

Why Think?

EVOLUTION AND THE RATIONAL MIND



Ronald de Sousa

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Why Think? ■ *Evolution and the Rational Mind*

RONALD DE SOUSA

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Preface ❖❖

It's fashionable to claim that we should trust our gut, rely on our intuitions, and stop thinking too much. The book now in your hands takes the question seriously: How is explicit human thinking different from the goal-directed "intelligence" of animals? How does our own ability to come to quick, intuitive decisions—often mediated by unreflective emotional responses—relate to reflective thought? The quick responses of intuition often conflict with reflective thought. Yet both have been honed and refined by millions of years of natural selection. So it's important to understand how they both work, and what are their respective strengths.

Evolution itself has displayed a capacity to mimic intelligent planning so uncanny that many people simply refuse to believe it ever happened. That makes it worth asking what natural selection and intelligent thought have in common. Why did the inventive genius of the Wright brothers not enable them to design a 747 straight off the bat? If we ignore the time scale, the path from the Kitty Hawk "Flyer" to the supersonic airliner looks much like the transition from the early *Eohippus* to the modern horse, *Equus Caballus*: gradual, fumbling, step-by-step change, groping forward by trial and error. How then are "rational" solutions different from those arrived at by the mindless processes of natural selection?

This book approaches this question by looking at our nature as rational beings in the light of biology. We don't usually accuse other animals of being irrational, even when their instinctual responses

prove fatal: to do so would add insult to injury. When an animal's responses didn't work out, we allow that similar responses must have been good enough in the long run to keep the species alive up till now. But it was all done without discussing alternatives, debating improvements, or mutual criticism. Only humans do all that. We do it mostly by *talking about it*. But our "natural" answers to hypothetical problems, especially those involving evaluation of risk, are notoriously erratic. Human reasoning itself evolved, and took a leap with the invention of language. And language depends (ideally) on informational rather than only on straightforwardly causal processes. Mistakes in reasoning, success or failure, are no longer measured exclusively in terms of biological fitness, in which the only "value" is the reproduction of genes. Why should I care that my genes get replicated? They are not me. I may have other plans.

When canons of rationality can be articulated and debated, disagreement generates a proliferation of individual human values. The crucial transition to deliberation mediated by language is therefore what makes possible, at one stroke, human rationality, irrationality, and the wondrous, chaotic multiplicity of conflicting human values. But where do we get those values? At the deepest level, they have their roots in the very emotions that emerge out of the interplay between our most basic responses in childhood and the elaboration of reasoned ideas, which is what education is all about. Fully to understand this is the goal of psychology and social science. Both must be grounded in an understanding of our biological natures. The perspective offered here is therefore a wholly naturalistic one. But if the picture presented in this book has any force, an understanding of the highs and lows of our capacity for rational thought and action can ground a virtually unlimited range of possibilities for human flourishing.

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Chapter 1 ❖ Introduction

Aristotle called human beings “rational animals.” It is all too regrettably obvious, however, that we are frequently irrational. Yet it would be hasty to reject Aristotle’s characterization outright. Much of this book is concerned with sorting out how to make sense of both our rationality and our irrationality. It is also about what’s good about being rational, and why it’s worth the trouble.

To make a start on the latter question, consider Jack and Jill. When Jill tackles a project, she is methodical and scrupulously careful. She tailors her means to her ends. She looks only to the best evidence and the soundest reasons. She is, then, you will agree, as rational as one could be. Yet she fails. Jack, on the contrary, is devoted to Non-Linear Thinking, which he interprets as requiring regular consultation of astrological charts, the hexagrams of the *Yi Jing*, and other magical omens. Rationality, he declares, is overrated. Irritatingly, he succeeds in what he attempts and loudly trumpets his success.

Such things do happen. When they do, isn’t it enough to throw you right off the claims of rationality? What is it, actually, that is so good about rational thinking?

