BEING LOGICAL
A GUIDE TO GOOD THINKING

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We may take Fancy for a companion,
but must follow Reason as our guide.

—DR. SAMUEL JOHNSON

Preface

LOGIC IS ABOUT clear and effective thinking. It is a science and an art. This book is intended to introduce readers to the rudiments of the science as well as to the basic skills associated with the art.

We all know people who are very bright but who do not always shine when it comes to being logical. They have the ability to think logically—that is, clearly and effectively—but that ability does not habitually manifest itself. The likelihood is that it has never been properly developed, pointing to a deficiency in their education. Indeed, logic is the very backbone of a true education, and yet it is seldom taught as such in American schools. To my mind, logic is the missing piece of the American educational system, the subject that informs every other subject from English to history to science and math.

Some readers, especially if this book represents their first serious encounter with logic, might react skittishly to what appears to be an overly technical vocabulary, or to the symbolic notation that logic makes frequent use of. Don't be scared off by initial impressions. I have made a concerted effort to present whatever technical matters I deal with here (which in any event are not all that trying) in as simple and uncomplicated a way as possible. At the same time, however, I have tried to avoid lapsing into the simplistic. A dumbed-down logic is not logic at all. Other readers might be put off by what they perceive to be an emphasis upon the obvious. I do, in fact, place a good deal of stress on the obvious in this book, and that is quite deliberate. In logic, as in life, it is the obvious that most often bears emphasizing, because it so easily escapes our notice. If I have belabored certain points, and regularly opted for the explicit over the implicit, it is because I adhere to the time-honored pedagogic principle that it is always safest to assume as little as possible.

Logic, taken as a whole, is a wide, deep, and wonderfully varied field, and I would be pleased if my readers, as a result of their encounter with this little

book, were moved to become more familiar with it. However, my aim here is very modest. This is neither a treatise in logical theory nor a textbook in logic—though I would not be disappointed to learn that it proves useful in the classroom. My governing purpose was to write a practical guidebook, presenting the basic principles of logic in a way that is accessible to those who are encountering the subject for the first time. *Being Logical* seeks to produce practitioners, not theoreticians—people for whom knowing the principles of logic is in the service of being logical.

In the hope of better serving the practical ends of the book, I have adopted a somewhat informal style, often addressing the reader directly, and, in the manner of a tutor or coach, sometimes assuming a distinctively directive tone. I treat logic in five stages, represented by the five parts of the book, each successive stage building upon the one that preceded it. Part One is preparatory, and deals with the proper frame of mind that must be established if logical thinking is to take place at all. In Parts Two and Three, the heart of the book, we pass into the realm of logic proper. Part Two explains the foundational truths that govern logical thinking, while Part Three focuses on argument—the public expression of logical thinking. In Part Four, I discuss attitudes and frames of mind that promote illogical thinking. Finally, Part Five concentrates on the particulars of illogical thinking—the fallacies.

A final word, of admiration and appreciation, for a sparkling little book called *The Elements of Style,* by William Strunk, Jr., and E. B. White, which was the inspiration for *Being Logical.* What I have managed to accomplish here is no match for the unique achievement of Strunk and White, but I hope that *Being Logical* might to some degree succeed in doing for the cause of good thinking what *The Elements of Style* has done for that of good writing. My earnest wish is that this book may succeed in convincing its readers of the intrinsic importance of logic—and that it engender in them an appreciation for the priceless satisfaction which inevitably accompanies the happy state of being logical.

PART ONE

Preparing the Mind for Logic

Being logical presupposes our having a sensitivity to language and a knack for its effective use, for logic and language are inseparable. It also presupposes our having a healthy respect for the firm factualness of the world in which we live, for logic is about reality. Finally, being logical presupposes a lively awareness of how the facts that are our ideas relate to the facts that are the objects in the world, for logic is about truth. In this first part of the book I will discuss those attitudes, points of view, and practical procedures whose adoption prepares the mind for a successful engagement with logic.

1. Be Attentive

Many mistakes in reasoning are explained by the fact that we are not paying sufficient attention to the situation in which we find ourselves. This is especially true in familiar situations. That very familiarity causes us to make careless judgments about facts right before our eyes. We misread a situation because we are skimming it, when what we should be doing is perusing it. Often, we assume that a familiar situation will be but a repeat performance of a similar situation we've experienced before. But, in the strictest sense, there are no repeat performances. Every situation is unique, and we must be alert to its uniqueness.

The phrase "to pay attention" is telling. It reminds us that attention costs something. Attention demands an active, energetic response to every situation, to the persons, places, and things that make up the situation. It is impossible to be truly attentive and passive at the same time. Don't just look, see. Don't just hear, listen. Train yourself to focus on details. The little things are not to be ignored, for it is just the little things that lead us to the big things.

