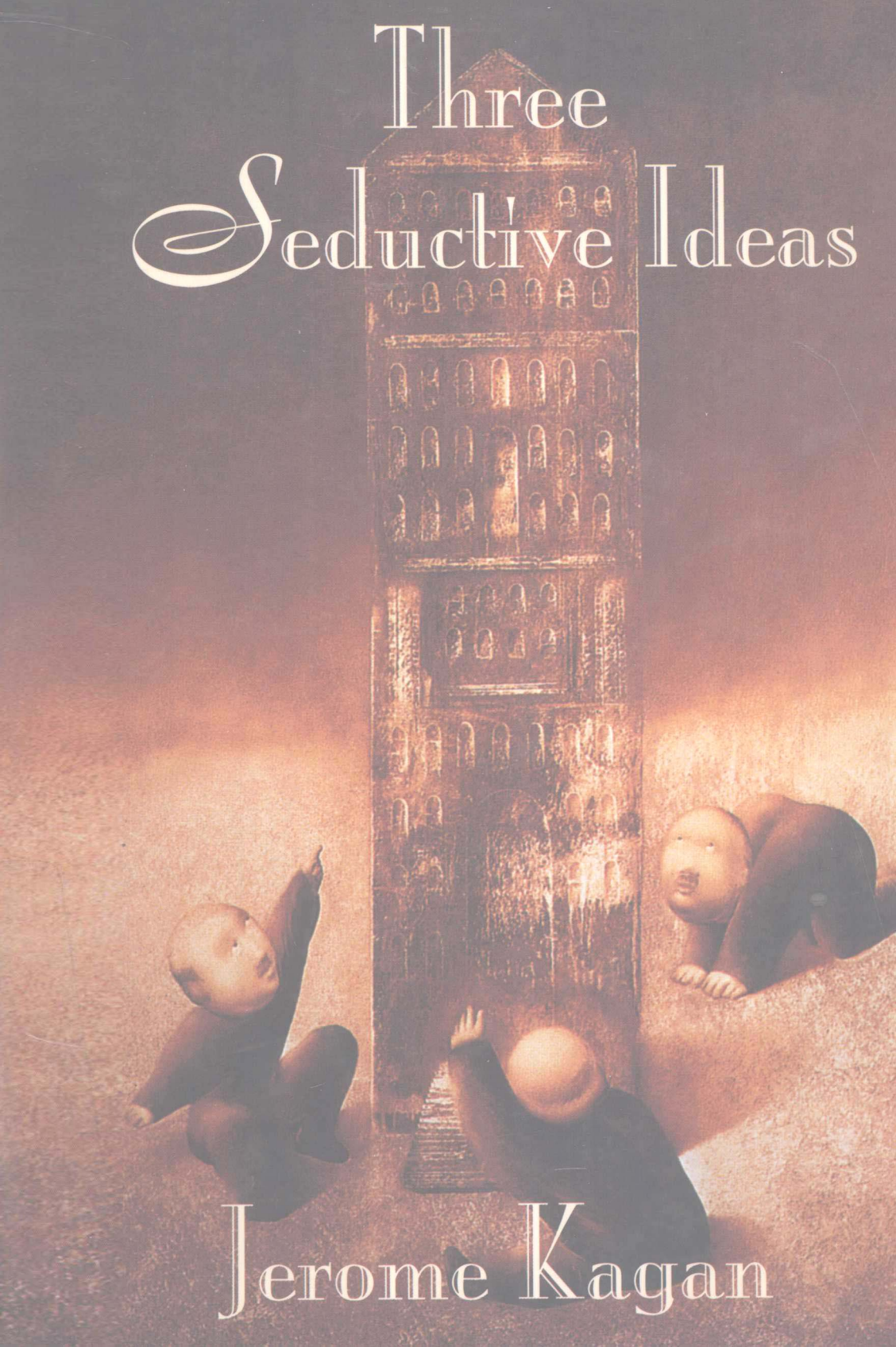
Three Seductive Ideas



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Prologue

> The true method of discovery is like the flight of an aeroplane. It starts from the ground of particular observation; it makes a flight in the thin air of imaginative generalization; and it again lands for renewed observation rendered acute by rational interpretation.
>
> *A. N. Whitehead, 1929*

