Invitation to Eden:
The Natural Potentials and Cultural Limitations of Corporate Strategy

(A paper in 2 Parts)

William C. Frederick

"But why do your desired words fly so high
above my power to follow their intent
that I see less and less the more I try?"
"They fly so high," she said, "that you may know
what school you followed, and how far behind
the truth I speak, its feeble doctrines go."
Dante Alighieri

Introduction

The principal intended audience for this paper is that executive group responsible for crafting a corporation's strategy and making it work over an extended period of time. My goal is to clarify the possibilities and cultural limitations they face, so that their task can go forward with more assurance of achieving a desired outcome. Why then, you may wonder, does the paper appear in this academic venue that is only rarely read by practicing business executives? It is because my other audience is composed mainly of academic theorists who as experts on the subject of corporate strategy may occasionally influence the thinking of a company's strategists. So, the paper appeals both to the practical and the conceptual dimensions of a central business function, hoping to convince both groups that something of value may be discovered here.

The tale will be shaped as a Biblical allegory. Eden here is the natural state of the earth containing all forms of life, including humans. Present within Eden are two natural forces with enormous potentials for human life and growth: a Tree of Life, and a Tree of the Knowledge of Good and Evil. Fruit from the Tree of Life extends human life indefinitely. Fruit from the other tree enables normative judgments to be made. Well, as you know (if you have read the original Eden story), either God or God's chroniclers let things get out of hand rather rapidly, for in no time at all, women were put down, men were given life sentences of hard work, and the world's first two newborn brothers wound up fighting until one murdered the other. As time went on, different groups split up and battled one another, corrupting the entire world scene. (Sound familiar?) This was just too much for God who then drowned almost everyone on earth so there could be a new beginning. One might well believe this episode was the world's first recorded strategic miscalculation. This paper welcomes you to today's Eden. It's all still there, as in the original.

Abstract: Eden I and Eden II

"Eden I" describes the principal components of Eden's Tree of Life—but in the modern language of science. The story will be woven from a network of natural sciences: evolutionary biology, neuroscience, evolutionary psychology, behavioral economics, ecology, and certain aspects of physical science. Emerging from these ideas will be two indispensable perspectives for understanding and successfully implementing corporate strategy: a nature-derived grasp of Eden's dominant behavioral impulses and capabilities, along with an ecological dynamic that channels and drives corporate strategy. In simpler terms, behavior and environment plus their links to each other. In Biblical allegorical terms, the Tree of Life, and the role it plays within today's Eden.

"Eden II" tackles what might be called Eve's Dilemma—whether today's corporate strategists should be persuaded to taste the forbidden fruit of The Tree of Knowledge of Good and Evil, thereby gaining a God-like ability to know right from wrong, certainly an awesome responsibility. As most know, Eve paid quite a price for being beguiled by the Serpent to nibble the apple and feed it to Adam. In Eden II, we shall explore Eve's Dilemma in its modern guise as the central puzzle of corporate strategy.[1]

Key Terms and Concepts

For Strategic Management: Strategy, Strategic Goals, Strategic Planning, Economizing, Technological Innovation, Market/Competitive Environment, Stakeholders

For Academic Theory: DNA, Energy Dynamics, Economizing, Ecologizing, Economic Rationality, Workplace Emotions, Reciprocal Trust, Ethnocentrism, Market Model, Organic Model, Complex Adaptive System, Ecosystem Dynamics, Strategic Values

Eden I
The Naturological Architecture of Corporate Strategy

William C. Frederick

Eden's Tree of Life—I mean *all* life, not just the human branch—grew from very early beginnings, far more ancient than recorded by the Biblical Eden's scribes. They were generally on the mark by sensing the presence of an older pre-life geological era on earth with oceans and continents, followed by successive eras of vegetation, aquatic organisms, land creatures, and finally humans. We now know, though, it took far longer than a Biblical week. Vastly more ancient were the stellar and galaxial platforms—the Biblical heavens—from which the evolution of the entire universe proceeded following

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[1] All citations, references, source of quotations, etc., may be found in a separate section at the end of the paper, listed by subsection title. For ease of reading, no other notes appear throughout the paper. I am grateful for helpful comments by Paul Herr, Andre Laplume, David Maskalick and Diane Swanson.

the Big Bang around 15 billion years ago. An ancient age also for a planetary body we call Earth that formed some 4.5 billion years ago from fragments of a coalescing solar system. Then it took earthly life, as we now define it, a billion more years to emerge from biochemical processes, about 3.6 billion years ago. Well, as they say, a billion here, a billion there—before long it all adds up.