2. Get the Facts Straight

A fact is something made or done. It has clear objective status. It is something we respond to as having an independent status all its own. It is naggingly persistent, demands recognition, and can be nasty if ignored.

There are two basic types of objective facts, things and events. A "thing" is an actually existing entity, animal, vegetable, or mineral. The White House is an example of the first type of fact, and the assassination of Abraham Lincoln of the second. The first type is more basic than the second because events are made up of things or of the actions of things. A state dinner is to be held at the White House. Such an event could not take place were it not for the existence, first and foremost, of the fact that is the White House, and countless other facts as well. In order to establish the factualness of an event, any number of concrete things need to be appealed to.

To determine the reality of a fact that is a thing, all you need do is pay it a visit. If it actually exists it must be somewhere, and, assuming its place to be accessible to you, you can verify its factualness by direct observation. Take the case of the White House. To ascertain its being a fact, rather than purely imaginary, you can travel to Washington, D.C., and there see the White House with your own eyes. That is the most direct and reliable way to establish its factualness. But you could also rely on indirect evidence: For example, by taking the word of a trustworthy eyewitness that the White House is indeed in Washington, D.C. Or you could decide that photographic evidence is sufficient to establish factualness.

But what about an event like Lincoln's assassination? We say that is a fact. What is the justification for that claim? It is an event that is over and done with, and there are no living witnesses to the event whom we might consult. Obviously, we did not ourselves witness the event, so direct evidence is out of the question. In this case our approach will be to acquaint ourselves with a variety of things that serve as indirect evidence of the event. For example, we would consult official documents (police reports, the death certificate, etc.), newspaper accounts, photographs, memoirs, diaries, and items in the *Congressional Record,* all of which are facts in their own right and whose only reasonable explanation is the factualness of Lincoln's assassination. On the basis of the factualness of these things, we establish the factualness of the event. And we thus establish a historical fact.

Facts can also be thought of as objective or subjective. Both things and events are objective facts. They exist in the public domain and are in principle accessible to all. A subjective fact is one that is limited to the subject experiencing it. A headache would be an example of a subjective fact. If I am the one experiencing the headache, then I have direct evidence of its factualness. But if it is you experiencing the headache, I can establish its factualness only indirectly. I must take your word that you have a headache. Establishing the reality of subjective facts depends entirely on the trustworthiness of those who claim to be experiencing them.

To sum up how we get the facts straight: If a given fact is an actually existing thing to which we have access, then the surest way to establish its factualness is to put ourselves in its presence. We then have direct evidence of it. If we cannot establish factualness by direct evidence, we must rigorously test the authenticity and reliability of whatever indirect evidence we rely upon so that, on the basis of that evidence, we can confidently establish the factualness of the thing.

There are only a very limited number of significant public events which we can experience directly. This means that, in almost every case, we must rely on indirect evidence. In establishing the factualness of events by indirect evidence, we must exercise the same kind of care we do in establishing the factualness of “things” by indirect evidence. It all comes down to the authenticity and reliability of our sources.

A subjective fact, to the subject experiencing it, is self-evident under normal circumstance. However, through such mechanisms as self-delusion or rationalization, a person could fail to get straight a fact even about himself.

Because the establishment of the factualness of a subjective fact pertaining to another person depends entirely on the trustworthiness of that person, you must first, insofar as it is possible, establish the trustworthiness of the person in question.

3. Ideas and the Objects of Ideas

Every idea in the mind is ultimately traceable to a thing, or things, actually existing in a world that is independent of and apart from the mind. An idea is the subjective evocation of an objective fact. Clear ideas, then, are ideas that faithfully reflect the objective order from which they derive. Unclear ideas, conversely, are those that give us a distorted representation of the objective world.

Though the control we have over our ideas is not absolute, it is real. This means that we are not helpless in the face of unclear ideas. To ensure that our ideas are clear, we must vigilantly attend to the relationship between any given idea and its object. If it is a strained relationship, if the connection between the idea and its object is tenuous, then we are dealing with an unclear idea.

It is wrong to suppose that because we know things in the world only through our ideas, it is only our ideas which we really know. Our ideas are the means, not the ends, of our knowledge. They link us to the world. If they are clear ideas, the links are strong. The most efficient way to clarify our ideas is to look *through* them to the objects they represent.

4. Be Mindful of the Origins of Ideas

We all tend to favor our own ideas, which is natural enough. They are, after all, in a sense our very own babies, the conceptions of our minds. But conception is possible in the thinking subject only because of the subject's encounter with the world. Our ideas owe their existence, ultimately, to things outside and independent of the mind, to which they refer: objective facts.

