The list ignores everything but substances and attributes. Which category is supposed to contain sensations, or any other feelings and states of mind—hope, joy, fear; sound, smell, taste; pain, pleasure; thought, judgment, conception, and the like?. . . . Feelings or states of consciousness are assuredly to be counted among realities, but they can't be reckoned among either substances or attributes.

[Mill has here a long footnote discussing a comment by Bain on the preceding passage. Bain says that Aristotle didn't intend the Categories as kinds of *things* but as kinds of *questions*, so that Mill's criticisms miss the mark. Mill accepts this, but adds:] So Aristotle may not have seen the Categories as classification of *things*; but his scholastic followers certainly did see them that way, and employed them on that basis: subdividing •the category *substance*, as a naturalist might do, into the different classes of physical or metaphysical objects as distinguished from attributes, and subdividing •the other categories into the principal varieties of quantity, quality, relation, etc. So it is fair to complain that they had no category of feeling. Feeling is assuredly predicable, as a summum genus, of every particular kind of feeling (e.g. Bain's example of *hope*): but it can't be brought within any of the Categories as interpreted by Aristotle or by his followers.

§2. Before starting to re-do this work, making a better job of it than the early logicians did, I must comment on an unfortunate ambiguity in all the concrete names that correspond to 'existence', the most general of all abstract terms. When we need a name to denote anything that exists—as distinct from non-entity or Nothing—almost every word that could do this also has an even more familiar sense in which it denotes only substances. But substances aren't all that exists. If attributes are to be spoken of, they must be said to exist; feelings certainly exist. Yet when we speak of an 'object' or of a 'thing' we are almost always supposed to mean a substance. There seems to be a kind of contradiction in saying that one *thing* is merely an attribute of another thing. . . . If we reject 'thing' and look for a word whose dominant or only meaning makes it •denote whatever exists and •connote only simple *existence*, it might seem that the best word for this purpose is 'being'. It is basically the present participle of the verb 'to be', which in one of its meanings is exactly equivalent to the verb 'to exist'; so that even the grammatical formation of 'being' makes it suitable to be the concrete ·term· corresponding to the abstract ·term· 'existence'. But oddly enough this word is even more completely spoiled than 'thing' for the purpose that it seemed perfectly made for. 'Being' is customarily exactly synonymous with 'substance' (except that it can be applied equally to matter and to mind, whereas 'substance', though originally and strictly applicable to both, is apt to suggest the idea of *matter*). Attributes are never called 'beings'; nor are feelings. A 'being' is something that *arouses* feelings and *has* attributes. The soul is called a 'being'; God and angels are called 'beings'; but if we said that extension, colour, wisdom and virtue are 'beings' we might be suspected of thinking

- •with some of the ancients, that the cardinal [see Glossary] virtues are animals; or
- •with the Platonic school that 'Ideas'—·which play the role of attributes·— can exist without anything having or instantiating them; or
- •with the followers of Epicurus that sensible forms—·which they thought to be instances of attributes·—

radiate out in every direction from bodies and by coming in contact with our organs cause our perceptions; i.e. of thinking that attributes are substances!

Philosophers looking for something to replace the spoiled 'being' laid their hands on the word 'entity'. This piece of barbarous Latin was invented by the scholastics as an abstract name, which is what its grammatical form seems to make it; but being seized by logicians in distress to stop a leak in their terminology, it has ever since been used as a concrete name. [To make sure that that is understood: The scholastics used 'entity' to mean 'existence', i.e. what existing items *have*; the panicking logicians used it mean 'existent', i.e. what existing things *are*. Incidentally, Mill writes as though he weren't aware that 'existent' was available as a noun to do exactly the work he wanted done.] **(**The related word 'essence', born at the same time and of the same parents, scarcely underwent a more complete transformation when it went from being the •abstract noun of the verb 'to be' to denoting something •concrete enough to be kept in a glass bottle! [This is a joking allusion to 'vanilla essence' etc. on grocery shelves.]**)** After the word 'entity' settled down into a concrete name, it kept its universality of signification rather better than any of the other names I have mentioned. But all the language of psychology seems liable to gradual decay as it gets older, and 'entity' hasn't been exempt from that. If you call virtue an 'entity' you aren't as strongly suspected of believing it to be a substance as you would be if you called it a 'being'; but you're still somewhat open to that suspicion. *Every* word that was originally intended to connote mere •existence seems in the course of time to enlarge its connotation to •*separate* existence, i.e. existence freed from the condition of belonging to a substance; which has the effect of shutting out attributes, and along with them feelings, which in nearly every case have no name except that of the attribute grounded on them. The greatest difficulty confronting those who have a lot of thoughts to express is finding a sufficient variety of precise words fitted to express them; which makes it *strange* that people—even scientific thinkers—are seriously addicted to the practice of taking valuable words to express ideas that are already well enough expressed by other words!

When we can't get good tools, the next best thing is to understand the defects of the tools we have. That's why I have warned you of the ambiguity of the names that I have to employ for want of anything better. I must now try to use them in a way that won't ever leave my meaning doubtful or obscure. Because none of the above words is altogether unambiguous, I shan't restrict myself to any one; rather, on each occasion I'll use the word that seems least likely in that particular case to lead to misunderstanding. I don't claim to keep these *or any other* words strictly to one single sense. Doing that would often leave me without a word to express something that is signified by a known word in one or other of its senses. . . . It wouldn't be wise for me, when writing on such an abstract subject, to deny myself the advantage I can get from even an improper use of a term, when by using it I can call up some familiar association that will bring my meaning home to your mind in a flash.

The difficulty that you and I will both have in getting vague words to convey a precise meaning is not wholly a matter for regret. . . . Philosophical language will for a long time, and everyday language still longer, retain so much vagueness and ambiguity that logic wouldn't be worth much if it didn't, among its other advantages, exercise the understanding in doing its work neatly and correctly with these imperfect tools.

Now it is time to proceed to my list. I shall start with feelings, the simplest class of nameable things—the word 'feeling' being of course understood in its broadest sense.

I. FEELINGS, OR STATES OF CONSCIOUSNESS.

§3. In the language of philosophy, 'feeling' and 'state of consciousness' are equivalent expressions: everything the mind is conscious of is a feeling. . . . In everyday language 'feeling' is not always synonymous with 'state of consciousness': it is often taken more restrictedly for states that are thought of as belonging to the sensitive or the emotional side of our nature, and sometimes even more restrictedly to the emotional side alone, excluding anything thought of as belonging to the percipient or to the intellectual side. But this is an admitted departure from correctness of language. [Mill mentions comparable 'perversions' of language: using 'mind' to refer only to the intellect; using 'feeling' to refer only to tactual sensations.]

In the proper sense of the term, *feeling* is a genus of which sensation, emotion and thought are species. I am taking 'thought' to cover everything we are internally conscious of when we are said to think: from •the consciousness we have when we think of a red colour without having it before our eyes to •the most difficult thoughts of a philosopher or poet. Bear in mind that a *thought* is what occurs in the mind itself; what a person is thinking about isn't a thought. . . . Even imaginary objects. . . .are distinct from our ideas of them. I may think of a hobgoblin, or the loaf I ate yesterday, or the flower that will bloom to-morrow. These things •never existed or •no longer exist or •don't yet exist; they are distinct from my thought which exists right now.

Similarly, a sensation should be carefully distinguished from the object that causes it—our •sensation of white is distinct from •a white object. And equally distinct from •the attribute whiteness, which we ascribe to the object because it causes the sensation. It's hard for us to be clear and discriminating in dealing with these subjects because our sensations seldom have separate names of their own. We have

- •a name for the objects that produce a certain sensation in us: '**white**'.

We also have

- •a name for the quality in those objects that causes the sensation: '**whiteness**'.

But when we want

- •a name for the sensation itself we have to say '**the sensation of white**' or '. . . **of whiteness**'.

We have to name the sensation from the causing object or the causing attribute. If the sensation arose spontaneously in the mind without anything causing it, which it conceivably could, we would be at a loss. (This isn't surprising. The need to talk about the sensation arises only in scientific theorising, and language mostly adapts itself to the common uses of life, which is why it hasn't given us any single-worded or immediate name for the sensation.) For our sensations of hearing we are better provided: we have the word 'sound' and a whole vocabulary of words denoting the various kinds of sounds. Because we are often conscious of these sensations in the absence of any perceptible object, we can more easily conceive having them in the absence of any object whatever. If we shut our eyes and listen to music, we can conceive of a universe with nothing in it except •sounds and •ourselves hearing them; and what is easily conceived separately easily gets a separate name. But in general our names of sensations denote indiscriminately the sensation and the attribute. . . .

[The admirable Mill has just made a common mistake. Perhaps 'sound' can refer to auditory sensations, but in its dominant meaning it refers to items out there in the world, with locations and sizes and (at least in theory) shapes. 'Did you hear that sound a few minutes ago?' 'I wonder if that sound was heard on the other side of the island.' And so on. Mill's own usage shows this, though he doesn't notice what he's doing:

'. . . a universe with nothing in it except •sounds and •ourselves hearing them'—he presumably doesn't mean 'a universe with nothing in it except auditory sensations and ourselves hearing them'! Incidentally, the old question 'If a tree fell in the forest when there was no-one to hear it, would it make a sound?' is often presented as deep and puzzling; but it's actually childish nonsense that feeds on the ambiguity of 'sound'. If the word is used to refer to sensations, then the answer to the 'puzzle' is boringly No. If it refers to objective sounds out there in the world, the answer is boringly Yes.]

§4. A lot of intellectual damage is often done by people's confusing •the sensation itself with •the bodily state that produces the sensation. One source of confusion in this area is the common division of feelings into •bodily and •mental. There's no basis for this distinction: even sensations are states of the sentient mind, not states of the body. What I am conscious of when I see the colour blue is a feeling of blue colour, which is one thing; the picture on my retina—or the relevant sequence of events in my optic nerve or in my brain—is another thing, of which I'm not conscious and wouldn't have known about if it weren't for scientific investigation. These are states of my body; but the resultant sensation of blue is not a state of body but of the thing that perceives and is conscious, namely *mind*. When sensations are called 'bodily feelings', that's because they are immediately triggered by bodily states; whereas the other kinds of feelings—e.g. thoughts and emotions—are immediately aroused not by anything acting on the bodily organs but by sensations or by previous thoughts. But this is a distinction in the agency that produces our feelings, not in the feelings themselves, which are all states of mind.

[Mill now gives two paragraphs to the view of some philosophers that in addition to •the action of the outside world on our bodily organs and •the action of the organs in producing a sensation there is •'a third link in the chain of phenomena, which they call a perception'. He declines to theorise in detail about these perceptions, because he is sure of just one thing about them, and that is enough to make them no business of logic. Thus:] In these so-called perceptions or direct recognitions of objects. . . .external to the mind, I can see only cases of belief that claims to be intuitive, or independent of external evidence. When a stone lies before me, I am conscious of certain sensations that I receive from it; but if I say that

> •these sensations come to me from an external object which I perceive,

the meaning of these words is that

> •in receiving the sensations I intuitively believe that an external cause of those sensations exists.

As I have said several times—·e.g. on page 3·—the laws of intuitive belief and the conditions under which it is legitimate are a subject that belongs not to logic but to the science of the ultimate laws of the human mind.

The same is true of everything that can be said about the distinction the German metaphysicians and their French and English followers so elaborately draw between the •acts of the mind and its merely •passive states; between what it •gives to and what it •receives from the crude materials of its experience. I'm aware that in the context of those writers' view of the primary elements of thought and knowledge this distinction is fundamental. My present purpose, however, is to examine not the basic groundwork of our knowledge but how we come by the part of it that isn't basic; so *here* the difference between active and passive states of mind is of secondary importance. They are all states of mind, all feelings, by which (I repeat) I mean nothing about their being passive; all I mean is that they are psychological facts, that take place in the mind, and should be carefully distinguished

from the physical facts that may be connected with them as effects or as causes.

§5. One kind of active state of mind does merit particular attention because it's a principal part of the connotation of some important classes of names. I mean •volitions, i.e. •acts of the will. In many cases, when we apply a relative name to a sentient being, much of the name's connotation consists of that being's *actions*—past, present, and possible or probable future. Consider 'sovereign' and 'subject'. The meaning these words convey is of innumerable actions done or to be done by the sovereign and the subject in relation to one another. Similarly with 'physician' and 'patient', 'leader' and 'follower', 'tutor' and 'pupil'. Many relative words also connote actions that would be done under certain conditions by other persons: 'mortgagor' and 'mortgagee', 'obligor' and 'obligee', and many other words expressing some legal relation, which connote what a court of justice would do if. . . etc. And some relative words connote actions previously done by other persons: e.g. 'brother'. These examples may show you how much of the connotation of names consists of actions. Now what is an action? Not one thing, but a series of two things: the state of mind called a volition, followed by an effect. The volition or intention to produce the effect is one thing; the effect produced by the intention is another thing; the two together constitute the action. . . .

§6. Of the first leading division of nameable things, namely feelings or states of consciousness, I began by recognising three subdivisions—sensations, thoughts, and emotions. I have illustrated the first two of these at some length; the third, emotions, doesn't require examples in the same way because it isn't tangled by ambiguities. And, finally, I needed to add to these three a fourth species, commonly called 'volitions'. I'll now move on to the two remaining classes of nameable things: all things that are regarded as external to the mind are thought of as either •substances or •attributes.

II. Substances.

Logicians have tried to define 'substance' and 'attribute', but their definitions are not so much attempts to say what substances and attributes *are* as instructions about how the grammatical structure of a sentence depends on whether we are speaking of substances or of attributes. Such definitions are language-lessons rather than lessons in mental philosophy. An attribute, say the scholastic logicians, **(a)** must be the attribute *of* something: colour must be the colour *of* something, goodness must be the goodness *of* something; and **(b)** if this 'something' should cease to exist or cease to be connected with the attribute, the attribute would go out of existence. In contrast with that, a substance is self-existent; we can speak about it without putting 'of' after its name. A stone is not the stone *of* anything; the moon is not the moon *of* anything—it's simply the moon. Unless the name we give the substance a relative name, in which case it must be followed by 'of' or by some other particle implying a reference to something else; but the substance would still fail test **(b)** for being an attribute, because it could stay in existence if the 'something else' were destroyed. A father must be the father *of* something; and we might say 'If there were no child there would be no father', but this means merely that if there were no child we wouldn't call this person a 'father'. The man could still exist even if there were no child; there would be no contradiction in supposing him to exist though everything else in the universe was destroyed. But if you destroy all white substances, where would the attribute whiteness be? *Whiteness without any white thing* is a contradiction in terms.

That's the nearest that ordinary logic textbooks come to solving this difficulty. You'll hardly think it is a satisfactory solution. **(a)** If an attribute is distinguished from a substance by being the attribute *of* something, we need to be told what 'of' means: it stands in such great need of explanation that it can't be placed in front of the explanation of anything else. **(b)** It's true that a substance can be conceived to exist without any other substance, but it's also true that an attribute can exist without any other attribute; and although we can't imagine attributes without a substance, we also can't imagine a substance without attributes.

Metaphysicians, however, have gone deeper and given a much better account of substance than that. Substances are usually divided into •bodies and •minds, and philosophers have. . . .provided a seemingly flawless definition of each of these.

§7. According to the accepted doctrine of modern metaphysicians, *body* can be defined as *the external cause to which we ascribe our sensations*. When I see and touch a piece of gold, I'm aware of a sensation of yellow colour, and sensations of hardness and weight; and by manipulating the gold I can add to these sensations many others. . . . The sensations are all that I'm directly conscious of, but I consider them as produced by something that is independent of my will and external to my body and my mind. This external something I call a 'body'.

You may want to ask: How do we come to ascribe our sensations to any external cause? And have we sufficient ground for this? Some metaphysicians have started a controversy about this, maintaining that we aren't justified in referring our sensations to what we call 'body' or to any other external cause. I'm not concerned here with this controversy or with the metaphysical intricacies on which it depends; but one of the best ways of showing what 'substance' means is to consider how one would have to go about maintaining the existence of body against opponents.

This much is certain: our notion of a body includes the notion of a number of sensations of ours or of other sentient beings, habitually occurring simultaneously. My conception of the table at which I am writing is compounded of

- •its visible form and size, which are complex sensations of sight;
- •its tangible form and size, which are complex sensations of our organs of touch and of our muscles;
- •its weight, which is also a sensation of touch and of the muscles;
- •its colour, which is a sensation of sight;
- •its hardness, which is a sensation of the muscles;
- •its *composition*, a word that stands for all the varieties of sensation that we receive under various circumstances from the wood of which it is made,

and so on. All or most of these sensations are •often experienced simultaneously, and we learn by experience that they could •always be so;. . . .so that the thought of any one of them makes us think of the others, and the whole becomes mentally amalgamated into one mixed state of consciousness which the followers of Locke and Hartley call a 'complex idea'.

[From here to † on the next page the discussion is riddled with a mistake nearly all metaphysicians made through several centuries, though it is now generally recognised to be a mistake. It consists in failing to distinguish these two theses:

(1) In addition to all the **attributes** of a thing there is an underlying sheer pure *thing* or *substratum* that **has** them.

(2) In addition to all our **ideas or sensations** relating to a thing there is a strictly external non-mental *thing* that **causes** them.