If you had lived in Europe as the fifteenth century came to a close, you would have believed that witches cause disease, that harsh punishment of a child creates an adaptive fear of authority, and that pursuit of sexual pleasure depletes a man's vital energy and guarantees exclusion from heaven. Today, five centuries later, the vital but still young sciences of human behavior are friendly to a number of equally fallacious assumptions. This book critically examines three of these potentially misleading ideas and suggests some of the reasons for their continued popularity.

The first flawed belief is that most psychological processes generalize broadly. Therefore, many believe it is not terribly important to specify the agent being studied, whether rat, monkey, or human, or the context in which the subject acts, whether laboratory, natural habitat, workplace, or home, because broad conclusions can be drawn regardless of the agent and context. Instances of this loose thinking can be found in every technical journal, but especially in books written for the general public. A quality called intelligence, for example, is applied to animals, human infants, college students, and software programs. The evidence used to infer this quality includes rats running mazes, the survival of

species, infants staring at novel pictures, possession of a large vocabulary, fast decision times, the ability to recall a long string of numbers, and correct application of logical rules. The notion that one mental process could mediate such a diverse set of phenomena should strain the imagination of the most open mind.

This permissive attitude is widespread. When a man pushes ahead of us in a queue, we are prepared to attribute a general trait of aggressivity to him, believing that he is similarly aggressive at home, in the office, and on family picnics. Not surprisingly, perhaps, we are much more conservative when we ourselves commit the very same act. If I push ahead in an airport line, I will explain my rudeness as an uncharacteristic reaction that happened to be provoked by special conditions—the flagrant incompetence of the airline's booking agent, or snarled traffic in the airport tunnel, or a last-minute medical emergency at home. Social psychologists call this type of asymmetric logic, in which we assign broad stable traits to others but explain our own behavior as due to local conditions, the attribution error.

Our attraction to broad categories is most obvious when we name concrete things in the world. A mother points to a tall, crimson-leafed maple and says, "Look at the tree," not "Look at the big, colorful maple." The preference for underspecifying an event and, therefore, overgeneralizing is probably rooted in the biological nature of the human mind and is one of the oldest and best-established phenomena in the psychological laboratory. If a rat or human is shown a red light, followed a second later by a reward—food for the rat and perhaps money for the human—each agent will display a conditioned excitability to a variety of red hues, not just the particular wavelength of red used in the original conditioning. The human brain, like the brain of a rat, is biased initially to attend to generality rather than particularity. Experience must teach us to prune our initial understanding.

This fine-tuning is a seminal purpose of the empirical sciences. Over the last five hundred years much of our progress in the study of nature has occurred because investigators analyzed abstract concepts and replaced them with families of related but distinct categories. The cosmos, we now know, contains not just the visible stars in galaxies but also

the mysterious, massive "dark matter" that surrounds them. Reproduction occurs sexually in some species, asexually in others, and both ways in a few. Viruses are distinguished from retroviruses, and sharks are not close relatives of whales.

Scientists have just begun to appreciate the advantages of analysis for cognitive phenomena. For example, the unitary competence that psychologists had regarded simply as memory is now recognized to consist of a set of distinct processes mediated by different brain circuits. Despite these few victories, too many social and behavioral scientists retain a deep affection for big concepts like learning, fear, depression, communication, love, and consciousness, trusting that each term faithfully describes a coherent commonality in nature. The first chapter of this book probes this problem by analyzing four popular words that are used so abstractly as to render them almost useless: fear, consciousness, intelligence, and temperament.

A second seductive premise favored by those who study human behavior is infant determinism, which holds that some experiences during the first two years of life are preserved indefinitely. One of the great moments in child development occurs in the middle of the second year, when a toddler who fails to find a toy she had seen an adult hide under a cloth looks purposefully for the object in nearby places. If the toy were under the cloth a few seconds earlier, and she did not see it removed, she knows that it must be somewhere, for objects do not disappear. This universal event, which Jean Piaget called "object permanence," implies that the human mind is prepared to believe that things do not just vanish unless some agent or force intervenes.

