

A Short Course in Intellectual Self-Defense

NORMAND BAILLARGEON

Translated by Andréa Schmidt

Illustrations by Charb

SEVEN STORIES PRESS

New York | Toronto | London | Melbourne

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*To Martin Gardner, the polymath,
for everything he has taught me.*

I have done everything I can to recognize my debts to all the authors I borrowed ideas from. If I failed to do so in a particular case, please let me know so that I correct this omission in a future edition.

—*N. B.*

INTRODUCTION

To doubt everything or to believe everything are two equally convenient solutions; both dispense with the necessity of reflection.

—HENRI POINCARÉ

The slumber of reason breeds monsters.

—FRANCISCO DE GOYA

My personal feeling is that citizens of the democratic societies should undertake a course of intellectual self-defense to protect themselves from manipulation and control, and to lay the basis for more meaningful democracy.¹

—NOAM CHOMSKY

This little book has emerged from the convergence of two of my concerns. They are not mine alone—far from it—but that does not make them any less vivid. Lacking the ability to justify each of them, which would require an entire book of its own and which, in any case, is unnecessary here, permit me simply to state them.

The first of these concerns could be described as epistemological, and includes two series of worries. First, I am concerned about the prevalence of all the beliefs that circulate in our societies under names such as paranormal, esotericism, or New Age, and which include beliefs and practices as diverse as telekinesis; telepathy; past lives; kidnapping by extraterrestrials; the powers of crystals; miracle cures; exercise programs and equipment that produce immediate results with no effort at all; communication with dead people; a range of applied Asian mysticism; chiropractic, homeopathic, astrological, and all sorts of so-called alternative medicines; feng shui; Ouija boards; the possibility of bending spoons by means of thought alone; police resorting to the use of psychics; cartomancy; and . . . I could go on.²

Furthermore, I am concerned—perhaps I should even say appalled—by what appears to me to be the truly deplorable state of reflection, knowledge, and rationality in large strata of academic and intellectual life. I will say it as temperately as possible: I am staggered by some of the things that are done and said in certain sectors of the contemporary university, where a lack of education and charlatanry are flourishing. And I am not the only one to think so.

My second concern is political, and has to do with the access of citizens of democracies to an understanding of the world in which we live—to rich, serious, and plural information that allows us to understand this world and to change it. I will be

frank: like many other people, I worry about the state of our media, about media concentration and convergence, and the way it is driven by the market. I worry about the propagandic role that the media have come to play in society at a time when each of us is bombarded with information and discourses trying to obtain our approval and make us act in certain ways.

We know that in a participatory democracy, education is the other major institution that has a privileged obligation to contribute to producing a sense of citizenship worthy of the name. But it is also in bad shape. Recent developments have provided serious cause for worry: for example, we seem to be blithely giving up the pursuit of the ideal of a liberal education for each person. This makes me particularly indignant, given that this training is more necessary for future citizens today than ever before. The client-centered mentality and economic reductionism that one finds in too many people these days, and particularly amongst the decision-makers of the education world, constitute, in my view, more serious reasons to be uneasy about the future of participatory democracy.

But if it is true, as I think it is, that each advance of irrationalism, of stupidity, of propaganda and manipulation, can be confronted by means of critical thinking and reflexive assessment, then, without deluding ourselves, we can take a certain comfort in spreading the art of critical thinking. From this point of view, exercising intellectual self-defense is an act of citizenship. It is what has motivated me to write this little book, which offers exactly this: an introduction to critical thinking.

What you will find in the following pages does not purport to be new or original. What I advance here is well-known, at least amongst those who are familiar with scientific literature or writings on critical and skeptical thinking. Nonetheless, I have tried to make it an accessible synthesis by presenting, as simply and clearly as possible, the concepts and skills which seem to me to be necessary for every citizen to master.

Here, then, is what you will find in this book.