Mill switches back and forth between these; the switches won't be tagged, but the present note should enable you to spot them. For a full discussion see www.earlymoderntexts.com/jfb/substrat.pdf. On page 28 Mill

briefly confronts the distinction between •properties and •sensations, and declares it to be merely verbal. Coming where it does, the declaration is astonishing; but Mill moves straight on to argue that it's just a mistake to think that as well as sensations there are *also* qualities. This passage involves a different mistake from the one mentioned above—a once-common mistake concerning so-called 'secondary qualities'. It would take too much space to explain it here, but you might find www.earlymoderntexts.com/jfb/lf6p.pdf helpful. And when you read what Mill says about this on pages 28–29 ask yourself this: if he had illustrated his thesis about 'qualities' in general with *squareness* instead of *whiteness*, how much of its plausibility would remain?]

Some philosophers—·most notably Berkeley·—have argued as follows:

> If we conceive an orange to lose its natural colour without acquiring any new one; to lose its softness without becoming hard, its roundness without acquiring any other shape; to lose its size, weight, taste, smell; to lose all its mechanical and chemical properties without acquiring new ones; to become—in short—invisible, intangible, imperceptible by our senses or the senses of any other real or possible sentient beings; **nothing would remain**. If anything were left, what could its nature be? and how could it manifest its presence? By the evidence of the senses? No, because nothing is apparent to the senses except the sensations. We know that these sensations are bound together by some law; they don't come together at random, but according to a systematic order that is part of the order established in the universe. When we experience one of these sensations, we usually experience the others also, or know that we have it in our power to experience them. But a fixed law of connection that makes the sensations occur together doesn't necessarily require what is called a 'substratum' to support them. The conception of a substratum is merely one of many possible forms in which that connection presents itself to our imagination. . . . If there were such a substratum, suppose it to be at this instant miraculously annihilated, while the sensations continue to occur in the same order—how would the substratum be missed? What evidence could we have that it had gone out of existence? Wouldn't we have as much reason to believe that it still existed as we now have? And if we wouldn't be justified in believing it •then, how can we be so •now? So a body is not anything intrinsically different from the sensations that the body is said to produce in us; it is, in short, a set of sensations—or rather of possibilities of sensation—joined together according to a fixed law.

The controversies these speculations gave rise to, and the doctrines that have been developed in the attempt to answer them, have brought important benefits to the science of mind. The sensations (it was answered) that we are conscious of, and that we receive joined together in a certain uniform manner, imply not only •a law or laws of connection but also •a cause external to our mind; and it's this cause which by its own laws determines the laws according to which the sensations are connected. The scholastics used to call this external cause by the name I have already used, 'substratum'; and its attributes (as they put it) *inhered* in it—literally meaning *were stuck in it*. To this substratum the name 'matter' is usually given in philosophical discussions.† But it was soon accepted by all who *thought* about the subject that the existence of matter can't be proved by extrinsic evidence. So the answer usually given to Berkeley and his followers is this:

> The belief ·in the existence of matter· is *intuitive*. Mankind in all ages have felt themselves compelled,

> by a necessity of their own nature, to regard their sensations as having an external cause. Even those who deny this in theory yield to the necessity in practice: in speech, thought, and feeling they join the man in the street in taking their sensations to be the effects of something external to them. This knowledge is as obviously intuitive as our knowledge of our sensations themselves is intuitive.

And here the question merges into the fundamental problem of metaphysics properly so-called, and I leave it there.

The extreme doctrine of idealist metaphysicians ·such as Berkeley·—that objects are nothing but our sensations and the laws that connect them—has not been generally adopted by subsequent thinkers; but they are generally thought to have been right in one really important part of their doctrine, namely the thesis that all we know of objects is the sensations they give us and the order in which they are given. Kant himself is as explicit on this point as Berkeley or Locke. He was firmly convinced that there exists a universe of 'things in themselves' that is distinct from the universe of phenomena, i.e. things as they appear to our senses; and he even introduced a technical term, 'noumenon' [see Glossary], to denote •what the thing is in itself as contrasted with •how it is represented in our minds; but he accepted that this representation. . . .is all we know of the object, and that the real nature of the thing is, and by the constitution of our faculties must always remain,. . . .an impenetrable mystery to us. [The present version omits Mill's mentions of a couple of bits of Kant's doctrine, and several long footnotes in which he discusses some of his contemporaries' attitudes to the matter now being discussed.]

There's not the slightest reason to think that what we call an object's 'sensible qualities' are *like* anything inherent in the object itself. . . . Just because x causes y, it doesn't have to be the case that x is like y: an east wind isn't like the feeling of cold, heat isn't like the steam of boiling water. So why should matter resemble our sensations? Why should the inmost nature of fire or water resemble the impressions those objects make on our senses? What grounds have we for inferring from the effects *anything* about the cause except that it is a cause adequate to produce those effects? So we can take it a truth that is obvious in itself and accepted by everyone that we need to listen to, that we don't and can't possibly learn *anything* about the external world except the sensations we experience from it. [A long footnote here discusses the views of some contemporaries—views that Mill hadn't known about when this book was first written [we are reading its eighth edition]. The main upshot here is Mill's thesis that the two somewhat opposing doctrines—•that there are no noumena and •that we have intuitive knowledge that there are noumena—are both irrelevant to logic.]

§8. *Body* having now been defined as the external cause (and, according to the more reasonable opinion, the *unknown* external cause) to which we refer our sensations, we now have to create a definition of *mind*. And after what we have just been through, this won't be hard. For alongside this:

> •our conception of a body is of an unknown arousing **cause** of sensations,

we can say this:

> •our conception of a mind is of an unknown **recipient** of those sensations and indeed of all our other feelings.

Body is the mysterious something which that stimulates the mind to feel, and mind is the mysterious something that feels and thinks. There's no need for me to give details of a sceptical theory calling in question whether there is any such thing as *mind* as a thing in itself. . . .; but I do have to say that we are, and unless our faculties change must

always remain, entirely in the dark about the innermost nature (whatever 'innermost nature' means) of the thinking principle [see Glossary], as well as about the inmost nature of matter. All we're aware of, even in our own minds, is what James Mill called a certain 'thread of consciousness', i.e. a series of sensations, thoughts, emotions, and volitions, more or less numerous and complicated. There's a something that I call 'myself', or 'my mind', which I regard as distinct from these sensations, thoughts, etc.; a something that I conceive to be not •the thoughts but •the being that *has* the thoughts, and which I can conceive as existing forever in a state of quiescence, without any thoughts at all. But although this being is myself, I know nothing about it except its series of states of consciousness. Just as bodies show themselves to me only through the sensations I think they cause, so also the thinking principle (or mind) in my own nature shows itself to me only by the feelings of which it is conscious. All I know about myself are my capacities for feeling, i.e. being conscious (including, of course, thinking and willing); and with my present faculties I can't conceive of learning anything new about my own nature except learning that I have some additional capacities—not known to me now—for feeling, thinking, or willing.

Summarising: Just as body is the unfeeling item that we are naturally prompted to regard as the cause of a certain portion of our feelings, so mind is the sentient subject of all feelings—it's what has them or feels them. But according to the best existing doctrines we know nothing about the nature of either body or mind other than the feelings that body causes and mind experiences. And if we *do* know anything, logic has nothing to do with it or with how that knowledge is acquired.

So much for feelings and substances. Now let us move on to the third and only remaining class of nameable things.

III. Attributes, starting with Qualities. . .

§9. From what I have said about *substance* it's easy to deduce what should be said about *attribute*. If we don't and can't know anything about bodies but the sensations they cause in us, those sensations must be all that we can—when you come right down to it—mean by their attributes; and the distinction that we verbally make between the properties of things and the sensations we receive from them must originate in the convenience of discourse rather than in the nature of what the words signify. [That is the 'astonishing' remark mentioned in the long note on pages 25–26.]

Attributes are usually classified under the headings: Quality, Quantity, and Relation. I shall start with Quality.

Let's work with a so-called 'sensible quality'—specifically *whiteness*. What do we mean when we say that snow has the quality whiteness? Simply that when snow is present to our sense-organs we have a kind of sensation that we customarily call 'the sensation of white'. How do I know that snow is present? Obviously, by the sensations I derive from it. I infer that the object is present because it gives me a certain group or series of sensations; and when I ascribe to the object the attribute whiteness, *all* I mean is that one member of that group or series is the sensation that I call 'the sensation of white colour'.

That's one view of this subject, but there's also a different possible view, which goes like this:

> It's true that •we know nothing of sensible objects except the sensations they cause in us; and that •our receiving from snow the particular sensation called 'a sensation of white' is our only reason for saying that the snow has the quality *whiteness*. But because x is the sole evidence of the existence of y it doesn't follow that x *is* y. The attribute whiteness is not the fact of

> receiving the sensation, but something in the object itself, a power inherent in it, something that enables the object to produce the sensation. When we say that snow has the attribute whiteness, we don't merely say that the presence of snow produces that sensation in us, but that it does so through and by reason of that power or quality.

For the purposes of logic it doesn't really matter which of these opinions we adopt. The full discussion of the subject belongs to. . . .metaphysics; but I will say this: for the doctrine that there exists a peculiar species of entities called 'qualities' I can see no basis except in the human mind's disposition, whenever we meet with two names that aren't precisely synonymous, to suppose that they must be the names of two different things; whereas they may be names of one thing viewed in two different lights, or in different surrounding circumstances. Because 'quality' and 'sensation' aren't interchangeable in all contexts it is supposed that they can't both signify the same thing—namely the feeling we're affected with through our senses by the presence of an object. There's no absurdity in supposing that this impression or feeling may be called a 'sensation' when considered in itself and a 'quality' when looked at in relation to some object whose presence to our sense-organs causes that sensations (among others) in our minds. And if this is an admissible supposition, those who contend for a separate entity called a 'quality' ought to show that their opinion •is preferable rather than •being merely a lingering remnant of the old doctrine of occult [= 'hidden'] causes—the exact same absurdity that Molière so nicely ridiculed in his play *The Imaginary Invalid* when he made one of his pedantic physicians 'explain' why opium produces sleep by saying that 'opium has a soporific virtue'. [This sort of empty 'explanation' has been expressed in terms of 'virtue', 'occult cause', and 'faculty'. When Mill expresses it in terms of 'power', that's because he thinks, as most philosophers now do, that 'faculty' is just a fancy word for 'power'.]

It's obvious when the physician said that opium has a 'soporific virtue' he merely *said again* that it produces sleep—he didn't *explain* it. Similarly, when we say that snow is white because it has the quality of whiteness we're only *saying again*, in more technical language, that it causes in us the sensation of white. But doesn't the sensation have to have some cause? Yes: its cause is the presence of the group of phenomena that is called the 'object'. All that we know about the matter is this: *Whenever the object is present and our sense-organs are in their normal state, the sensation occurs*. After assigning a reliable and intelligible cause, we have no reason to suppose that there is *also* an occult cause that enables the real cause to produce its effect! Why does the presence of the object cause this sensation in me? I don't know. I can only say that such is my nature and the nature of the object; that's just how things are. And we'll come eventually to this answer even after interpolating the imaginary entity, ·the occult cause·. However many links there are in a causal chain, we'll still be unable to explain how any one link produces the one next to it. It's as easy to comprehend that •the object produces the sensation directly and at once as that •it produces it by something else called the 'power' of producing it.

But I would have to go far beyond the boundaries of logic to remove all the difficulties that you may feel about this view of the subject, so I'll settle for the little I have already said, and for the purposes of logic I'll adopt a language compatible with either view of the nature of qualities. I shall say—what at least admits of no dispute—that the quality of whiteness ascribed to the object snow is *grounded on* its arousing in us the sensation of white; and. . . .I'll call the sensation of white the 'foundation' of the quality whiteness. For logical

purposes the sensation is the only essential part of what is meant by the word—the only part we can ever care about proving. When that is proved, the quality is proved; if an object causes a sensation it does of course have the power of causing it!

. . . THEN RELATIONS. . .

§10. The qualities of a body (I repeat) are the attributes grounded on the sensations aroused in our minds by the presence of that particular body. But when we ascribe to any object x the kind of attribute called a 'relation', the foundation of the attribute must be something in which other objects are concerned besides x and the percipient.

If two things can be given correlative names it is proper to say that there is a relation between them. So we may expect to discover what *relations* in general are if we •list the principal cases in which mankind have imposed correlative names and •see what these cases have in common.

Here are some items to put in the list:

- •x is like y
- •x is unlike y
- •x is near y
- •x is far from y
- •x is before, after, along with y
- •x is greater than, equal to, less than y
- •x is the cause of y, the effect of y
- •x is the master, servant, child, parent, debtor, creditor, sovereign, subject, attorney, client of y.

What is the common character possessed by everything in this heterogeneous and discordant list?

Resemblance has to be considered separately, so I set it aside for now. One thing that is common to all the rest—and it seems to be the only one—is that in each of them x and y both have roles in some fact or phenomenon which does or did or may be expected to exist or occur. This fact or phenomenon is what the Aristotelian logicians called the foundation of the relation [Mill gives it in Latin, *fundamentum relationis*]. Thus in the relation of greater and less between two magnitudes x and y, the foundation of the relation is the fact that x could under certain conditions be included in the space occupied by y without entirely filling it. In the relation of master x and servant y, the foundation of the relation is the fact that y has undertaken (or is compelled) to perform certain services for the benefit and at the bidding of x. Examples could be indefinitely multiplied; but it's already obvious that

- •whenever two things are said to be related, there's some fact or series of facts into which they both enter; and ·conversely· that
- •whenever any two things are involved in some one fact or series of facts, we may ascribe to them a mutual relation grounded on that fact or series of facts.

Even if they have nothing in common except what they share with all things, namely that they are members of the universe, we call that a relation and label them as 'fellow-creatures', 'fellow-beings', or 'fellow-inhabitants of the universe'. A relation will be more or less specialised, more or less complicated, depending on the nature of the fact on which it is grounded. And there are as many conceivable relations as there are conceivable kinds of fact in which two things can be jointly involved.

So there's a parallelism here:

- •A quality of x is an attribute grounded on the **fact** that a certain sensation. . . .is produced in us by x;
- •A relation between x and y is an attribute grounded on some **fact** into which x enters jointly with y.

The very same kind of elements make up the two facts—

namely states of consciousness. In the case, for example, of any legal relation—debtor and creditor, principal and agent, guardian and ward—the foundation of the relation consists entirely of thoughts, feelings and volitions of the persons themselves or of others who are concerned in the same series of transactions. I mean thoughts etc. that *do* occur or that *would* occur if certain conditions existed; for example the intentions a judge •would form if a complaint were made to his court concerning the infringement of any of the legal obligations imposed by the relation; and the acts the judge •would perform as a result of that. (Remember that 'act' is just another word for 'intention followed by an effect', and that 'effect' is just another word for 'sensations or some other feelings' caused in the agent himself or in somebody else.) Everything implied by the names that express the relation comes down to states of consciousness; outward objects are supposed throughout as the causes of some of those states of consciousness, and minds are supposed as the subjects by which they are experienced, but the external objects and the minds are known to exist only through states of consciousness.

Relations aren't all as complicated as those legal ones. The simplest of all relations are those expressed by 'before', 'after' and 'simultaneous with'. If we say that dawn came before sunrise, the fact in which dawn and sunrise were jointly involved consisted only of those two things themselves; no third thing entered into the fact or phenomenon. . . . Dawn and sunrise announce themselves to our consciousness by two successive sensations. Our consciousness of the succession of these sensations isn't a third sensation added to those two. . . . To have two feelings at all implies having them either successively or simultaneously. Two sensations or other feelings being given, they have to be successive or simultaneous—the nature of our faculties insists on that. No-one has been able to analyse the matter any further than that, and there's no need to try.

§11. It's somewhat the same with two other sorts of relations, •likeness and •unlikeness. Suppose I have a pair of simple sensations, both of white; and another pair, one of white and one of black. I call the first two sensations 'alike', the second two 'unalike'. The fact or phenomenon on which these relations are grounded consists of •two sensations and •a feeling of resemblance or of lack of resemblance. . . . Resemblance is evidently a feeling, a state of the observer's consciousness. Whether the feeling of the resemblance of the two sensations is a third state of consciousness. . . .or whether (like the feeling of their succession) it is involved in the sensations themselves, may be a matter of discussion. But either way, these feelings of resemblance and dissimilarity are parts of our nature; and parts so far from being analysable that they are presupposed in every attempt to analyse any of our other feelings. So likeness and unlikeness must—along with beforeness, afterness and simultaneity—stand apart among relations as *sui generis*. They are attributes grounded on facts, i.e. on states of consciousness, but states that are special, unanalysable and inexplicable.

But though likeness and unlikeness can't be resolved into anything else, complex cases of them can be resolved into simpler ones. When we say of two things that have parts that they are alike, their likeness can be analysed: it is composed of likenesses between the parts of one and the parts of the other, and of likeness in their arrangement. . . . If one person mimics another with any success, that complex over-all similarity must be made up of ever so many simple likenesses—in a succession of bodily postures, in the accents and intonations of the voice, in the choice of words, and in

the thoughts or sentiments expressed. . . .

Every case of likeness or unlikeness that we know about comes down to likeness or unlikeness between states of mind, our own or someone else's. We say that one body is like another, but all we know of bodies is the sensations they cause us to have; so what we mean really is that there's a resemblance between some or all of the sensations caused by the two bodies. We say that two attributes are like one another, but all we know of attributes is the sensations or states of feeling they are grounded on; so we mean really that those sensations or states of feeling resemble each other. We say that two relations are alike. A resemblance between relations is sometimes called 'analogy' (one of many meanings of that word). The relation of Priam to Hector—namely, father to son—resembles the relation of Philip ·of Macedon· to Alexander ·the Great·; resembles it so closely that they are called the same relation. Cromwell's relation to England resembles Napoleon's to France, though not so closely as to be called the same relation. In each case, the meaning must be that there's a resemblance between the facts that were the foundation of the relation.

