TO LIGHT THE FLAME OF REASON

CLEAR THINKING FOR THE TWENTY-FIRST CENTURY

Christer Sturmark and Douglas Hofstadter

Foreword by Douglas Hofstadter

Pulitzer-Prize winning author of *Gödel, Escher, Bach: An Eternal Golden Braid*

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FOREWORD

Douglas Hofstadter

It is a great pleasure and a great honor to write the foreword to this book. And it has also been a great pleasure and a great honor to translate this book into English—a task in which I have been engaged, with love, for several years.

I had never heard of Christer Sturmark until early 2016, when, via e-mail, he invited me to participate in a small symposium in Stockholm on the topic "limits to knowledge." He mentioned several people who would probably be there, some of whom I knew or had heard of, and I was intrigued. I happened to have lived in Stockholm long ago and was very fond of the city, so it was a temptation I couldn't resist. I might add that this unknown gentleman's invitation was written in a very lively and genuinely friendly manner, which also helped tip the balance.

I just told you that I had never heard of Christer, and that's what I sincerely believed at the time, but when I arrived in Stockholm, I found out that I was quite wrong. Christer showed me an enthusiastic fan letter (a genuine *postal* letter) that he had written to me back in the early 1980s, when he was a teenaged rock musician, and then he showed me my reply to him, and his reply to me, and my second reply to him . . . I had completely forgotten all that! Clearly, my long-ago reactions to his style must have been similar to my much more recent reactions. In 2016, Christer was still just as boyish and ebullient as he had been as a very young man.

I had an excellent time at his symposium in Stockholm in 2016, especially getting to know the Viennese mathematician and writer Karl Sigmund, who later became a great friend. But Karl wasn't the only good friend I made thanks to Christer. The other friend was Christer himself. Here's what happened.

The day the symposium ended, Christer invited a handful of participants to dinner at his house on the lovely island of Lidingö, just to the east of

Stockholm, across the Lilla Värtan Strait. I'll never forget how that evening his former wife and still great friend Gunilla Backman sang one of my own songs for us, accompanied by mathematician Anders Karlqvist at the piano. It practically moved me to tears.

And then Christer, who had just discovered with great surprise that I spoke some Swedish, spontaneously offered me a copy of his brand-new book *Upplysning i det tjugoförsta århundradet* ("Enlightenment in the Twenty-First Century"). It was a hefty tome, but Christer smiled and said, "Don't worry—it's in pretty simple Swedish. You'll easily be able to read it." What he meant was that it wasn't written in pompous academic jargon or in an obscure Swedish dialect or in ancient verse or anything of the sort. In actual fact, it was written in quite sophisticated Swedish and not at all a piece of cake for me to read. Luckily, though, I could make sense of most of what I saw without using a dictionary.

At the outset, I had no idea what the book was about, but on my flight home, I paged through it and got very intrigued. I could see that it was giving a personal vision of an idealistic way for human beings to live together and get along in a world filled with conflict; in fact, it was an eloquent paean for tolerance, clear thinking, and belief in science. In some ways, it reminded me of the classic book *Fads and Fallacies in the Name of Science* by Martin Gardner, a hero of mine. For me, reading that book in my teenage years had been a life-changing experience.

The flavor of Christer's book deeply appealed to my lifelong sense of idealism and belief in science, and once I was home I suddenly had the idea that maybe I could translate it into English. In so doing, not only would I be doing Christer a favor but also I would be doing myself a favor, since translating his book would force me to work hard on my Swedish, a language I've loved ever since 1966, when I lived in Sweden for half a year. Moreover, assuming that the book got published, I would hopefully be doing a favor for people in the English-speaking world, by making a valuable set of idealistic ideas available to them. Those were all excellent reasons for my suggestion, and to my delight, Christer was thrilled with my offer. And why shouldn't he have been? After all, an author whom he had once admired was now offering to be his translator, purely out of friendship! What could have surprised and gratified him more than that?

In fall 2016, I eagerly plunged into the task. During the course of several months, I translated roughly a page a day, altogether doing maybe one-third of the book. At that point, my sabbatical year from Indiana University was

looming, and I had already been planning to spend the three winter months at the great university in Uppsala. It struck me that a very appropriate project to undertake during my three Uppsala months would be to complete the translation right there, only an hour or so away from Stockholm, so that Christer and I could meet from time to time and discuss all sorts of details.

Indeed, that's just what happened. During the cold, dark months from December 2017 through February 2018, my wife Baofen and I took the train several times from Uppsala to Stockholm, then made our way out to Christer's home on the far side of Lidingö (itself on the far side of Stockholm), and there we all had a wonderful time getting to know each other better. And in this way, a casual lecture invitation turned into a great friendship.

Now let me say some things about Christer's book itself, since that's what people expect from a foreword—and rightly so.

To Light the Flame of Reason (as the author poetically renamed it in English) sprang out of Christer's youthful passion for logic, math, and science. As a boy, he was fascinated by the universe's paradoxicality, strangeness, and magic. But he soon came to see that although there was plenty of mystery, there was also a way to study and to penetrate much of the mystery—namely, through science and mathematics. He threw himself into the study of those disciplines, and also into related activities, like chess (which he still loves to play, especially with his young son Leo).

Out of this intense engagement with the world of ideas came a conviction that there is a kind of truth that transcends all dogmas, all superstitions, and all religions, and that if humanity as a whole were to embrace that sort of truth, it would open up a marvelous period of enlightenment and could even bring about world peace.

Throughout the years, Christer's involvement with science itself—computer science at the start, but then other sciences—gradually turned into a kind of *crusade* (if I dare use that inflammatory word)—a crusade for a science-based tolerance of people of all races, lifestyles, cultures, and belief systems.

Christer discovered that there was already a worldwide movement of kindred spirits who thought along these same lines—namely, *secular humanists*—people who believe in benevolence towards all humans, not for religious reasons but out of a belief in the power of tolerance and clear thinking, and also out of a vivid sense of our collective fragility on this tiny blue-green sphere spinning its way among billions of stars, themselves among billions of galaxies. In other words, a sense of profound humility inspired Christer

(and other secular humanists) to try to get along with the other beings on this planet, rather than falling victim to blind, prejudice-driven hatreds and engaging in constant vicious battles with supposed "enemies."

Eventually, Christer, ever the idealist, decided to found his own publishing firm—Fri Tanke ("Free Thought")—and to publish high-quality books in Swedish, as well as a magazine called *Sans* ("Sense"), which would explain and advocate science, logic, and the philosophy of secular humanism, while arguing against pseudoscience, superstitions, and fundamentalist religions.

Christer's dream came true, thanks in part to help from his good friend Björn Ulvaeus (of ABBA fame), and some years ago he became an influential Swedish publisher. Among the many books issued by Fri Tanke are numerous translations of books written by some of the thinkers I most admire, such as Richard Dawkins, Daniel Dennett, Rebecca Goldstein, Mikhail Gorbachev, Andrew Hodges, Steven Pinker, and numerous others.

As the years passed, Christer's increasing visibility led him to become a well-known speaker and television personality in Sweden, representing the ideas of secular humanism most of all. He often could be seen arguing against astrologers who claimed everyone's fate was predestined in the stars, or debating with religious clerics who insisted that Darwinian evolution was a hoax, or defending his own credo that the philosophy of atheism should be every bit as respected by Swedish laws as organized religions are. Though unfailingly polite, Christer was always passionate about publicly defending all these stances in which he believed so deeply, no matter how hard it was to do so. My hat is off to him for his fervor and his courage!

While I was living in Uppsala and interacting with Christer quite frequently, I soon discovered that he was also practicing what he preached. He was a crusader for immigrants in Sweden, especially for people who had fled to Sweden as refugees from religious persecution. I saw firsthand how Christer gave enormous personal help to a Bangladeshi blogger who had fled his native land because of the threat of death from terrorists who hated free thinking and tolerance—the same kinds of extremists who had brutally attacked and nearly killed the teenaged girl Malala Yousafzai, who was an activist for education for girls in Pakistan.

In short, I came to admire Christer as a thinker, writer, publisher, and human being. We are now close friends, and part of what binds us is that we share a kind of youthful idealistic hope for humanity. His book—this book—expresses his sense of idealism clearly, concretely, and enjoyably.

Christer, like me, loves examples and stories to get his points across, and he uses them well in every chapter of this book.

Moreover—and here, perhaps, I detect a little trace of my own influence on him—he likes playing with form when he writes. Just as in *Gödel, Escher, Bach*, I alternated between more serious chapters and more playful dialogues, so Christer, in his book, alternates between more serious chapters and more playful "interludes," in which he allows himself a bit more liberty in expressing purely personal feelings.

As a translator of several previous books, I had quite a lot of experience in translation, and part of my style as a translator is that of taking lots of liberties—I call this "poetic lie-sense." Here and there, I allow myself to say things somewhat differently from the way they were expressed in the original, as I think it will work more effectively that way in English. I also sometimes take the liberty to suggest adding (or possibly dropping) a few ideas here and there. In this book, no less than in earlier books I'd translated, I used this brash style—but I had the advantage that I could always ask the original author if the small changes that I was suggesting were acceptable to him. To my gratification, Christer nearly always gave me a green light. This made for a very pleasant and easygoing relationship between author and translator, and during these past few years we've had great fun in our give-and-take as partners in the realization of this radical transplantation, into my language and my culture (namely, the English language and the American culture), of Christer's original book, which of course was deeply rooted in his own native soil of the Swedish language and culture.

Now that it's done, I will miss our delightful author/translator interactions, but it's high time for me to move on to new projects—and although I will no longer be translating Christer's book, our friendship will continue to grow and flourish. Most of all, I fervently hope that Christer's dream of a truly open society with universal tolerance and a universal reverence for science will come to exist, aided by his own contributions—especially by this highly stimulating and deeply personal book.

November 17, 2020
Bloomington, Indiana

FOREWORD

Christer Sturmark

Sometimes, in my darkest hours, I am worried that my fellow humans are slowly but surely losing the capacity of clear and independent thinking, of reason and rationality.

The global era of liberal ideas and values, which I see as having begun with the fall of the Berlin Wall and the end of the Cold War, seems tragically to have come to an end.

Many developments in the world at the start of this, the third decade of the twenty-first century, are making me increasingly worried. The world has been hit by the global pandemic of COVID-19, caused by a new coronavirus. Frantic work by scientists throughout the world has resulted in the development of vaccines with a speed never seen before—certainly an impressive proof of the power of science and collaboration. But at the same time, we are seeing an increase in anti-vaccination movements, often (but not always) founded on conspiracy theories about a "New World Order"—a nonexistent organization supposedly controlled by an elite (often believed to be Jewish, thus following classic antisemitic trends) having the goal of creating a world government that would control all of humanity through mind-controlling microchips and vaccines, and would reduce the world population to one-tenth of its current size.

The roots of the New World Order conspiracy theory in the United States can be traced to the militant antigovernment Right and the end-of-the-world brand of fundamentalist Christianity that fears the emergence of an Antichrist.

The QAnon conspiracy is another example of bizarre thinking that is on the rise in the United States: Its believers allege that there is an organization of pedophiles who worship Satan and who are running a global sex-trafficking business that involves politicians, police, and government institutes. No one can be trusted.

But conspiracy theories are just a small part of the problem: Throughout the world, ideas are spreading to the effect that certain words or pictures that make fun of various belief systems should be banned, and that those who break these principles should be punished by death.

Many of us remember the fatwa on Salman Rushdie pronounced by the Iranian leader Ayatollah Khomeini in 1989, by which he ordered Muslims throughout the world to kill Rushdie.

These kinds of ideas are spreading fast, and freedom of speech is under threat in an increasing number of countries throughout the world.

On October 16, 2020, the French middle-school teacher Samuel Paty was beheaded by a young Muslim. Paty had shown cartoons of the Islamic prophet Muhammad in class, during a discussion about the enlightenment idea of freedom of expression.

In Poland, a very conservative and Catholic regime has come to power. In Hungary, the trend is much the same. The freedom of speech and independent press are severely limited in these countries.

