

Goldberg, Philip. (1993). *The emergence of intuition*. Chapter I in *The Intuitive Edge*, Los Angeles, Jeremy P. Tarcher, pp. 15-29.

# The Emergence of Intuition

The really valuable thing is intuition.

—Albert Einstein

Until recently intuition has been treated like an employee who, forced to retire, keeps going to work because he is indispensable. Attitudes about him vary: some people don't know he exists, some downgrade his contributions as trivial, some revere him privately while trying to keep his presence a secret. A growing minority are exuberant supporters who feel that credit is long overdue and that such a valuable asset can function even better when recognized and encouraged. This book is in the latter category, part of the corrective effort to bring intuition out into the open, to demystify it, to see what it is, how it works, and what can be done to cultivate its full potential.

In recent years, the subject has emerged from obscurity. Intuition is increasingly recognized as a natural mental faculty, a key element in discovery, problem solving, and decision making, a generator of creative ideas, a forecaster, a revealer of truth. An important ingredient in what we call genius, it is also a subtle guide to daily living. Those people who always seem to be in the right place at the right time, and for whom good things happen with uncanny frequency, are not just lucky; they have an intuitive sense of what to choose and how to act. We are also coming to realize that intuition is not just

79

231

a chance phenomenon or a mysterious gift, like jumping ability or perfect pitch. While individual capacities vary, we are all intuitive, and we can all be *more* intuitive, just as we can all learn to jump higher and sing on key.

The emergence of intuition is part of a more global shift in values that has been chronicled by numerous sharp-eyed observers. The passionate pursuit of both individual growth and a better world, begun in earnest in the 1960s, has led to a reevaluation of conventional beliefs, among them the way we use our minds and the way we approach knowledge. Our decisions and actions spring from what we know. Therefore, if collective problems remain intractable and the gap between individual desires and fulfillment remains vast, it is only natural that we start to wonder if there isn't a better way to go about knowing.

Contributing to the new attitude is a resurgence of respect for the world within. The behaviorist school of psychology, which dominated the field during most of this century, had declared irrelevant the deeper realms of mind and spirit. To believers in orthodox religions and Freudian psychotherapy, those areas seethed with dark urges and repressed instincts that, depending on the point of view, should either be kept under cover, liberated, or therapeutically neutralized. These assumptions are giving way to a more positive, often sublime vision. The growth of cognitive research, theoretical advances in humanistic and transpersonal psychologies, provocative brain studies, the remarkable acceptance of Eastern philosophies and disciplines—such developments have led large numbers of people to believe that there is untapped power and wisdom within us. They sense there is a part of ourselves that—although obscured by bad habits and ignorance—understands who we are and what we need and is programmed to move us toward the realization of our highest potential. There is a growing conviction that perhaps we ought to trust the hunches, vague feelings, premonitions, and inarticulate signals we usually ignore.

These trends are characteristic of a basic contemporary pattern: the desire to eliminate obstacles that keep us from being what we really are. Where intuition is concerned, the obstacles are rooted in long-standing epistemological assumptions, which are perpetuated in the institutions that teach us how to use our minds. A brief look at those premises will help us understand why we have not been encouraged to use and develop our intuitive capacities.

## THE LEGACY OF SCIENTISM

For over three centuries the prevailing model for gaining knowledge in the Western world has been what we loosely call science, that robust and precocious offspring of such giants as Galileo, Descartes, and Newton. Let's use the word *scientism* to refer to the ideology, as opposed to the practice, of science, since the two are rather different. According to scientism, the right way to approach knowledge is with a rigorous interchange of reason and systematically acquired experience.

This philosophy developed as a hybrid of rationalism and empiricism. Empiricism holds, essentially, that the experience of the senses is the only reliable basis for knowing; rationalism contends that reasoning is the prime avenue to truth. In science, empirical information and reason are supposed to work in tandem, each acting as a check on the other's shortcomings. Since experience can be deceptive, information is scrutinized with rigorous logic; since reason is not entirely flawless, tentative conclusions—hypotheses—are put to the empirical test with controlled experiments subject to repeated verification. For this game plan to work, the data should be quantifiable and the players should be objective, thus keeping biases, emotions, and opinions from contaminating the findings.