Resemblances range from •perfect undistinguishableness to •something extremely slight. [Mill then discusses 'A thought suggested to the mind of a genius is like a seed cast into the ground', explaining at some length that this rests on resemblances between relations.]

Hardly anyone is sufficiently on his guard against a certain ambiguity of language concerning relations. When two things are so alike as to be indistinguishable from one another, this likeness is •often called 'identity' and the two similar things are said to be 'the same'. This doesn't happen •always because we don't talk like that about similar pairs of visible objects, e.g. two persons; but we always do so when speaking of feelings—'The sight of that whale carcass gives me the same feeling today that it did yesterday, or the same that it gives to my wife'. This is obviously a misuse of 'same', because the feeling I had yesterday is gone, never to return; what I have today is *another* feeling very like yesterday's; and it's obvious that two people can't be experiencing 'the same' feeling in the sense in which they can both sit at 'the same' table. The ambiguity is also at work when we say that two persons are ill with 'the same' disease, or have 'the same' official duties, meaning that their duties are similar. A different sense of 'same' is at work when we say that two people are engaged in 'the same adventure' or sailing in 'the same ship'. Able people are often confused and led into bad arguments by their not being properly aware that they (sometimes unavoidably) use the same name to express ideas as different as those of •identity and •indistinguishable resemblance. Whately is almost the only current writer to have called attention to this distinction and to the ambiguity connected with it.

Several other relation-words really stand for resemblance. For example, 'equality'. This is just another word for *exact resemblance in respect of quantity*. And this leads into the third and last of the three headings under which attributes are commonly arranged.

. . . AND FINALLY QUANTITY

§12. [In this paragraph, the variables 'x', 'y' etc. are not Mill's; nor are the subscripts.] Let us take two things that are exactly alike except in quantity—x is a gallon water and y is 10 gallons of water. Each makes its presence known to us by sensations that it causes us to have; but we don't mistake x for y, so there must be a likeness$_1$ between the two sets of sensations. Similarly, a gallon of water z and a gallon of wine w make their presence known by two sets of sensations, and again

the sensations are unalike$_2$. So we have here two cases of unlikeness-between-sensations; and these unlikenesses are themselves unalike$_3$—we register that fact when we say that one concerns quantity and the other quality. What exactly *is* this unlikeness$_3$? It's not for logic to analyse it, or even to decide whether it *can* be analysed. . . . All I want here is to show, that when we say of two things that they differ in quantity, just as when we say that they differ in quality, the assertion is always grounded on a difference in the sensations they cause. No-one would deny that seeing or lifting or drinking ten gallons of water involves a set of sensations different from those of seeing or lifting or drinking one gallon. . . . I don't undertake to say what the difference in the sensations is. Everybody knows, and nobody can tell; any more than any one could tell what *white* is to a person who had never had the sensation. . . .

Summing up on Attributes

§13. So all the attributes of bodies that are classed under *quality* or *quantity* are grounded on the sensations we get from those bodies, and can be defined as *the powers that the bodies have of causing those sensations*. And we've seen that the same general account can be given for most of the attributes usually classed under *relation*. They too are grounded on some fact into which the related objects enter as parts; that fact has no meaning and no existence to us except the series of states of consciousness by which it makes itself known; and the relation is simply *the power the object has of taking part along with the correlated object in causing the series of sensations*. We have had to recognise a somewhat different character in certain special relations—succession and simultaneity, likeness and unlikeness. These can't be analysed in the same way because they aren't grounded on any fact distinct from the related objects themselves. But these relations are themselves states of consciousness: resemblance is merely our feeling of resemblance; succession is merely our feeling of succession. Or at any rate all that we do *or can* know about these relations is confined to the relations between our states of consciousness. . . .

§14. In this discussion I have for simplicity's sake considered bodies only, and omitted minds. But everything I have said is applicable, *mutatis mutandis* [see Glossary], to minds as well. The attributes of minds are like those of bodies in being grounded on states of consciousness; but in the case of a mind we have to consider its own states as well as the states it causes in other minds. Every attribute of a mind consists either in that mind's being itself affected in a certain way or its affecting other minds in a certain way. . . .

. . . .A mind doesn't cause sensations (as a body does), but it may cause thoughts or emotions. The most important attributes ascribed on this ground are terms expressing approval or blame. We say 'He is admirable', meaning 'His mind is admirable', meaning that our contemplation of his mind arouses admiration in us—with an implication also that we approve of our having that feeling. Sometimes a single attribute is really two combined: 'He is generous' means something about *his* state of mind and also (because it is a term of praise) something about the approval his mind arouses in ours. . . .

We can ascribe attributes to bodies, too, on the ground of •ideas and emotions, and not solely on the ground of •sensations. 'That's a beautiful statue' is grounded on the special feeling of pleasure the statue produces in our minds, and that's an emotion, not a sensation.

VII. Summing up this chapter

§15. My survey of the varieties of things that have been or can be named—that have been or can be •predicated of other things or themselves •made the subject of predications—is now concluded. [Mill now re-states his results—more briefly but with no change of content. After that:] So my analysis gives us the following classification of all nameable things:

(1) Feelings, i.e. states of consciousness.
(2) The **minds** that experience those feelings.
(3) The **bodies**, i.e. external objects that arouse certain of those feelings, together with the powers by which they arouse them.
(4) The **successions and co-existences, likenesses and unlikenesses** between feelings or states of consciousness.

. . . .I don't think that a sound philosophy would support the inclusion of 'powers' in **(3)**, but I put them in because their existence is taken for granted in common language, and it wouldn't be prudent for me to deviate from that.

Until something better can be suggested, I offer this as a substitute for Aristotle's Categories, considered as a classification of existences. The practical application of it will appear when I start looking into the import of propositions—i.e. into what the mind actually believes when it gives its 'assent' to a proposition.

If my classification is correct, the above four classes comprise all nameable things; so of course some or all of them must •compose the signification of all names and •make up every fact.

•Facts composed solely of feelings or states of consciousness are often called •psychological or •subjective facts.
•Facts composed at least partly of. . . .substances and attributes are called •objective facts.

So we can say that every objective fact is grounded on a corresponding subjective one, and apart from that it has no meaning to us except as a name for the unknown and inscrutable process by which that subjective or psychological fact is made to happen.

Chapter 4: Propositions

§1. With propositions as with names, I have to start with some fairly elementary points about their form and varieties, before entering into the analysis of the import conveyed by them, which is the real subject and purpose of this preliminary Book.

A proposition, I repeat, is a bit of discourse in which a predicate is affirmed or denied of a subject. A predicate and a subject are all we need to make a proposition; but merely putting two names side by side doesn't tell anyone that they are a predicate and a subject, i.e. that one is intended to be affirmed or denied of the other; so there has to be some way of indicating that that is the intention—some sign to distinguish a predication from any other kind of discourse. This is sometimes done by an inflection of one of the words, as when we say 'Fire burns'—the 's' in 'burns' shows that we mean to affirm the predicate *burn* of the subject *fire*. But it is more often done by 'is' (for affirmation) or 'is not' (for negation), or by some other part of the verb 'to be'. The word that serves as a sign of predication is called the 'copula'. It's important to think clearly about what the copula is and does:

confused notions about this have helped to spread mysticism over the field of logic and perverted its speculations into wars over words.

Some writers have thought that the copula is more than a mere sign of predication—that it also signifies *existence*. The proposition 'Socrates is just' may seem to imply not only •that 'just' can be affirmed of Socrates but also •that Socrates *is*, i.e. that he exists. But this only shows that 'is' is ambiguous: as well as doing the work of a copula in affirmations, it also has a meaning of its own which lets it be the predicate of a proposition. The two don't have to go together: from 'A centaur is a fiction of the poets' you can't infer that a centaur exists, because the proposition explicitly denies this.

Books could be filled with the frivolous speculations about the nature of *Being* (. . . 'ens', 'entitas', 'essentia' and the like) that have arisen from overlooking this double meaning of 'be', supposing that when it signifies *to exist* it must basically answer to the same idea as it does when it signifies *to be F* for some specific value of F—

- •to be a man,
- •to be Socrates,
- •to be seen or spoken of,
- •to be a phantom,
- •to be a nonentity

—having one meaning that fits all these cases! The fog rising from this narrow spot spread in ancient times over the whole surface of metaphysics. But we shouldn't put ourselves above the great intellects of Plato and Aristotle because we can now avoid many errors that they, perhaps inevitably, committed. . . . The Greeks seldom knew any language but their own, and that made it much harder for them than it is for us to detect ambiguities. One advantage of knowing several languages—especially ones in which eminent thinkers have expressed their thoughts—is the lesson regarding ambiguity that we learn by finding that a single word in one language corresponds in different contexts to different words in another. Without that help, even the strongest understandings find it hard to believe that things that share a name don't also in some way share a nature. . . . But once the habit ·of ambiguity-spotting· has been formed, one doesn't need high intelligence to detect ambiguities, even ones that are common to many languages; so it's surprising that the ambiguity of 'to be', though it exists in modern languages as well as in ancient ones, should have been overlooked by almost everyone. The quantity of futile speculation arising from a misunderstanding of the nature of the copula was hinted at by Hobbes; but I think it was James Mill who first clearly described the ambiguity, and pointed out how many errors in the accepted systems of philosophy it has been responsible for. . . .

I shall now briefly review the principal distinctions among propositions, and the technical terms most commonly used to express them.

§2. A proposition being a portion of discourse in which something is affirmed or denied of something, the first division of propositions is into *affirmative* and *negative*. An affirmative proposition is one where the predicate is affirmed of the subject ('Caesar is dead'); a negative proposition is one where the predicate is denied of the subject ('Caesar is not dead'). The copula in the negation is 'is not'; in the affirmation it is 'is'.

Hobbes and some other logicians have stated this distinction differently, recognising only one form of copula, 'is', and attaching the negative sign to the predicate. According to these writers, 'Caesar is dead' and 'Caesar is not dead' have the same copula but different predicates, 'dead' and

'not dead'; so they define a *negative proposition* as one in which the predicate is a negative name. . . . These writers had the idea that they could get rid of the affirming/denying distinction by treating every case of denying as the affirming of a negative name. But what is a negative name? A name expressing the absence of an attribute; so when we affirm a negative name what we're predicating is absence, not presence; we're asserting not that anything *is* but that something *is not*; and the best name for that operation seems to 'denying'. The fundamental distinction is between

- •a fact and the non-existence of that fact;
- •seeing something and not seeing it,
- •Caesar's being dead and his not being dead.

If this were a merely **verbal** distinction, the thesis that brings both within the same form of assertion would be a real simplification; but the distinction is **real**—it's in the facts—and what deserves the label 'merely verbal' is not this distinction but the thesis that smudges it by treating the difference between two kinds of truths as a mere difference between two kinds of words. . . .

Something like that also applies to most of the distinctions among propositions that are said to concern their *modality*—e.g. difference of tense or time: 'The sun did rise', ' The sun is rising', 'The sun will rise'. These differences could also be glossed over by regarding the temporal element as a mere detail about the predicate: 'The sun is an object having risen', 'The sun is an object now rising', 'The sun is an object to rise hereafter'. But this simplification would be merely verbal. Past, present and future don't constitute different kinds of *rising*; they are designations belonging to the event asserted, to *the sun's rising today*. What they act on is not •the predicate but •the applicability of the predicate to that particular subject. What we affirm to be past, present or future is not

- •what the subject signifies, or
- •what the predicate signifies, but
- •what the predication signifies

—something expressed by the whole proposition and not by either or both of the terms. So the temporal element is properly considered as attaching to •the copula, which is the sign of predication, and not to •the predicate. Nothing like this applies to 'Caesar may be dead', 'Caesar is perhaps dead', 'It is possible that Caesar is dead', because these are really assertions not of •anything relating to the fact itself but of •the state of our mind in regard to it—e.g. 'Caesar may be dead' means 'I am not sure that Caesar is alive'.

§3 . The next division of propositions is into *simple* and *compound* or *complex*. A simple proposition is one in which one predicate is affirmed or denied of one subject. A compound proposition has more than one predicate, or more than one subject, or both.

At first glance this division looks absurd—a solemn distinction of things into •one and •more than one, like dividing horses into •single horses and •teams of horses. It's true that what is called a compound proposition is often not one proposition but several, held together by a conjunction. 'Caesar is dead and Brutus is alive' or even 'Caesar is dead but Brutus is alive'—in each of these there are two assertions, and calling them a complex proposition is like calling a street a complex house. The words 'and' and 'but' do have a meaning; but that meaning, far from making the two propositions one, adds a third proposition to them. All particles are abbreviations, and usually abbreviations of propositions, a kind of short-hand which quickly suggests to the mind something that it would take a proposition or a series of propositions to express fully. For example, 'Caesar is dead and Brutus is alive' is equivalent to: 'Caesar is dead; Brutus is alive; it is desired

that those two propositions be thought of together'. As for 'Caesar is dead but Brutus is alive'—that means the same as the other with a *fourth* proposition, namely 'Between the first two propositions there's a contrast'. . . .

In those examples the two propositions are kept visibly distinct, each subject having its own predicate and vice versa. Often for brevity's sake the propositions are blended together: 'Peter and James preached at Jerusalem and in Galilee' contains four: 'Peter preached at Jerusalem', etc. . . .

We have seen that when the two or more propositions contained in a 'complex proposition' are stated outright and unconditionally, it's not a proposition but a plurality of propositions; and if the whole thing is true then so is each of its constituent propositions taken separately. But there's a kind of proposition which, though it. . . . does in a sense consist of several propositions, contains only one assertion; and its truth doesn't imply that each of the simple propositions that make it up is also true. For example:

- A is B *or* C is D;
- A is B *if* C is D.

The former proposition is called 'disjunctive', the latter 'conditional'; 'hypothetical' used to be common to both.

Whately and others have pointed out that the disjunctive form is resolvable into the conditional, because every disjunctive proposition is equivalent to two or more conditional ones. 'Either A is B or C is D' means 'if A is not B, C is D; and if C is not D, A is B'. So all hypothetical propositions are disjunctive in form but conditional in meaning; and 'hypothetical' and 'conditional' may be and generally are used synonymously. Logicians use 'categorical' as their name for propositions in which the assertion [see Glossary] doesn't depend on a condition.

A hypothetical proposition is not. . . .a mere cluster of simple propositions. The simple propositions that enter into it are not part of the assertion it conveys. When we say 'If the Koran comes from God, Mohammed is the prophet of God', we don't intend to affirm either that the Koran comes from God or that Mohammed is his prophet. The hypothetical proposition may be indisputably true even if each of those simple propositions is false. What is asserted isn't that either of them is true but that the second of them can be inferred from the first. Then what is the subject of the hypothetical proposition and what is its predicate?. . . . The subject is the proposition 'Mohammed is the prophet of God', and what is affirmed of it is that this is a legitimate inference from the proposition 'The Koran comes from God'. The subject and predicate of a hypothetical proposition are thus names of propositions. The subject is some one proposition. The predicate is a general relative name applicable to propositions, of the form '. . . an inference from so and so'. We see again here that particles are abbreviations: 'If A is B, C is D' turns out to be an abbreviation of 'The proposition "C is D" is a legitimate inference from the proposition "A is B"'.

So hypothetical propositions aren't as different from categorical ones as they at first seemed to be. In each of them one predicate is affirmed of just one subject; but a conditional proposition is *about* a proposition; the subject of the assertion is itself an assertion. . . . And there are other kinds of assertions about propositions. . . .because other things can be predicated of a proposition:

- 'The whole is greater than its part' is an axiom in mathematics.
- 'The Holy Ghost proceeds from the Father alone' is a tenet of the Greek Church.
- The doctrine of the divine right of kings was renounced by Parliament at the Revolution.
- 'The Pope is infallible' has no support in Scripture.

In each of these the subject of the predication is an entire proposition. . . .

Given that •hypothetical propositions differ from others much less than one might think, judging from their form, isn't it surprising that •they loom so large in treatises on logic? No! To see why, remember that what they predicate of a proposition—namely that it can be inferred from something else—is precisely the one of its attributes that a logician is which most of all concerned with.

§4. The next common division of propositions is into *universal*, *particular*, *indefinite*, and *singular*—a classification based on how *generally* the subject term is to be understood. Here are examples:

•'All men are mortal'—universal.
•'Some men are mortal'—particular.
•'Man is mortal'—indefinite.
•'Julius Caesar' is mortal—singular.

A proposition is singular if its subject is an individual name, which doesn't have to be a proper name. 'The founder of Christianity was crucified' is as much a singular proposition as 'Christ was crucified'.

When the subject term is a general name, we may intend to affirm or deny the predicate of •all the things it denotes or only of •some of them. When the predicate is affirmed or denied of •each of the things denoted by the subject, the proposition is universal; when it is affirmed or denied of •only some undefined portion of them, it is particular. So these are all universal:

•'All men are mortal',
•'Every man is mortal',
•'No man is immortal.