In 2018, a coalition government was elected in Italy, jointly ruled by a populist party (the Five Star Movement, or Movimento Cinque Stelle) and a group of right-wing extremists belonging to the Lega (formerly Lega Nord), a party founded on the idea of ejecting from Italy all parts of the country from Naples southward. In Austria and Russia, right-wing populism and conservative moral values are quickly gaining ground.

In the Philippines, President Rodrigo Duterte refuses to respect human and legal rights in his fight against drugs and Islamist jihadists. He has often proudly stated that he personally killed criminal suspects, and he has systematically supported death squads carrying out extrajudicial killings of drug users and other criminals. Many street children were among the victims. Duterte has also encouraged his soldiers to rape women.

Recent developments in China are also highly worrisome. Information technology is widely used to monitor and control the citizens, and as the economy is developing, the country is becoming more authoritarian, rather than less so. And in Turkey, Islamism and nationalistic ideas have taken over, while in India, Hindu nationalists have come to power.

And last but certainly not least, the United States of America, formerly a beacon of enlightenment and hope for much of the world, has been led for four years (2017–2020) by a president who seems unfit to run anything. That era is over now, but the country is deeply polarized in a way that will make it difficult to heal for a long time.

So, what is the antidote to all this?

What is needed, I believe, is a revival of what I call "enlightenment values." I believe we need to revive the art of clear thinking and bring about a renaissance of secular ethics.

This book is my attempt to contribute to such a development. I believe that one must begin with oneself, and work on a small scale. If each human being, whether young or old, were to decide to try to help build a new world in an open-minded way and were to try to be a bit more systematic and clear thinking, we would be well on the way toward my vision.

I also harbor a hope that such ideals could come to be included in the school systems throughout the world. Today, many schools could be said to be in a state of crisis. It's not so much due to problems of discipline and behavior but, rather, to a loss of perspective about the nature of knowledge and understanding. Students in schools and universities throughout the world need to be exposed to a more philosophical approach; they need to have more exercises in careful and clear thinking, greater awareness of life's complexities, and deeper probing into the nature of human existence. Only when we truly recognize ourselves as reflecting, conscious humans can we fully participate in life and improve it, not only for ourselves but also for others.

We also crucially need to realize that ethical and moral values do not have to stem from religion. Ethics is a long-standing branch of philosophy, and it has no indispensable link with religion. Indeed, moral values can be solidly grounded in a totally nonreligious, secular, and humanist fashion. We have to let our children know that a scientific outlook on the world is the most fascinating one there is, and that science, together with a humanist form of ethics, can ground a personal worldview.

This book grew out of my concern about rationality and enlightenment during the first twenty years of the twenty-first century, in which religious fundamentalism, pseudoscience, cultural relativism, post-truth relativism, conspiracy theories, and other antiscientific attitudes have been spreading like wildfire throughout the world.

This book project started a few years ago, when I wrote a book in Swedish about the necessity for a new enlightenment for the twenty-first century—an enlightenment that would bring back reason, clear thinking, and ethics and tolerance grounded in secular humanism.

The book you are now reading grew out of that book, in a wonderful collaboration with my intellectual hero from my teenage days, and now, as of a few years, my good friend, Professor Douglas Hofstadter. His book *Gödel, Escher, Bach: An Eternal Golden Braid* changed my life when I was in my early twenties, and it turned me away from the (passionate but unreasonable) ambition to become a pop star (or at least a pop musician, neither of which happened) and turned me toward mathematics, philosophy, computer science, and eventually writing and science publishing. You'll read more about that in chapter 1.

The story of how I came to collaborate with Douglas Hofstadter on this book is well told in Doug's foreword, so I will not repeat it here. His language skills and versatile mind made it possible for him to first translate my entire Swedish manuscript to English,[1] and then we worked together for three months while Doug visited my alma mater in Uppsala (where I studied computer science) to create this co-written version of my "enlightenment manifesto" for an English-speaking audience. I am thrilled that the book will also be published in Chinese, Russian, and Korean, so hopefully my enlightenment message will reach a much larger audience than just the tiny set of speakers of Swedish.

This book consists of two parts. Part I comes from taking a "micro-perspective." In it, my aim is to give the reader tools with which to think more clearly and more effectively in the everyday world. I want to provide keys and insights that will allow complex, sophisticated, multidimensional thoughts to bloom and to reach their full potential.

Part II takes an overarching "macro-perspective." Here my aim is to present a political and philosophical vision of a new *Age of Enlightenment*—a vision of a free and secular world in which people are not limited or oppressed by dogmas or superstitions, an open society without racism or sexism or other prejudices, a society where human rights occupy center stage.[2]

My hope is that this book can furnish people with tools with which to draw deeper conclusions and make wiser decisions, thereby helping them develop their capacities of reflection and analysis. In the final analysis, what it all comes down to is *the art of thinking clearly*. In part, this means that one's thoughts and reasoning should be lucid and sharp, not blurry and sloppy. But it also means that one should think things through carefully, not

just leap to snap judgments based on little evidence. I hope that this book's usefulness will flow naturally out of my discussion of how we can learn to ground our thought processes in a solid understanding of how we acquire knowledge and process it.

I am also aware that some people will inevitably take my position as a critique of religious beliefs. However, I wish to emphasize that this is truly not my attitude. Throughout these past twenty years, I've made many friends, both religious and nonreligious ones—among them rabbis, imams, Jesuits, scientists, and philosophers. My thoughts have been greatly enriched by all these friends and acquaintances.

I have the highest respect for everyone's personal beliefs. I know that religion can play a very central role in a person's life, especially in periods of grief and despair. Although I personally do not believe in any kind of life after death or supernatural being or creator, I know that many religious people have such a comforting belief, and I fully respect that—but alas, I am unable to offer any replacement for it. Hopefully, though, even if I cannot provide any support for the idea that we continue to live on in any reasonable sense after we die, I will be able to offer a convincing reason to focus primarily on our life on this earth. (Even if there were a life after this one, that would not be a good reason to be less than fully engaged with one's life right now here on earth.)

Finally, I want to encourage my readers to read this book with a critical eye. After all, my whole idea of a "new enlightenment" is precisely that of examining claims and judgments in a critical manner. Please do not be put off by the fact that this book deals, from time to time, with philosophy. Many people think that philosophy is difficult or even opaque, but I think this is a misconception. Is it hard to play the piano? Well, it all depends on whether you are trying to play Bach or "Twinkle, Twinkle, Little Star." Much the same could be said concerning philosophy. I actually talk quite often about philosophical and existential questions with my eleven-year-old son Leo, and the questions he asks me are quite similar to the questions we grown-ups ask. Philosophizing can be done by people of any age. It just depends on how you approach the questions, and which aspects of philosophy you tackle.

In this book, between successive chapters you will always find an "Interlude" (like a dash of lemon sherbet served between two heavier courses of a long meal) on some topic or other. These interludes are a bit freer in form than the chapters and are sometimes more personal; they can also pose riddles without answering them.

Personally, I feel that a reawakening through a "new enlightenment" can contribute to a more open society, to a more democratic way of life, and to more favorable living conditions for all human beings. In my opinion, in today's globalized world, a secular vision of humanity and a secular body of ethical principles are the most promising avenues to bring about peaceful coexistence among peoples. We must take responsibility for life on earth, in the here and now. Too many people today suffer from religious or superstitious oppression of one form or another. The secular vision I am proposing is thus, aside from being a plan to bring enlightenment, a plan to bring liberation.

I have called the book *To Light the Flame of Reason: Clear Thinking for the Twenty-First Century* because my dream is for it to be an optimistic manifesto for a new Age of Enlightenment.

January 1, 2021
Stockholm, Sweden

PRELUDE

Concerning Yesterday's World and Today's World

I do not believe in revealed religion.
I will have nothing to do with your immortality;
we are miserable enough in this life,
without the absurdity of speculating upon another.

—Lord Byron, letter to Thomas Moore, March 8, 1822

It was in a hotel room in Brazil that the Austrian writer Stefan Zweig (1881–1942) wrote his famous description of the collapse of the Old World. That book was his final desperate manifesto, and after he had finished writing it, he took his own life, and his wife took hers as well. The book first appeared in print in Sweden in 1942 under the title *The World of Yesterday* (actually, it was printed in German, and its title was *Die Welt von Gestern*). Zweig had for a long time been one of Europe's most popular writers, but Nazism had driven him into exile, and in Germany his books were burned.

The World of Yesterday grew out of Zweig's sense that the world around him had gone crazy. He had lived through a period in which the ethical compass and the belief in the future that had pervaded Europe up until World War I were suddenly uprooted and replaced by fanaticism and irrationality. As he puts it (as translated from the German by Anthea Bell):

> All the pale horses of the apocalypse have stormed through my life: revolution and famine, currency depreciation and terror, epidemics and emigration; I have seen great mass ideologies grow before my eyes and spread, Fascism in Italy, National Socialism in Germany, Bolshevism in Russia, and above all the ultimate pestilence that has poisoned the flower of our European culture, nationalism in general.
>
> I have been a defenseless, hapless witness of the unimaginable relapse of mankind into what was believed to be long-forgotten barbarism, with

> its deliberate program of inhuman dogma. It was for our generation, after hundreds of years, to see again wars without actual declarations of war, concentration camps, torture, mass theft, and the bombing of defenseless cities, bestiality unknown for the last fifty generations, and it is to be hoped that future generations will not see them again.[1]

Then Zweig goes on to point out the paradoxical aspect of the times he had lived through:

> Yet paradoxically, at the same time as our world was turning the moral clock back a thousand years, I have also seen mankind achieve unheard-of feats in the spheres of technology and the intellect, instantly outdoing everything previously achieved in millions of years: the conquest of the air with the airplane, words traveling all over the world at the moment when they are spoken, the conquest of space, the splitting of the atom, the defeat of even the most insidious diseases. Almost daily, things still impossible yesterday have become possible. Never until our time has mankind as a whole acted so diabolically, or made such almost divine progress.[2]

A Global Psychosis

Aside from the Eurocentric perspective in Zweig's description, it is hard not to see parallels with the world of today. The internet has linked most of the people of the world together through websites, e-mail, and social media like Facebook and Twitter.

Zweig's description concerns a Europe that had moved rapidly from a marvelous period of astonishing scientific progress, deep belief in the future, and a spirit of enlightenment to a nightmarish period of irrationality and fanaticism. And exactly that is happening once again today, but now on a global scale. Never has scientific progress been so impressive as nowadays. Never has it been so easy to dig up information and knowledge as today. Never has it been so hard for dictatorships and other totalitarian regimes to keep their populations in the murk of ignorance. Never has it been so simple to make oneself be seen, heard, or read by a global audience.

And yet, simultaneously, the world has been hit by a form of mass psychosis. On a daily basis, homosexual people are being killed or imprisoned, thanks to certain people's interpretations of God's will. Women are dying because they have been denied abortions. People are being stoned to death, or are having their hands chopped off, because of the way they happen to

conceive of divine laws. Religious fundamentalists post videos of beheadings on the internet, urging viewers to join them in their holy war. People are hoodwinked into thinking that God can cure deadly diseases through miracles. Myths about witches or demons that must be exorcised result in cases of maltreatment or death, in which even children are too often the victims.

Since Ayatollah Khomeini's seizure of power in Iran in 1979, since the fall of the Berlin Wall and the end of the Cold War in 1989, and most of all, since the attack on the World Trade Center in September 2001, it seems that irrationality, superstition, and fanaticism have been making ever greater gains all around us. Examples are manifold; the list that follows is a tiny but representative sampler.

In November 2015, a series of terrorist attacks took place in Paris and the city's northern suburbs. There were several mass shootings and a suicide bombing at cafés and restaurants. The attackers killed 130 people, including 90 who were attending a concert at the Bataclan theater. The Islamic State (usually called "ISIS," or as they call themselves, "The Caliphate") claimed responsibility for the attacks.

On Bastille Day in France—July 14, 2016—a nineteen-ton truck was deliberately driven into a crowd of people celebrating on the Promenade des Anglais in Nice. Eighty-six people died and 459 were injured. The Islamic State claimed responsibility for the attacks.

A similar attack with a truck took place in Stockholm on April 7, 2017, killing five people and injuring many more. The driver had sworn allegiance to the Islamic State.