Ancients such as Plato and modern philosophers such as Spinoza, Nietzsche, and, at the turn of the century, Henri Bergson pointed beyond reason and sense data to higher, intuitive forms of knowing. So, too, have mystics, romantics, poets, and visionaries in all cultures. There have been "intuitionist" schools in mathematics and ethics, and psychologists such as Gordon Allport, Abraham Maslow, Carl Jung, and Jerome Bruner have all acknowledged the importance of intuition. For the most part, however, intuition has been only a peripheral concern in the West, where the revered mode of knowing has been rational empiricism, thanks largely to the astonishing success of science.

Nothing said on behalf of intuition in this book should be taken as a deprecation of either science or rational thought. In wresting authority from faltering religious institutions, they freed us from the tyranny of dogma and arbitrary ideas. Insistence on evidence and rigorous verification, the heart and soul of scientism, enables us—collectively and over time—to sort out the true from the false. In a secular, pluralistic society, such standards are imperative. And science has

given us a way to precisely analyze and shape the material world, providing us with unprecedented affluence, comfort, and health.

Like most rebellions, however, the scientific revolution created some new problems. Flushed with success, the juggernaut of science gobbled up terrain formerly held by philosophy, metaphysics, theology, and cultural tradition. We sought to apply the methods that worked so well in the material realm to answer questions about the psyche, the spirit, and society. Through experimentation and the application of reason—which was elevated to the pinnacle of the mind—it was assumed we would come to know the secrets of the universe and learn how to live. To accomplish this, we set out to perfect the objective tools of knowing; we invented devices and procedures that extended the range of our senses and made more rigorous our logic and our calculations. Over time, our organizations and educational institutions made scientism the sine qua non of knowing, the model for how to think.

This ideological bias is reflected in our vocabulary; words that suggest truthfulness stem from the rational-empirical tradition. We use the word *logical*, even when the rules of logic have not been applied, to indicate that a statement seems correct. So highly regarded is reason that we use the word *reasonable* to refer to anything we consider appropriate—for example, “Twenty dollars is a reasonable price to pay for a theater ticket.” We also have the noun form of reason, which is what you are asked to provide in order to justify a proposition. People demand *reasons*; they seldom say, “Give me one good feeling why you think John is wrong” or “What are your intuitions for claiming that jogging will cure insomnia?”

The word *rational*—which, strictly speaking, suggests the use of reason and logic—has come to be synonymous with sanity, while *irrational* connotes madness. *Sensible* and *making sense*, along with their antonym *nonsense*, link soundness and truth with the sense organs, as if adequate meaning came through those channels alone—the classic conviction of empiricism. *Objective* has come to imply fairness, honesty, and precision, suggesting that the only way to gain untainted knowledge is to remain detached and treat whatever you study as if it were a material object. As for the word *scientific*, that is the ultimate pedigree for any claim whatsoever.

Fortunately, the language also contains some reservations about the rational-empirical ideal. Thanks to Freud, we have the word *rationalize*, a pejorative term referring to the way we justify bad

guesses, mistakes, and neurotic behavior with faulty reasoning. We also use the term *sense* in an effort to legitimize knowledge that can't be attributed to the customary five senses, as when we say “I sense danger in this room” or “I have a sense of what that poem is about.” But, despite these few colloquial exceptions, we generally act as if sense perceptions and rational thought are the only ways to know anything. This strikes many people as illogical, unreasonable, and maybe even nonsensical.

The unfortunate aspect of this tendency is not the veneration of rationality or the insistence on experimental evidence, but the discrediting of intuition. The whole thrust of scientism has been to minimize the influence of the knower. It protects knowledge from the vagaries of subjectivity with a system of checks and balances that are as essential as their equivalent in democracies. But if the system becomes imbalanced, the power of a particular branch can become so diluted as to lose its real effectiveness.