This may seem an idle question. Surely the advantages of thinking are obvious. And yet no product of human ingenuity can hold a candle to the subtle and economical complexity of a single living cell, let alone to the unfathomable organization of what is often termed the most complicated object in the universe, the human

brain. Thought nowhere figures in the mechanisms of evolution that have shaped life itself. Nor does it play any part in the procedures used by most organisms to keep themselves alive. Such marvels are not the fruit of any computation or planning: they are merely the upshot of four billion years of natural selection, constrained by the laws of physics, chemistry, and probability. The precise details of the diversity of mechanisms involved in natural selection are still a matter of dispute, but in the main they are adequately summed up in the phrase made famous by the biologist Jacques Monod (1972): *chance* and *necessity*. Nature abounds in astonishing inventions such as the human eye, or the intricacies of the mechanisms that turn food into over three hundred different kinds of cells that make up our bodies. The proponents of the theory of Intelligent Design love to cite these, but they keep having to pick new candidates as science cracks one mystery after another. When a favorite example of the inexplicable is explained, it must be replaced with a new mystery. If the “irreducible complexity” of anything still unexplained had been consistently used to posit the intervention of an Intelligent Designer, evolutionary science would have been abandoned as a waste of time before it started. The wonder of nature’s ingenuity rests precisely on the assumption that her most ingenious devices are all natural products of evolution, owing nothing to intelligence. What, then, is the point of thinking?

In approaching such questions, we should first remind ourselves that rationality does not guarantee success. Its advantage consists merely in increasing the *chances* of success. This brings rationality right into line with evolution, of which the very stuff, we might say without much exaggeration, is *probability*. Natural selection has perceptible effects only in the context of large numbers. At the level of statistical phenomena, probability governs the precise interactions of chance and necessity. As for individuals, no matter

how well equipped they might be to seize opportunities and face the dangers that threaten them in every natural environment, survival is never guaranteed. What biologists call an organism's *fitness*, its *probable* survival and fertility, guarantees neither its survival nor its fertility. No more, for that matter, than success is assured even in the most minutely planned of intentional undertakings. In both cases, the most we can claim is that the best-adapted organism no less than the most elaborately worked-out plan will be the one most *likely* to succeed. This fact will translate into meaningful observable effects only in the long run, at the statistical level.

In this essential respect, then, the upshot of rational planning elaborated in intelligent thinking is the same as the upshot of natural selection: in the long run, individuals increase the chances of success in their respective undertakings. Furthermore, there is every reason to think that the methods used by rational beings such as we pride ourselves on being have themselves been shaped over millions of years by natural selection. This process took place over an enormous variety of circumstances—when our ancestors lived in the ocean and when they lived on land, when they had to succeed in catching prey and when they had to avoid their own predators. Should we then assume that our strategies of inference and discovery are invariably the best they could be? If not, can we fall back on the thought that they are generally adequate, if not actually optimal? Or should we, on the contrary, resign ourselves to the possibility that the most seemingly “natural” epistemic processes are often ill adapted to the circumstances of present day life? If the more pessimistic hypothesis is right, can we at least still count on our capacity for self-improvement? Given the way we came by our faculty of thought, what reasonable expectations are we entitled to?

The questions I have raised so far are of two kinds. A first batch takes the powers of rational thought for granted. Rational thought

is set up as a benchmark, by reference to which we might assess the mechanisms of natural selection. The second batch, by contrast, takes natural selection as its point of departure, in order to question the viability and reliability of our modes of discovery, our rules of inference, and our standards of proof—in short, of all the epistemic strategies that natural selection has empowered us to devise and endorse. Thus the evolutionary point of view suggests two perspectives: one looks at the logic of natural selection that gave us adaptive functions, while the other scrutinizes the origins and the constraints on the rationality of thought and action that supposedly characterizes intelligent human beings. These two perspectives form the framework of what follows.

At the heart of both is the idea of rationality. Let me then begin by attempting to cast a little light on the significance of that notion. Rationality is generally thought to be a good thing, although the occasional dissenting voice is heard to deplore it as rigid, narrow, linear, or even—most horribly—“phallogocentric.” What does *rationality* actually mean?



1.1 Two Senses of “Rationality”

At first sight it seems obvious that the ascription of rationality is confined, like its opposite *irrationality*, to thought and action and to organisms capable of both. Talk of rationality is not appropriate in connection with events governed purely by the laws of physics, even if such events involve a rational being. Suppose a man accidentally stumbles and falls into a clump of nettles. We wouldn’t label him “irrational,” for the incident was not a chosen act. It was a mere event, implicating the person not as an agent but merely as a physical object, subject to the laws of gravitation and inertia. We speak of a falling object as “obeying” the law of gravitation, to

be sure, but *disobeying* the law of gravitation isn't really an option. That sort of obedience is neither rational nor irrational.