In September 2017, Indian journalist Gauri Lankesh was shot dead outside her home in Bangalore. Lankesh was known as a fierce critic of Hindu nationalist organizations in her state. In 2016, she had been convicted of libel because of an article she wrote, accusing members of the Bharatiya Janata party of theft.

In 2016, a band of militiamen in Kansas, calling themselves "Crusaders," were charged in a terrorist plot against Somali Muslim immigrants. They were planning a bomb attack on an apartment complex where many Muslim immigrants lived, and which was also home to a mosque.

In 2018, a meat seller in Uttar Pradesh, India, was beaten up by the police because of allegations that he had slaughtered cows (cows are believed to be holy in the Hindu religion), and he later died in a Delhi hospital. Since 2010, 28 Indians, of whom 24 were Muslims, have been killed, and 124 have been injured, in acts of violence sparked by disputes over the allegedly sacred cows.

In 2018, a Buddhist mob attacked mosques and Muslim-owned businesses in Sri Lanka, resulting in two deaths. Sri Lanka is a Buddhist-majority country. Since 2012, tensions and violence there have been fueled by hard-line Buddhists and their organization BBS, or Bodu Bala Sena (meaning "Buddhist Power Force").

In 2012, Savita Halappanavar had a miscarriage in the seventeenth week of her pregnancy. She was residing in Ireland, and the doctors in the hospital refused to remove the fetus. The explanation they gave her was: "This is a Catholic country." She died of blood poisoning one week later.

In February 2014, Uganda's president Yoweri Museveni signed a law that permitted the death penalty for homosexuals. At the same time it also became mandatory to report anyone whom one believed to be homosexual. The reasoning behind this Bible-inspired law was eagerly supported by the Anglican Church. On the day after the law came into force, a Ugandan newspaper published the names and photographs of 200 alleged homosexuals, every one of whom, from that moment on, lived under the constant threat of death. (In August 2014, the law was annulled, but for purely formal reasons, when Uganda's constitutional court ruled that too few members of parliament had been present when the law was passed. Some Christian churches in Uganda are continuing, however, to push for the law to be passed again. Homosexuality is still a crime in Uganda.)

In March 2013, the Catholic Church in Burundi asked the state to prevent a splinter group of the church from making its monthly pilgrimage. The pilgrims made their way to a spot where they thought that the Virgin Mary was making an apparition, but the church claimed that the apparition was false and wanted to prevent the group from going there. This resulted in monthly skirmishes between the police and the pilgrims. On one of these occasions, the police shot into the group, killing ten people and injuring thirty-five.

In 2014, in Sudan, twenty-seven-year-old Mariam Yahia Ibrahim was sentenced to death by hanging for having declared herself Christian rather than Muslim. (In 1983, Sudan had instituted Sharia law, which is described in some detail in chapter 10.) Though she was eight months pregnant, the young woman was nonetheless sentenced to be whipped one hundred times before her execution was to take place. After a huge international outcry, she was liberated and flown to the United States.

In 2014, Brunei took the first step toward instituting Sharia law. This initial step involved the criminalization of extramarital pregnancy, of missing Friday prayers, and of proselytizing for any religion other than Islam,

with the punishment ranging from fines to prison terms. In the second step, theft and the consumption of alcohol by Muslims were made punishable by whippings or possibly by cutting off of limbs or other body parts. These laws came into force in 2015. In 2016 came the third step, in which adultery, sexual intercourse between homosexuals, and blasphemy against the prophet Muhammad would all be punished by stoning to death.

In June 2018, the secular Bangladeshi blogger Shahzahan Bachchu was killed by unknown attackers. This, unfortunately, is just one example in a series of killings of secular activists in Bangladesh. Earlier, in 2015, the secular publisher Faisal Arefin Dipan was hacked to death. Prior to that, the secular blogger Avijit Roy was also murdered. Also in 2015, the blogger Niloy Neel, who defended atheist views, was hacked to death in his home in Dhaka, the capital city. Some Bangladeshi secular bloggers managed to flee to Sweden, and in 2017 and 2018, they were granted temporary asylum there.

In 2017 and 2018, many members of the Muslim Rohingya people in Myanmar were attacked and killed by Buddhist extremists. Luckily, many Rohingas managed to escape to Bangladesh, where today they are living in refugee camps.

In 2015, an ultra-Orthodox Jewish anti-gay extremist attacked a Gay Pride festival in Jerusalem, stabbing one person to death and injuring several others. The attacker had been released from prison just three weeks before the attack, after having served ten years for a similar attack he made in 2005.

In January 2015, militant Islamists invaded a meeting of the editors of the French satirical magazine *Charlie Hebdo*, killing twelve people and injuring many more. The victims' "crime" involved the publication of satirical drawings that criticized various religions, including Islam. After the attack, the perpetrators fled and were eventually killed, after an intense police search that lasted for three days. Linked to this attack was another attack on a Jewish shop in Paris, in which several people were taken hostage. Some of the hostages died when the French police attempted to liberate them.

In that same month, several people were killed by two suicide bombers in a market in northeast Nigeria. The perpetrators were two teenage girls, each wearing a bomb strapped to her waist, who blew themselves up, along with their victims.

What is it that drives people to carry out all these fanatical acts, and what gives rise to the bizarre beliefs underlying such acts?

One can't help but wonder what makes so many people say that they love and revere a god who seems to accept the fact that people act so barbarically.

The god whom they claim to love also lets vast numbers of innocent people suffer inconceivably as a result of all sorts of natural catastrophes. What kind of god is it that lets children on vacation in Thailand lose their parents in a gigantic tidal wave? And what kind of morality does a person have who thanks God for having saved them in a bus crash, when people sitting all around them died? At the same time as their god allows (or causes) disasters to take place every single day throughout the world, many believers presume that this god is merely reacting with justifiable wrath at such supposedly evil acts as stem-cell research and acts of love committed by homosexuals.

This god also seems unable to tolerate not being believed in by some people. In many countries, the "crime" of denying God's existence merits the legal system's most severe punishments. God would certainly seem to have a peculiar set of priorities. And so I wonder: Why on earth should billions of people respect or worship such a god?

Fatal Superstition

Irrational thinking throughout the world crops up not only in expressions of religious extremism. Magical thinking and other superstitious notions are also widespread, and moreover, they can be life threatening.

In October 2014, a fifty-five-year-old woman in the Indian state of Chhattisgarh was tortured and murdered by her own family members because they suspected that she, through witchcraft, had brought illness upon a family member. Chili powder was smeared all over her eyes and into her ears, and then she was caned to death.

A twelve-year-old girl in Brazil who was suffering from cancer died because her father believed more in a "miracle doctor" supposedly having healing powers than in the modern treatment of cancer using chemotherapy and radiation.

A British family who were members of the Christian sect of Jehovah's Witnesses refused to let their child have a blood transfusion because that would go against their religious convictions. Jehovah's Witnesses believe that both the Old Testament (Genesis 9:4; Leviticus 17:10; Deuteronomy 12:23) and the New Testament (Acts 15:28–29) command them to abstain from using the blood of others. In March 2014, however, an English court ruled that the parents did not have the authority to stop the blood transfusion from taking place.

This was good, but in many other countries, parents' superstitious beliefs are accorded higher respect than their children's lives. In thirty-seven U.S. states, there are laws that clearly state that if parents deny a child medical treatment because of religious convictions, they cannot be held legally responsible for any harm that might come to the child.

The theory of evolution lies at the base of modern medical research and practice. Yet nearly half of all U.S. citizens believe that Darwin's theory is false and that humans, exactly as they are today, were created by God. To them it is inconceivable that there could exist any kind of link between humans and apes, or that humans might have changed throughout time.

A full one-third of the American populace believes in ghosts and telepathy. One American in four believes in astrology, and also in the idea that Jesus will come back to earth within the next fifty years. Some American politicians believe that we don't need to worry our heads over global warming because Jesus will solve all our problems when he returns to earth.

In May 2014, the Hindu nationalist Narendra Modi, of the Bharatiya Janata Party (BJP), became prime minister of India. At that time, the BJP parliament member Ramesh Pokhriyal Nishank stated in a political debate that as trology was far ahead of science, and that science was in fact "a pygmy" compared to astrology.

Swedish Extremism and Superstition

Of course, Sweden is not immune to religious extremism and superstition. Since summer 2012, hundreds of Swedes traveled to Syria in order to fight hand in hand alongside religious jihadists.

Two parents in the town of Borås concluded that their twelve-year-old daughter was possessed by evil spirits. They sought help from the pastor in a local free church (a non-state-sponsored Christian church) in order to drive out the demons. The girl was severely mishandled, and both the parents and the pastor were sentenced to jail terms. The year was not 1613 but 2013. Not too long after that, yet another case of torture in a suspected case of exorcism created a stir in the same city.

At the same time as children in Sweden are mistreated by exorcists, Swedish television channels happily show entertainment programs based on just such belief in spirits, featuring "haunted houses" and seances with mediums who claim to be able to communicate with the souls of dead people. The responsible officials on Channel TV4 consider it all to be harmless fun.

A teenage girl in northern Sweden was living with a man who regularly beat her. She sought advice from a fortuneteller, who divined her future using Tarot cards. He stated that she was simply going through a troublesome patch in her relationship, but that the Tarot cards showed that her partner would become much warmer to her if they had children together. The fortuneteller's advice made her stop seeking help. Her trust in the Tarot cards meant that she would continue to be victimized for many more years.

A Swedish parliament member belonging to the Green Party requested that the parliament's investigation bureau look into suspicious contrail lines in the sky, which were referred to as "chemtrails." (The "chemtrail" interpretation of contrail lines stems from a conspiracy theory that claims that white lines in the sky, left by jet planes as they fly, are part of a secret attempt to control the weather, human behavior, and countless other phenomena. In actual fact, contrail lines arise when the hot gases expelled by the jet engines come in contact with cold air at high altitudes. The lines are just streams of ice crystals.) The Green Party's previous leader claimed that the CIA and Russia lay behind these mysterious displays in the sky, and a parliament member belonging to the Center Party claimed that airplanes were spraying out chemicals in an attempt to control the weather.

Sweden's small but vocal Christian Values Party (www.kristnavardepartiet.se) seeks to totally ban abortion. It also aims to overturn the ban on caning children and does its best to obstruct *in vitro* fertilization.[3] The party also seeks to block same-sex marriage and to deny same-sex couples the right to adopt children. Its members also believe that the teaching of evolution in schools is harmful.

In southern Sweden, there is a school supported by the Christian doomsday sect known as the Plymouth Brothers. (The Plymouth Brothers took their name from the city of Plymouth in England, where the movement's first gathering took place in 1832. In Sweden, this cult was established in the 1870s, and today it boasts roughly four hundred members.) Sect members do not allow their children to go to public schools and even refuse to eat at the same table as nonmembers of the sect. Their children should have as little contact as possible with the surrounding society, while they are awaiting the second coming of Jesus. Women are not allowed to have short hair, and they must not work outside the home after marriage. Sect members are not allowed to watch television or listen to the radio. They must not study at a university or vote in any election. And yet, the Swedish parliament decided that the sect would receive federal support for its school, in the name

of religious freedom. That these children are thereby exposed to extensive brainwashing seems not to matter in any way.

Religion, the "New Age" movement, quack medicine, and superstition are not harmless. What we humans believe is a matter of major importance. And yet, politicians, journalists, and society in general are often inconsistent in their attitudes toward different sorts of beliefs.

Suppose that you have a good friend who at a certain point becomes more and more skeptical about taking his diabetes medicine. You grow very worried about his behavior and confront him sternly. He explains that he won't take his medicine because he thinks it has been poisoned by the CIA. They are out to get him, he says—they want to kill him.

You call up a doctor and relate what just happened. The doctor investigates your friend and reports the diagnosis: paranoid delusions, psychic disturbances, mental illness. Your friend is offered treatment.

Another good friend just broke off her long-term relationship with her live-in partner. You think this is a mistake and ask her why she did this. She replies that after attending a meeting of the Christian group called "The Word of Life," she realizes that she no longer can live with her partner because they aren't married. She fearfully insists that she will be punished forever in hell for having had sex before marriage. Moreover, she won't ever let a swear word cross her lips, because then she will suffer the same fate.