Given the universality of this belief, we should not be surprised to find it frequently applied to the psychological products of the first years of life: things—in this case the products of the child's earliest experiences—do not just vanish. To most people, the premise that the first mental structures created by experience are preserved indefinitely, like a scratch on a table, seems reasonable. But in fact many early ideas and habits either vanish or undergo such serious transformation that they cannot be retrieved in later life, any more than the first strokes of a seascape can be discerned from the larger scene, once a painting is complete.

The private reorganizations of images and ideas that occur over development are hidden from observers. An infant's representation of his mother's face changes imperceptibly with each passing year, so that no adolescent is able to reconstruct the earliest schema of his parent. Similarly, the nine-month-old's cry of terror when picked up by an uncle she has never seen before vanishes by the second year with no sign of heirs. These early mental events can be likened to names written in the summer sand that disappear with the tide. As Chapter 2 will show, the impermanence of first structures is as likely an outcome as preservation, whether in evolution, psychological growth, or language.

One trio of authors writing over sixty years ago told parents that an adult's aesthetic sense was established in the first year of life. Other writers have advised parents not to take their infants to the movies, lest they be harmed by the experience. Readers who wonder whether these beliefs are old-fashioned and have vanished should read the February 3, 1997, issue of *Time* magazine. The cover story, "How a Child's Brain Develops," probably worried many working parents, for it implied that if mothers do not remain home to play with their infants, their child's future psychological integrity would be compromised. "In an age when mothers and fathers are increasingly pressed for time . . . the results coming out of the labs are likely to increase concerns about leaving very young children in the care of others. For the data underscore the importance of hands-on-parenting, of finding time to cuddle a baby, talk with a toddler, and provide infants with stimulating experiences."[1]

The same advice was a frequent theme in Sunday sermons in America delivered over two hundred years ago, and it continues to generate unnecessary anxiety among perfectly competent parents. Of course, infants who are neglected, abused, and rarely played with will be slowed or seriously retarded in their psychological growth; whether the retardation will be permanent should the child's environment change is less clear. But most neglecting or abusive parents do not read *Time* magazine, while the vast majority who do are providing their infants with adequate love and stimulation. It is not fair to tell them, in science-fiction rhetoric, that every time their baby looks up at their smiling face, "tiny bursts of electricity shoot through their brain, knitting neurons into cir-

cuits as well defined as though etched into silicon chips." Even though the essay acknowledged later that children are malleable during the opening years of life, the prose exaggerated what we know.

There are good reasons why many believe in the preservation of early structures. First, infant determinism has the illusion of being mechanistic. It is easier to state a cause–effect sequence if each new quality is preceded by one that makes a substantial contribution to it than if a new behavior suddenly emerges because of a traumatic event or maturational changes in the brain. Second, a belief in infant determinism renders the parent's first actions useful. If the bases for adult traits were not established until later childhood, the first years would seem to have no special purpose. But a third, and perhaps the most potent, reason why Americans believe in the preservation of early structures is that this doctrine is in accord with egalitarianism. Each historical period is dominated by a philosophical view—an intellectual electric fence—that most scholars try to avoid breaching. From the early medieval period to the eighteenth century, philosophers and naturalists were reluctant to reach conclusions that would contradict the Bible. Although few contemporary scientists worry about the implications of their work for Christian doctrine, a majority are concerned with the implications of their findings for the ethic of egalitarianism, and in the field of child development that anxiety makes the doctrine of infant determinism attractive. If society could arrange growth-enhancing experiences for all infants and if the resulting psychological products were preserved despite the slings and arrows of later life, we might approach the ideal of a society of equals. But if, on the other hand, the frustrations of poverty or prejudice could produce psychological discontinuities in adolescence despite a benevolent infancy, the egalitarian premise would be threatened. Thus community sentiment surrounding the idea of equality maintains this assumption.