The last one is a universal proposition because its predicate, 'immortal', is denied of each and every individual denoted by the term 'man'. It could instead have been expressed as 'Every man is not-immortal'. But 'Some men are wise' and 'Some men are not wise' are particular propositions, because the predicate 'wise' is affirmed (denied) not of each and every man but only of each and every man in some portion of men, without saying what portion. If the portion were specified, the proposition would become either •singular or •universal with a different subject—e.g. 'All properly instructed men are wise'. There are other forms of particular propositions, such as 'Most men are imperfectly educated': it doesn't matter how large a portion of men the predicate is asserted of, as long as it isn't specified how that portion is marked off from the rest.

[A so-called 'indefinite' proposition, Mill says, is one that doesn't make clear whether its it is an assertion about all the things denoted by subject term or only some of them. He agrees with Whately that this is a blunder, like that of the grammarians who say that there are *three* grammatical genders—masculine, feminine, and doubtful. What we really have here is not a kind of proposition but a mere unclarity or vagueness, which indeed is often removed by the context. He follows Bain in emphasising 'indefinite' propositions with names of materials as their subjects: 'Food is chemically constituted by carbon, oxygen, etc.' is meant as a universal proposition, whereas 'Food is necessary to animal life' is meant as a particular.]

[In two further paragraphs Mill introduces a time-hallowed technical term, namely 'distributed'. In these:

•'All A are B'
•'Some C are D'

the term A stands for is distributed, the other three are undistributed. Mill says that this distinction helps a lot in stating and proving rules of the syllogism, but in fact he doesn't use it when gets to that topic in Book II.]

There are many more ways of classifying propositions than those I have presented, some of them quite important. I'll explain and illustrate them when suitable occasions arise.

Chapter 5: The import of propositions

§1. An inquiry into the nature of propositions must aim either to analyse **(i)** the state of mind called 'belief', or to analyse **(ii)** what is believed. All languages distinguish **(ii)** a doctrine or opinion from **(i)** the fact of entertaining the opinion; **(i)** assent from **(ii)** what is assented to.

Logic as I understand the term has no concern with the nature of the act of judging or believing; the consideration of that mental act belongs to another science. Yet philosophers from Descartes downward, and especially from the era of Leibniz and Locke, haven't observed this distinction and would have dismissed out of hand any attempt to analyse the import of propositions that wasn't based on an analysis of the act of judgment. They would have said: 'A proposition is merely the verbal expression of a judgment. What matters is the thing expressed, not the mere expression of it. When the mind assents to a proposition, it *judges*. When we find out what the mind does when it judges, we'll know what propositions mean; there's no other way.'

In line with these views, almost all the writers on logic in the last two centuries—English, German, or French—made their theory of •propositions nothing but a theory of judgments. They considered a proposition (or a judgment—they used the two words indiscriminately) to consist in affirming or denying one *idea* of another. To judge was to

- •put two ideas together, or to
- •bring one idea under another, or to
- •compare two ideas, or to
- •perceive the *dis*agreement between two ideas'

Or replace *ideas* by *conceptions* or whatever else the writer preferred as an all-purpose name for mental representations. And these writers held that such ideas are essentially the subject-matter and substance of the operations of judging and reasoning. . . .

Whenever we make a judgment, e.g. judging that *gold is yellow*, something happens in our minds that is partly described by one or other of these theories. We must have the ideas of *gold* and of *yellow*, and these must be brought together in our mind. But there's obviously more to it than that, because we can put two ideas together without any act of belief, for example when we merely imagine *a golden mountain*, or when we *dis*believe—for you can't disbelieve that Mohammed was an apostle of God without putting together your ideas of *Mohammed* and of *apostle of God*. What *does* happen in assent or dissent besides putting two ideas together? That is an intricate metaphysical problem; but the solution of it—whatever it turns out to be—*can't* have anything to do with the import of propositions. Why not? Because propositions are hardly ever assertions about our ideas of things; they're assertions about the things themselves. To believe that gold is yellow I must have the ideas of gold and of yellow, and something involving those ideas must take place in my mind; but my belief isn't about the internal ideas—it's about external gold and yellow, about gold and the effect it has on human sense-organs. . . . It's true that if I am to believe this external fact another fact must take place in my mind, a process must be performed upon my ideas; but so it must in everything else that I do. I can't dig the ground unless I have the ideas of •the ground and •a spade and so on, and unless I put those ideas together. But it would be ridiculous to say that *digging the ground* is *putting one idea into another*! Digging is an operation on the things themselves, though it can't be done unless I have in

my mind the ideas of them. Similarly, believing is an act that has for its subject the facts themselves, but I can't perform it without already having in my mind a mental conception of those facts. When I say 'Fire causes heat' I mean that the natural phenomenon *fire* causes the natural phenomenon *heat*. When I mean to say something about ideas I call them 'ideas'—e.g. 'A child's idea of a battle is unlike the reality'. . . .

One of the most fatal errors ever introduced into the philosophy of logic, it seems to me, was the notion that what primarily matters to the logician in a proposition is the relation between the two ideas corresponding to the subject and predicate;. . . .and it's the main reason why the theory of logic has made so little progress during the last two centuries. The treatises on logic and related branches of philosophy that have been produced since this cardinal [see Glossary] error pushed in, though sometimes written by extraordinarily able men, have nearly all tacitly implied that investigating truth consists in contemplating and handling our ideas. . . ., which amounts to the assertion that the only way to get knowledge of nature is to study it at second hand, as represented in our own minds. [Mill continues with this theme, talking about the 'great and fruitful truths on most important subjects' that have been discovered with no help from the logicians, so that natural scientists have come to regard logic as 'futile'.]

What we must investigate here is not *Judgment* but *judgments*; not the act of believing but the thing believed. What is the immediate object of belief in a proposition? What matter of fact does it signify? When I assert a proposition what am I giving my assent to and inviting others to give theirs? What is expressed by the kind of discourse called 'a proposition'? What is the fact conformity to which makes the proposition true?

§2. One of the clearest and most coherent thinkers the world has produced—I mean Hobbes—has answered this question as follows (·this is not a quotation·):

> In every proposition what is signified is the speaker's belief that the predicate is a name of the same thing that the subject is a name of. If it really is so, the proposition is true. Thus the proposition 'All men are living beings' is true, because 'living being' is a name of everything of which 'man' is a name. 'All men are six feet tall' is not true because 'six feet tall' is not a name of everything of which 'man' is a name.

What this presents as the *definition* of a true proposition is certainly a *property* that all true propositions have. If the subject and predicate were names of different things, one name couldn't be predicated of the other. If it's true that some men are copper-coloured, it must be true—and the proposition does really assert—that among the individuals denoted by 'man' there are some who are also among those denoted 'copper-coloured'. If it's true that all oxen ruminate, it must be true that all the individuals denoted by 'ox' are also among those denoted by 'ruminating'; and whoever asserts that all oxen ruminate undoubtedly does assert that this relation holds between the two names.

[Mill now says—with elaborations that are clever but not very helpful—that Hobbes's account is true of every proposition but is the whole truth about only a few. He continues:] The only propositions of which Hobbes's principle is a sufficient account are those in which the predicate and the subject are both proper names. Proper names have strictly no meaning; they are mere marks for individual objects; and when a proper name is predicated of another proper name all that's conveyed is that both names are marks for one object. Thus, what Hobbes offers as a theory of predication in general is a *full* account of the likes of these:

•'Hyde was Clarendon.'
•'Tully is Cicero.'

But it's a sadly inadequate theory of most propositions. How could Hobbes have thought otherwise? It must because he like other nominalists pretty much ignored words' connotations and looked for their meaning exclusively in what they denote;. . . .as if the only difference between a proper name and a general name were that the former denotes only one individual and the latter denotes more than one.

But we have seen that the meanings of all names except proper names and some abstract names resides in their connotations. So when we are analysing the meaning of any proposition in which either or both of the predicate and the subject are connotative names, we must look to their connotations and not to what they denote. . . . When Hobbes said that (for instance) 'Socrates is wise' is a true proposition because 'Socrates' and 'wise' are names of the same person, it's astonishing that such a powerful thinker didn't ask himself 'How did they come to be names of the same person?'. ·Well, how did they·? Surely not through the intention of those who invented the words: when mankind fixed the meaning of 'wise' they weren't thinking of Socrates; and when Socrates' parents gave him that name they weren't thinking of wisdom! The names *happen* to fit one person because of a certain *fact*, that wasn't known or didn't exist when the names were invented. And the clue to the fact is in the connotation of the names.

. . . .If in our experience the attributes connoted by 'man' are always accompanied by the attribute connoted by 'mortal', it will follow that the class *man* will be wholly included in the class *mortal*, and that 'mortal' will be a name of all things of which 'man' is a name: but why? Those objects are brought under each name by having the attributes connoted by it; and •their having those attributes is the real condition that makes the proposition true, not •their being called by the name. Connotative names do not *precede* but *follow* the attributes they connote. . . . The most ingenious and refined analysis of the significations of 'diamond' and 'combustible' couldn't have shown men that *diamonds are combustible*. That was discovered by a very different process, namely finding empirically that the attribute of combustibility existed in the diamonds on which the experiment was tried; the number or character of the experiments lending support to the inference that what was true of those individuals is true of all substances 'called by the name', that is, of all substances having the attributes the name connotes. . . .

§3. Hobbes's theory of predication, stated as he stated it, hasn't been favourably received by subsequent thinkers; yet a theory virtually identical with it—though much less clearly expressed—has almost achieved the status of an established opinion. The prevailing notion of predication these days goes like this:

> Predicating A of x consists in putting x into a *class*—whether x is an individual or itself a class. Thus, 'Man is mortal' asserts that the class *man* is included in the class *mortal*. 'Plato is a philosopher' asserts that the individual Plato is one of those who compose the class *philosopher*. If the proposition is negative then it excludes something from a class.

This differs only verbally from Hobbes's account. A class is *nothing* but an indefinite number of individuals denoted by a general name. What makes them a class is their common name. To refer something to a class, therefore, is to regard it as one of the things that are to be called by that common name. To exclude it from a class is to say that the common name is not applicable to it.

The widespread influence of this view of predication can be seen in the fact that it's the basis of the celebrated *dictum de omni et nullo* [Latin = 'the everything-and-nothing principle'], which says that **what is true of a class is true of all things that belong to it**. When *this* is laid down by almost all logicians as the ultimate principle to which all reasoning owes its validity, it's clear that logicians generally assume that the propositions of which reasonings are composed can only express the process of dividing things into classes and putting everything in its proper class.

This theory seems to me to be a striking example of a common logical error,. . . .namely explaining a thing by something that presupposes it. When I say that snow is white, I ought to be thinking of snow as a class because I'm asserting a proposition about all snow: but I'm certainly not thinking of white objects as a class. The only white object I'm thinking about is snow, and *what* I am thinking about it concerns only the sensation of white that it gives me. It's true that when I have judged that snow is white and that various other things are also white, I begin to think of white objects as a class. . . . But this is a conception that •followed those judgments, so it can't •explain them. Instead of explaining the effect by the cause, this doctrine explains the cause by the effect—I think it is based on a hidden misunderstanding of the nature of classification.

In discussions of these matters, some people write as though they thought this:

> Classification is a grouping of definite and known individuals. When names were imposed, mankind
>
> - •took into consideration all the individual objects in the universe,
> - •distributed them into parcels or lists,
> - •gave the objects in each list a common name, and
> - •repeated this operation until they had invented all the general names of which language consists.
>
> And now that this has been done, if a question arises about whether a certain general name N can be truly predicated of a certain particular object x, we have only (as it were) to read the roll of the objects on which N has been conferred, and see whether x is among them. The makers of language have predetermined all the objects that are to be in each class, and we have only to consult the record of that previous decision.

No-one will accept this absurd doctrine when thus nakedly stated; but if the commonly accepted explanations of classification and naming don't imply this theory, it needs to be shown how they can be reconciled with any other.

General names aren't marks put on definite objects; classes aren't made by drawing a line round a given number of assignable individuals. The objects composing any class are perpetually fluctuating. We can frame [see Glossary] a class without knowing all—indeed without knowing *any*—of the individuals in it; we can do this while believing that no such individuals exist. If the meaning of a general name is to consist of the things it is the name of, no general name, except by accident, keeps the same meaning for any length of time. The only way a general name has a definite ·and durable· meaning is by being a name of an indefinite variety of things—namely all the things, known or unknown, past, present, or future, that have certain definite attributes. When we discover empirically that these attributes are possessed by some object not previously known to possess them (as when chemists found that the diamond was combustible), we include this new object in the class; but it did not already belong to the class. We place the individual in the class because the proposition is true; the proposition is not true

because the object is placed in the class.[1] [The clause 'it did not already belong in the class' is verbatim from Mill. It implies that nothing is in a class until we *put* it there.]

When ·in Book II· I discuss reasoning, you'll see how greatly the theory of reasoning has been spoiled by the influence of these erroneous notions, and by the habit of assimilating •all the operations of the human understanding that have truth for their object to •processes of mere classification and naming. Unfortunately, the minds that have been entangled in this net are precisely the ones that have escaped the other big error discussed at the start of this chapter. Since the revolution that dislodged Aristotle from the schools, logicians can almost be divided into •those who have looked on reasoning as essentially an affair of ideas and •those who have looked on it as essentially an affair of names.

Hobbes's theory of predication. . . .makes truth and falsity completely arbitrary, with no standard but the will of men, and Hobbes acknowledged this.[2] But don't think that Hobbes, or any of the others who mainly agreed with him about this, did in fact regard the distinction between truth and error as less real or less important than other people: their writings show otherwise—their doctrine didn't have a strong grip on their minds. No-one has ever *really* thought that truth is merely propriety of expression, using language in conformity to a previous convention. When they came to particular cases it has always been accepted that verbal questions are different from real ones; that some false propositions are uttered not from ignorance of the meaning of •words but from a misapprehension of •things; that a person who doesn't have a language can still form propositions mentally, and that they may be untrue. . . . This last admission can't be made more strongly than it is by Hobbes himself,[3] though he won't allow such erroneous belief to be called 'falsity', but only 'error'. Hobbes says elsewhere that general names are given to things *because of* their attributes, which are named by abstract names: 'Abstract is that which in any subject denotes the cause of the concrete name. . . .' It is strange that he didn't see that what he calls the *cause* of the concrete name is really the *meaning* of it; and that when we predicate of any subject a name that is given because of an attribute. . . . our intention is not to •affirm the name, but by means of the name •to affirm the attribute.

[1] Bain in commenting on this passage says that the word 'class' has two meanings: 'the class definite, and the class indefinite. The class definite is an enumeration of actual individuals, like the Peers of the Realm, the oceans of the globe, the known planets. . . The class indefinite is not enumerated. Such classes are stars, planets, gold-bearing rocks, men, poets, virtuous. . . In this second meaning of the word, class name and general name are identical. The class name denotes an indefinite number of individuals, and connotes the points of community or likeness.' The theory I criticise in the text assumes all classes to be definite. I have assumed them to be indefinite, because for the purposes of logic definite classes are almost useless. . . .

[2] He wrote: 'From hence it may be deduced that the first truths were arbitrarily made by those who first of all imposed names on things. . . . For it is true (for example) that *man is a living creature*, but only because men chose to impose both those names on the same thing.'

[3] He writes: 'Men are subject to err not only in affirming and denying, but also in perception and in silent cogitation. . . Tacit errors, or the errors of sense and cogitation, are made by passing from one imagination to the imagination of another different thing; or by feigning that to be past, or future, which never was, nor ever shall be; as when by seeing the image of the sun in water, we imagine the sun itself to be there; or by seeing swords, that there has been, or shall be, fighting, because it used to be so for the most part; or when from promises we imagine the mind of the promiser to be such-and-such. . . . And errors of this sort are common to all things that have sense.'

4. [Mill now says all this again in application to a proposition of the type '[Proper name] is [adjective]', emphasising that someone who says this is thinking about the •thing named by the •proper name, not about the name itself. Then with a proposition of the form '[General name] are [adjective]': here again the thought is not about the general name but about the things denoted by it.]

With these two things in mind—

- •Every attribute is grounded on some fact or phenomenon of outward sense or inward consciousness.
- •To say that 'x *has* attribute A' is just one way of saying that x is the cause of (or a part of) the fact or phenomenon upon which A is grounded,

—we can add one more step to complete the analysis. The proposition that one attribute always accompanies another attribute really says that one phenomenon always accompanies another phenomenon. . . . In the proposition 'All men are mortal' the word 'man' connotes the attributes we ascribe to a certain kind of living creatures on the ground of certain phenomena—physical and mental—that they exhibit. . . . And when we say 'Man is mortal' we mean that wherever these physical and mental phenomena are all found, we can be sure that the physical and mental phenomenon called 'death' will follow; the proposition doesn't say when. . . .

§5. We have gone far enough not only to show that Hobbes is wrong but to ascertain what the real import *is* of the most numerous class of propositions. The object of belief in a proposition. . . .is generally either the •co-existence or the •sequence of two phenomena. At the very start of this inquiry we saw that every act of belief requires two things, and we know now that in most cases these two things are two phenomena, i.e. two states of consciousness; and what the proposition affirms (or denies) regarding them is either that one follows the other or that they co-exist. And this is true of countless cases that no-one would, unprompted, think of describing in those terms. 'A generous person is worthy of honour'—who would see this as asserting co-existence between phenomena? Yet that's what it is. A person is termed 'generous' because of states of his mind and facts about his conduct; both are phenomena—facts of internal consciousness and physical facts or perceptions of the senses. A similar analysis holds for 'worthy of honour': as used here, 'honour' means a state of approving and admiring emotion, followed sometimes by corresponding outward acts. 'Worthy of honour' connotes all this, together with our approval of the act of showing honour; and all these are phenomena—states of internal consciousness accompanied or followed by physical facts. When we say 'A generous person is worthy of honour' we're affirming co-existence between the two complicated phenomena connoted by the two terms respectively. . . .