In the first part, entitled “Some Indispensable Tools for Critical Thinking,” I begin by examining language and studying certain properties of words, before reviewing some useful notions of logic and examining the principal fallacies. The second chapter offers an overview of “citizen mathematics.” It deals with common forms of innumeracy, probability, statistics, and forms of data presentation.

The second part of the book, “On the Justification of Belief,” deals with this issue in three particular domains: personal experience, science, and the media. In other words, we will try to clarify in what cases, on what conditions, and to what extent we can hold a proposition true when it is justified by our personal experience, by recourse to experimentation, and by the media.

If the study of critical thinking is a new thing for you, I am well aware that this description does not tell you very much, and that you still do not know what exactly is meant by “critical thinking” or “intellectual self-defense.” The rest of this book is intended to explain exactly that. In the meantime, and to close this introduction, I would like to suggest a little game that may go some way to satisfying your curiosity,

and may even rouse it further.

In the box below, you will find a passage taken from the final work published by the late Carl Sagan (1934-1996) during his lifetime. A reputable astronomer and an exemplary popularizer of science, Sagan also worked hard to make critical thinking known and to encourage its practice. The text I cite is adapted from a passage in which he offers a collection of precepts of critical thinking that he called a “Baloney Detection Kit.” Read it carefully. I suspect that some of his entries will seem a little bit obscure. But I am also convinced that, when you have finished reading this book, you will understand perfectly not only what Sagan meant, but also, and above all, why it is so important to practice these precepts. If that is indeed the case, neither you nor I will have wasted our time.

Carl Sagan’s Baloney Detection Kit

(Excerpts)

- Wherever possible there must be independent confirmation of the “facts.”
- Encourage substantive debate on the evidence by knowledgeable proponents of all points of view.
- Arguments from authority carry little weight—“authorities” have made mistakes in the past. They will do so again in the future. Perhaps a better way to say it is that in science there are no authorities; at most, there are experts.
- Spin more than one hypothesis and don’t jump on the first idea that comes to mind.
- Try not to get overly attached to a hypothesis just because it’s yours. . . . Ask yourself why you like the idea. Compare it fairly with the alternatives. See if you can find reasons for rejecting it. If you don’t, others will.
- Quantify. If whatever it is you’re explaining has some measure, some numerical quantity attached to it, you’ll be much better able to discriminate among competing hypotheses. What is vague and qualitative is open to many explanations. Of course there are truths to be sought in the many qualitative issues we are obliged to confront, but finding them is more challenging.
- If there’s a chain of argument, every link in the chain must work (including the premise)—not just most of them.
- Occam’s Razor. This convenient rule-of-thumb urges us when faced with two hypotheses that explain the data equally well to choose the simpler.
- Always ask whether the hypothesis can be, at least in principle, falsified.

Propositions that are un-testable, un-falsifiable are not worth much. Consider the grand idea that our Universe and everything in it is just an elementary particle—an electron, say—in a much bigger Cosmos. But if we can never acquire information from outside our Universe, is not the idea incapable of disproof? You must be able to check assertions out. Inveterate skeptics must be given the chance to follow your reasoning, to duplicate your experiments and see if they get the same result.

The reliance on carefully designed and controlled experiments is key. . . . We will not learn much from mere contemplation. . . . If, for example, a new medicine is alleged to cure a disease 20 percent of the time, we must make sure that a control population, taking a dummy sugar pill which as far as the subjects know might be the new drug, does not also experience spontaneous remission of the disease 20 percent of the time.

Variables must be separated. Suppose you're seasick, and given both an acupuncture bracelet and 50 milligrams of meclizine. You find the unpleasantness vanishes. What did it—the bracelet or the pill? You can tell only if you take the one without the other, next time you're seasick. . . .

Often the experiment must be done “double-blind.” . . .

In addition to teaching us what to do when evaluating a claim to knowledge, any good baloney detection kit must also teach us what not to do. It helps us recognize the most common and perilous fallacies of logic and rhetoric.

Carl Sagan, *The Demon-Haunted World: Science as a Candle in the Dark* (New York: Ballantine Books, 1996).