You call up the doctor once again and ask him to check out your friend. It turns out he gives the same diagnosis to her: paranoid delusions, psychic disturbances, mental illness. But no—society says instead that she is just "reborn." She has simply become religious, that's all.

Society judges these two friends of yours in totally different ways, although it is even less likely that hell is awaiting friend #2 when she dies than that the CIA has poisoned friend #1's diabetes medicine. After all, the CIA at least *exists*, and it is even known to have poisoned certain people that it considered to be a threat.

It's obvious that society's general measuring rods are not based on what is sensible and what is not sensible. Other factors play a role in determining what is considered to be reasonable behavior, and what is not.

Why do people seek certainty in religions, in the New Age movement, or in superstitions? Why do people believe in such strange ideas and dogmas? The question is complicated, and there are many answers—not just sociological answers but also political ones, psychological ones, and ones coming from evolutionary biology.

Our ever-more globalized world can give rise to feelings of insecurity, rootlessness, and identity crisis. For some people, the solution is to seek security in the warm fuzzy feelings of the New Age movement. The New Age has become Generation X's religion: quack medical claims such as astrology, homeopathy, *feng shui*, Tarot cards, *Reiki* ("universal life energy" in Japanese) healing, iris-based diagnosis techniques, Chinese alternative medicine, magnet therapy, psychosynthesis, *chakra* balancing, Kirlian photography, and other pseudoscientific ideas are spreading like crazy, particularly with the help of the media, in a ceaseless flood.

Courses in "leadership and personal development" are launched by cynical exploiters, as are pyramid-style get-rich-quick schemes on the web, inspired by the world of the New Age movement. All sorts of quack treatments for serious illnesses are hawked with the promise of bringing fantastic, rapid effects. Pseudoscientific and New Age ideas are luring more and more people, and many are not only tricked but also exploited—sometimes with tragic consequences.

When believers are confronted with the fact that there is nothing to support these theories, nothing that would indicate that they are true, they often point to a criticism inspired by New Age thinking—namely, criticism of the very concept of truth. Claims are not true or untrue, so this idea runs—they are merely true *for certain people* or true *for certain cultures.* "Such-and-so may not be true for *you*, but it's true for *me*!"

The notion that all truth is relative (i.e., that what is true varies from person to person), and that no set of cultural values is better than any other, is encouraged in certain intellectual circles, as well as in Swedish cultural debates. Unfortunately, such wishy-washy ideas do nothing to help in the fight against global warming or to raise our general moral consciousness. In fact, quite the contrary, they fool exactly those people who most need to be involved in the project of a new enlightenment. Such a relativist stance is really the result of intellectual laziness on the part of people who prefer to glibly slip from one idea to another rather than reaching conclusions through careful deliberation. And what the relativists don't seem to understand is that if there is no objective truth, then you can't even be *wrong* about anything! Relativism is thus a conveniently self-reinforcing belief system.

And yet, among relativists, prejudices flourish against people who have chosen to seek clarity and a scientific basis for their beliefs. Scientifically inclined people often run into relativist or New Age objections such as this:

"You only believe in what science can explain! How can you be so narrow-minded?" Or else, "Well, what about *love*? Don't you believe in love? Obviously you can't *explain* love, so that means you can't believe in it!"

To defend their blurry ways of thinking, some relativists and New Agers try to make themselves immune to criticism, and they shy away from reconsidering their views in light of new facts that crop up. Behind such weird insults as "You're nothing but a science fundamentalist!," there is often a great well of ignorance of—and a contempt and an intolerance for—science and its practitioners.

Sweden is a quite secular country. Religion no longer plays a large role in our society, especially in comparison with many other countries. Most Swedish citizens consider themselves nonreligious. The Swedish Lutheran Church (once officially the state religion) today has such an unclear and blurry message to offer that few people care at all about its teachings anymore.

But Sweden is also part of Europe, and in Europe as a whole the situation is considerably more serious. Many contemporary European politicians are insisting that Europe should have a Christian set of values, and in countries like Poland, fundamentalist Christians actually are running the government.

In the United States, despite the long-standing official separation of church and state, the conservative Christian movement exerts major influences on the country's politics. The same holds for many Catholic countries and, of course, for the rapidly evolving political form of Islam, which everywhere seeks to install Sharia law as the law of the land and make the Koran become the ultimate guiding principle for all human beings.

What We Need Is a New Age of Enlightenment

Religious beliefs have very serious consequences as far as society and politics are concerned. Opinions about such matters as women's rights, abortion laws, stem-cell research, contraceptives, children's rights, animal rights, euthanasia, homosexuality, marriage, science, and so forth are all deeply affected by religious views throughout the world.

Today, international politics is pervaded by a conflict of ideas between those who seek a new secular enlightenment and those who cling to a conservative view of the world. This conflict not only affects world politics in the highest degree but also touches the lives of all ordinary people. Both in Europe and in the rest of the world, a war is being waged against terrorism and religious fundamentalism. The once-promising Arab Spring ran out of

gas and turned into a cold winter, and the rise and fall of the Islamic State showed the world the most gruesome violence it had seen in a long time.

The worst forms of religious fundamentalism, whose consequences we see in such lands as Uganda, Sudan, Syria, and Iraq, don't have a great deal of support in our part of the world. But the basic attitudes underlying fundamentalism, such as the claim that the principles of morality were dictated directly by God, are very widespread, even in a progressive (and mostly nonreligious) country like Sweden.

We truly need to put this all behind us, for these are ideas that belong to a bygone era. In their place we need to formulate a new enlightenment-oriented secular humanism, in which what is deeply *human* is found at the very core. We need to reawaken the basic values and ideals that defined the original age of enlightenment. We need to accept the idea that the world we inhabit is part of nature, and that it has no trace of supernatural or magical forces. Only when such a worldview predominates will respect for people and their relations occupy center stage, as opposed to people's relations to one or more gods. Ethical questions should be detached from religion. This doesn't mean that the questions become any easier—just that ideas are tested and judged without being profoundly tainted and constrained by religious dogmas.

Such a form of secular humanism builds on the power of free thought—the power to investigate and understand the natural world. Although not *everything* can be investigated or understood, the sincere quest for knowledge and understanding establishes a flexible, nondogmatic attitude toward the world. Curiosity and openness lie at the core of such an attitude. The scientific method of careful and open-minded testing, as well as science's creative and reflective ways of thinking, provides key tools. What clear, science-inspired thinking helps us understand, among many other things, is that a person can be good and can be motivated to carry out morally good actions without ever bowing to, or being limited by, supposedly divine forces.

This attitude is also characterized by a desire to move toward a secular structure for society and a secular form of politics, in which all people in a given situation are treated with equal respect and consideration, independently of what beliefs or cultural background they might have. In such a society, the laws, the norms, and the public places do not reflect religious presumptions of any sort but, rather, a human set of ethical principles not linked to any religion. Religion and politics are kept apart. Every person can

believe what they wish to believe, as long as it does not infringe on others, and as long as citizens are not compelled to submit to a state religion.

Such a secular vision of humanity represents a strong belief in human beings, in their abilities, and in their potential to grow and change. It represents the idea that goodness in human life comes from *within*, rather than being imposed from on high.

Today, the global society forged by the internet is taking shape quickly. Not just companies but countries are becoming increasingly globalized, and, of course, individuals are doing so as well. People throughout the world can raise their voices and be heard, and compete in terms of knowledge and skills as never before. Thanks to social media, isolated individuals can play a larger role than ever in political developments. Today, more people have greater access to information and knowledge than ever was dreamed of before, and more people are concerned about the world situation. More people have the chance, through their own actions, to make a difference.

Each one of us, as an individual, matters. It is thus vitally important that each of us should choose, in a conscious and reflective manner, our own views of reality, of the world, and of humanity. And this means that it is crucial for us all to train ourselves in the art of thinking clearly.

Part I

THE ART OF THINKING CLEARLY

CHAPTER ONE

TO MEET THE WORLD WITH AN OPEN MIND

Concerning the Tools and Compass Needed in the Quest for Knowledge

> Judge a man by his questions rather than his answers.—Pierre-Marc-Gaston, duc de Lévis[1]

Would we humans have been just as curious about the world and the universe if the sky above us had always been cloudy? I wonder. The great existential questions were most likely first posed when people looked up at the sky on a starry night. What is there out there? Where do *I* come from? Why do I exist? Why is there something at all, instead of just nothing? What does it mean to be human? What should I believe in? How am I going to decide on my moral values? And lastly, what is the meaning of life?

Each person making the bumpy trip from childhood to adulthood runs into these same eternal questions in a fresh way, and continues, for the rest of their life's trip, to reflect about them.

My Own Bumpy Trip

As a child I loved to read tales of fantasy. One of my favorites was *Alice in Wonderland* by Lewis Carroll (1832–1898).[2] Wonderland was a fantastic place where anything was possible, but Alice was a skeptic. I always think of the time when, in the story, she meets the White Queen. Alice innocently says, "One can't believe impossible things," to which the White Queen haughtily retorts, "I daresay you haven't had much practice. When I was younger, I always did it for half an hour a day. Why, sometimes I've believed as many as six impossible things before breakfast."

When I was a child, I thought that Alice had a boring attitude. *Obviously* one should believe in what is impossible! Curiosity was already then a strong driving force in my life.

When I was little, I thought I could move things with the force of thought alone, thanks to the Israeli magician Uri Geller. In 1972, Geller appeared on television in the United States, and millions of viewers saw keys bending and watches suddenly stopping without his ever touching them. He succeeded in convincing many people that he had true parapsychological powers, allowing him to make things move by the pure power of concentration, but skeptical magicians, especially Ray Hyman and James Randi, revealed how he depended on trickery. Their debunking, however, was not known to the general public, and certainly not to me as a child.

I remember Uri Geller so clearly from my childhood, and, of course, I believed in his magical powers. Many was the time I sat there staring at a matchbox, concentrating all my powers on it, trying to make it move—just a little bit, just a tiny bit, even just a millimeter! I so yearned for it to happen! Maybe I just wanted to feel that I was different and special. Why not believe it, when I *wanted* to believe it? But it never worked. At some point, I started to suspect that things wouldn't become true merely because I *wanted* them to be true. Today I know that Uri Geller was a faker. He certainly faked me out.

As I grew older, I started to devour books about physics and other sciences. Among my favorite readings were fantasy and science fiction novels. I thought that *The Foundation Trilogy* by Isaac Asimov and *Lord of the Rings* by J. R. R. Tolkien were masterworks. Gradually, my growing knowledge about the world started competing with my fascination with "magical" phenomena. The child in me dearly wanted to believe in magic, parapsychological phenomena, gods, and other supernatural beings, but I was inexorably growing older.

I grew up in the tiny town—really just a village—of Mariefred, Sweden (about thirty miles west of Stockholm), which had an extremely limited supply of things for kids to do, aside from the usual sports. But sports were not for me. I have never played soccer or ice hockey in my life. When I turned twelve, I became obsessed with mathematics. While other kids were playing soccer, I would sit all alone in my room and plot curves on graph paper. I soon started to program a Texas Instruments TI59 pocket calculator, and then a computer (an ABC 80). I really was quite the nerd.

When I reached the age of fifteen, I came across the writings of the British philosopher Bertrand Russell (1872–1970). I first read his memoirs, which made a strong impression on me. Russell was not just a philosopher; he was also a political activist, and he wanted to have an impact on others. He certainly had a decisive influence on my choices in life as a teenager. At

some point, I read his book *Why I Am Not a Christian* (1958), which paved the way for my interest in philosophy and sparked my interest in society and in political engagement. In 1950, Russell was awarded the Nobel Prize in Literature "in recognition of his varied and significant writings in which he champions humanitarian ideals and freedom of thought."[3]

At around this age, I started, reluctantly, to realize that it was intellectually dishonest to believe in something just because I wanted it to be true. I also began to understand that it could even be immoral to believe in something without a good reason to do so. If I can believe in anything I want, then my treatment of other people may be totally arbitrary.

I started to see that one has to be able to *justify* one's beliefs. One has to have a plausible reason for taking a statement as true. And thus I eventually gave up my belief in magic and in parapsychological phenomena; however, I continued to love performing magic tricks, and I still do some magic today.