After my analysis of the import of names, I needn't give many examples to illustrate the import of propositions. When there's any obscurity or difficulty, it comes from the meaning not of the proposition but of the names that compose it—the complicated connotation of many words, the vast series of facts that often constitute the phenomenon connoted by a name. But when we see what the phenomenon is, it's usually easy for us to seeing what the assertion conveyed by the proposition is, namely the co-existence or succession of the phenomena in question. . . .

This is the •most common meaning propositions are intended to convey, but it's not the •only one. Sequences and co-existences are asserted not only about phenomena but also about those hidden causes of phenomena—substances and attributes. A substance, though, is nothing but either that which •causes phenomena or that which •is conscious

of them; and the same is true *mutatis mutandis* of attributes. So no meaningful assertion can be made about these unknown and unknowable entities except in virtue of the phenomena by which alone they show themselves to us. When we say 'Socrates was contemporary with the Peloponnesian war', the foundation of this assertion, as of all assertions about substances, is an assertion about the phenomena they exhibit, namely this:

> The series of facts by which Socrates manifested himself to mankind, and the series of mental states that constituted his sentient existence, went on simultaneously with the series of facts known by the name of 'the Peloponnesian war'.

[Regarding Mill's speaking of one assertion as being based on another *assertion*, see Glossary.] Still, that isn't all that the proposition (as commonly understood) says; it asserts that the thing in itself, the *noumenon* [see Glossary] Socrates, was existing and doing or experiencing those various facts during the same time. Co-existence and sequence can be affirmed or denied not only between phenomena but also between noumena, or between a noumenon and phenomena. And both of noumena and of phenomena we may affirm simple existence. But what is a noumenon? An unknown cause. In affirming the existence of a noumenon, therefore, we are affirming causation. So here are two additional kinds of fact that can be asserted in a proposition. Besides the propositions asserting •Sequence or •Co-existence, there are some that assert simple •Existence; and others assert •Causation. The status of this last as a special kind of assertion will come up for reconsideration in Book III.[1]

§6. To these four kinds of matter-of-fact assertion I must add a fifth, *Resemblance*. (Back on page 31 I found it impossible to analyse this species of attribute; the only grounding that could be assigned for it was the ·resembling· objects themselves.) Sample propositions involving resemblance: ' This colour is like that colour'; 'The heat of today is equal to the heat of yesterday'. [Mill sketches and shoots down a suggested analysis of resemblance in terms of sequence, and concludes:] Resemblance between two phenomena is more intelligible in itself than any explanation could make it, and in any classification it must be distinguished from ordinary cases of sequence and co-existence.

It is sometimes said that any proposition with a general name as predicate does in fact affirm or deny resemblance. Here is why:

> All such propositions affirm that a thing belongs to a class; and things are classed together according to resemblance; so each thing is classed with the things it is thought to resemble most. Thus, when we affirm that gold is a metal we mean that gold resembles other metals more closely than it resembles objects outside that class.

This has some foundation, but not much. The arrangement of things into classes, such as the class *metal*, is indeed grounded on a resemblance among the things placed in that class, but not on a mere general resemblance; it is grounded on fact that all those things have certain common features, and it is *these* that 'metal' connotes. What the proposition asserts, then, is not a general resemblance but the sharing of these special features. When I say 'Gold is a metal' I do imply

[1] I fully accept the Law of Relativity, an important truth of which Bain has been in our time the principal expounder and champion; but unlike him I don't take it to say that we can't apprehend or be conscious of any fact except by contrasting it with some other *positive* fact. The needed antithesis. . . .may be between one positive and its negative. . . . The relative opposite of *Being*, considered as a highest genus, is *Nonentity* or *Nothing*; and we do sometimes have reason to consider and discuss things merely in contrast with Nonentity. . . .

that if there are any other metals gold must resemble them; but if there were no other metals I could still assert 'Gold is a metal', meaning that gold has the various properties implied in the word 'metal'—which is just what it *does* mean. Thus, the situation regarding propositions in which objects are assigned to a class because they have the attributes constituting the class is not •that they assert nothing but resemblance but rather that strictly speaking they don't assert resemblance at all! [Mill in this paragraph ran 'Gold is a metal' in harness with 'Socrates is a man'. One was enough.]

There are, however, two kinds of exception to this. **(1)** It is sometimes convenient to enlarge a class so as to include things that lack some of its characteristic properties, or have them only in a low degree, provided they resemble that class more than any other, so that propositions that are true of the class will be nearer to being true of those things than any other equally general propositions. For instance, some substances that have very few of the properties by which metals are commonly recognised are nevertheless called 'metals'; and almost every large grouping of plants or animals has a few anomalous groups on its borders, which are admitted into it by a sort of courtesy. . . . When the class-name is predicated of any group of this description, we are affirming resemblance and nothing more. . . . If my account of predication is to be scrupulously correct it ought to have an added clause to cover predications on such borderline groups, but there's no need for that complication. It's not often that such a predication is made on a borderline group, and when it is there's usually some slight difference in the wording—'This group is considered as. . . , may be ranked as. . . ' and so on. . . . (Reasons for admitting borderlines into classes will be more fully discussed in Book IV chapter 7.)

(2) The second kind of exception concerns the classes into which our simple sensations, or other simple feelings, are divided. Sensations of *white* are classed together not because we can take them to pieces and say 'They're alike in this, and not alike in that', but because we feel them to be alike altogether, though in different degrees. So when I say 'The colour I saw yesterday was a white colour' or 'The sensation I feel is one of tightness', the attribute I affirm of the colour or of the other sensation is mere resemblance—simple likeness to previous sensations of mine that have been given those names. The names of feelings, like other concrete general names, are connotative; but they connote a mere resemblance. . . .

Existence, Co-existence, Sequence, Causation, Resemblance: one or other of these is asserted (or denied) in every proposition that isn't merely verbal. This five-fold division covers all matters of fact, all things that can be believed or proposed for belief, all questions that can be asked, all answers that can be given to them.

Bain distinguishes two kinds of propositions of co-existence. 'In one kind, account is taken of place; they are propositions of *order in place*.' He calls the other kind *co-inherence of attributes*:

> 'This is a distinct variety of propositions of co-existence. Instead of an arrangement in place. . . .we have the concurrence of two or more attributes or powers in the same part or locality. A mass of gold contains in every atom the concurring attributes that mark the substance—weight, hardness, colour, lustre, etc. An animal, besides having parts situated in places, has co-inhering functions in the same parts, exerted by the very same masses and molecules of its substance. . . The mind isn't the source of any propositions of order in place, but it has co-inhering functions. We affirm mind to contain feeling, will, and thought, not in local separation but in commingling

> exercise. Affirmations of co-inherence are true of the concurring properties of minerals, of plants, and of the bodily and the mental structure of animals.'

This distinction is real and important. ·but it isn't basic in the way Bain thinks it is·. As I have pointed out, an attribute (except when it's a simple unanalysable resemblance between the subject and some other things) consists in causing impressions of some sort on consciousness. So the co-inherence of two attributes is merely the co-existence of two states of consciousness. . . . With one complication: this co-existence is sometimes only potential, because an attribute may be regarded as •actually in existence though the fact on which it is grounded is only •potentially present. It's convenient to regard snow as white even in the dark, because. . . .we'll be conscious of the whiteness at daybreak. So co-inherence of attributes is still a mildly complex case of co-existence of states of consciousness. But it is of course a totally different thing from order in *place*; it's a matter of something's having two attributes at the same *time*.

We may sometimes find it convenient, then, to replace

- •co-existence and sequence,

by the more specific

- •order in place and order in time.

Order in place is one kind of co-existence, a kind that we needn't analyse any further here. And order in time includes both sequence and the co-existence of attributes, which I have already analysed.

§7. I have thought that I needed to analyse only propositions in which the predicate is a concrete term. But in doing this I have indirectly analysed those in which the terms are abstract. What distinguishes an abstract term from its corresponding concrete isn't any difference in what they signify; for the real signification of a concrete general name is (I repeat) its connotation; and what the concrete term connotes is the entire meaning of the abstract name. Since everything in the import of an abstract name is also in the import of the corresponding concrete, it's natural to suppose whatever is in the import of an abstract-terms proposition can also be expressed in a concrete-terms one.

And this turns out to be right. An abstract name is the name of an attribute;. . . .the corresponding concrete is a name given to things in order to express their possessing that attribute. So when we predicate a concrete name of anything, what really predicate of it is the attribute. [The rest of this paragraph repetitively emphasizes Mill's view that every attribute is 'an existence, a sequence, a co-existence, a causation, or a resemblance'.]

It is impossible to imagine any abstract-terms proposition that can't be transformed into a precisely equivalent proposition with concrete terms—namely,

- •the concrete names that connote the attributes themselves, or
- •the names of the facts or phenomena on which those attributes are grounded.

To illustrate the latter case, consider a proposition of which only the subject is an abstract name: 'Thoughtlessness is dangerous'. Thoughtlessness is an attribute grounded on the facts that we call 'thoughtless actions'; and the proposition is equivalent to 'Thoughtless actions are dangerous'. Now a couple of propositions in which both terms are abstract names: 'Whiteness is a colour', 'The colour of snow is a whiteness'. These attributes are grounded on sensations, so the equivalent concrete-terms propositions are 'The sensation of white is one of the items called 'sensations of colour' and 'The visual sensation caused by looking at snow is one of the sensations called sensations of white'. . . . Now two examples in which the concrete terms directly correspond

to the abstract names, connoting the attribute that these denote: 'Prudence is a virtue' = 'All prudent persons, in so far as prudent, are virtuous'. 'Courage is deserving of honour' = 'All courageous persons are deserving of honour in so far as they are courageous', which = 'All courageous persons deserve an addition to the honour, or a diminution of the disgrace, that would attach to them on other grounds'. [The 'in so far as' locution is Mill's.]

Let's go into more detail about the 'prudence' example. In 'Prudence is a virtue' let us replace 'virtue' by an equivalent but more definite expression—e.g. 'a mental quality beneficial to society' or 'a mental quality pleasing to God' or whatever else we use to define 'virtue'. What the proposition asserts is a •sequence accompanied by •causation, namely that benefit to society (or whatever) is •consequent on prudence and •caused by it. Here is a sequence; but between what? We understand the consequent of the sequence, but what about the antecedent? In connection with prudence, the attribute, two things are to be considered: prudent •persons, who have the attribute, and prudent •conduct, which can be called the foundation of it. [Mill says that neither of these is the attribute, because a prudent person may be a rogue, and behaviour that is prudent may nevertheless have bad consequences that outweigh the prudential good. He continues:] Thus, neither the substance nor the phenomenon—neither the person nor the conduct—is an antecedent which the other term of the sequence *always* follows. But 'Prudence is a virtue' is a *universal* proposition. What is it, then, that the proposition says is *always* followed by the effects in question?. . . . ·It's the relevant mental states and actions·—a correct foresight of consequences, a just estimation of their importance to the object in view, and repression of any thoughtless impulse that would interfere with the deliberate purpose. These are the real antecedent in the •sequence, the real cause in the •causation, asserted by the proposition. They are also the real ground of the attribute of prudence; where these states of mind exist we can predicate prudence without knowing whether any conduct has followed. In this way, every assertion about an attribute can be transformed into an exactly equivalent assertion about the phenomenon that is the ground of the attribute. . . .

Chapter 6: Merely verbal propositions

§1. The proper aim of logic is to lay down how propositions are to be proved, and on my way to that I have had to investigate *what they assert* that requires proof or can be proved. I examined the conceptualist opinion that a proposition expresses a relation between two ideas; and the extreme nominalist doctrine that it expresses an agreement or disagreement between the meanings of two names. I argued that neither of these is a correct *general* theory: many propositions are not about names or about ideas. I then examined the different kinds of propositions, and found that apart from those that are merely verbal they assert five different kinds of matters of fact—existence, order in place, order in time, causation, and resemblance. . . .

Notice that I excepted 'merely verbal' propositions, which don't relate to anything properly called a 'matter of fact'. Since names and their signification are entirely arbitrary, such propositions can't be (strictly speaking) true or false; they can only be in conformity or disconformity with usage or convention; and the only proof they are capable of is proof of usage—proof that the words have been used by others in the meaning the speaker or writer wants to give them. Yet these propositions have a conspicuous role in philosophy, and their characteristics are as important in logic as those of any of the five other classes of propositions.

If all propositions about the signification of words were as simple and unimportant as. . . .the likes of 'Cicero is Tully', there would be little to attract philosophers to attend to them. But the class of merely verbal propositions contains ones that are not like that, including some that at first sight don't seem to be merely verbal. These latter include a kind of assertions that have been regarded not only as relating to things (·rather than merely to words·) but as being more intimately related to things any other propositions whatever. If you know some philosophy you'll see that I'm referring to the distinction—much emphasized by the scholastics and still retained under one or another label by most metaphysicians today—between 'essential' and 'accidental' propositions, and between 'essential' and 'accidental' properties or attributes.

§2. Almost all metaphysicians before Locke and many since his time have made a great mystery of *essential predication* and of predicates that are said to be 'of the essence' of the subject. Their view went like this:

> The essence of a thing is that without which the thing couldn't exist or be conceived to exist. Thus, rationality is of the essence of man, because man could not be conceived to exist without rationality. The different attributes that make up the essence of a thing x are its *essential properties*; and a proposition that predicates any of these of x is an *essential proposition*, which goes deeper into x's nature, conveying more important information about it, than any other proposition could do. Properties of x that aren't of its essence are its *accidents*. They have almost nothing to do with its inmost nature, and a proposition that predicates any of these of x is an *accidental proposition*.

. . . .The terms 'essence' and 'accident' were the scholastics' technical expression of their false views about nature of classification and generalisation. That's the only possible explanation of their having misunderstood the real nature of the 'essences' that loomed so large in their philosophy. They were right in saying that man can't be conceived without rationality. But though *man* cannot, a *being* can be conceived exactly like a man in every way except for rationality and whatever other qualities are tied to it. Thus, the truth of 'Man cannot be conceived without rationality'—the *whole* truth—is merely that if a being doesn't have rationality it doesn't count as *a man*. Such a being can be conceived; for all we know, it can exist; but the conventions of language won't allow it to be called by the name that is reserved for rational beings. Rationality, in short, is involved in the meaning of the word 'man'; it's one of the attributes connoted by that name. The 'essence of man' simply means all the attributes connoted by 'man', and each of those attributes is an essential property of man.

It's easy for us to see this, but it would have been difficult for persons who thought—as most of the later Aristotelians, including the scholastics, did—that. . . .gold (for instance) was made gold not by

> having certain properties that mankind have chosen to attach the word 'gold'

but by

> participating in the nature of a general substance—'gold in general'—which inheres in every individual piece of gold.

They didn't think that these universal substances are attached to *all* general names, but only to *some*; so their view was that •an object borrows only some of its properties from a universal substance (its essence) and that •the rest belong to it individually (its accidents). The scholastic doctrine of essences lingered on for years after the death of the underlying theory about real ·general· entities corresponding to general terms; and it was left to Locke to convince philosophers that the 'essences' of classes were merely the significations of their names. Among Locke's notable services to philosophy, none was more needed or more valuable than this.

Any proposition 'Every S is P', where P stands for an attribute that belongs to the set of attributes connoted by S, is of course true. . . . But it won't tell you anything you didn't know already if you know the meaning of S. 'Every man is a corporeal being', 'Every man is a living creature', 'Every man is rational', convey no knowledge to anyone who is already aware of the entire meaning of 'man'. . . . That every man has the attributes connoted by *all* these predicates is already asserted when he is called a 'man'. All the propositions that have been called 'essential' are like that; they are in fact identical [see Glossary] propositions.

It is true that a proposition that predicates any attribute, even one implied in the subject-name, is usually understood to imply that there *exists* a thing corresponding to that name and having the attributes connoted by it; and that implied assertion may convey information even to someone who already understands the meaning of the name. But any information of this sort. . . .is included in the assertion 'Men exist'. This implication of real existence results from an imperfection of language, namely the ambiguity of the copula 'is', which serves **(a)** as a mark to show that an assertion is being made and **(b)** as a concrete word connoting existence. So this implication of the actual existence of such a proposition isn't *real*. We may say 'A ghost is a disembodied spirit' without believing in ghosts. But an accidental or non-essential affirmation *does* imply the real existence of the subject. . . . 'A ghost walks the battlements every Tuesday' has to be understood as implying a belief in ghosts. The meaning of 'ghost' implies nothing like this, so the speaker either means nothing or means to assert something that he wants us to believed really happens.

I'll show later on that when—as in mathematics—any important consequences seem to follow from an 'essential proposition', i.e. from a proposition involved in the meaning of a name, what they really flow from is the assumption that the objects so named really exist. Apart from this assumption of real existence, propositions in which the predicate is 'of the essence' of the subject. . . .do nothing but unfold the whole or some part of the meaning of the name to those who don't already know it. So the most useful kind—strictly speaking the *only* useful kind—of essential propositions are *definitions*. [Mill adds brief remarks about kinds of definition, and says that definitions 'will be minutely considered' in chapter 8.]