Our ideas are clear, and our understanding of them is clear, only to the extent that we keep constant tabs on the things to which they refer. The focus must always be on the originating sources of our ideas in the objective world. We do not really understand our own ideas if we suppose them to be self-generating, that is, not owing their existence to extramental realities.

The more we focus on our ideas in a way that systematically ignores their objective origins, the more unreliable those ideas become. The healthy bonds that bind together the subjective and objective orders are put under great strain, and if we push the process too far, the bonds may break. Then we have effectively divorced ourselves from the objective world. Instead of seeing the world as it is, we see a projected world, one that is not presented *to* our minds but which is the product *of* our minds.

When we speak of "establishing a fact," we do not refer to establishing the existence of an idea in the mind. The idea in the mind, as we have seen, is a subjective fact, but the kind of fact we are concerned with establishing is an objective fact. To do so, we must look beyond our ideas to their sources in the objective world. I establish a fact if I successfully ascertain that there is, for a particular idea I have in mind, a corresponding reality external to my mind. For instance, I have a particular idea in my mind, which I label "cat." Corresponding to that idea are actually existing things in the extramental world called "cats." But I could have another idea in my mind, which I label "centaur" but for which no corresponding fact can be found in the extramental world. For all that, the idea of "centaur" is a subjective fact, since it really exists as an idea in my mind.

5. Match Ideas to Facts

There are three basic components to human knowledge: first, an objective fact (e.g., a cat); second, the idea of a cat; third, the word we apply to the idea, allowing us to communicate it to others (e.g., in English, "cat"). It all starts with the cat. If there were no real cats, there would be no idea about them, and there would be no word for the idea. I have been stressing the general point that ideas (subjective realities) are clear or sound to the extent that they reflect objective realities. And we have said that all ideas have their ultimate source in the objective world. Now we must look more closely at how ideas relate to the objective world, for the relation is not always simple. Next, we must address the question: How are bad ideas possible?

Sometimes there is a direct correlation between an idea and an objective fact. Example: the idea of cat. We will call this a "simple" idea. Corresponding to my idea of cat is a single, particular sort of entity in the extramental world—that furry, purring creature which in English we name a cat. In dealing with simple ideas it is relatively easy to test their reliability, because we need only refer to one thing. My idea of cat is clear and sound if it refers to an actual cat.

We will call "complex" ideas those for which there is no simple one-to-one correspondence between idea and thing. Here the correspondence is one to many. There is more than a single originating source for this kind of idea in the objective world. Let's take the idea of democracy. Is it a clear or a sound one? It is, at least potentially. It is a clear or sound idea to the extent that we are able to relate it to the objective world. But there are many things in the objective world that go together to compose the rich meaning of the idea of democracy: persons, events, constitutions, legislative acts, past institutions, present institutions. If my idea of democracy is going to be communicable to others, it must refer to what is common to me and to others, those many things in the objective world that are its originating source. To prevent my idea from being a product of pure subjectivism, in which case it could not be communicated to others, I must continuously touch base with those many facts in the objective world from which the idea was born.

How are we to explain bad (that is, unclear or unsound) ideas? An idea is unclear or unsound to the degree that it is distanced from and unmindful of its originating source in the objective world. No idea, even the most bizarre, can completely sever its ties with the objective world, but ideas can become

so remote from that world that their relation to it is difficult, if not impossible, to see. Bad ideas can be informative, not about the objective world—for they have ceased faithfully to reflect that world—but about the subjective state of the persons who nourish those ideas. Bad ideas do not just happen. We are responsible for them. They result from carelessness on our part, when we cease to pay sufficient attention to the relational quality of ideas, or, worse, are a product of the willful rejection of objective facts.

6. Match Words to Ideas

As we have seen, first comes the thing, then the idea, then the word. If our ideas are sound to the extent that they faithfully represent the thing, they will be clearly communicable only if we clothe them in words that accurately signify them. Ideas as such are not communicable from one mind to another. They have to be carefully fitted to words, so that the words might communicate them faithfully. Putting the right word to an idea is not an automatic process, and sometimes it can be quite challenging. We have all had the experience of knowing what we want to say but not being able to come up with the words for it.

How do we ensure that our words are adequate to the ideas they seek to convey? The process is essentially the same as the one we follow when confirming the clarity and soundness of our ideas: We must go back to the sources of the ideas. Often we cannot come up with the right word for an idea because we don't have a firm grasp on the idea itself. Usually, when we clarify the idea by checking it against its source in the objective world, the right word will come to us.

Sometimes there is a perfect match between word and idea, which would mean a perfect match between word and thing, for if the idea is clear it faithfully represents the thing, and if the word accurately expresses the idea, it would at the same time faithfully identify the thing. This commonly happens with simple ideas. If I say, "The monument is granite," and the monument to which I refer is in fact granite, then in "granite" I have the perfect match for the idea and the thing it represents. It gets more complicated when we are dealing with complex ideas, but the general principle remains the same: In order to guarantee accuracy in your use of words, go back to the objective facts that are the foundational explanations for words.