The institutions that teach us how to use our minds, as well as the organizations in which we use them, are so skewed toward the rational-empirical ideal that intuition is seldom discussed, much less honored or encouraged. From grade school to graduate school, and in most of our work settings, we are taught to emulate the idealized model of scientism in our thinking, problem solving, and decision making. As a result, intuition is subject to various forms of censure and constraint. What psychologist Blythe Clinchy said of early education applies throughout our culture: “We may convince our students that this mode of thought is an irrelevant or indecent way of approaching formal subject matter. We do not actually stamp out intuition; rather, I think, we drive it underground.”

There are twin ironies in this situation. First, the model we seek to emulate is something of a fiction, erroneous in some of its assumptions and inappropriate in many of its applications. Second, like the employee in our opening metaphor, intuition is a vital—although restricted—contributor to the very institutions that tried to retire it.

## DO AS IT DOES, NOT AS IT SAYS

Real day-to-day science and real day-to-day problem solving are to their formal descriptions what a jam session is to sheet music. For one thing, the detached objectivity that scientism prizes is an impos-

sible ideal. Psychological research tells us that even ordinary sense perception is an interpretive act, influenced by expectations, beliefs, and values. For example, the same coin is perceived as larger in size by poor children than by their more affluent counterparts.

We also know from science itself that the long-standing theoretical separation of observer and observed, object and subject, can no longer be assumed. As Werner Heisenberg noted when he formulated the uncertainty principle, which proved that on the subatomic level the act of observation influences what is being observed: "Even in science, the object of research is no longer nature itself but man's investigation of nature." Furthermore, every discipline is rooted in a set of assumptions and beliefs—what philosopher Thomas Kuhn called a *paradigm*—and, like all of us, individual scientists have convictions, attachments, and passions that influence their work. Indeed, without them scientists could never muster the courage and tenacity to discover anything worthwhile.

The real objectivity of science pertains to the macrocosm, the collective enterprise where hunches, beliefs, and intuitive convictions confront one another in the public arena and are rigorously evaluated. What survives we call objective, scientific knowledge. The knower will always be subjective and will always use his intuition. We have tried to minimize the imperfections of subjectivity; what we have not done is try to elevate the knower's subjective ability to know.

When given the opportunity, intuition has done wonders. If reason and empirical observation steer the course of discovery and the passion for truth supplies the fuel, it is intuition that provides the spark. (Although we are discussing science, the same comments apply to creative decision making and problem solving in any field.) Abraham Maslow distinguished two types of scientists, each essential to the overall endeavor. One type he compared to tiny marine animals who build up a coral reef; they patiently pile up fact after fact, repeat experiments, and cautiously modify theories. The other breed, whom Maslow called the "eagles of science," make the soaring leaps and imaginative flights that lead to revolutions in thought. Intuition is what gives wing to the eagles.

Many of the anecdotes throughout the book will demonstrate this point, and an army of quotations could be culled from the pantheon of science and mathematics to support it. Here are just two.

First, Einstein on the discovery of natural laws: "There are no logical paths to these laws, only intuition resting on sympathetic understanding of experience can reach them." Second, John Maynard Keynes on Isaac Newton: "It was his intuition which was preeminently extraordinary. So happy in his conjectures that he seemed to know more than he could have possibly any hope of proving. The proofs were . . . dressed up afterwards; they were not the instrument of discovery."

Keynes's point is an essential one: formal proofs are instruments of verification and communication. The final descriptions of research are what the public sees and what we learn about in school. But they are the end products, the logical, orderly presentations compiled after all the sloppy work has been done, all the false starts and dead ends corrected, all the vague hunches and gut feelings sorted out. What we see is an idealized road map, constructed retrospectively, like a traveler's outline of a cross-country journey that excludes the side trips, the backtracking, the mistakes, and the spontaneous changes of direction.