Part One

SOME INDISPENSABLE TOOLS FOR CRITICAL THINKING

CHAPTER 1

LANGUAGE

It would not be impossible to prove with sufficient repetition and psychological understanding of the people concerned that a square is in fact a circle. What after all are a square and a circle? They are mere words and words can be molded until they clothe ideas in disguise.

—JOSEPH GOEBBELS, Nazi Minister for Public Enlightenment and Propaganda

When words lose their meaning, people lose their freedom.

—CONFUCIUS

How many feet does a pig have?

Four.

And what if we call its tail “foot,” then how many feet does it have?

Five.

No: you can't change a tail into a foot simply by calling it a foot.

—ANONYMOUS CHILDREN'S RIDDLE

Xanthus [his master] commanded [Aesop] to buy the best there was. He bought only language. The appetizer, main course, the palate cleanser, all were languages.

And what is there that is better than language? Aesop carried on: It's the connection to civil life, the key to science, the organ of truth and reason. Ah, well, said Xanthus, tomorrow buy me the worst there is. The next day, Aesop served the same dishes, saying that language is the worst thing in the world: It's the mother of all arguments . . . the source of division and of war . . .”
—LA FONTAINE, *Life of Aesop*

Introduction

Plato claimed, with great finesse, that wonder is a passion proper to philosophy. What does that mean? There is no doubt that the capacity to feel wonder is a privileged starting point for thought in general, and for philosophy in particular. In fact, it presupposes that one is able to rid oneself of preconceived ideas and prejudices, and tear oneself from the immense force of opinion's inertia to the point of being profoundly stunned by what seemed up to that point insignificant and uninteresting. Then wonder arises and opens trajectories for thought.

Language is such an everyday experience that we rarely stop to wonder at it. We are making a mistake: merely a minute of thought allows most people to discover how tremendously stunning and worthy of our wonder human language is.

An image first used by John Serale may help. In the lower part of our face, we all have a cavity that we can open and close as we wish. Somewhere at the back of this cavity, we have cords of a certain kind; by pushing air through them, it is possible for us to produce innumerable modulations of sound. These sounds are projected out through the cavity and, traveling through the air, they make it to people within their reach who, with the help of other complex mechanisms, are able to receive them. Thanks to these sounds, a huge number of things can be achieved. One can, for example:

- transmit information;
- affirm or deny a fact;
- ask a question;
- provide an explanation;
- exhort someone to do something;
- give an order;

- make a promise;
- get married;
- rouse emotion;
- hypothesize;
- suggest a thought experiment.

And those are just a few of thousands of examples. How is all of that possible? How does language have meaning? How to explain, for example, that we can produce original statements—and even produce as many as we want? And furthermore, how is it possible that those statements are generally perfectly understood by those who hear them for the first time?

As soon as we think about what talking means, innumerable fascinating questions and problems arise that linguists, philosophers, and other thinkers have tried to penetrate for a long time. For the time being, language remains full of mystery.

Although these considerations are fascinating, we will not delve further into them. But since language is able to produce the effects we just described (convince, move, exhort, and so on), it seems clear that we should dwell on it for a while if we wish to assure our intellectual self-defense—even if we don't have a definitive and philosophically satisfying answer to all our questions. Such a powerful tool can prove to be a formidable weapon. For those who might have forgotten or never knew, it is worth remembering how language was used to speak of politics during the twentieth century. To refresh our memory, there is nothing better than to reread George Orwell who invented the notion of "Newspeak," that strange language that allows one to say, for example, that slavery is freedom.