So, one might well ask, what does this have to do with corporate strategy? The answer: a very great deal. From both the inorganic and organic evolutionary streams flow two of the fundaments—the basic necessities—involved in setting and keeping a company on course to achieve its strategic goals. Of these two forces, the *organic* stream is the more familiar of the two: **DNA**, or **d**eoxyribo**n**ucleic **a**cid, otherwise known as the genetic material of living organisms. DNA is the biological half of a two-partner dance team supporting life. But keep your eye on the other half, for the *inorganic* partner may just be the more basic of the two, and it is most certainly more ancient as well as doing its thing among even non-living parts of the universe: **NET**, or **n**on-**e**quilibrium **t**hermodynamics, is all about how the energy required for life (and for non-life) is moved around. A more friendly meaning of NET is simply "energy flow," or "energy transformation," thereby skipping the technical terminology. But keep in mind that NET is the *physics* counterpart to DNA's *biological* process, and both are essential to the presence and continuation of earthly life in all of its manifestations.

Why? Because DNA (genes) and NET (energy flow) are, by their very nature, functionally inclined towards producing *survival outcomes* for their carriers, i.e., humans and all other organisms. NET does so by making it possible to acquire and maintain enough energy to sustain an organism's life up to the theoretical limits permitted by its inherited DNA potentials. A person's DNA, on the other hand, produces a hand-me-down ability to adjust more or less successfully to the world as experienced by one's parents and earlier generations, thus perpetuating an adaptability that worked so well for one's biological predecessors. But DNA in a metaphorical sense is always on the lookout for environmental changes that might alter its program of successful adaptation. It is a self-preserving kind of thing, even famously called a "selfish gene" by scientist Richard Dawkins. DNA works to sustain itself.

Well, put those two tendencies together—NET to attract and organize energy, DNA to use it for survival—and you have the elements of a self-sustaining system of life in general, nothing but the Biblical Tree of Life itself. But you also have the underlying features of a company's attempts to survive through strategic planning. *Without the deliberate, conscious activation—and more importantly, the directed channeling—of DNA (genes) and NET (energy flow), no corporate strategy can possibly be carried out successfully.* Let me explain why.

The NET (Energy Basis) of Corporate Strategy

The central, indispensable, functional constituents of any business firm, large or small, are various forms of energy that can be used to perform work. They can be **people** who use muscular and intellectual energy, **raw materials** such as coal, oil, natural gas

processed for their energy contents, **buildings and other physical structures** along with their electrical and utility connections that pipe in the external energy that drives work, **information systems** that buzz, beep, glow, and echo while carrying symbolic forms of energy (language) to all points of the firm where work is being done, **organizational systems** that link workers to each other, to supervisors, managers, executives, and external stakeholders, and all of the **technological devices**, tools, machines, computers, and networks of electronic wizards through which the accumulated piles of energy are transformed into tangible products and services that can be marketed to willing customers. **Capital** itself, the virtual essence of capitalism, is a form of energy, whether physical capital (as above), human capital (as human resources), social capital (as positive relationships internally and externally), or financial capital (as invested money). Each form of capital can cause energy to flow for the benefit of the firm, thus sustaining its life successfully—*but only as long as the capital-to-energy ratio is maintained at a favorable (positive) balance*.

That's the trick—the secret—of corporate strategy. All of the firm's ability to perform work depends on a continuous in-flow of energy from external sources. The firm is a virtual prisoner of its energy environment. Its strategy must be dominated by a successful search for and efficient use of energy, i.e., qualified, skilled, dedicated employees; materials; technology; information systems; financial capital. And not just once but continuously, since all forms of capital wear out and require renewal. Employees need to be retrained, organizational systems reformulated, information flows updated, energy extraction processes overhauled, production systems modified, monetary capital reinforced. Renewing energy in-flows from the firm's environment is the only way to survive, to grow, to prosper, to sustain the firm into the future. The firm—its fate now and forever—is unalterably linked to its environment, the source of its needed energy flows. *Achieving a positive balance of energy in-flow and out-flow is the very essence of a successful corporate strategy.*