We are led to believe that the finished product depicts the actual process. Then we are advised to emulate it in our thinking. Hence our schooling centers on recalling facts and following standardized methods for solving problems whose beginning and end points are clearly defined. Imagination and the vague intuitive notions that prefigure discovery are devalued or ignored. In classrooms they are even considered to be mere guessing, particularly when the student is unable immediately to produce a logical defense. We are asked to do what science says, not what it does, which is both unfortunate and ironic. As psychologist Jerome Bruner wrote in *The Process of Education*: "The warm praise that scientists lavish on those of their colleagues who earn the label 'intuitive' is major evidence that intuition is a valuable commodity in science and one we should endeavor to foster in our students."

If great ideas actually did follow inexorably from piling up facts through reason and experimentation, as the orthodox model suggests, then all it would take to walk away with history's prizes would be to show up in the right place at the right time, like the millionth customer to enter a supermarket. Nothing but chance would distinguish the geniuses we venerate, the ones who looked at the same everyone else had looked at and thought what no one else had thought. But, as the philosopher of science Karl Popper says

is no such thing as a logical method of having new ideas, or a logical reconstruction of this process. . . . Every discovery contains an 'irational element' or a creative intuition."

The very essence of breakthroughs is that they defy conventional assumptions. They go beyond anything we have any logical or factual reason to accept. The general relativity theory, for example, was born when Einstein had what he called "the happiest thought of my life." He realized that a person falling from a roof was both at rest and in motion at the same time. What could be more illogical? Years later, when the theory was proven, it started to seem logical because our assumptions about space and time had been transformed, thanks to Einstein's intuition.

Most people associate the flash of discovery—the "Aha!" or "Eureka!"—with intuition, but that is not its only function, as we shall see in Chapter 3. Scientists, and problem solvers in general, make advances by spotting difficulties and knowing which questions to ask and how to frame problems, a step that Einstein said was "often more essential than its solution." Those acts are guided, at least in part, by intuition. This is particularly so when deeply ingrained assumptions are called into question by anomalous findings—the first step in scientific revolutions, Thomas Kuhn tells us. When hypotheses are proposed, individuals intuitively decide whether they are worth trying to prove or refute. Intuition also helps them decide where to look for facts, how to design experiments, and how to interpret data and recognize what is relevant.

If all this could be accomplished through formal, mechanical procedures, experts, like computers, would never disagree. Yet in all disciplines they are frequently on the warpath. Individuals become intense advocates of ideas, even those that are ridiculed and contradicted by evidence. When their intuitive convictions prove incorrect we call them madmen; when they are right they secure a place in history, as Marconi did when he insisted that wireless signals could traverse the ocean even though the laws of physics at the time proved otherwise, or as Ray Kroc did when he followed a feeling in his "funny bone" instead of the advice of his experts and purchased McDonald's.

The same analysis also applies to mathematics, that exacting and meticulous language which imparts precision to science. All attempts to establish a formalized, logically sound foundation for mathematics have failed. The effort culminated in Kurt Gödel's incompleteness

theorem, which demonstrated that no formal system can ever be both consistent and complete. "What then is mathematics if it is not a unique, rigorous, logical structure?" asks Morris Kline in *Mathematics: The End of Certainty*. "It is a series of great intuitions carefully sifted, refined, and organized by the logic men are willing and able to apply at any time."

That which holds true in the abstract realms of science and mathematics also holds true in the practical world, where we have tried to apply the rigors of scientism to decisions and problems. Business schools and other arenas of professional training emphasize sophisticated quantitative analysis. But many executives feel that modern techniques, while potent and important, are not enough in an uncertain and changeable environment. For that reason, ivory-tower management scientists have had trouble getting working managers to apply their methods.

It seems that successful decision making requires the same uncanny sense of direction and the same creative fertility that characterize great science. Executive suites and laboratories have more in common with artists' studios than we have realized. In a widely quoted article in the *Harvard Business Review*, Henry Mintzberg of the McGill University Faculty of Management reported the results of an extensive study of corporate executives. He found that the high-ranking manager operating under chaotic and unpredictable conditions is a "holistic thinker . . . constantly relying on hunches to cope with problems far too complex for rational analysis." Mintzberg concludes that "organizational effectiveness does not lie in that narrow-minded concept called 'rationality'; it lies in a blend of clear-headed logic and powerful intuition."