In the effort to come up with words that accurately convey ideas, our ultimate purpose should always be this: to so shape our language that it communicates to others the way things actually are—objective reality. It is not enough that language be satisfied with ideas as such, but with clear and sound ideas. Let us say I fervently hold to the real existence of Lilliput, and have all sorts of ideas about it. I may be able to come up with scads of words that accurately convey those ideas to you, but all those words do is reveal the state of my mind. They do not reveal the state of the world. They

deal with subjective reality, not objective reality.

7. Effective Communication

Language and logic are inextricably bound up with each other. How that is so becomes clear when we recall the relationship between the idea and the word. Although it is a disputed point among the experts, it seems possible that we can hold an idea in our mind without having a precise word for it. In any event, if we are going to attempt to communicate an idea to others, it is imperative that we express it by a word. And, as we have seen, the better the fit between word and idea, the clearer and more effective the communication of the idea.

Matching words to ideas is the first and most basic step in communication. The next step is putting ideas together to form coherent statements. If I said to you "dog" or "cat," your response would be expectant, waiting to hear more. You would wonder, What about dogs or cats? Through the words I'm speaking, you know the ideas I'm dealing with, but you don't know what I intend to do with those ideas. I'm simply "saying" the ideas; I'm not saying anything *about* them. We say something about ideas when we put them together to form statements that can be responded to affirmatively or negatively. Notice that if someone simply says "dog," there would not be much sense in responding with "That's true" or "That's false." But if someone says something about a dog—"The dog is in the garage"—then such a response would be appropriate. "Statement" has a special meaning in logic. It is a linguistic expression to which the response of either "true" or "false" is appropriate.

Words have been called the building blocks of language, but it is the *statement* that logic starts with, for it is only at the level of the statement that the question of truth or falsity is introduced, and logic is all about establishing what is true and distinguishing it from what is false. It can sometimes be tough enough determining whether a statement is true or false when that statement is clearly understood. But if we have difficulty understanding what a statement is attempting to say, then our difficulties are compounded, because we have to figure out the meaning of the statement before we can get on to the main business of determining whether it is true or false. Thus the importance of clear, effective communication.

It is impossible to have clear communication without clear thinking. How can I give you a clear idea of something if it is not first clear in my own mind? However, clear ideas do not guarantee clear communication. I may

have a perfectly good idea of what I'm *trying* to say, but can't succeed in getting my ideas across clearly and effectively.

Here are some basic guidelines for effective communication:

Don't assume your audience understands your meaning if you don't make it explicit.

The more complicated the subject matter dealt with, the more important this point is. We sometimes take it for granted that an audience is aware of background information that is necessary for a correct understanding of the subject we're speaking on, but in fact the audience may be quite innocent of this information. When in doubt, spell out the background information. It is always better to err on the side of saying too much than on the side of saying too little.

Speak in complete sentences.

The sentence with which logic is most concerned is the declarative sentence. A declarative sentence is the same thing as a statement (also called a "proposition" in logic). If I say "Dog turtle," "Falling stock prices in July," "The building's Indiana limestone facade," you could presume I am intending in each case to link certain ideas together, but you do not know how. That is because I am not forming genuine statements. I need to speak in complete sentences: "The dog bit the turtle," "Falling stock prices in July depressed Julian," "The building's Indiana limestone facade was severely defaced by the vandals."

Don't treat evaluative statements as if they were statements of objective fact.

"The Pearce Building is on the corner of Main and Adams" is a statement of objective fact, and as such it is either true or false. "The Pearce Building is ugly" is an evaluative statement, and as such it combines both subjective and objective elements. Evaluative statements do not lend themselves to a simple true-or-false response. We must not invite unwarranted responses to statements, which is just what we do when we attempt to pass off an evaluative statement as if it were a statement of objective fact. True statements of objective fact are not open to argument; evaluative statements are. If I want an evaluative statement to be accepted, I must argue for it.

mean by unfairness.

An ambiguous term ("equivocal," in the language of logic) is one which has more than a single meaning and whose context does not clearly indicate which meaning is intended. A sign posted at a fork in a trail which reads BEAR TO THE RIGHT can be understood in two ways. The more probable meaning is that it is instructing hikers to take the right trail, not the left. But let us say that the ranger who painted the sign meant to say just the opposite. He was trying to warn hikers against taking the right trail because there is a grizzly bear in the area through which it passes. The ranger's language was therefore careless, and open to misinterpretation that could have serious consequences. The only way to avoid ambiguity is to spell things out as explicitly as possible: "Keep left. Do not use trail to the right. Grizzly bears in the area."