Taking the place of magical thinking in my mind was my discovery that the real world is filled with wonderful mysteries. Unsolved riddles in the world of science fascinated me in a way that no magical wishful thinking ever had. Mysteries inside mathematics, physics, chemistry, and biology were much more interesting to me, since they were *genuine* mysteries. They were just as magical, though in a more abstract sense of the word.

I'll never forget my first experience with logical paradoxes. It was April Fool's Day. That morning, an older friend of mine who liked math said to me, "Today is April Fool's Day, and I'm going to trick you in a way that no one has ever tricked you before!" This was a little scary-sounding—and challenging. Therefore, all day long I paid extremely close attention to everything he said and did, but nothing seemed like a trap at all. Eventually evening fell. I tried to look back on the day and figure out when or how he had tried to trick me, but I couldn't recall anything suspicious. I thought and thought, and when bedtime came, I had a hard time falling asleep. The next day I ran into my friend again and told him with annoyance that I hadn't slept the night before, because he had broken his promise of tricking me.

Then he said triumphantly, "So you expected I would trick you at some point yesterday?"

"Yes."

"But I *didn't* trick you, did I?"

"No."

"But you *believed* I was going to?"

"Yes."

"Well, then—I fooled you, didn't I? You gullibly fell for what I told you in the morning!"

On hearing this, I realized that my friend had indeed fooled me as never before—by *not* fooling me. Or rather, he *didn't* fool me at all, hence he fooled me. Many years later, I found out that my friend had borrowed this paradoxical trick from a book he'd read by the American philosopher and logician Raymond Smullyan.[4]

My teenage rebellion made me want to stop being a nerd and to get at least a few points for being cool, especially with girls. The solution I hit on was to learn to play the guitar and to try starting a rock band. This was my main activity while I was in high school in the larger but still very small town of Strängnäs, about ten miles northwest of Mariefred. I played hooky pretty often, taking the commuter train into Stockholm, and there I got very involved with music and going out to nightclubs.

At age twenty, I was playing guitar in a rock band and was pretty sure that I was going to be a musician. Our group, called "Heroes," had put out a record, and at this point I started making frequent trips to London with the goal of establishing contacts in the music world and hopefully getting a recording contract there. (If in our band's name you pick up on the influence of David Bowie, you aren't wrong.) In the end, however, I found that London's nightclub life and music scene weren't my cup of tea, after all, and were even causing me to lose my bearings. This was no good, and after a while, I decided to go back home to Sweden.

On my trip home, I happened to buy a copy of Douglas Hofstadter's 1979 book *Gödel, Escher, Bach: An Eternal Golden Braid*. I gobbled the entire book down during the trip home and throughout the next couple of weeks. It deals with art, music, mathematics, and philosophy in a rich contrapuntal fashion, and it left an indelible impression on me. It opened my eyes onto a whole new world. *This* was what I wanted my life to be about! My earlier teenage passion for mathematics was reawakened, and all at once I decided to study math, philosophy, and computer science at Uppsala University. And I realized that I wanted to weave all these interests together, with music being just a hobby instead. And actually, being a nerd wasn't so uncool after Hofstadter's book became well known. There was hope even for us nerds!

Today I have to admit that I may occasionally have gone a bit overboard with my nerdity, but I am unbelievably grateful for the thinking tools that I acquired during my university days.[5]

To Have an Open Mind

The most enjoyable trip one can take is the trip to knowledge and insights, driven by curiosity and a sense of wonder. What's amazing about such a trip is that the farther you travel, the more you find there is to discover. The more you understand, the more you realize how little of all that is in principle understandable you actually do understand.

To take such a trip, it's best to have the proper gear in one's backpack. Certain types of equipment are needed in order to avoid falling into traps and going astray, but above all one needs a compass to find the right direction. This book is about such tools, and it tries to supply its readers with such a compass. But it also deals with the traps and blind alleys that one can so easily wind up in.

An important tool is openness. People should be open minded. But what does "to be open" really mean? I have often broached this issue with various people, and I've observed that the concept "open" is frequently misinterpreted. So let me give an example.

You and a friend are looking at a TV show about a supposedly haunted house. Taking part in the show is a "medium" who holds seances and claims to speak with the deceased—people who have passed over to "the other side." Afterward, the two of you discuss the program. Your friend claims that ghosts and spirits of dead people really exist, and that there are people who can communicate with them.

You reply that you believe there are no such ghosts or spirits, and that so-called "mediums" either are charlatans or are fooling themselves. Your friend then says, "Come on! You should be more open minded! Don't be so narrow! Just be more open-minded about whether ghosts exist or not."

How often have I wound up in just that position! Sometimes it's been in a debate on television, other times just in ordinary chit-chat. But there is something weird going on in the earlier conversation. Which of the two is more open minded? Can you tell if you look solely at what they believe? One's degree of openness shouldn't have to do with *what* one believes, should it? Shouldn't it instead be measured by how willing one is to *change* one's opinion, on the basis of new facts and pieces of evidence?

The skeptic who thinks that ghosts don't exist can certainly be the less open minded of the two. That person might rigidly insist, "I will never, ever believe in ghosts, even if I encounter one in the flesh in broad daylight!" Clearly, this is not a very open state of mind. But if one day it were

proven that human souls continue to exist in another realm after death, and that it was possible to set up communication channels with these "spirits," then the skeptic might change their mind and might start believing in talking to the dead.

But it could also be the ghost-believer whose mind is less open. Just imagine this person saying, "I once witnessed a highly strange event that I couldn't explain, and I won't ever believe that there is a scientific explanation of what I saw. I'll always believe in ghosts!" In such a case, it's sensible to say that this person is very dogmatic—the opposite of open minded.

Suppose that my friend and I are discussing life on other planets. I say that I think there is life on other planets, but my friend says this is silly. Which of us is the more open-minded one? Clearly it's impossible to answer the question if one looks solely at what we believe on this topic.

Let's take another example. Suppose I have a small, closed black box sitting on my lap, and I say to my two friends Adam and Eve, "Do you think there's an apple in this box? Just make a guess, using all your intuition and common sense. . . . So now—do you think there's an apple in here?"

Adam swears that he believes there is an apple in the box, while Eve believes the box is empty. Simply knowing that one of them believes there *is* an apple, while the other believes there is *not* one, we can't determine which of the two is more open minded. In sum: one's degree of openness is not a function of *what* one believes, but of *how willing* one is to change one's mind, when new facts and discoveries come to light.

Today, however, one frequently runs into people who claim that if Person A believes in ghosts, flying saucers, and alien abductions while Person B is a skeptic of such things, then clearly A is more open minded than B. What sense is there behind such a view? Does one get credit for open-mindedness simply because one believes in implausible, crazy-sounding ideas? Surely that doesn't make sense.

Let's try another thought experiment that clearly shows that looking at beliefs alone cannot be the right way to determine someone's degree of open-mindedness. In contemporary Europe there are a lot of people on the extreme right, including some who go so far as to deny that the Holocaust took place during World War II. This is a completely implausible stance. But should we say that these people are *more open minded than we are*, precisely because they hold this belief, while we simpletons are convinced that the Holocaust *did* take place? No; that would be not just silly but deeply foolish.

How open minded are those folks who staunchly assert that no human has ever stood on the moon, and that the supposed moon landing in 1969 was all fakery, just filmed in a Hollywood studio? Such an attitude is hardly more open minded than believing that a moon landing actually did happen.

The trait of "openness" should instead be thought of as being a close cousin to curiosity. To be open-minded means to be constantly sensitive and always on the lookout for ways to reevaluate one's values and one's ideas, whenever one runs into new facts or viewpoints.

More than just open-mindedness is needed to allow an idea to be thought through carefully, however. One also needs a criterion for what is sensible to think of as possibly true. Swedish philosopher Ingemar Hedenius stated a very simple but helpful principle that he called "the principle of intellectual honesty": Believe in an idea if and only if you have good reasons to think it is true.

This implies that you should be ready to explore all conceivable alternatives in order to choose which among them is the most plausible or reasonable. Such an attitude would constitute the best and truest kind of openness, in contrast to someone who will gladly swallow any random idea that's thrown at them. Such naïve gullibility hardly merits the label "open"; it is simply a symptom of an immature thinking style. In the United States, there is a slogan that says, "Don't be so open minded that your brain falls out." Who would want to be that open minded?

And yet, many people believe in things that have no reasonable or plausible support. Some unreasonable ideas simply have high social status, or they are considered thrilling or mystical. That's one of the reasons that "New Age Spirituality" is so popular today. But if one feels it is important to be intellectually honest with oneself and with others, then irrelevant "reasons" like that will not play into one's judgments of an idea's truth or falsity.

Explanations and Ockham's Razor

There is a very old fundamental philosophical principle that advocates selecting the *simplest* of rival explanations for a given phenomenon. Let's take an example.

Suppose that one day I come home to my apartment and I notice that the window has been broken and the TV set is missing. There are any number of possible explanations for what I see, of which here are three:

1. An extraterrestrial descended to earth from a flying teapot, broke into my apartment, and made off with my TV.
2. A burglar broke into my apartment and made off with my TV.
3. My TV was teleported to another dimension by secret CIA agents, using techniques unknown to current-day science.

The simplest and most sensible of these three explanations, and thus the best of them, is #2 (unless we come across new pieces of information that give us reason to take alternative #1 or #3 seriously).

This same kind of thought should apply to phenomena that are claimed to be supernatural or paranormal. Consider, for example, the following two claims:

1. I believe that paranormal-seeming abilities in a human being are best understood through the postulation of a seventh sense, which conveys information and knowledge that would otherwise be inaccessible.
2. I believe that paranormal-seeming abilities in a human being are best understood through scientific explanations developed by researchers in the given domain. These explanations involve . . .[6]

What could possibly be humbler and more open minded than believing that scientific explanations are the simplest and the most plausible, and therefore the best?

The idea that good explanations are simple is a stance that is usually called "Ockham's razor."[7]

Sometimes one hears a statement like "Science will never be able to explain X!," where X might be the nature of consciousness, the origin of life, or the origin of the universe. But such cocksure pronouncements are both dogmatic and limited. How can anyone foretell what humanity will (or will not) eventually be able to explain? The fact that we *today* can't explain something doesn't mean that it will *never* be explicable.

Self-assured claims of this sort often are due to a confusion between what has been *explained* and what is, in principle, *explainable*. The nature of consciousness is a good example. There are many people who have pondered how consciousness arises in the brain and have offered plausible theories about it, but there is still no complete and totally accepted theory of consciousness that all scientists agree on; however, this doesn't imply anything about whether consciousness will one day be explained in the future.

One should simply be open minded and humble about future knowledge, and say something like this: "Today's science has not fully explained the nature of consciousness, but perhaps in the future we will be able to do so. We just don't know, today."

In the New Age movement, one often runs into claims like this: "I was present at an event that I couldn't explain, so it must be supernatural!" But why should the fact that one can't explain something on one's own mean that there is no scientific explanation for it, and never could be, never will be? A healthier outlook would be to think that if one can't explain something oneself, then perhaps someone else could do so—someone with greater knowledge or better qualifications than oneself. It is arrogant to assume that one's own inability to explain a given mysterious event is more reliable than long traditions of research, which might be able to point toward a genuine explanation. To dismiss the value of scientific findings and to think of one's own personal experience as the ultimate authority merely reveals a serious lack of humility.

To proceed solely on the basis of one's own limited life experience and to reject all the collective results of scientific research is an attitude that seldom leads to new insights. Someone who says, "I was there and I couldn't figure it out, so it just can't be figured out!" is merely confusing their own ability (or inability) to explain the given mystery with a more general, timeless meaning of "explainability." What they are really saying is this: "If *I* can't figure out what happened that time, then by God, *nobody* can." This is just cocky; one should be more humble.