Despite the evidence, there are many in academic and scientific circles—those arbiters of knowledge who tell us what is true and real—who insist that intuition has no significant role in discovery or decision making. To them, the process of knowing is as mechanical as putting together a model airplane from an instruction manual. They seem to feel that scientists and executives who praise intuition are indulging in a bit of romantic poetic license, perhaps to counteract their dull public image.

There have always been those who embraced and celebrated their intuition. Jonas Salk, for example, has said, "It is always with excitement that I wake up in the morning wondering what my intuition will toss up to me, like gifts from the sea. I work with it and

rely on it. It's my partner." Most scholars and scientists acknowledge the value of their intuition but are more circumspect, partly because they fear the ridicule of their peers. There may be another reason, too; E. C. G. Sudarshan, a theoretical physicist at the University of Texas, maintains that some of his colleagues don't talk about their intuition because "they fear the wellspring will dry up. Very few will admit to being superstitious, but when inspiration doesn't come they get alarmed."

Another reason people are quiet about intuition is that it is hard to pin down. Researchers prefer phenomena that can be directly observed and measured, so we have only a small body of knowledge, mostly anecdotal, about ephemeral intuition, with a few brave attempts at experimentation. It has also been considered—when it is considered at all—a chance phenomenon, something that either happens or doesn't. There does not seem to be any way to arrange it into a set of rules that can be taught the way logic and quantitative procedures can be taught. These skills are transmitted in schools while intuition is neglected, for the same reasons that we have courses dealing with sex education but not with love.

All that is changing, however, despite the ideological obstacles. New discoveries about the brain, growing awareness of the limits of scientism, and insights from ancient teachings and progressive psychologists are creating an intellectual atmosphere more receptive to understanding intuition. And progress is being made on the applied level as well. Intuition is a spontaneous phenomenon in that it can't be contrived or forced. But, as we shall see, a good deal can be done to develop intuitive capacity and to create conditions that are conducive to it.

Perhaps the biggest single reason for the emergence of intuition, however, is necessary. It may be underdeveloped and underemployed, but intuition still works, and one of the truths it is whispering to large numbers of people is that we need more of it.

## THE GROOMING OF INTUITION

So far we have examined the ideology of scientism to understand why we have heard so little about intuition and done so little to cultivate it. It is important to understand these attitudes since they cause

us to mistrust our own intuition; we encounter resistance not only from outside sources but from ourselves, for we have internalized the same belief patterns. We often force ourselves to think in a rigidly rational-empirical manner when it is inappropriate or futile. This can restrain our intuition, causing us to stagger mentally, just as we might stagger physically if we had learned to walk on our heel instead of using the entire foot.

The rational-empirical mode works best under three conditions: when we can control or predict all the variables that affect the subject matter under consideration; when we can measure, quantify, and define with precision; and when we have complete and adequate information. Needless to say, those conditions are not always met in a complex world, especially when human beings are involved or when emotions or metaphysical questions concern us. It is often forgotten that science was designed to deal with the material world; extending it to the nonmaterial without the added dimension of an acute intuitive sense is like promoting a crack salesman or engineer to a managerial position for which his skills are inadequate.

"If your only tool is a hammer," said Abraham Maslow, "you begin to see everything in terms of nails." If your only cognitive tools are rational-empirical, your vision will be restricted to what can be analyzed and measured. Ask the grand metaphysical questions about human identity and the nature of reality, and materialistic answers will come back. The self comes to be seen as a catalog of analyzable personality traits, and the cosmos becomes a collection of objects separated from the self, an incomplete vision with consequences that range from short-changing human potential to pillaging nature. As we will see, deep intuition alone can penetrate the transcendent and illuminate the sublime.

An exclusively rational-empirical approach to problem solving and decision making will not enable us to deal adequately with essential but nonmeasurable considerations such as values, morals, and human will. It also encourages a bottom-line mentality that can't see beyond narrow, measurable benefits. To accommodate the requirements of scientism, we break into parts things that should be viewed as wholes and we separate items that might better be understood as complementary. We might look for single, identifiable causes when multilevel causation, or no causation, might be more accurate. We reduce uncertainty by disregarding the unpredictable and by squeez-

ing variables with multiple meanings and subtle nuances into neat but artificial compartments. And we often lean too heavily on analyzing the past because the past is easy to quantify.