Loyalty to the doctrine of infant determinism is also sustained by the ambiguity of the phenomena we wish to explain. As long as the adult qualities supposedly determined by infant experience remain general—like being well-adjusted or free from mental illness—we have no way to refute the notion that early experience is contributory. As long as

adherents of infant determinism are unable to specify a particular outcome for a given class of infant experiences—say, a phobia of animals, introversion, suicide, substance abuse, or poor school performance—they make testing the hypothesis difficult.

Biologists, by contrast, usually begin with robust, observable outcomes and then try to explain them. The ratios of wrinkled to smooth peas in Mendel's herbarium motivated the idea of genes as a cause of heredity. Spoiled wine was the hard fact that led Pasteur to posit the existence of microbes. In these and other examples the facts came before the explanatory concepts. Too many students of development reverse this sequence by positing causes—like playing with an infant—before they specify what it is they wish to explain.

No serious investigator of human development challenges the claim that the social experiences of the first two years sculpt to some degree the profile we see on a child's second birthday. Infants who are neglected are obviously less alert, less verbal, and less enthusiastic than those who receive predictable care, affection, and playful encounters. However, the profile observed at age ten is the result of a decade of experiences, not just those that occurred in the first two years. If two-year-old children living in less stimulating environments suddenly found themselves in growth-enhancing homes, their minds would grow quickly. It is unfair to blame uneducated mothers living in poverty for not playing with and talking to their infants as frequently as they should. If these mothers knew that their indifference harmed their infant, they would alter their actions. The problem is that they do not appreciate that they can be effective agents in their child's growth; many of them have become fatalists. We will help them more by muting their fatalism than by impugning their character. The second chapter questions the faith in infant determinism and describes three important influences on development that do not emerge until later childhood.

The final chapter of this book addresses the assumption, popular among psychologists and economists, that most human action is motivated by a desire for sensory pleasure. Philosophers, by contrast, award greater power to a different motive—the universal human wish to regard the self as possessing good qualities. More philosophical works

have been written on morality than on any other human quality because it is a unique and distinctive characteristic of our species. Every species inherits potentialities that make the acquisition of particular competencies easy. Talking comes readily to humans, while reading usually requires special tutoring. Assigning the symbolic labels good or bad to experience also comes easily to humans, and this disposition permeates our actions, beliefs, and emotions.

A person asked why he ordered chocolate cake may describe the pleasant sensation the dessert creates, but when asked why he cut his vacation short in order to visit his mother in the hospital, his reply, "I had to," makes no reference to sensory pleasure. Those who feel minimal guilt recognize that something is wrong with them. A female murderer out of prison on parole told an interviewer, "I never had a strong sense of sin . . . somewhere along the line I missed out on guilt."[2]

The only competing goal that scientists pit against a felt moral imperative is the claim that all volitional actions are directed at maximizing pleasure or minimizing pain. As behaviorism and psychoanalysis gained adherents, the nineteenth-century belief that the child knew right from wrong and could use his will to maximize the former was replaced with the suggestion that all moral values were conditioned habits acquired through praise and punishment. Hence, humans had less freedom of choice than they believed. By the middle of this century, this deterministic philosophy dominated most scientific explanations of moral behavior. The ancients would not have understood this gloomy, robotic description of human conscience.

Although all persons want to regard themselves as belonging to a category of "good people" as each defines that concept, this motive is vulnerable to dark forces. Philosophers, novelists, and playwrights who have attempted to capture the vulnerability have had difficulty finding the right balance between the lion and the lamb in each person. Social scientists have awarded a little too much power to the obvious desire to maximize self-interest and attain sensory pleasure and not quite enough to the universal need to be kind, loyal, and loving. This chapter does not compete with philosophical works by defending one set of ethics over another, for I ask only why humans hold any ethical position at all.