Traps in Thinking

Socrates was very wise when he observed that one should not believe that one knows something, when in fact one *doesn't* know it. In his defense plea before the court that sentenced him to death, he said (or at least this is what Plato tells us), "I am wiser than this man; it is likely that neither of us knows anything worthwhile, but he thinks he knows something when he does not, whereas when I do not know, neither do I think I know. So I am likely to be wiser than he to this small extent, that I do not think what I do not know."[8]

To overestimate one's knowledge is not good. Nor is it good to let one's judgment be led astray. English philosopher Francis Bacon (1561–1626) was one of the first people to formulate some of the thinking traps that we all fall into so easily. Bacon believed that science should be organized so as to

be useful. Results of research should be collected and distributed, particularly through academies and journals, so that the same mistake is not made over and over again. In *Novum Organum* ("The New Tool"), published in 1620, he writes, "The mind of man is far from the nature of a clear and equal glass, wherein the beams of things should reflect according to their true incidence, nay, it is rather like an enchanted glass, full of superstition and imposture."[9]

Bacon wrote of four "idols" (and by this term he does not mean "false gods" but, instead, "false ideas") that often lead thought astray and that may cause the voyage toward knowledge to come to a dead halt in a blind alley. In the following list, I describe Bacon's four idols in my own words:

1. *Idola tribus* (the idol of the tribe): The first cognitive trap is that we humans tend to overgeneralize. We interpret facts on the basis of our habitual ways of interpreting situations and using our habitual notions. We ascribe to nature an order that may well not be there. We categorize and classify, and we believe that if some members of a category have a certain property, then so must all members. Through this cognitive trap are born prejudices against women, Germans, homosexuals, Africans, or whatever other category you can think of, which we have decided to generalize and to use in our further thoughts.
2. *Idola fori* (the idol of the marketplace): The second cognitive trap is to uncritically let one's thought be guided by faddish words, clichéd phrases, and widespread opinions. Human language is not precise but blurry. It is important to pin down what one is speaking about, for otherwise one may well cause totally unnecessary misunderstandings, and language may come to dominate over thought. An example is the term *openness*, discussed earlier in the chapter; it is often used in an erroneous way, and thus it guides our thinking down wrong avenues.
3. *Idola specus* (the idol of the cave): The third cognitive trap is to see the world solely from one's own perspective, thus letting wishful thinking get in the way of truth. In addition, own's own limitations, whether innate or the result of training, determine how we interpret things we observe. Here we run into what is called "cognitive bias," which is our tendency to *seek confirmation* of what we already believe, instead of looking for facts that might *cast doubt* on what we believe.

If an adult were to write a letter to Santa Claus, the act could be described as irrational and silly. But a five-year-old child writing a letter to Santa Claus is fully reasonable. The child really believes that Santa Claus exists, and that the letter can have an effect on what presents Santa will leave under the Christmas tree.

For rationality to be morally fair, we need wisdom in addition. Rationality alone does not give wisdom. What, then, is meant by the notion of wisdom? And what distinguishes *wise* behavior from merely *rational* behavior? To be rational means to draw conclusions that are not in logical conflict with known facts. A rational conclusion must logically follow from the premises and must be contradiction free. But wisdom is more than that.

Human wisdom has to do with *ends*, not just with *means.* Wisdom has to do with what is morally good or bad. Wisdom requires rationality, but rationality does not require wisdom. A rational argument is a mechanical chain of logical steps, whereas wisdom includes moral judgments and a careful look at what the conclusions imply. Wisdom is more comprehensive than rationality, but for that reason it is far harder to capture in a precise description.

Wise reasoning is rational, but rational reasoning is not always wise.

Having Ideas and Forming a Philosophy of Life

What is the world like, and how should I live? What really matters? Sooner or later in life, we all ponder such questions. We all try to make for ourselves at least a fairly consistent picture of how the world is and what we ought to do in it. Each of us winds up constructing our own personal philosophy of life.

Having a philosophy of life means that one has a belief about the nature of reality and a sense of how one should live in it, and how one should treat oneself, other people, other living creatures, and the environment. Any philosophy of life has these two aspects, one of them being *descriptive* (trying to say how things *are*) and the other being *normative* (trying to say how we feel things *should be*). The descriptive aspect tries to reach an understanding of how the universe is constituted, while the normative aspect aims at establishing a system of values and a sense for human nature. All religions and other philosophies of life include these two dimensions.

The concept of "religion" is a manifestation of culture that is not easy to capture in a generally agreed-upon, all-encompassing description. A simple definition might be "the belief in a higher, supernatural power to which

humans relate, and vice versa." Often, religions are based on the concept of one or several gods, or other supernatural beings. Many religious people speak of "a personal and conscious god," while others have a vaguer notion of what God is.[10]

A philosophy of life can of course be based on a vision of reality that does not involve any kind of god or supernatural power. A philosophy of life doesn't need magical beings; it just needs to provide a broad, clearly formulated, and coherent set of ideas, on both the descriptive and the normative side. Gods and superpowers are optional features. Thus, although every religion counts as a philosophy of life, not every philosophy of life is a religion.

As you know, holding the belief that no god exists is usually called *atheism.* Its opposite—*theism*—is the belief that there is a god (or gods). Does theism or atheism by itself constitute a philosophy of life? Well, the Swedish national encyclopedia defines the notion "philosophy of life" as follows: "A theoretical and value-laden set of ideas that gives rise to, or exerts a major influence on, a broad picture of humanity and the universe; it expresses a set of basic beliefs and includes a system of values."[11]

For this reason, one can't say that just any old set of ideas constitutes a philosophy of life on life. For example, if I believe that life exists on other planets, that in itself is not a philosophy of life. It's just an idea about one isolated issue. It has no moral implications (i.e., no normative side).

The same holds if I am an atheist—that is, if I believe that no god exists (or if you prefer, that God doesn't exist). Once again, such a stance is merely a point of view about one isolated question; it's not rich enough to constitute a whole philosophy of life, with all sorts of ethical implications and so forth. And much the same is true for theism. Theism—belief in God—doesn't necessarily imply a whole rich philosophy of life. It can be just a single isolated belief.

The desire to put a halt to painful tests carried out on animals, or to forbid abortion, or to have all jobs paid exactly the same—none of these is, in itself, a philosophy of life. Each of them might be a position coming *out of* a person's philosophy of life, however, and thus belonging to that person's set of moral views. In sum, a philosophy of life is a broad and reasonably consistent system of ideas.

The *descriptive* side of a philosophy of life contains not only a theory of what valid knowledge is and how one should best use it (in philosophy, this would be called "epistemology") but also a theory of what exists and what is real (this would be called "ontology").

The *normative* side of a philosophy of life includes basic ideas about human values and human rights, and usually, in addition, views about such things as racism or antiracism, feminism, animal rights, environmental issues, and so forth. All the values that we have belong to this side of our philosophy of life.

Most people, at some point in their lives, muse about the basic questions of existence, although some do so a great deal, and others not so much. But no matter how much or how little we ponder on such things, we all have *some* thoughts on these issues. Without a basic philosophy of life, we would have a hard time navigating around in the world and seeing our environment in a consistent manner.

What are the basic questions in a philosophy of life? Of course they can be described in many different ways. A list of the most central questions might include the following entries:

1. Questions about knowledge and knowing. Can we know something about reality? If so, what can we know, and how? What is knowledge, in the end? What methods can we use to reach knowledge? These are epistemological questions, belonging to the theory of knowledge.
2. Questions about what exists and about the nature of reality. These are ontological questions. They include questions about the possible existence of a god or gods, the implications of the "God" concept, and the compatibility or incompatibility of such a concept with the rest of our knowledge or beliefs about the world. These sorts of questions belong to theology, or the philosophy of religion.
3. Questions about morality—its nature, its existence, and its justification. What characterizes a good moral act? How can we decide whether a given act is morally right or not? Is there an objective morality, independent of one's ideas and desires? This aspect of philosophy is ethics.
4. Questions about the nature of humanity, involving good and evil, fate, consciousness, mortality, and immortality. Do we have free will? Is consciousness something over and above the chemistry of the brain? Does evil exist? If so, what is it? These questions belong to metaphysics.
5. Questions about how we should organize our social life and living conditions. What is the function or role of society? How should a person relate to authorities and laws? What rights and duties do we

> have with respect to other people and other living creatures? These sorts of questions are mostly discussed in the philosophy of politics (and sometimes also in ethics).

Why should you (or anyone) consider such questions at all? Well, one good reason is plain old curiosity. You'd have to be pretty blasé to have no interest at all in how the world is, or ought to be. Another reason is that pondering such questions enriches your life. The more deeply you probe the world, the more fascinating it becomes.

Another reason can be to figure out if the ideas you have are really the result of independent thinking, or if they instead come from an unreflective acceptance of things that you were told by your parents, your friends, or representatives of the society you grew up in—your "cultural inheritance." If, at some point, you unquestioningly bought into a set of dogmas, values, and ideas about humanity and the world, then those are not truly your own ideas, and you run the risk of being a marionette easily manipulated by others. In such a case, it would behoove you, at least once in your life, to reflect about your value system and to develop your own philosophy of life. It is never too late.

My Point of View

Each of us has a point of view—a spot from which we look out at the world. I was born in 1964 in a country that was racially and economically quite homogeneous, and in which most people had pretty good lives, materially speaking. There was an outward sense of security—our country hadn't been in a war in two hundred years. When I was a kid, most women were housewives, although many were restless in that role; indeed, the women's liberation movement was soon going to be launched. Now, as I look back, I see a set of broad social changes that had to do with equality and gender roles. I also grew up in a democracy with a free-market economy, a blend of free enterprise with a strong public sector. Through the years, immigration, largely from Europe, Asia, and Africa, changed from a trickle into a flood. Last but not least, I was part of a major digital revolution in the 1990s; as a result of this revolution, Sweden became one of the leading nations in the world with computers and the internet. Today Sweden is among the most globalized of all countries, and it is now ethnically highly diverse, unlike when I was growing up. In short, in my country, I have witnessed vast changes in social life, economic life, and political life from the inside.

During this period of upheaval, I realized, when I was around twenty, that I had a *secular* outlook on the world, meaning first that I saw the concept of God as merely a human-created myth, and second, that I had a *humanistic* view of what it means to be a person. I was therefore a *secular humanist*—and that's what I still am today. This is the point of view that lies behind the arguments in this book.

We live in a world where people with highly varied philosophies of life, ideologies, and value systems have to be able to coexist and cooperate. For me, secular humanism is all about having a carefully considered set of attitudes about the world, not just concerning the nature of reality but also including a healthy and sensible set of values, which will help such coexistence to come about.

This is a point of view that is tenable, rationally and morally, both for the heart and for the head.

Secular Humanism

So what is secular humanism really about? The term "secular" originated, as I mentioned earlier, from the Latin adjective *saecularis*, meaning "worldly," in contrast to "ecclesiastical" (or "churchly"). In current usage, "secular" refers to the idea that human affairs should not be mixed in with (let alone controlled by) religious ideas or religious rules.

As for the word "humanism," in Swedish it actually has three quite different meanings:

1. Humanism as a *goal in education.* One can call oneself a humanist in Sweden if, at the university, one's major focus is or was the humanities, such as art history or comparative literature.
2. Humanism as a *general concern for the welfare of human beings.* One can say one is a humanist in Swedish if one has a strong commitment to people and human rights (which of course one can have as an atheist, as a Christian, as a Muslim, as a Buddhist, or as anything else).
3. Humanism as a nonreligious philosophy of life.

In English, by contrast, there are three different words corresponding to these different meanings. The first meaning is conveyed by "the humanities"; the second by "humanitarianism"; and the third by "humanism" (or sometimes "secular humanism").

What if what we really need is a philosophy of life without dogmas, without gods, without guilt, without shame, without a fear of hell, without the need to force other people to live according to "God's rules," and without endless bitter fighting over what is true and what is false? What if what we really need is a philosophy of life that affirms openness and questing, that encourages wonderment, fascination, and deep feelings for art, music, literature, nature, the cosmos, reality, and for other human beings?

For me, spirituality is not supernatural but has everything to do with nature itself. We are all just tiny pieces of something much greater. We are small pieces of humanity, tiny parts of the universe, minuscule slices of reality. This thought is dizzying enough for me; I feel no need to spice it up with divine beings or magical powers.