What often happens is that, in practical situations, we sacrifice innovation for control, and in the quest for knowledge we sacrifice wisdom and depth for predictability. This might be why, in the study of human beings, increased quantification seems to produce banality, while the truly significant contributions come from the intuitive insights of gifted thinkers and healers.

Our economy is a good example of the limits of applied scientism, and also of how its requirements determine the way we define reality. Sacrosanct formulas and sophisticated mathematical models have for years consistently gone awry. This failure has baffled economists, but they never seem to question certain premises on which economic theories are based: that people are well-informed, rational thinkers who calculate the costs and benefits of their alternatives and arrive inexorably at the right choices. No intuitive shopkeeper or advertising copywriter would swallow that, but scientists need this assumption in order to design and use formal methodologies.

This is not to disparage rational thinking or empirical procedures for processing information; we would be in sad shape without them. It is simply to point out that we have trouble making our way through a complex, incessantly changing world by relying on rational-empirical thinking alone. "In a human situation," wrote philosopher William Barrett, "the waters are usually muddy and the air a little foggy; and whatever the intuitive person—whether he be a politician, courtier, or lover—can perceive in that situation is not by virtue of well-defined logical ideas. Quite to the contrary; such ideas are more likely to impede his vision."

As individuals, we can't expect to approach real-life decisions—particularly in relationships and other areas where emotions and ambiguities are involved—as if they were problems in an algebra class. There are usually too many unknowns to fit the equations. For example, psychologist Steve Baumgardner of the University of Wisconsin at Eau Claire studied vocational decision making among college students and concluded that "the uncertainties surrounding career opportunities and the involvement of emotions and broad life goals in career choice may make fully rational career planning impossible and undesirable."

Baumgardner discovered that when students think about careers,

they tend to shift from an analytic approach in their freshman years to a more intuitive attitude as sophomores. This trend is lamented by most counselors, who urge students to analyze job-availability data and make objective, even quantitative assessments of their abilities. Baumgardner suggests that the shift to intuition is actually an adaptive response to uncertainty and complexity. He argues that "we ought to give up systematic career planning, both as a description of how careers are chosen and as a prescriptive ideal of how careers ought to be chosen."

Like scientists and executives, humans in general don't always follow the formalized thought patterns that are customarily prescribed. We are not by nature the logical creatures of recent Western mythology. As Morton Hunt points out in *The Universe Within*, a survey of cognitive psychology, logic is a tool invented for certain uses; it is not the way we deal with reality most of the time, despite our conditioning. That is not a flaw, but a useful strategy. Hunt quotes psychologist Donald Norman: "We leap to correct answers before there are sufficient data, we intuit, we grasp, we jump to conclusions despite the lack of convincing evidence. That we are right more often than wrong is the miracle of human intellect."

Most of that miracle is what we call intuition. When we mistrust it or let it atrophy by persisting with exclusively rational-empirical thought patterns, we end up tuning in with mono to a stereo world. It is time to acknowledge the importance of intuition in our lives, to understand it, and to find ways to nurture it. For individuals, the intuitive edge means better decisions, more creative ideas, deeper insight, and a smoother, more direct route from desire to fulfillment. But the effort promises more than personal advantage. It will help society at large meet the demands of a turbulent, unpredictable world. A lack of intuition among our thinkers, decision makers, and citizens can be fatal.

This entreaty does not constitute a threat to rationality or empirical science. It is often feared that endorsing intuition might be the first step toward intellectual anarchy, dogmatism, or authoritarianism. But what people actually fear is not so much intuition as the sacrifice of verifiable proof to antireason, arbitrariness, and claims of infallibility. There is some justification for this, and it is worthy of more than passing mention.

There have always been those who disdain science and rigorous analytic thought, which they perceive as cold and impersonal. Some-