Orwell on Language and Politics

In our time, political speech and writing are largely the defense of the indefensible. Things like the continuance of British rule in India, the Russian purges and deportations, the dropping of the atom bombs on Japan, can indeed be defended, but only by arguments which are too brutal for most people to face, and which do not square with the professed aims of political parties. Thus political language has to consist largely of euphemism, question-begging and sheer cloudy vagueness. Defenseless villages are bombarded from the air, the inhabitants driven out into the countryside, the cattle machine-gunned, the huts set on fire with incendiary bullets: this is called pacification. Millions of peasants are robbed of their farms and sent trudging along the roads with no more than they can carry: this is called transfer of population or rectification of frontiers. People are imprisoned for years without trial, or shot in the back of the neck or sent to die of scurvy in Arctic lumber camps: this is called elimination of unreliable elements.

George Orwell, "Politics and the English Language" (1946), *The Orwell Reader: Fiction, Essays and Reportage*, (Orlando, FL: Harcourt & Brace, 1984), 363.

It's an ancient lesson. History teaches us that people who are sensitive to the power of language are quick to take advantage of it. It seems that, at least in the West, all this began in Sicily around the fifth century BCE, when people whose land had been usurped endeavored to take it back from the evil-doers by launching legal proceedings against them. At that point, the oratory techniques that became rhetoric began to develop.

Soon, teachers were going from city to city, selling the art of speech and promising fame and glory for anyone who learned to master it. They came to be known as "sophists," the name derived from the term "sophism," which refers to invalid reasoning that is put forward with the intention of tricking its audience.

History may be unfair to these teachers, portraying them as charlatans concerned only with the efficacy of their practice and social success. Whatever the case, the sophists had become fully aware of the power that language can confer when it is handled by an able rhetorician. Here is the opinion of Gorgias, one of the sophists, on the matter:

Speech is a powerful lord. . . . [It] can stop fear and banish grief and create joy and nurture pity. . . . Fearful shuddering and tearful pity and grievous longing come upon [its] hearers, and at the actions and physical sufferings of others in good fortunes and in evil fortunes, through the agency of words, the soul is wont to experience a suffering of its own. . . . Sacred incantations sung with words are bearers of pleasure and banishers of pain, . . . substituting opinion for opinion, taking away one but creating another, [rhetors] make what is incredible and unclear seem true to the eyes of opinion; then, second, logically necessary debates in which a single speech, written with art but not spoken with truth, bends a great crowd and persuades. . . . The effect of speech upon the condition of the soul is comparable to the power of drugs. . . . In the case of speeches, some distress, others delight, some cause fear, others make the hearers bold, and some drug and bewitch the soul with a kind of evil persuasion.¹

In the following pages, we will deal with language as it relates to intellectual self-defense.

Our trajectory will take us through two phases. First we will consider words, the choice of words, and some deceptive ways of using them with which it is crucial to be familiar in order to guard against them. Then we will arrive at logic, or the art of combining propositions, and above all this very particular art called rhetoric, understood as mental treachery and manipulation. At that point, we will examine some common fallacies.

1.1 Treacherous Words

Words, words, words.

—WILLIAM SHAKESPEARE

*What is well-conceived is easily articulated
And the words to say it come easily.*

—French poet and critic

NICOLA BOILEAU,
from his Art of Poetry, I

This section invites you to show great vigilance with regard to words, a vigilance that should equal the attention that those who know how to use words effectively to convince, deceive, and indoctrinate shrewdly pay them. I will begin by introducing an important distinction between the verbs “denote” and “connote.”

1.1.1 To Denote/To Connote

Our spontaneous conception of language is often quite naive. It is based on the idea that words designate objects in the world, objects to which we could otherwise point. One minute of reflection shows that it is far from being that simple. Many words do not have such referents: they are abstract, imprecise, vague, and they change meaning depending on the context. Still others reify, transmit emotions, and so forth.