CHAPTER TWO

I BELIEVE THAT I KNOW

Concerning Reality, Knowledge, and Truth

> It is not what the man of science believes that distinguishes him, but how and why he believes it. His beliefs are tentative, not dogmatic; they are based on evidence, not on authority or intuition.—Bertrand Russell

In order to be able to formulate your own viewpoint on reality, you will need some tools and a vocabulary of concepts. You'll need to understand concepts such as *truth*, *learning*, *faith*, and *knowledge*. You'll also need to decide for yourself which basic assumptions you will make. Is what *seems* real *really* real, or is it just a dream? Could everything be just an apparition inside my head? Or do genuine truths and falsities exist? And what good reason is there for being rational, anyway?

Someone with a rational attitude does not claim to be able to give definitive and exhaustive answers to all questions about the nature of the world. Contemporary science and knowledge are not yet at the point where they can explain all the phenomena on our planet and in our universe, and they almost surely never will be. Therefore, having a rational attitude means being intellectually humble. It means frequently engaging in self-critical examination of the ideas and concepts that one takes for granted—especially those that one is particularly strongly attached to. This contrasts strongly with traditional religious attitudes.

Many religious interpretations of reality are characterized by absolutist ways of phrasing things, or by claims about how things behave, based solely on religious writings and traditions. Things that today's science cannot yet explain are supposedly explained by reference to "God," which amounts to sweeping such issues under the rug. The following are examples: "We don't know how life originated, so there must have been a god that created it." Or, "We don't know how the universe arose, so a god must have created it." Or

again, "We don't know what this consciousness inside our skulls is, so it must have come from God." And so on.

But one could instead have a totally different kind of attitude. Here's a simple parable to show what I mean:

I don't understand how it's possible to build a house like the one I live in. I myself am all thumbs, and I can barely screw in a lightbulb. But that doesn't mean that I believe that some god must have built my house. For the time being, I'll simply have to accept the fact that I don't how it was put together. The fact that something is a mystery to me right now doesn't necessarily mean that it will forever be a mystery for all people. Maybe I just don't understand it! Maybe I just don't yet have the right mental tools!

As in this parable, one simply has to accept the fact that many of today's big questions and mysteries are still unanswered. Perhaps one day they will be explained by science—or perhaps they won't.

What Is Knowledge?

What is knowledge? What can we know? What is truth? How can we determine whether something is true or false? The area of philosophy that tries to answer these questions is called, as was mentioned earlier, *epistemology* or *the theory of knowledge.* We will now familiarize ourselves with some basic tools so that we can make use of our faculty of reason in the best possible way.

I know the name of Sweden's capital. So I have *knowledge*, in this specific case. But might not knowledge in general be far more complex than this trivial example? What are the exact criteria that must be met so that we can say we *know* something? What does it mean, really, to *know* something?

Three criteria must be met if we're going to talk about knowledge—namely, belief, truth, and strong reasons. For me to know something (I'll call it "X"), the following must all hold:

1. I *believe* X.
2. X is *true.*
3. I have *strong reasons* for believing X.

It's easy to see that the first condition has to be met. I can't know something without believing it. If I don't *believe* that Paris is in France, then I certainly don't *know* that it is in France.

We can imagine situations where X is true and I have good reasons to believe X is true, but where the first criterion is not met: I simply refuse to believe that X is true. Take the case where a friend of mine has said mean things about me behind my back, and I've been told about this by several independent, reliable sources (thus I have good reasons to believe it). But I still don't *want* to believe it, and so I staunchly refuse to accept it. In such a case, I certainly don't *know* that I have been badmouthed; how could I *know* it if I don't even *believe* it? And yet the last two criteria are met. Such behavior on my part wouldn't be rational, but it would be psychologically understandable.

What about the second criterion? It's obvious that something has to be *true* if we are to *know* it. We can have an idea and have good reasons for believing it, but we can still be wrong about it, since the idea could simply be wrong.

Suppose that I have read several books about some topic in history and have talked with numerous knowledgeable people about it. Then I have good reasons for believing I am knowledgeable about the topic. But it could easily be that the books I read contained wrong pieces of information, and that the people I spoke with were misinformed or even were lying to me. Some of the ideas that I strongly believe in are simply not true. Thus I don't *know* them, even if I have good reasons to believe them.

Finally we come to the third condition: the strong grounds. Knowledge of X involves more than just X being true and my believing X. It's also crucial that I have good reasons for believing X. Let me give an example. Suppose that one day, out of the blue sky, a little inner voice whispers to me that there are 213 almonds in the bowl on my kitchen table. And suppose that just by chance, this is exactly right. The statement that I believe is true, but my hunch can't be counted as *knowledge*.

It all comes down to the fact that I don't have any good reason backing up my idea. I haven't counted the nuts, or even made a good estimate of their number using common sense; I simply happen to be right on the money. There actually *are* 213 almonds in the bowl. I'm just guessing, though, and it's merely a piece of luck that I'm right. I certainly don't *know* there are 213 almonds in the bowl. In sum, then, we need good reasons for a true belief to be counted as *knowledge*.

The words "faith" and "knowledge" are often placed in contrast to each other. But in everyday speech, "I know X" merely means that I have very good reasons for having faith in X. When I say that I "know" that the earth is round

or that Paris is in France, all I mean is that I believe it, am convinced of it, have faith in it, and have lots of very good grounds for believing it. Of course I *could*, in principle, turn out to be wrong even in basic beliefs like these; maybe I've been systematically lied to on these topics since I was a baby.

From a knowledge-theoretic perspective, faith and knowledge are not opposite notions. The sense of "faith" we've just been speaking of is, however, in contrast to the *religious* sense of "faith," which means "I accept this as true without any proof or evidence." If you believe in something merely because you *want* to believe in it—because it makes you feel good or because it gives you hope for the future—then this is not a sufficient reason to call your belief *knowledge.* Nonetheless, people often believe things precisely because those things make them feel better or give them hope for the future.

Is What Seems Real Really Real?

Let us for a moment take a look at the most radical questions about belief. Anyone who has seen the movie *The Matrix* has at least considered the possibility that our entire world is just an illusion.

As far as we know, our brains evolved, through millions of years of natural selection, for the purpose of processing information that reached us via our senses. Our brains allow us to orient ourselves in the world, since evolution selected those brains that did the best in supplying information that aided survival. But what reason is there for believing that our brains give us *true* information about the world, rather than information that merely helps us survive in our environment? What evolutionary goal would be served by having the world faithfully mirrored in our brains? After all, evolution selected brains purely for their ability to survive, not for their ability to recognize truths.

And yet we humans, almost as a side effect, developed a unique capacity for finding and recognizing truths, even deeply hidden ones. This is clearest in the domain of mathematics. Much of mathematics was developed without even the slightest anchoring in the material world, and yet, much later, piece after piece of "unanchored" math turned out to be central in describing the physical laws governing the material world.[1]

For centuries, philosophers have pondered about whether humans can know anything at all about things outside their own bodies. Why should we rely on information that is fed into our brains by our sensory organs? In fact, we all know that our senses can trick us at times, so could they simply

Another example of a matter of fact is the claim: "The earth is flat." This, as a matter of fact, is false.

And what about the claim "There is life on other planets"? Is this a matter of fact or one of taste? It seems to be a matter of fact, and it should be either true or false; however, we don't know which it is, and we may never find out. Nonetheless, either there *is* life somewhere out there, or there *isn't*. The fact that we don't know the answer, and even may never know it, doesn't make the claim less objective.

Such claims as "This house is haunted," "There is life after death," and "God exists" are also statements about fact, and each of them is either true or false. To be sure, this supposes that we have agreed on some definition of the concepts "haunted," "life," and "God" when we go to examine these claims' truth.

As far as matters of fact are concerned, there are established methods to distinguish what is true from what is false. This includes the scientific method, which we will look at carefully in a later chapter. By following such methods, we can make reasonable judgments about which claims are true and which are false.

With questions of taste, though, it's quite another matter. If I declare "Lady Gaga is better than Beyoncé" and you counter with "Beyoncé is better than Lady Gaga," which of us is telling the truth? Neither, of course! We simply have different tastes and preferences, that's all. So this is a matter of taste. I can like something that you don't like, and vice versa.

Even if there's no objective answer as to which of Lady Gaga and Beyoncé is better, there are many true statements about our exchange that can be made. For example, it's a *fact* that I like Lady Gaga better than I like Beyoncé. So if you were to say to me, "No, you don't like Lady Gaga any more than you like Beyoncé!," I would get annoyed at you, since what you're claiming is false.

Disagreements concerning questions of fact (or of taste) often turn out to be only *apparent* disagreements. Take, for instance, the question of God's existence. If you say "God exists" while I say "God doesn't exist," we'll only be genuinely disagreeing if we mean the same thing by the word "God." If it turns out that when you say "God," you mean "love," then we both agree that God *does* exist. But if what I mean by "God" is some very old scraggly bearded fellow who's sitting up on a cloud, and if you accept this definition, then we're in agreement that God *doesn't* exist.

Much the same holds for matters of taste. If we are going to be in genuine disagreement about which of Lady Gaga and Beyoncé is better, then we

have to disagree in more than just a *linguistic* sense. For instance, we both have to mean the same thing by the word "better." But, in music, it's unclear what "better" means. When I say "better" regarding music, perhaps I mean "more musically original," whereas when you say it, perhaps you mean "more admired by the public." In such a case, we aren't really in disagreement, since your view and mine can both be true at the same time.

Many unnecessary quarrels could be avoided if we were taught how to distinguish between matters of fact and matters of taste. Too many discussions wind up on the rocks because the participants just don't mean the same thing by certain fairly common expressions they use.

What Is Truth?

Many theoretical attempts have been made at describing what truth is. The most reasonable such attempt is usually called the *correspondence theory.* The name comes from the idea that truth implies that there exists a correspondence, a link, between what is being said about the world and the world itself. The statement "There's an apple right there" is true if and only if there really *is* an apple right there. Aristotle (384–322 BCE) gave essentially this point of view in his book *Metaphysics*: "To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, and of what is not that it is not, is true."[3]

The correspondence theory's notion of truth takes for granted the philosophical view of reality that is usually called *realism.* This means that reality exists and, in a certain sense, does so independently of our preconceptions of it. The opposite notion is called *antirealism*, which claims that there is no reality independent of our human notions.

A realistic viewpoint about the world is needed for us to be able to deal with our everyday environment, not to mention situations in scientific laboratories. Without a realistic viewpoint, we would simply be unable to relate to our environment.

Correspondence theory and philosophical realism turn out not to be so simple. Take the following assertion: There's a light-blue diamond on my dining room table.

Is it true? According to the correspondence theory of truth, this statement would be true if and only if there really *is* a light-blue diamond on my dining room table. But what does "diamond" mean? And what does "light-blue" mean? These are notions that humanity created. "Blue," just like all

other color words, is a concept that has to do with the way our eyes and brains work as sensors of light, and the adverbial modifier "light" results in a variation on "blue" that certainly has no sharp cutoff, and that people can argue about forever. The adjective "light-blue" is thus fraught with all sorts of blurriness and ambiguity.

What about "diamond"? This, too, was a human invention. What stones in the world count as diamonds? There are all sorts of "diamonds in the rough" about which experts could squabble as to whether they actually *are* diamonds or are not. And what about the meaning of "diamond" that merely means "lozenge-shaped"? And what about the meaning that applies to cards (one of the four suits)?

And what does "on" mean? What if the table has a cloth mat on it? Are objects sitting on the mat also *on the table*? Does a candle whose ceramic candlestick has been placed on the cloth mat that is lying on the table also count as being *on the table*? And what about the flame atop the candle—is that, too, *on the table*?

We construct our concepts and words so that we can communicate about the world, so that others can understand what we have in mind when we are speaking with them—but that doesn't mean that sentences using familiar concepts are always precise in their meanings. As the foregoing shows, even sentences made up solely of common words can be anything but precise!

Another question has to do with how a given concept corresponds with the world. Consider the term "Santa Claus." Even though we adults know there is no Santa Claus, we see Santa Clauses all the time in shopping centers and in advertisements. So how do we use this word? What does it refer to? What sense does it make to *pluralize* it, when we all know that there is *only one* Santa Claus (and, to complicate matters, when we also know that this "unique" entity is in fact nonexistent)?