Each chapter illustrates a basic psychological principle. The seminal idea in Chapter 1 is that all behavior is influenced by the person's psychological construction of the immediate situation, which in turn is influenced by the objects and people in the perceptual field and by memories of both the immediate and the distant past. For example, if a college student is asked on a questionnaire, "Are you happy?" an affirmative reply is more likely if he had not been asked moments earlier, "How many dates did you have last month?" A child who is shy with an unfamiliar adult often laughs spontaneously with unfamiliar children. The first chapter argues that an indifference to the local influences on behavior leads some social scientists to write about psychological processes as if they were like the fingers and toes that each person carries from one situation to the next.

The principle that permeates Chapter 2 is that events which are discrepant from what has been experienced, or what is expected, are the most important causes of thought, feeling, and action. Surprises motivate interpretations, and interpretations are the critical determinants of what will be felt, remembered, and done. The child who is scolded continually for yelling becomes accustomed to the punishment; the child who is not scolded most of the time will react with considerably more feeling when a parent unexpectedly chastises him for raising his voice. Humans continually compare self with others, and the products of the comparison create beliefs about the self. If everyone in a town is dirt poor, poverty has far less serious psychological consequences than if only a minority lives with disadvantage.

This principle bears on the doctrine of infant determinism because children do not compare their personal qualities with those of others in any systematic fashion until they are five or six years old. That fact is one important reason why the events of the first two years are of less significance than psychologists or the media have claimed. And over the course of later experience, discrepant events continue to shape the psychological profile of the developing child and adolescent.

The principle which informs Chapter 3 is that humans would rather avoid the varieties of regret that follow a loss than gain the variations on joy that follow attainment of a desired goal. Put simply, most humans tend to be risk averse. Investors usually hold stocks losing value for too

long a time and prefer investments in which loss is minimized over those that maximize large gains. When people must choose between avoiding a future state of sadness, fear, anxiety, shame, or guilt, or attaining the state that follows possession of power, wealth, or sexual pleasure, most have a preference, not always honored, for the former because the dysphoria usually lasts longer than the joy. Suppression of behaviors that might bring on guilt and shame serves a motive—Thomas Aquinas called it an aptitude—for virtue that is the basis of human morality.

The three chapters collectively argue that *Homo sapiens* possesses a small number of unique qualities that are present in no other animal. Uniqueness is common in biology. Snakes shed their skin, dogs do not; bears hibernate, cats do not; monkeys form dominance hierarchies, mice do not. Humans experience guilt, shame, and pride, anticipate events far in the future, invent metaphors, speak a language with a grammar, and reason about hypothetical circumstances. No other species, including apes, possesses this set of talents.

However, because a great deal of important, informative research is performed with animals, scientists feel considerable social pressure to generalize conclusions based on evidence from animals to the human condition. This strategy is successful for many phenomena. Vision and hearing, for example, are very similar in monkeys and humans. But equally confident generalizations are not possible for all human qualities. Only humans engage in symbolic rituals when they bury kin, draw on cave walls, hold beliefs about the self and the origin of the world, and worry over their loyalty to family members. Thus, it is useful to examine critically the generalizability of some current psychological concepts that rely primarily on research with animals, in order to decide which extrapolations may have gone too far. I suspect that many extrapolations, like Don Quixote's conviction that he was attacking giants rather than windmills, will turn out to be seriously inaccurate.

Although the ancients wondered about the features that define human nature, systematic empiricism in psychology is only a little over one hundred years old, and understanding is necessarily immature. If we let

Galileo's discoveries mark the birth of systematic experimentation in the physical sciences, then the social and behavioral sciences are over three hundred years behind and by analogy should resemble the physics of the seventeenth century. Robert Boyle's *The Skeptical Chymist*, written in 1661, seriously criticized the conceptions of his day. Boyle came to realize, for example, that the ashes left after a log had burned were not present in the log before it was put in the fireplace.