§3. According to the view I have presented, no proposition can qualify as 'essential' if its subject term is a proper name. Individuals don't have essences. When the scholastics talked of the 'essence' of an individual, they didn't mean the properties implied in its name, for the names of individuals don't imply any properties. They counted as 'of the essence' of an individual x whatever was of the essence of the species usually assigned to x—i.e. the class that they thought x

naturally belonged to. Thus, because 'Man is a rational being' is an essential proposition, they said the same thing about 'Julius Caesar is a rational being'. This followed very naturally if genera and species were to be considered as entities distinct from the individuals composing them—distinct from them and inhering in them. If *man* was a substance inhering in each individual man, the essence of man (whatever that might mean) was naturally supposed to accompany it; to inhere in John Doe and to form the common essence of Doe and Julius Caesar. That being so, rationality is of the essence of John Doe because it's of the essence of man. But if *man* is nothing but the individual men and a name given to them because of certain common properties, what becomes of John Doe's essence?

A fundamental error is seldom expelled from philosophy by a single victory. It retreats slowly, defends every inch of ground, and after it has been driven from the open country it often retains a footing in some remote safe haven. The essences of individuals were a meaningless illusion caused by a misunderstanding of the essences of classes; yet even Locke, having wiped out the parent error, couldn't shake himself free from one of its offspring. He distinguished two sorts of essences, *real* and *nominal*. His 'nominal essences' were the essences of classes, explained nearly as I have just explained them. (Indeed, Book III of Locke's *Essay* is a nearly flawless treatise on the connotation of names, except for its view that there are 'abstract Ideas', a view that is unfortunately •involved in the wording though not necessarily •connected with the thoughts contained in that immortal Third Book.) But he also admitted 'real' essences, i.e. essences of individual objects, which he thought to be the causes of those objects' sensible properties. We don't know (he said) what these real essences are (and this acknowledgment made the fiction comparatively harmless); but if we did, we could from them alone demonstrate the sensible properties of the object as the properties of the triangle are demonstrated from the definition of *triangle*. I'll return to this theory when I discuss demonstration, and the conditions under which one property of a thing can be demonstrated from another. . . .

§4. So an essential proposition is a purely verbal one. . . .which gives no information except about the subject-name, not the thing. Non-essential or 'accidental' propositions can be called *real* [see Glossary] propositions as opposed to *verbal* ones. They predicate of a thing some fact that isn't involved in the signification of the name by which the proposition speaks of it, some attribute not connoted by that name. Propositions of this kind include

- •all propositions concerning things individually designated, and
- •all general or particular propositions in which the predicate connotes some attribute not connoted by the subject.

If any of these is true, it conveys information that isn't already involved in the names employed. . . . These are the only propositions that are in themselves instructive, or from which any instructive propositions can be inferred.[1]

[The 'school logic' that descended from the scholastics, Mill says, has a widespread reputation for being futile; and the biggest single source of this is probably the practice of discussing predication and inference almost entirely with examples that are essential propositions. Animals are

[1] This distinction corresponds to the one drawn by Kant and other metaphysicians between what they call 'analytic' and 'synthetic' judgments, the former being the ones that can be derived from the meanings of the terms used.

bodies, and bodies are substances, therefore animals are substances—what triviality! He concludes:] I have, therefore in this work avoided using essential propositions as examples, except where there is a special point in using them.

§5. As regards propositions that do convey information,. . . .there are two ways of looking at these, or rather at the general propositions among them: we can look at them as portions of •theoretical truth or as memoranda for •practical use. Depending on which of these we adopt, their import can be conveniently expressed in one or other of two formulas.

(i) The formula I have been using is best adapted to express the import of the proposition as an item of theoretical knowledge: 'All men are mortal' means that the attributes of *man* are always accompanied by the attribute mortality; 'No men are gods' means that the attributes of man are never accompanied by all the attributes signified by 'god'. **(ii)** But when a proposition is considered as a memorandum for practical use, a different way of expressing the same meaning is better adapted to indicate the job the proposition is doing. The practical use of a proposition is to inform or remind us of what we have to expect in any individual case that falls within the scope of the proposition. In that context, 'All men are mortal' means that the attributes of *man* are evidence of—are a mark of—mortality; an indication by which the presence of mortality is made manifest. 'No men are gods' means that the attributes of man are a mark or evidence that at least some of the attributes understood to belong to *a god* are not there; that where the former are, we shouldn't expect to find the latter.

These two forms of expression are basically equivalent; but **(i)** points our attention more directly to what a proposition means, **(ii)** to how the proposition is to be used.

Now *reasoning* is a process into which propositions enter not as ultimate results but as means to establishing other propositions. So we can expect that the role of propositions in reasoning is best expressed by **(ii)** the way of exhibiting a general proposition's import that brings out its application to practical use. In the theory of reasoning, therefore, we pretty well have to think of a proposition as saying that one fact or phenomenon is a mark or evidence of another fact or phenomenon. For the purposes of that theory, the best way to define a proposition's import is not the one that most clearly shows what the proposition is in itself, but the one that distinctly suggests how it can be made available for advancing from it to other propositions.

Chapter 7: The nature of classification. The five predicables.

§1. In discussing the nature of general propositions I have made much less use than logicians usually do of the ideas of a *class* and of *classification*—ideas that have, since the realist doctrine of general substances went out of vogue, been the basis for almost every attempt at a philosophical theory of general terms and general propositions. I have considered general names as having a meaning, quite independently of their being the names of classes. Whether a general name names a class is utterly irrelevant to its signification; it makes no difference whether there are many objects, or only one, or none, to which it happens to be applicable. The word 'god' is as much a general term to the Christian or Jew as to the polytheist; and 'dragon', 'hippogriff', 'chimera', 'mermaid', 'ghost' are general names, just as much so as if real objects existed corresponding to them. If a name's signification is constituted by attributes, it is potentially a name of indefinitely many objects; but it needn't actually be the name of any; and if of any, it may be the name of only one. As soon as we use a name to connote attributes, the things (if any) that have those attributes are thereby constituted a class. But in predicating the name we predicate only the attributes; and in many cases the fact of belonging to a class doesn't make an appearance.

However, although predication doesn't presuppose classification, and although the theory of names and propositions is only cluttered by intruding the idea of classification into it, classification is nevertheless closely connected with the use of general names. By every general name that we introduce, we *create a class* if there are any things, real or imaginary, to compose it, i.e. any things corresponding to the signification of the name. Thus, classes mostly owe their existence to general language. But general language sometimes, though not very often, owes its existence to classes. A general name is mostly introduced

> because we have a signification to express by it; i.e. because we need a word by which to predicate the attributes that it connotes.

But sometimes a general name is introduced

> because we have found it convenient to create a class; i.e. because we have thought it useful in our thinking that a certain group of objects should be thought of together.

For example, a naturalist has scientific reasons to sort the animal or vegetable creation into certain groups rather than into any others, and he needs a name to bind each of his groups together, so to speak. But don't think that names introduced in this way are in any way different from other connotative names in *how* they signify. The classes they denote are, as much as any other classes, constituted by certain common attributes, and their names signify those attributes and nothing else. . . .

The principles that ought to regulate classification, as a logical process subservient to the investigation of truth, can't be usefully discussed until much later in my inquiry. But I *have to* deal here with classification considered as resulting from (and implied in) the fact of employing general language; if I didn't, I would be leaving the theory of general names and of their use in predication in a mutilated and formless state.

§2. This part of the theory of general language is the subject of what is called the doctrine of the *predicables*, a set of distinctions handed down from Aristotle and his follower Porphyry, many of which have taken root in scientific

terminology and some even in ordinary informal language. The predicables are a five-fold division of general names, base not on •differences in their meanings, i.e. on the attributes they connote, but on •differences in the kind of class they denote. There are five different sorts of class-name that we can use in predication:

a genus of the thing
a species
a differentia
a proprium
an accidens

[Those labels are Latin; Mill also gives the Greek for each.] Notice that when you put one of these labels on an attribute what you're talking about is not •what the attribute is like in itself, but •what relation it has to the subject you are predicating it on.... 'Animal', for instance, is a genus with respect to *man* or *John*, a species with respect to *substance* or *being*. 'Rectangular' is one of the differentiae of a geometrical square; it is merely an accidens of the table at which I am writing. The words 'genus', 'species', etc. are therefore relative terms: they are names applied to certain predicates to express the relation between them and some given subject. And we'll see that the relation is grounded not on what the predicate connotes but on •the class it denotes and •the place that class has in some given classification relatively to the particular subject.

§3. Two of these names, 'genus' and 'species', are used by naturalists in technical senses not precisely agreeing with their philosophical meaning, and have also acquired popular [see Glossary] meanings that are much more general still. In this popular sense, any two classes can be called 'genus' and 'species' if one includes the other and more. For instance, animal and man; man and mathematician.... Taste is a genus of which sweet taste, sour taste, salt taste etc. are species. Virtue is a genus; justice, prudence, courage, fortitude, generosity etc. are its species.

A class that is a genus relative to the sub-classes or species included in it can itself be a species relative to a more comprehensive genus. [Examples are then given.]

....The Aristotelian logicians used 'genus' and 'species' in a more restricted sense. They didn't count every case of class/subclass as one of genus/species; for example, they wouldn't say that *man* is a species belonging to a genus *biped*.... They held that genus and species must be 'of the essence' of the subject, and they expressed this also by saying that genus must differ from species **in kind**. *Animal* was of the essence of man; *biped* was not. And in every classification they considered some one class as the lowest species—*man* was a lowest species, for instance. Any further divisions of the class—e.g. man into white, black, and red man—they didn't count as species.

I showed in chapter 6 that the distinction between •the essence of a class and •the attributes that aren't of its essence....is in fact merely the difference between •attributes of the class that are involved in the signification of the class-name and •attributes that aren't. And I showed that as applied to individuals the word 'essence' has no meaning except in the context of the exploded tenets of the realists....

Is this merely verbal difference all there is to the line the scholastics drew between the class-pairs that they would count as genus/species and the ones that they wouldn't? Is it an error to regard some of the differences that exist among objects as differences in kind (in genus or species), and others only as differences in the accidents? Were the scholastics right or wrong in calling some classes '**kinds**' and others not? We'll see that the Aristotelians *did* mean

something by this distinction—something important—but they didn't have it clear in their minds, which is why they expressed it in terms of 'essences' and other unsatisfactory language.

§4. It's a fundamental principle in logic that the power of framing [see Glossary] classes is unlimited, as long as there's some difference, however tiny, to base a distinction on. Take any attribute A whatever: and if some things have it and others don't, we can take it as the basis for dividing all things into two classes; and we actually do this the moment we create a name that connotes the attribute. So the number of possible classes is boundless; and there are as many actual classes (of real or of imaginary things) as there are general names (including the negative ones).

[The labels 'K' and 'NK' are reminders—not by Mill—of 'difference in kind' and 'difference not in kind'.] But if we contemplate any one of the classes so formed, such as the classes animal or plant, sulphur or phosphorus, white or red, and ask ·what I'll call 'the Question'·:

> **What features are possessed by every individual in this class and by no individual outside it?**

we'll get two very different sorts of answer, depending on what class is in question. For NK classes, the things in the class differ from other things only in certain particulars that we could list; whereas for K classes there are more differences than we could list, more even than we have much chance of knowing. Ask the Question about *white things*, for example: they have nothing in common except their whiteness (and perhaps some features connected somehow with whiteness). But now ask it about some K class—*plants* or *phosphorus*: many centuries of research haven't given us a complete list of the common properties of animals or of portions of phosphorus. And we don't assume that we can complete the list: we go on making new observations and experiments, in confidence that we'll discover new properties that weren't implied in any of the ones we previously knew. So far as we're concerned, the list of all the common properties might as well be infinite. Contrast that with a research proposal to investigate the common properties of all things in an NK class, e.g. having same colour, or the same shape, or the same specific gravity! The absurdity would be obvious. We have no reason to think that any such common properties exist, apart from ones that are •involved in the defining attribute or •derivable from it by some law of causation. . . . [The phrase 'involved in the defining attribute' replaces Mill's puzzling 'involved in the supposition itself'.]

There's nothing wrong with saying that a K classification answers to a much more radical distinction in the things themselves than does an NK classification. And if you want to say that K classifications are made •by nature while NK ones are made •by us for our convenience, you'll be right, provided you mean only this:

- •(K) Where a certain apparent difference between things answers to who-knows-how-many other differences,. . . .some involving properties not yet discovered, it is not optional but imperative to recognise this difference as the basis for a specific distinction; whereas
- •(NK) differences that are merely finite and determinate, like those designated by the words 'white', 'black', or 'red', can be disregarded if the purpose for which the classification is made doesn't require that they be attended to.

The differences are made by nature in both cases; the recognition of them as bases for classification and naming is done by man in both cases. Where they differ is in this: in one case (K) the purposes of language and of classification

would be subverted if no notice were taken of the differences ·that define the class·, while in the other case (NK) the need to take notice of the defining difference depends on how important the relevant qualities are to us.

Now, these (K) classes, distinguished by unknown multitudes of properties, and not solely (NK) by a few determinate ones—which (K) are separated off from one another by an unfathomable chasm instead of (NK) by a mere ordinary ditch with a visible bottom—are the only classes that the Aristotelian logicians counted as genera or species. . . . They were justified in drawing a broad line of separation between these two kinds of classes and of class-distinctions; and I shall not only •retain the division itself but also •continue to express it in their language. According to that language, the 'proximate' (or lowest) kind to which any individual can be assigned is called its species: so Isaac Newton would be said to be of the species *man*. He also belongs to many sub-classes included in the class *man*—e.g. *Christian*, *Englishman*, *Mathematician*. But though these are distinct classes they are not, in our sense of the word, distinct 'kinds' of men. A Christian differs from other human beings; but he differs only in the attribute that the word 'Christian' expresses—belief in Christianity and whatever else that implies. . . . We would never think of asking 'What properties, unconnected with Christianity either as cause or effect, are possessed by all **Christians** and by no-one else?'; whereas physiologists are perpetually asking the analogous question about **men**, and aren't likely ever to have a complete answer. So *man* is a species and *Christian* is not.

I'm not denying that there *may* be different kinds—different 'species' in the Aristotelian sense—of men. The various races and temperaments, the two sexes, and even the various ages, may be differences of 'kind' in my meaning of the term. I don't say that they *are* so. The progress of physiology suggests that they are not, making it look likely that the real differences between different races, sexes, etc. are (NK) causally natural consequences of a small number of primary differences that can be precisely determined and that account for all the rest. If that is so, these are not (K) distinctions in kind, any more than are the differences of Christian, Jew, Moslem, and pagan, which also carry many consequences along with them. That is how classes are often mistaken for real kinds and then found not to be so. But if it turned out that the differences couldn't be thus accounted for, then Caucasian, Mongolian, Negro, etc. really would be different kinds of human beings, and entitled to be ranked as species by the logician. But not by the naturalist, because (I repeat) the word 'species' is used with different significations in logic and in natural history. Naturalists usually don't put two organisms in different species if they are thought to have descended from the same stock. But that is an artificial sense given to the word for the technical purposes of that one science. To the logician, if a Negro and a white man differ in the same way (even if not to the same extent) as a horse differs from a camel—i.e. if their differences are inexhaustible and not traceable to any common cause—they are different species, whether or not they have ancestors in common. But if their differences can all be traced to climate and habits, or to some one or a few special differences in structure, logician doesn't assign them to different species. [This work first appeared 16 years before Darwin's *The Origin of Species*. Three or four editions of *System* post-dated *Origin*, but weren't altered in the light of it.]

When the lowest species—the 'proximate kind'—to which an individual belongs has been ascertained, the properties common to that kind must include all the common properties of every other real kind to which the individual can be assigned. Let the individual be Socrates, and the proximate

kind *man*. *Animal* is also a real kind, and includes Socrates; and since all men are animals the properties common to animals are some of the common properties of the sub-class *man*. And any class that includes Socrates without including *man* is (NK) not a real kind—e.g. the class of flat-nosed animals. If it turned out that

- •all flat-nosed animals have common properties that aren't implied in their flat noses and aren't possessed by all animals whatever; so that
- •a flat nose was a marker for indefinitely many other special features not deducible from flat-nosedness by an ascertainable law,

then out of the class *man* we could cut (K) another class, *flat-nosed man*, which would be a kind. In that case, though, *man* would not be the proximate kind after all. . . .

Now we can fix the logical meaning of the terms 'genus' and 'species'. Every class that is (K) a real kind—i.e. is distinguished from all other classes by indeterminately many properties not derivable from one another—is either a genus or a species. A kind that isn't divisible into other kinds is a species, and can't be a genus because it has no species under it. . . . But every kind that can be divided into real kinds (as *animal* into mammal, bird, fish, etc., or *bird* into various species of birds) is •a genus to all below it and •a species to all genera in which it is included. With that settled, we can move on to the three remaining predicables, *differentia*, *proprium*, and *accidens*.

§5. The word 'differentia' is tied to 'genus' and 'species'. Everyone agrees that a differentia is an attribute that distinguishes a given species from every other species of the same genus. So far so good, but *which* of the distinguishing attributes is the differentia? ·The question arises· because every kind (and thus every species) is distinguished from other kinds by indefinitely many attributes. *Man* is a species of the genus *animal*, and logicians usually assign *rational* as the differentia (or *rationality*; it doesn't matter here whether we use the concrete or the abstract form of the word); man is also a cooking animal, and the only one. Since this is another attribute marking off *man* from other species of the same genus, would it serve equally well as a differentia? The Aristotelians say No, because they held that the differentia must be 'of the essence of' the subject, just as the genus and species are.