When I went to school, we learned that an atom was a tiny solar system with a nucleus in the middle and electrons in orbits around the nucleus, just like the planets orbiting around the sun.

In actual fact, this image doesn't have too much to do with reality. Yes, atoms consist of nuclei with electrons "in orbit" around them, but the concept of "orbit" is wildly different for atoms and for planets because, according to quantum mechanics, an electron in an atom is not localized to a specific point at a specific moment in time; rather, at each moment, each electron is blurrily located at *all possible* points in space, but with different *probabilities.* The solar-system model helps us envision atoms in a simple and helpful

manner, especially when the concept of "atom" is first being introduced in schools. But we should never confuse such pedagogical models of reality with the actual reality that is "out there."

Quantum mechanics is a remarkable subject since its equations and calculations allow us to predict with astonishing precision the results of all sorts of physics experiments. In that sense, we can say that our quantum-mechanical models of reality are true, and they function nearly perfectly. But even so, we have no imagery for quantum-mechanical systems (such as atoms) that is compatible with our everyday imagery based on the ordinary objects surrounding us. The ability of quantum-mechanical particles to be in many places at the same time—in fact, in infinitely many places!—clashes violently with the day-to-day intuitions about the world that we have built up over years of life.

The same can be said (only it's even more counterintuitive) about the fact that two quantum-mechanical particles can be *entangled* with each other. What this means is that whenever one of two entangled particles is observed to be in a particular state (say, with its spin pointing "up"), then the state of the other particle is instantly determined to be in the *opposite* state (thus with its spin pointing "down"), no matter how far the two are from each other. It seems that the two particles are cosmically linked, even way across the universe from each other. This is a profoundly mystifying aspect of quantum mechanics. Albert Einstein was deeply suspicious of it, and he famously called it "spooky action-at-a-distance."[4]

Since quantum mechanics is filled with phenomena that seem mystical, it has become all the rage in New Age circles. Unfortunately, disciples of New Age thinking seldom have any inkling of what quantum physics is actually about, and in New Age writings I have never once run into any quantum-inspired idea that I could make head or tail of—they just toss about fancy-sounding words. If only quantum mechanics were that simple!

Does all this mean that we can never describe reality with genuine precision and certainty? Not at all; we can definitely do so. Not all descriptions of reality are equally good; some are better than others. If there are three apples on the table, then it's more accurate to say "there are three apples on the table" than to say "there are *four* apples on the table" or "there are three *oranges* on the table" or "there are three apples *under* the table" or "there are three apples on the *sofa*," and so forth. Even when we are dealing with concepts that we have completely invented ourselves, we can't just make up a bunch of random statements and think they are all equally true.

In science, we can always try to determine which statements about the world are better by carrying out experiments to test them. The models or descriptions that most accurately predict the experimental results are in practice the "truest."

Our models of reality can also be *applied* to construct technology—machines and tools. If those work, then they work, no matter what the nature of the theories behind them is. Take the invention of blue-colored LED lights, which was rewarded with the Nobel Prize in Physics in 2014. Thanks to this invention, along with already-existent red and green LED lights, people were able to produce *white* LED light (red + green + blue = white). This technological success didn't mean that our theory of light's nature constituted a *precise* and *complete* description of light. But the theory was accurate enough to allow us to produce white LED lights. Sometimes science's applications work beautifully, even when there are lingering questions about the scientific models that give rise to them.

Truth as Absolute, Truth as Relative

The attitude that there is a true reality whose nature we can learn more and more about, but probably will never reach in full, is usually called *critical realism.* In the last few decades, however, a completely different viewpoint about truth has arisen and become very popular in some academic circles. This is the idea that *truth is a relative notion*. What does that mean?

Well, take this common utterance: "What's true for me doesn't have to be true for you." It suggests that there aren't any objective descriptions or truths, but that everything depends on the person who's considering the situation. That is, a person's claims about reality don't have anything to do with how the world actually is; they are merely vehicles for phrasing one's personal thoughts, one's social connections, one's ideologies, and the various powers that one wields.

This radical view of truth can be traced back to a philosophical notion that in a way is the diametric opposite to the correspondence theory of truth. It is called the *coherence theory* of truth, and oddly enough, it originated in logic and mathematics. This theory maintains that a statement is *true in a certain framework* as long as it is compatible with a system of other statements, all of which deal with notions in that same framework, and are mutually compatible. In other words, statements belonging to a given framework can be called "true" as long as the framework has *internal*

doesn't make truth relative. They understand that all this means is that corresponding entities in the rival theories, though called by the same name, are not the same things.

The coherence theory of truth, though it helps mathematicians understand "rival" axiomatic systems that are sealed off from one another, is not applicable to areas outside of mathematics—and the subtle lessons about truth and consistency that mathematicians struggled with and finally absorbed a couple of centuries ago should not be nonchalantly misapplied to the world at large, for the world is not an axiomatic system, let alone a collection of rival axiomatic systems.

To deny that truth is objective is not only naïve and wrong, but worse yet, it is morally problematic. In politics, it becomes very serious: one believes whatever one wishes when it agrees with one's personal goals, instead of believing what sense and reason would lead one to believe.

If you think there are trolls out there in the woods, and I don't believe there are any, then one of us is simply *right*, and the other is simply *wrong*. Even if we can't figure out which of us is right (without doing a lot of investigation), hopefully we agree that only one of us can be right. You might argue that your idea of trolls lurking in the woods is central to a coherent worldview (or "cosmology") that has a long tradition in your culture and that it therefore *must* be true. But that would be an absurd and hollow argument. Suppose someone slapped you in the face and then said to you, "No slap of your face occurred in *my* reality, so it doesn't matter." Would you accept such a weird relativism of truth?

If people were to accept the relativism of truth, then Hermann Göring could have been found innocent in the Nuremberg Trials by arguing that *his* reality was different from the *judge's* reality. If this kind of viewpoint were allowed in courts, then no one could ever be found guilty of any crime at all. Any old statement would have to be taken at face value, since no statement would be any righter or truer than any other one.

The viewpoint of truth-relativists—that "everything is equally correct"—could easily lead to a society just as immoral as the societies of religious fundamentalists throughout the world, who have cocksure and totally closed viewpoints, airtight and waterproof, about what truth is, and too often, their members don't mind killing people who don't agree with them.

Curiously, truth-relativism is also a self-defeating notion. If its ideas really were valid, then the claim "All truths are relative" would *itself* be true only for those people who liked it, and false for people who didn't. That is

surely absurd. In short, truth-relativism is a self-contradictory philosophy, which, upon investigation, falls to pieces.

There are linguistic phenomena that on the surface resemble truth-relativism, such as the case mentioned earlier, "Chicago is east of here." A sentence can be true or false, depending on who says it. If the king of Sweden says, "I live in Stockholm," he is telling the truth, but if Alice Appletree, who lives in Ann Arbor, Michigan, says "I live in Stockholm," she is uttering a falsity. The very same statement is both true and false! Well, obviously this doesn't show that truth-relativism is valid. The two people are simply making different claims, despite using the same sets of words. When the Swedish king says "I," he is talking about one person, while Alice Appletree, when she says "I," is talking about someone else.

Or if I say, "The flowers are to the right of the piano," this can be true if I'm sitting facing the keyboard, ready to play, but if I spin around on the piano bench so that I'm facing the other way, then it becomes false. The phrase "to the right of" depends on a frame of reference that hasn't been specified, so the statement is imbued with ambiguity. But once the frame of reference has been specified, then the statement loses its ambiguity and becomes either true or false.

Movement and speed are also relative. We all are familiar with this from sitting in a train sitting still in a station and looking out the window at the train that is right next to ours. All at once the other train starts to move. Or is it my train that just started to move? It can be hard to tell! The speed of an object always has to be given relative to some fixed framework (i.e., frame of reference)—except for the case of light, which always moves at exactly the same speed relative to any observer, no matter what frame of reference the observer is in. This highly counterintuitive idea is the crux of (special) relativity, developed by Albert Einstein (1879–1955) in 1905.

Einstein was born in Ulm, Germany, and later he became Swiss and then American. His theory of relativity was a generalization of a far earlier "principle of relativity" originally posited by Galileo Galilei (1564–1642), which claimed that all frames of reference in physics are equally good (meaning that the laws of physics hold equally in all of them). Actually, Galileo's principle was limited to so-called "inertial" frames of reference, meaning frames moving at constant speeds with respect to each other, and to mechanical experiments (mechanics being the only branch of physics that was known in Galileo's day). Einstein, however, conjectured that Galileo's principle could be extended from *mechanical* phenomena to *electromagnetic*


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and right, even borrowing New Age ideas from believers in ESP and other paranormal phenomena, all in order to give the appearance of making an ardently male-bashing attack on what the journal's editors would have called "phallocentric science." And just as Sokal had hoped, the editors fell for his hoax—lock, stock, and barrel.[12]

Another fine example of postmodernist nonsense is furnished by my own land of Sweden. A few years ago, I participated in a debate about schools, in which an education professor was part of a panel discussion. The professor claimed that the scientific theory of evolution and the biblical account of creation are simply two different "tales," or paradigms, about the story of humanity. There was no discussion about whether one of them was "truer" than the other. To my mind, such a stance is intellectually dishonest. If everything is just a matter of opinion, then what sense does it make to debate about anything?

Another prime example of such an attitude came from Swedish education professor Moira von Wright. In 1998, she wrote a report for the Swedish Ministry of Education about physics teaching in schools. In it, she claimed that the "scientific content" in physics courses should be modified "for the sake of equality," and in the following terms she rejects the process of scientific thinking:

> The notion of the superiority of scientific thinking is incompatible with the ideals of equality and democracy. . . . In the scientific community, some ways of thinking and reasoning are rewarded more than others. . . . If one fails to notice this, one runs the risk of drawing misleading conclusions—for example, mindlessly jumping from the idea that scientific thought is more rational to the idea that it should replace everyday thinking.[13]

Later in the same report, von Wright writes:

> What does it imply for equality that physics texts consider it crucial to convey to students a mechanical and deterministic picture of the world, and that they stress its superiority? To impose such narrow knowledge having a fixed interpretation is incompatible with our schools' goal of equality—and yet, this is exactly what most physics texts do, thereby contributing to the maintenance of the asymmetrical and hierarchical relationship between the masculine and the feminine in the scientific world. When physics is uncritically put forth as the only truth, it takes on a scientistic stance and thus exercises a (negatively) symbolic power over students' acquisition of knowledge. . . .[14]

> A gender-conscious and gender-sensitive physics would involve a relational point of view about physics; moreover, a great deal of the standard scientific content of physics would have to be removed.[15]

The conclusion of von Wright's report is as follows:

> Perhaps, to start off, we should ask ourselves in a new way how to get girls to be more interested in careers in the natural sciences. For instance, in place of the old stock question about how we might try to interest girls more in physics, we could turn things around and pose the novel question: How can we get physics to be more interested in gender, and in the feminine perspective?[16]

The attitude of von Wright's report is not just anti-intellectual but also anti-scientific. And in addition, it is condescending toward women to assume that they are less able than men to think in a rational manner. And yet, from 2010 through 2016, Moira von Wright served as president of Södertorn University in Stockholm.

Relativism and Politics

Truth-relative thinking grows even more worrisome when it worms its way into politics. Suppose, for example, that statistical studies show that Swedish women have a lower average salary than Swedish men do (which is in fact the case). Then imagine a debate in the Swedish parliament in which a politician takes the podium and states: "Well, that study may be true for *you*, but it isn't true for me! *My* truth is that women earn more than men do!"

Any politician who doesn't accept the idea that there are objective facts out there is in big trouble. Obviously it's often hard to arrive at the truth in debates about society and politics, and politicians often choose whichever aspect of reality they want to bring out. They carefully choose what to focus on and what to ignore, especially when making presentations involving numbers and statistics. If the subject matter is sufficiently complex, it becomes almost impossible to decide if the statistic in question was or was not "cherry-picked" so as to lend support to a particular interpretation.

Statistics do not lie, as many people believe (at least as long as they haven't been intentionally falsified), but one can carefully select pieces of information in order to place stress on just one aspect of reality. In this way, statistics can be used to manipulate people. Politicians and other people with important roles in society are also skilled at presenting facts mixed in with

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