Three Seductive Ideas was written with Boyle's skepticism. My conclusions—that many psychological processes do not generalize broadly; that most adaptive adult characteristics are not determined by experiences of the first two years; and that the majority of our daily decisions are issued in the service of gaining or maintaining a feeling of virtue—challenge assumptions that can be traced to the philosophical foundations of the contemporary social and behavioral sciences. My selection of these three topics for examination should come as no surprise. I am a developmental psychologist, and abstract concepts like temperament, fear, attachment, and intelligence are popular in research on child development. Furthermore, controversy over the deterministic role of early experience is at the heart of many debates in this field. Finally, the universal emergence of a moral sense at the end of the second year is so striking to those who study children that its significance is difficult to ignore. A scientist who studied only college students might agree with a statement once made by Van Quine, one of the world's most respected philosophers, that human conscience is essentially a socially constructed product built from slaps and sugarplums. But no one who has seen a three-year-old's face become tense as she fails a difficult task, or heard a small child say "Yukky" to a dirty cloth lying on a laboratory floor, would find this argument persuasive.

A willingness to question these three premises must overcome strong defenses. Four conditions aid the commitment to a particular belief. The most obvious is a set of incontrovertible facts drawn from observation and experiment. Newton's contemporaries knew that the greater the force with which a stone is thrown, the farther it will travel. Thus, when Newton wrote the equation that formalized this incontrovertible fact, he encountered little resistance. Equally compelling is the power of logical explanation. Parents accepted the fact that injecting young

children with a bacterium or virus could be prophylactic once the logic of the antigen–antibody interaction was presented to them in a coherent argument. The ease with which a person can imagine an explanation also aids its receptivity. How the foods we eat might influence our mood is easy to imagine, but how our genes might accomplish the same goal is more difficult to visualize. Finally, we are always friendly to explanations that are in accord with our ethical standards—what we prefer to be true. The sixteenth-century Portuguese who shipped slaves from West Africa to Brazil salved their consciences by reminding themselves that God had made Christian Europeans more civilized and virtuous than those they were exploiting.

A critique of ideas popular in the social and behavioral sciences cannot take advantage of the first two conditions and is seriously hampered by the last two. There is no large body of impeccable, interrelated facts surrounding human emotions, the role of early experience, and morality that can be arranged into logically powerful arguments. Further, psychological processes, like the equations of quantum mechanics, are inherently nonvisualizable. Faced with the failure of facts, elegant logic, and visualizability, scientists and nonscientists alike fall back on pleasing explanations that affirm their ethical standards. The popularity of infant determinism, for example, is not based on logic or a rich set of facts but on its fit with contemporary ethical views.

A critique of these three themes is by necessity philosophical in nature. Sadly, philosophical arguments have lost favor during the past half century as technically complex and counterintuitive discoveries in the physical sciences, compounded by an explosion of information and historical and cultural upheavals, have generated doubt over the possibility of objective knowledge. As a result, many have become pragmatists. Whatever works best—which often means whatever feels best—is the usual rebuttal to philosophical critiques.

But the social and behavioral sciences have not enjoyed the dramatic theoretical and methodological advances that mark the last two decades in biology, chemistry, and astrophysics and, as a result, are not working well. One reason for their halting progress is a reluctance to question the trio of ragged ideas that is the subject of this book.

CHAPTER ONE

A Passion for Abstraction

When a person, plate, or poplar tree falls to the ground, our verbal description of the event is usually accurate, and almost all listeners know what we mean. Statements like "Mary had an argument with her mother-in-law" are less certain, because the nature and intensity of the argument are not completely clear; nonetheless, most adults will share a common conception of what happened. But understanding recedes quickly if a sentence refers to invisible qualities that are attributed to large numbers of people, animals, or objects. These are the sentences of science.

What distinguishes scientific language from most conversation is the use of words to describe hypothetical events not perceived directly but intended to explain those that are. Trouble arises, however, when psychologists, sociologists, economists, and others in the social and behavioral sciences use abstract words for hidden psychological processes. Often, these words fail to specify critical information such as the type of agent, the situation in which the agent is acting, and the source of evidence for the ascription. All three are critical to understanding. Whether the phenomenon is learning, communication, depression, externalization, extroversion, cooperation, avoidance, fear, regulation, or memory, scholars who study animal and human behavior prefer to use