We saw that when a genus and species are said to be 'of the essence' of the things they contain, there's a vestige of a meaning based on the nature of the things themselves ·and not merely the words used to express them·. When the scholastics distinguished things' 'essences' from their 'accidents', they were confusedly distinguishing (K) differences of kind from (NK) differences that are not of kind; they meant to say that genera and species must (K) be kinds. Their notion of 'the essence of' a thing x was a vague notion of a something that

- •makes x be what it is, i.e.
- •makes it the kind of thing that it is, i.e.
- •causes it to have all the variety of properties that distinguish its kind.

But when this was looked into more closely, nobody could discover •what caused the thing to have all those properties, or even •that anything causes it to have them. Logicians, however, didn't like to admit this, and being unable to detect what makes the thing *be what it is*, settled for knowing what makes it *be what it is called*. Of the innumerable properties, many of them unknown, that are common to the class *man*, only a few are connoted by its name; these few will naturally have been distinguished from the rest because they are more obvious or more important. And these are the properties that

logicians seized on and called 'the essence of' the species; and they went even further in the case of a lowest species and called them 'the essence of' the individual too, because they held that the species contained the whole essence of the thing. Metaphysics, that fertile field of delusion propagated by language, doesn't offer a more notable example of such delusion than this one. . . .

So the distinction between differentia, proprium, and accidens is grounded not in the nature of things but in the connotation of names. If we want to know what it is, that's where we must look.

From the fact that the genus includes the species—i.e. denotes more than the species. . . .—it follows that the species must connote more than the genus. It must connote all the attributes the genus connotes, or there would be nothing to prevent it from denoting individuals not included in the genus. And it must connote something besides what the genus connotes, because otherwise it would include the whole genus. 'Animal' denotes all the individuals denoted by 'man' and many more. So 'man' must connote all that 'animal' connotes, or there could be men who weren't animals. And it must connote something more than 'animal' connotes, or all animals would be men. This surplus of connotation—what the species connotes over and above the connotation of the genus—is the *differentia*; or, in other words, the differentia is what must be added to the connotation of the genus to complete the connotation of the species.

The word 'man', for instance, in addition to what it connotes in common with 'animal', also connotes *rationality*, and some approximation to the external shape that we all know but don't have any name for except 'human shape'. So the differentia of *man* in relation to the genus *animal* is •that outward shape and •the possession of reason. The Aristotelians said it was the possession of reason alone, without the outward shape. But if they kept to this, they'd have been obliged to call the Houyhnhnms men. [They are virtuous horses in one of Swift's Gulliver tales]. The question never arose, and they didn't have to decide how such a case would have affected their notion of essentiality. . . .

§6. Let's not give the notion of differentia too narrow a range. It can happen that a species is marked off within a genus by more than one differentia', and which one is selected depends on the purposes and methods of the person making the classification. A naturalist surveys the various kinds of animals looking for the classification of them that fits best with the order in which he thinks it desirable for us to think of them. With that aim, he favours a system in which there's a basic division between warm-blooded and cold-blooded animals; or between animals that breathe with lungs and those that breathe with gills;. . . .or between those that walk flat-footed and those that walk on their toes. . . . In doing this, he creates new classes that aren't the ones animals are assigned to in casual conversation; no-one would think of classifying animals in the naturalist's terms unless we were ruled by the need for scientific convenience. . . .

Practical convenience justifies us in making the main lines of our classification not coincide with any distinction of kind, thus creating 'genera' and 'species' in the popular sense that aren't 'genera' or 'species' in the rigorous sense. So we must also be justified, when our genera and species *are* real genera and species, in marking the distinction between species and genus in whatever suits our practical convenience. If we cut the species *man* out of the genus *animal*, for instance, intending the cut to be governed by rationality, then ·for us· rationality is the differentia of the species *man*. But if as naturalists we find it scientifically convenient to mark out *man* from the genus *animal* by 'four

incisors in each jaw, tusks solitary, and erect posture', then 'man' as used by us as naturalists connotes not *rationality* but those three other properties. . . . The upshot of all this is as follows:

> In any genus/species pair, the name of the species must •be connotative and must •connote the differentia; but the connotation can be special—not involved in the ordinary use of the word but given to it when it is used as a term of art or science.

[Mill remarks that if for a given genus/species pair two different differentiae have some currency, we might discover something that fits one differentia and not the other—e.g. a rational animal that doesn't fit the differentia used by the naturalist Linnaeus. Would it be a man?]

Words that aren't otherwise connotative can acquire a special or technical connotation in the way I have described. 'Whiteness' (I repeat) doesn't connote anything; it merely denotes the attribute corresponding to a certain sensation; but if you're writing an article about the classification of colours, and want to underline the particular place of whiteness in your scheme, you can define it as 'the colour produced by the mixture of all the simple rays'; and this fact, though not implied in the ordinary meaning of 'whiteness', *is* part of its meaning in your article, where it is the differentia of the species.

So the differentia of a species can be defined as: *the part of the connotation of the species-name, whether ordinary or special and technical, that distinguishes the species from all other species of the genus to which we are assigning it.*

§7. Having dealt with genus, species, and differentia, we won't find it hard to get clear conception of how proprium differs from accidens, and how those two differ from the first three.

In the Aristotelian terminology genus and differentia are 'of the essence' of the subject, which really means (as we saw) that the properties signified by the genus and those signified by the differentia are part of the connotation of the name denoting the species. Proprium and accidens, on the other hand, are not part of the essence, and are predicated of the species only accidentally [see Glossary]. Both are 'accidents' in the broader sense in which a thing's accidents are opposed to its essence; but in the ·Aristotelian· doctrine of the *Predicables* 'accidens' is used only for one sort of accident, 'proprium' for another. Proprium, the scholastics said, is predicated accidentally *but necessarily*, or—as they further explain it—it signifies an attribute that flows from the essence without being a part of it, so that it is inseparably attached to the species. For example, all the properties of a triangle that aren't part of its definition must be possessed by anything that fits that definition. Accidens, on the other hand, has no connection with the essence; it can come and go without affecting the species. . . . Whether or not we actually encounter a member of the species that doesn't have the accidens, we can think of such a thing without having to think of it as no longer belonging to that species.

So we can define the *proprium* of a species as: any attribute that isn't connoted by the species-name but follows from some attribute that the species-name does connote. This applies whether the classification in question is an ordinary everyday one or a special one adopted for a special purpose.

There are two kinds of proprium, because there are two ways for one attribute to 'follow from' another: it may follow •as a conclusion follows premises or •as an effect follows a cause. For example, the attribute of *having the opposite sides equal* isn't connoted by the word 'parallelogram' but follows from ones that are connoted by it;. . . .so that attribute

is a proprium$_1$ of the class *parallelogram*, by which I mean that it follows **demonstratively** from the connoted attributes. The attribute of *being able to understand language* is a proprium of the species *man*, because it follows from an attribute that 'man' does connote, namely rationality. But this is a proprium$_2$, by which I mean that it follows **causally** from rationality. Many questions arise, which I'll deal with in Books II and III. All I need to say here is that whether a proprium follows by •demonstration or by •causation it follows *necessarily*—i.e. by some law that is a part of the constitution either of •our thinking faculty or of •the universe.

§8. The fifth and last predicable, *accidens*, includes all the attributes of a thing that aren't involved in the signification of its species name (whether ordinary or technical), and aren't known to have any necessary connection with attributes that are involved in it. They are commonly divided into two groups. **Inseparable** accidents. . . .are ones that aren't necessary to the species though they are in fact possessed by all the species' members. Blackness is an attribute of a crow, and (as far as we know) of *all* crows. But if we came across a race of white birds that were like crows in every other way, we would say 'These are white crows'—not 'These are not crows'. . . . We conceive a white crow, and don't know of any reason why such an animal should not exist, but we don't know of any real white crows; so in our present state of knowledge blackness counts as an accident, but an inseparable accident, of the species *crow*.

Separable accidents are attributes that aren't possessed by all the members of the species all the time: as well as not being necessary ·to the species· they aren't even universal ·throughout it·. . . . Thus the colour of a European is a separable accident of the species *man*, because it isn't an attribute of all human creatures. *Being born* is also a separable accident of the species *man*: it's an attribute that all human beings possess, but only at one particular time for each. . . .

Chapter 8: Definition

§1. One part of the theory of names and propositions remains to be discussed: the theory of *definitions*. When I discussed what I called 'purely verbal' propositions in chapter 6, I said a little about definitions, which are the most important purely verbal propositions; but there would have been no point in trying to deal with them thoroughly until I had dealt with classification.

The simplest and best notion of *definition* is: *a proposition that declares the meaning of a word*—it may be the ordinary popular meaning or a special meaning that the speaker or writer wants to give to the word for his own purposes.

Obviously, words that have no meaning can't be defined. So proper names can't be defined. You can't define 'John Doe' by saying 'John Doe is the son of General Doe' or 'That's John Doe over there, crossing the street'. These propositions may make known who is the particular man to whom the name

belongs, but you can do that even more unambiguously by pointing to him!

The meaning of a connotative name, as I have already said several times, is its connotation; and the definition of a connotative name is the proposition that says what that connotation is. It can do this either directly or indirectly. The word 'man' is defined **directly** by a proposition of the form: '"Man" is a name connoting such and such attributes', or '. . . is a name which, when predicated of a thing, signifies its possession of such and such attributes', or '*Man* is everything that has such and such attributes—e.g. that has corporeity, organisation, life, rationality, and certain special features of external shape'.

This is the most precise and least ambiguous type of definition; but it's long-winded, and also too technical for common discourse. The more usual **indirect** way of declaring the connotation of a name is to predicate of it another name or names of known signification, which connote the same collection of attributes. This can be done either by using another exactly synonymous connotative name—e.g. 'Man is a human being', which isn't commonly counted as a definition at all; or by using two or more connotative names that jointly make up the whole connotation of the name being defined. In this last case, we can use as many connotative names as there are attributes, one for each, as in

- 'Man is a corporeal, organized, animated, rational being, shaped so and so';

or we can shorten the definition by using names that connote several of the attributes at once, as in

- 'Man is a rational animal, shaped so and so'.

The definition of a name, on this view of it, is the sum total of all the essential propositions that can be formulated with that name as subject. All the propositions whose truth is implied in the name, all that we are made aware of by merely hearing the name, are included in the definition if it is complete; and we can extract them from it without the aid of any other premises. . . . So Condillac and other writers had reason to assert that a definition is an analysis. Breaking a complex down into the elements of which it is compounded—that's what 'analysis' means; and it's also what we do when we ·define a word, i.e.· replace one word that connotes a set of attributes collectively by two or more that connote them singly or in smaller groups.

§2. How, then, are we to define a name that connotes only a single attribute? For example, 'white', which connotes nothing but whiteness; 'rational', which connotes nothing but the possession of reason. You might think that the meaning of such names could be declared in only two ways: •by a synonymous term, if one be found; or •in the direct way I have described, e.g. '"White" is a name connoting the attribute whiteness.' ·Before jumping to that conclusion·, however, let us see whether we can go further with breaking down the word's meaning into several parts. Setting aside the question of whether we can do this with 'white', it's obvious that we can do more to explain the meaning of 'rational' than merely to say 'Rational is that which possesses the attribute of reason', because the attribute of reason can itself be defined. This brings us to the topic of the definitions of attributes, or rather of the names of attributes, i.e. of abstract names.

Two kinds of case are unproblematic. **(a)** If N is an attribute-name that is itself connotative, i.e. expresses attributes of the named attribute, then like other connotative names it is defined by declaring its connotation. Thus 'fault' may be defined as 'a quality productive of evil or inconvenience'. **(b)** Sometimes the attribute ·whose name is· to be defined is not one attribute but a union of several;

and in that case we need only to put together the names of all those attributes taken separately, and that will be a definition of the name that belongs to them all taken together—a definition that corresponds exactly to the definition of the corresponding concrete name. . . . For example, if the definition of 'human being' is 'a being that is corporeal, animated, rational, shaped so and so', then the definition of 'humanity' will be 'corporeity and animal life, combined with rationality, and with such and such a shape'.

What about the case where the abstract name does not express an aggregation of attributes, but only a single attribute? Here we must remember that every attribute is grounded on some fact or phenomenon which is the sole source of its meaning—what on page 29 I called the 'foundation' of the attribute, which we must now look to for its definition. The foundation of an attribute can be a phenomenon of any degree of complexity, consisting of many different parts, either co-existent or in succession; and we can define ·the name of· the attribute by analysing the phenomenon into these parts. 'Eloquence', for example, is the name of a single attribute, but this attribute is grounded on complicated external •effects, flowing from •acts of the person whom we credit with eloquence; and by resolving this phenomenon into its two parts, the •cause and the •effect, we get a definition of 'eloquence', namely 'the power of influencing the feelings by speech or writing'.

. . . .Suppose, though, that the fact on which an attribute is grounded is one of our *simple* feelings or states of consciousness, and therefore can't be analysed. Even then, the names both of the attribute and of object that has it can be defined—or rather they could be defined if all our simple feelings had names. 'Whiteness' can be defined as 'the property or power of exciting the sensation of white'. A 'white object' may be defined as 'an object that arouses the sensation of white'. The only names that can't be defined because their meaning can't be analysed are the names of the simple feelings themselves. These are in the same position as proper names. They aren't unmeaning as proper names are, for the words 'sensation of white' signify that the sensation I'm applying this to resembles other sensations that remember having experienced and called by that name. But as we have no words by which to recall those former sensations—except the very word we're trying to define, or some other that requires definition just as much—words cannot unfold the signification of this class of names; and we have to make a direct appeal to the personal experience of the person we are speaking to.

§3. Having stated what I think is the true idea of a definition, I shall now examine some opinions of philosophers, and some popular conceptions, that conflict with that idea.

I have contended that the only adequate definition of a name is one that declares *all* the facts that the name involves in its signification. But for most people a definition doesn't aim to do so much; all they want from a definition is a guide to the correct use of the defined word—a protection against applying it in a manner inconsistent with custom and convention. So they'll accept as a sufficient definition of a term anything that accurately points to what the term denotes, even if it doesn't take in the whole—perhaps doesn't even take in any part—of what it connotes. This gives rise to two sorts of imperfect or unscientific definition: **(i)** essential but incomplete definitions, in which a connotative name is defined by a part of its connotation; and **(ii)** accidental definitions or descriptions in which the name is 'defined' by something that isn't part of the connotation at all.

(1) Here's an example of the first kind of imperfect definition: 'Man is a rational animal'. We can't regard this a

complete definition of 'man', because it would require us to call the Houyhnhnms 'men'; but as there happen to be no Houyhnhnms, this imperfect definition satisfactorily marks the objects that are actually denoted by 'man'. . . . Such definitions, however, are always liable to be overthrown by the discovery of new objects in nature. . . .

§4. Although that first kind of imperfect definition. . . .has been considered by the ancients and by logicians in general as a complete definition, they have always insisted that the attributes employed should be part of the connotation. The rule was that the definition must be drawn from the essence of the class, not including attributes not connoted by the class name. The second kind of imperfect definition, therefore, in which the name of a class is defined by some of its accidents—i.e. by attributes that aren't included in its connotation—has been counted by logicians not as a genuine definition but as a 'description'.

(2) This second kind of imperfect definition, however, has the same sources as the first, namely, a willingness to accept as a definition *anything* that enables us •to pick out the things denoted by the name and thus •to use the term in predication without deviating from accepted usage. This end is achieved by stating *any* combination of attributes that is possessed by everything in the class and nothing outside it, even if separate attributes within that combination are shared with some things outside the class. All that is needed is for the definition (or description) to be exactly co-extensive [see Glossary] with the name it professes to define; and that can be achieved even if the specified attributes have no connection with the ones that mankind had in view when they formed or recognised the class and gave it a name. By this test, the following are correct definitions of 'man': 'Man is a mammiferous animal' [= 'animal that has mammary glands'], '. . . an animal that has two hands', '. . . an animal that cooks its food', '. . . a featherless biped'.

What would otherwise be a mere description can be raised to the rank of a real definition by the special purpose that the speaker or writer has in view. . . . This has actually happened with one of examples I have given: 'Man is a mammiferous animal with two hands' is the scientific definition of 'man' in Georges Cuvier's classification of the animal kingdom.

Although such a definition does declare the meaning that the writer or speaker is giving to the word, that wasn't his purpose in offering the definition. What he was aiming at was to present not a •name but a •classification. The special meaning that Cuvier assigned to 'man'. . . .was a by-product of his plan of arranging animals into classes according to a certain set of distinctions. The definition of 'man' according to its ordinary connotation. . . .wouldn't have assigned the species its place in that particular classification. . . .

Scientific definitions—whether of scientific terms or of common words used in a scientific sense—are mostly of the kind I have been discussing: their main purpose is to serve as landmarks in scientific classification. And as scientific knowledge advances the classifications in any science are continually modified, so the scientific definitions are also constantly varying. The word 'acid' is a striking example of this. As experimental discovery advanced, the substances classed with acids have been constantly multiplying, so that the attributes connoted by 'acid' have become fewer. At first it connoted the attributes:

(i) combining with an alkali to form a neutral substance (called a salt);
(ii) being compounded of a base and oxygen;
(iii) being caustic to the taste and touch;
(iv) being fluid.