It is useful to distinguish between what words denote (the objects, people, facts, or properties to which they refer) and their connotations, that is, the emotional reactions that they elicit. Two words can thus denote the same thing but have very different connotations, positive in one case, negative in the other. Knowing this is crucial, because in this way one can glorify, denigrate, or neutralize that of which one speaks, as the case may be, merely by choosing one’s words. Thus, it is different to talk about a car, a cruiser, or a beater: each of these terms denotes a motor vehicle designed for individual transport, but each also carries with it connotations and elicits very different emotional reactions. So it is advisable to be attentive to the words used to describe the world—especially in all the polemical and contested categories of social life. Think, for example, about the vocabulary used to speak about abortion. The protagonists in that debate refer to themselves as being pro-life or pro-choice. That is no accident: who would want to be anti-life or anti-choice? Whether an activist is more willing to speak of a fetus or a baby is not accidental either. Think also about Wal-Mart employees, who are referred to as associates. Or again, think about comedian

Roseanne Barr’s joke: “I’ve found a fail-proof way of making sure that the kids eat healthily: the health mix. One spoonful of M&Ms and two of Smarties. The kids love it. You know it’s good for them: Hey! It’s a health mix!”

Look, too, at the use of what are known as euphemisms, which are words used to mask or at least minimize a disagreeable idea by referring to it with a word with less negative connotations. They are a good illustration of how this property of language can be used to mislead an audience.

Think about the following case, reported and studied by Sheldon Rampton and John Stauber.² It shows how groups with specific interests can use language to their advantage. In 1992, the US International Food Information Council (IFIC) was concerned about the public perception of food biotechnology. So they launched a vast research project to determine how to talk to the public about these technologies. Some words were identified as carrying positive baggage, and it was strongly recommended that they be used exclusively. For example: beauty, abundance, children, choice, diversity, earth, organic, heritage, hybrid, farmer, flowers, fruits, future generations, hard work, improve, purity, soil, tradition, and whole. On the other hand, others were absolutely proscribed, notably: biotechnology, DNA, economy, experimentation, industry, laboratory, machine, manipulate, money, pesticides, profit, radiation, security, and researcher.

As one might easily guess, war is another domain particularly propitious to the use of euphemisms, as shown by the following table.³ In the first column, you will find several examples of vocabulary that have been used to talk about war from Vietnam to our day. The second column suggests a translation of what is likely referred to by each of the words or expressions.

Collateral damage	Civilian deaths
Pacification center	Concentration camp
Caribbean peacekeeping force	The army, marines, and air force that invaded Grenada
US Department of Defense	Ministry of Aggression?
Operation Desert Storm	War on Iraq
Operation Provide Relief/ Operation Restore Hope	Entry of American troops into Somalia
Incursion	Invasion
Surgical strike	Bombing hoped to be precise because of the proximity of civilians

Defensive strike	Bombing
Strategic withdrawal	Retreat (ours)
Tactical redeployment	Retreat (the enemy's)
Advisors	Military officers or CIA agents—before the US admitted to its involvement in Vietnam
Terminate	Kill
Particular explosives	Napalm

The Demonstrations Against the Quebec Summit in Spring 2001, As Seen by Mario Roy

People dressed up as dolphins or sea-turtles—or even cows, as they were at the meeting of the Finance Ministers of the Americas in Toronto. Street musicians and dancers. Placards and posters. Rants and songs. Slogans and flyers. A demonstrator offers a flower to a police officer, as in that photo from the 1960s that was broadcast around the world and became an icon for the same reasons as Che.

A poster that says: Capitalism sucks! Like in 1970.

Everywhere, lanky teenagers and young adults race to the party, for the sole reason that you have to be where the action is, with your friends, whether it is Seattle or Quebec. For them, at night after the demo, once the placards have been stacked along the wall, there will be music and pot, love and wine. . . .

We're not talking here about professional demonstrators, often paid by big unions or "community" organizations, who are leashed to the State, and who are completely uninteresting. Nor about the hooligans, the word we use in these instances for the little bums, who are scarcely less so.

Not at all.

We're talking about the big anonymous crowd of youth brimming with hormones and enthusiasm who go to the WTO or to the Summit of the Americas for the same reasons that other young people went to Woodstock, or to "McGill français," or to the Sorbonne for the big show in May of '68.

It's normal. And it's healthy. Don't you remember being eighteen?