What this example brings out is that the word *rational* has two senses, marked by two different contraries. In the *categorical* sense, the contrary of *rational* is *arational*, a term that applies to behavior that is due neither to choice nor to thought. The notion of choice, in this context, implies nothing in particular about deliberation or free will, but merely refers to events that are caused in a certain way. For an occurrence to be a matter of choice in the sense intended, its causes must include *reasons*. Reasons, at a first rough level of approximation, provide explanations by appealing to certain goals, norms, or values.

The second, *normative* sense of the word *rational* contrasts with *irrational*. It implies that a belief or behavior was appropriately grounded in specific reasons, norms, or values. In this second sense, an agent who is not rational is in some sense defective in respect of thought or action. Irrationality is a normative notion: its ascription commonly involves a certain sort of reproach, complaint, or criticism. What sort of criticism is a question that will require close scrutiny. For one can criticize a landscape for being dull, or a fruit for being unripe, but complaints of that sort ascribe nothing like irrationality to landscapes or to fruit.

On pain of paradox, the word *rational* cannot be taken in its normative sense in Aristotle's characterization of humans as rational animals. The formula makes perfect sense, however, if it is interpreted in the categorical sense. Which is to say that if human beings can indeed be described as rational animals, it is precisely in virtue of the fact that humans, of all the animals, are the only ones capable of *irrational* thoughts and actions.

The distinction just drawn gives rise to a difficulty, however. If categorical rationality cannot appropriately be ascribed to events that are sufficiently explained in terms of natural laws, does this mean

that human behavior escapes the determination of natural laws altogether? One might take this in either of two senses. On a more modest interpretation, it would mean that the laws of physics, chemistry, or any other science—including the laws of probability—that explain the behavior of inanimate objects are insufficient to explain that of rational beings. Rational behavior would then belong in a zone left fallow by the laws of nature and mathematics. Someone might offer the behavior of a chess player as an instance of something that can be explained only in terms of the rules of the game, and rules are not laws of nature. A stronger version would insist that the behavior of rational beings actually transgresses some natural laws. But that thesis would be absurd because to claim that a “transgression” of laws of nature has occurred is to posit a miracle. Or, more reasonably, it amounts to an admission that we hadn’t got the alleged laws quite right in the first place.

Some philosophers, such as Kant and Bergson, have clung to the thought that free will transcends the natural world without actually violating the laws of nature. But this attempted solution is bred in bad faith. For talk of transcendence is generally a way of trying to paper over a contradiction with a spot of jargon. Better to acknowledge that regardless of intelligence or rationality, human beings are indeed subject, like everything else, to the laws of nature. The human difference must be sought among natural facts, and not in some hope that natural facts might be transcended.

The evolutionary perspective maintains that life arose about four billions years ago from chemical conditions that are still not fully understood, but of which one can safely presume that they included no phenomena that could be labeled either rational or irrational. It follows that at some point—or perhaps gradually, during a long transitional phase—phenomena that could be classed as rational succeeded others that could not reasonably be so labeled. By similar reasoning, a transition of the same kind must be supposed to take

place in the course of development in every individual human organism. For each of us begins life as a single-celled organism, the zygote that results from the fusion of the parental gametes. As that cell and its descendents undergo successive divisions, according to the laws of physics and chemistry that govern those processes, they undergo a series of metamorphoses that at some point gives rise to an organism capable of reasoning, that is, a rational being in the categorical sense.

If we start from the thought that rationality is typically applicable to thought and to action, we can characterize two crucial metamorphoses, both in the evolutionary process and in the course of individual development. One took us from the mere detection of stimuli to the capacity to represent objects; the other took us from tropisms, or automatic behavioral responses, to the capacity to form and act on desires and intentions.

From Detection to Representation

Each living cell, and therefore every multicellular organism, is endowed with some capacity to detect what might be useful or harmful to it. One could call this “sensibility,” but the notion I have in mind is meant precisely to contrast with the ideas of consciousness and knowledge evoked by this word. It is better to speak simply of a “detecting function” in order to underline the purely functional character of the faculty in question. The existence of a transition between the detecting function and its rational successor then raises the following questions: At what stage of phylogenetic evolution, and at what stage in the development of each adult to whom rationality is unquestionably ascribed, must we speak no longer of simple detection, but of belief, knowledge, or representations? What are the supplementary capacities that are crucial to this transformation, and how do they arise?