The true analysis of muriatic acid into chlorine and hydrogen

caused **(ii)** to be excluded from the connotation. The same discovery fixed the attention of chemists on hydrogen as an important element in acids; more recent discoveries have revealed its presence in sulphuric, nitric, and many other acids where it hadn't been suspected to be; so that there's now a tendency to include the presence of hydrogen in the connotation of 'acid'. . . . **(iii)** Causticity and **(iv)** fluidity have long since been excluded from the characteristics of the class, by the inclusion of silica and many other substances in it. So that now **(i)** forming neutral bodies by combination with alkalis, together with electro-chemical features that this is supposed to imply, are the only differentiae that give the word 'acid' its fixed connotation as a term of chemical science. . . .

In the same way that a technical definition aims to expound the **artificial classification** out of which it grows, the Aristotelian logicians seem to have imagined that an ordinary definition aims to expound the ordinary **natural classification** of things, namely the division of them into kinds, and to show the place that each kind has among other kinds—which ones it is superior to, inferior to, or collateral with. This notion would account for the rule that all definition must be by genus and differentia, and would also explain why a single differentia was deemed sufficient. But I have shown that a distinction of kind can't be expounded or expressed in words: calling something a 'kind' *means that* the properties that distinguish it don't grow out of one another, and therefore can't be expressed in words, even by implication, except by enumerating them all. And we don't know them all, and probably never will; so it's idle to look to *this* as one of the purposes of a definition. Whereas if the definition of a kind has only to indicate what kinds include it or are included in it, any definition that expounds the connotation of the name will do this. . . .

[At this point Mill has a very long footnote discussing Bain's view that a proper definition should list *all* the ultimate properties of the things the definition is to fit. Bain writes:

> 'When we are told that diamond, which we know to be a transparent, glittering, hard, and high-priced substance, is composed of carbon, and is combustible, we must put these additional properties on the same level as the rest; to us they are henceforth connoted by the name.'

Mill remarks that this gives to 'Diamonds are composed of carbon' the status of a *merely verbal* proposition. More generally, Mill objects to saying that the meaning of a word includes items that are known only to a few specialists.]

§5. . . . .I turn now to an ancient doctrine, once generally prevalent and still alive, which I regard as the source of much of the obscurity hanging over some of the most important processes of the understanding in the pursuit of truth. According to this doctrine, there are two sorts of definitions: definitions of •names and definitions of •things. The former are intended to explain the meaning of a term; the latter to explain the nature of a thing—and these are incomparably more important than the others.

This was the view of the ancient philosophers and of their followers except for the nominalists; but the spirit of modern metaphysics has until recently been on the whole a nominalist spirit, so that the notion of *definitions of things* has retreated somewhat. It still continues to breed confusion in logic—through its consequences rather than through itself—and the doctrine itself now and then breaks out, and has appeared, surprisingly, in Whately's justly admired *Logic*. I reviewed that work in the *Westminster Review* for January 1828 [when he was 21 years old]; I don't now agree with all of

that review, but I stand by the following passage from it [just the next paragraph]:

The distinction between nominal and real definitions, between definitions of words and what are called definitions of things—though it fits the ideas of most of the Aristotelian logicians—can't be maintained, it seems to me. I don't think that any definition is ever intended to 'explain and unfold the nature of a thing'. Of the writers who have thought there are definitions of things, none have discovered any criterion to distinguish •the definition of a thing from •any other proposition about the thing. They say 'The definition unfolds the nature of the thing'; but no definition can unfold its whole nature, and every proposition in which something is predicated of the thing unfolds part of its nature. [Mill then makes the point that a single sentence might convey both •the claim that there exist things of a certain kind and •a declaration of the meaning of the kind's name. He continues:] But it's not correct to call such a sentence a special kind of *definition*. Really it's a definition and something more. . . .

So there's a real distinction between definitions of names and so-called 'definitions of things'; but it's just that the latter covertly assert a matter of fact along with the meaning of a name. This covert assertion is not a definition, but a postulate. The definition is a mere identical [see Glossary] proposition, which gives information only about the use of language, and from which no matters of fact can possibly be inferred. The accompanying postulate does affirm a fact that might be anything from trivial to vastly important. It affirms the actual or possible existence of things having the attributes set forth in the definition; and this, if true, may be the foundation for a whole structure of scientific truth.

As I keep saying, the philosophers who overthrew realism didn't get rid of all its consequences; they retained in their own philosophy many propositions that could have a rational meaning only in the context of a realist system. It had been handed down from Aristotle and probably from earlier times, as an obvious truth, that the science of geometry is deduced from definitions. This did well enough as long as a definition was considered to be a proposition 'unfolding the nature of the thing'. But then came Hobbes, who rejected utterly the notion that a definition. . . .does anything but state the meaning of a name; yet he continued to affirm as sweepingly as any of his predecessors that the basic premises of mathematics, and even of all science, are definitions. This implies a strange paradox: systems of scientific truth—indeed, all truths that we reach by reasoning—are deduced from the arbitrary conventions of mankind concerning the signification of words!

To make credible the doctrine that definitions are the premises of scientific knowledge, the proviso is sometimes added that this holds only if the definitions are made in a way that fits the phenomena of nature—i.e. only if they give words meanings that suit objects actually existing. But this is just another example of retaining the words of a refuted doctrine by radically changing their meaning. We're being told that you can infer physical facts from •the meaning of a name, provided the name has corresponding to it •an existing thing. But in that case, what is the real premise of the inference—the existence of a **thing having** the properties, or the existence of a **name meaning** them?

Consider Euclid's definition of *circle*. This consists of two propositions:

(a) 'A figure can exist having all the points in the line that bounds it equidistant from a single point in it.'

(b) 'Any figure possessing this property is called a "circle".'

Of these, **(a)** is an assumption about a matter of fact, and **(b)** is a genuine definition. Let us look at a demonstration that is said to depend on this definition, and see which of

the two propositions it really relies on. It starts with

(i) 'About the centre A, draw the circle BCD.'

This relies on **(a)** the assumption that such a figure can drawn. It makes no difference to the demonstration whether that figure is called a 'circle' or not. Nothing would be lost if we replaced **(i)** by

(i') 'Through the point B, draw a line returning into itself, of which every point is equidistant from the point A.'

This gets rid of the definition **(b)** and rests wholly on **(a)**. The circle having been drawn, let us proceed to the consequence:

(ii) 'Since BCD is a circle, the radius BA is equal to the radius CA.'

BA is equal to CA not because BCD is a circle, but because BCD is a figure with equal radii. Our warrant for assuming that such a figure can be drawn is **(a)**. There may be dispute about whether postulates such as **(a)** rests on intuition or on proof; but either way *they* are the premises the theorems depend on; and while they are retained it would make no difference to the certainty of geometrical truths if every definition in Euclid, and every technical term therein defined, were set aside.

Perhaps it is superfluous to dwell at such length on something that is nearly self-evident; but when an obvious distinction has been muddled by powerful intellects, it's better to say too much than too little for the purpose of making such mistakes impossible in future. [For our purposes Mill has already said enough. What he offers next is a long discussion of a demonstration about dragons; it is like the demonstration about circles except that Mill now allows opponents to try defending themselves at certain points, and convincingly slaps down the defences.]

§6. This notion that demonstrative truths follow from definitions rather than from the postulates implied in them—why has it survived so long? One reason is that the postulates, even in the sciences that are thought to be supreme in demonstrative certainty, are not always exactly true. It is not true that a circle exists or can be drawn which has all its radii exactly equal. Such accuracy is ideal only; it isn't something we can •find in nature, still less is it something we can •make. This made it hard for people to conceive that the most certain conclusions could rest on premises which—far from being certainly true—are certainly *not* true to the full extent asserted. When I come to discuss *demonstration* I'll deal with this apparent paradox, showing that ·in each case· as much of the postulate is true as is required to support as much as is true of the conclusion. But philosophers who weren't satisfied by this thesis, or to whom it hadn't occurred, have thought they had to find in definitions something more certain—or at least more precisely true—than the implied postulate of the real existence of an object corresponding to the definition. And what they came up with was this:

> A definition is a statement and analysis not of •the mere meaning of a word, or of •the nature of a thing, but of •the nature of an idea.

What they thought about the proposition 'A circle is a plane figure bounded by a line all the points of which are at an equal distance from a given point within it' is an assertion not •that any real circle has that property (which wouldn't be exactly true) but •that we conceive a circle as having it—i.e. that our abstract idea of a circle is an idea of a figure with its radii exactly equal.

In line with this, it is said that the subject-matter of mathematics, and of every other demonstrative science, is not •things as they really exist but •abstractions of the mind. A geometrical line is a line without breadth; but no such line exists in nature; it's merely a notion suggested to the mind by its experience of nature. The definition (it is said) is a

definition of this mental line, not of any actual line: and it is only of the mental line, not of any line existing in nature, that the theorems of geometry are precisely true.

Even if this doctrine about the nature of demonstrative truth were correct (and in II.5 I shall try to prove that it isn't), the conclusions that seem to follow from a definition don't follow from the definition as such but from an implied postulate. . . . The definition postulates the real existence of an idea such as it is describing; it assumes that the mind can frame [see Glossary], or rather has framed, the notion of *length without breadth and without any other sensible property*. I can't see that the mind can form any such notion; it can't conceive length without breadth; all it can do is, when contemplating objects, to attend to their length while ignoring their other sensible qualities, thus discovering what properties can be predicated of them purely in virtue of their length. If this is right, then what is postulated in the geometrical definition of a line is the real existence not of *length without breadth* but merely of *length*—i.e. of long objects. This is quite enough to support all the truths of geometry, because every **property of a geometrical line** is really a **property of all physical objects in so far as possessing length**. But even what I hold to be the false doctrine about this doesn't affect the conclusion that our reasonings are grounded on the matters of fact postulated in definitions, not on the definitions themselves. . . .

§7. Although definitions are properly of names and not of things, it doesn't follow that definitions are arbitrary. How to define a name may be an inquiry not only of considerable difficulty and intricacy but involving considerations going deep into the nature of the things denoted by the name. For example the inquiries that form the subjects of Plato's most important Dialogues: 'What is rhetoric?' (the *Gorgias*) and 'What is justice?' (the *Republic*). Also the question scornfully asked by Pilate, 'What is truth?', and the fundamental question with moral theorists in all ages, 'What is virtue?'

It would be a mistake to represent these difficult and noble inquiries as aiming only to ascertain the conventional meaning of a name. They are inquiries to determine not so much what *is* as what *should be* the meaning of a name; and this, like other practical questions of terminology, can't be solved unless we enter, sometimes very deeply, into the properties not merely of names but of the things named.

Although the meaning of every concrete general name resides in the attributes it connotes, the objects were named before the attributes. You can see this in the fact that in all languages abstract names are mostly compounds or other derivatives of the corresponding concrete names. Thus the first names to be used (after proper names) were connotative names; and in the simpler cases a distinct connotation was presumably present to the minds of those who first used the name, and was distinctly intended by them to be conveyed by it. The first person who used the word 'white' as applied to snow or to any other object presumably knew very well what quality he intended to predicate, and had in his mind a perfectly distinct conception of the attribute signified by the name.

But where the resemblances and differences on which our classifications are based are not so obvious and easy to pin down—and especially where they consist in a number of qualities, the effects of which are not easy to sort out and assign to their respective causes—names are often applied to nameable objects by people who have no distinct connotation in mind. They're merely influenced by a general resemblance between the new object and some or all of the old familiar objects that they have been accustomed to call by that name. This, as I have shown [page 31], is the law which even the

mind of the philosopher must follow when giving names to the simple elementary feelings of our nature; but where the things to be named are complex wholes, a philosopher isn't content with noticing a general resemblance—he examines what the resemblance consists in, and gives the same name to things only if they are alike in definite respects. So ·even in these complex cases· the philosopher habitually uses general names with a definite connotation. But language wasn't made by philosophers, and can't be much repaired by them. In the minds of the real arbiters of language—·the common people·—general names connote little more than a vague over-all resemblance to the things that they were earliest (or most) accustomed to call by those names. This is especially true when the classes the names denote can't be brought before the tribunal of the outward senses to be identified and sorted out.

When ordinary folk predicate 'just' or 'unjust' of any action, 'noble' or 'mean' of any feeling, expression or demeanour, 'statesman' or 'charlatan' of anyone figuring in politics, do they mean to affirm of those various subjects any definite attributes of some kind? No! They merely recognise (or think they do) some fairly vague and loose likeness between these and some other things that they have been accustomed to label or hear labelled by those words.

Language, as Sir James Mackintosh used to say of governments, 'is not made, but grows'. A name isn't imposed on a class of objects because someone decided to do this; rather, it is applied first to one thing and then to another and another. . . . By this process it quite often happens that a name passes through successive links of resemblance from one object to another. . . until it comes to be applied to things that have nothing in common with the first things it was given to—though *they* retain the name also. Eventually the name denotes a confused jumble of objects that have nothing in common, so that it connotes nothing, not even a vague and general resemblance. When a name has fallen into this state, in which by predicating it of any object we assert literally *nothing* about the object, it is no longer fit for thought or the communication of thought, and can be made serviceable only by stripping it of some part of its multifarious denotation and confining it to objects with some attributes in common. These are the inconveniences of a language that 'is not made, but grows'. Like governments, it can be compared to a road that has made itself: it requires continual mending in order to be passable.

This shows why there is often so much trouble about the definition of an abstract name. The question 'What is justice?' is equivalent to 'What is the attribute that mankind mean to predicate when they call an action "just"?' The answer to *that* is that they, having come to no precise agreement on the point, don't mean to predicate distinctly any attribute at all. Yet they all believe that there's some common attribute possessed by all the actions that they ordinarily call 'just'. So the question has to be: 'Is there any such common attribute?' ·Really, there are three questions·:

(1) Do mankind agree sufficiently about the particular actions they call 'just' make it possible to ask what quality those actions have in common? If it is, then

(2) do those actions really have any quality in common? If they do, then

(3) what quality is it?

Of these three, only **(1)** is an inquiry into usage and convention; the other two are inquiries into matters of fact. And if **(2)** is answered negatively, there remains this:

(4) What is the best way to form, artificially, a class that the name may denote?

This is often more arduous than all the rest.

The study of the spontaneous growth of languages is of great importance to those who want to remodel them so as to make them more logical. The classifications roughly made by established language, when they are retouched (as they almost all need to be) by the hands of the logician, are often excellently suited to his purposes. As compared with the philosopher's classifications they are like the customary law of a country, which has grown up spontaneously, compared with laws organised and digested into a code. The customary law is a less perfect instrument than the codified one; but being the result of a long. . . .course of experience, it contains a mass of materials that may be very helpful in the construction of a systematic written code. . . . When a name's meaning is widened and widened until it is applied to things among which there isn't even a rough superficial resemblance, at every step in its progress we shall find such a resemblance. And these changes in the meaning of words are often a pointer to real connections between the things denoted by them—connections that might otherwise escape the notice of thinkers. . . . The history of philosophy abounds in examples of such oversights when philosophers didn't see the hidden link connecting the seemingly disparate meanings of some ambiguous word.[1]

Whenever the inquiry into the definition of the name of any real object consists of anything more than a mere comparison of authorities, we silently assume that we must find for the name a meaning that is •compatible with its continuing to denote all—or anyway the greater or the more important part—of the things it is commonly applied to. So the inquiry into the definition is an inquiry into the resemblances and differences among those *things*:

- •Is there any resemblance running through them all? If not,
- •through what portion of them can a general resemblance be traced? And lastly
- •what are the common attributes that has given to them all, or to that portion of them, the resemblance that has led to their being classed together?

When these common attributes have been located and classified, the name that belongs in common to the resembling objects acquires a distinct connotation in place of the previous vague one; and by having this distinct connotation it becomes definable.

When the philosopher is giving the general name a distinct connotation, he'll try select the most important of the attributes that are common to all the things usually denoted by the name; important either •in themselves or •indirectly through facts about their consequences—how many of them there are, or how conspicuous or interesting they are. He'll do his best to select the differentiae that lead to the largest number of interesting propria [= plural of 'proprium']. Why? Because •these do a good job—better than •the more obscure and difficult qualities that they often depend on—of presenting a set of objects in a way that makes

[1] In an earlier writing of mine I said: 'Few people have thought about how much knowledge of *things* is required to enable a man to say that an argument turns wholly upon words. Just about every leading philosophical term is used with almost innumerable shades of meaning, to express ideas more or less widely different from one another. Between two of these ideas a wise and penetrating mind will see, as it were intuitively, an unobvious connection; he may be unable to give a logical account of it, but he'll base a perfectly valid argument on it—an argument which a less insightful critic will take to be a fallacy turning on the double meaning of a term. And the greater the genius of the one who safely leaps over the chasm, the greater will probably be the crowing and vainglory of the mere logician who, hobbling after him, displays his own superior wisdom by pausing on its brink, and giving up as hopeless his proper business of bridging it.'

the groups into which they naturally fall *look* natural. But to penetrate to the more hidden agreement on which these obvious and superficial agreements depend is often one of the •most difficult of scientific problems, and usually one of the •most important. And because the result of this inquiry into the causes of the properties of a class of things has as a by-product a decision about what some word should mean, some of the deepest and best investigations that philosophy presents to us started as inquiries into the definition of a name, and have disguised themselves as that all through.