Now, while you were not looking, I have just described NET's role in corporate strategy—and did so in non-technical familiar terms. The "non-equilibrium" in NET is the same as that "positive balance" of energy in-flows and out-flows. The "thermodynamics" of NET is the same as "energy flow" that performs work. Put them together and you have "a positive balance of energy flows." In Thermodynamics 101, you learn that the energy that goes back and forth, to and fro, across the firm's boundaries is merely changed from one form (resources) to another (goods and services) which is the whole point of successful business. That's the first law of thermodynamics. In Thermodynamics 102, you find out there is a downside: energy not only costs money but wears out, i.e., it morphs into less usable forms. This industrial rubbish is called "entropy" by physicists but known more commonly as "pollution" by the rest of us. But pollution is only another form of degraded or worn-out energy. So what to do with it? Throw it out, of course. Where? Well, out the back door or up the smokestack or into the local dump or a nearby river or a distant ocean or some foreign nation, or quite possibly to a recycling firm. Ridding a firm of entropy (worn-out energy) is an essential part of corporate strategy for a very simple reason: you can't exist otherwise. That's the only way to achieve the desired "non-equilibrium thermodynamic" balance. A firm does

so at the expense of its environment by exporting its waste products "out there." That includes *all* forms of energy—irrelevant information, non-functional organization systems, outmoded technologies, and unproductive capital. *All strategically successful business firms do so constantly—and cannot do otherwise!* That's the conclusion of Thermodynamics 102 or what is called the second law of thermodynamics. In economic slang, it's the same as "There's no free lunch."

This energy dynamic—the constant struggle to get and keep a positive energy flow going against entropy's inexorable negative tides—creates an awesome, and awesomely powerful, evolutionary selection mechanism. All business firms confront the frightening possibility of being "selected" by this thermodynamic monster, if not for lunch, then for dinner. All it takes is to slide into that fatal equilibrium state where energy out-go equals or exceeds energy in-put. Snap! go those thermodynamic jaws. You're toast. Technically, this process is called "thermodynamic selection." Positive-energy-balance firms are selected for survival; the others are selected for, well, oblivion, perhaps to become useful pieces for entrepreneurs to reassemble into new forms.

Back to Eden for a moment, it's worth noting that NET applies to all forms of organic life, not just organizations like business. As a law of nature, NET operates to eliminate any organized entity that fails the test of having a positive energy balance. Even more fascinating, the law seems to hold true even for some inorganic processes such as hurricanes, tornados, volcanic eruptions, earthquakes, and unsettled weather systems in general. All such powerful and terrifying natural events represent the attempts of natural systems to release their pent-up energies into a broader environment; in doing so, they lose energy and change form until reaching an equilibrium of total energy release. It's entropy on a massive scale. Although manifest in Eden, NET far antedates Eden's creation as a built-in part of the Biblical heavens and earth, and whose appearance may well extend well beyond even the first stars and galaxies. But that's another story.

The DNA (Genetics) of Corporate Strategy

The DNA story takes longer to tell than the NET one. That's partly because DNA is more complex, partly because more is known about it and its functions, and partly, even mainly, because it helps explain some basic aspects of human behavior. The human behavior of prime interest here is the part involved in corporate strategy. Believe me, DNA is a treasure trove of immense practical value to corporate strategists and their firms. To elucidate its significance for this business function, the following discussion singles out the various threads of understanding found in the research of biological scientists regarding certain hard-wired, i.e., genetically expressed, behavioral impulses, attitudes, and potentialities. Taken together, they give a powerful insight into the possibilities inherent in the collective DNAs found within the business world—and not just in the proclivities of the business practitioner class but also in all others whose lives are affected by business operations. So, let's begin.

DNA: Some Basic Facts

For understanding DNA's role in corporate strategy, one doesn't need to rehearse all of the scientific technicalities about chromosomes, base pairs, double helixes, proteins, transcriptions, and other such scientific exotica. Just know that DNA—the human genome, the total set of genes in your body's cells—makes you what you are. Literally, you *are* your DNA: your appearance, activity profile, life potentiality. You got it from your parents, half from mother, half from father. You and your mate may pass your respective halves on to your offspring, and they to theirs, and on and on. DNA, in one form or another, has been going on for some 3.5 billion years. In fact, thanks to evolution, you carry some of those earliest cellular and even pre-cellular primitive forms in your modern body today. For an individual person, though, one's inherited DNA is stable, expressive, and permanent, not changing during the course of one's life. But for groups or populations of people, their *collective* DNA is subject to change over long periods of time. That process is called natural selection, meaning simply that some DNA features continue while other DNA traits are ruled out, falling by the evolutionary wayside. DNA acts to preserve itself against all comers, whether other DNA carriers or hostile environmental conditions. In that way, DNA is conservative; it preserves within the deep cellular layers where it resides all of the characteristics that have led to its current evolutionary success.

For corporate strategy, that preservative tendency is of vital importance. It means that any built-in behavioral impulse, attitude, expression, or trait that contributes to survival and flourishing of an individual DNA carrier (any employee), or a collective group of DNA carriers (all of the firm's employees), will be a foundation on which a successful strategy might be attempted. However, there is nothing automatic or predetermined about strategic outcomes. Randomness, chance, and perhaps probability are operative. Strategy is generally a craps shoot. Then, why try to understand it? Because to know the underlying factors at work at least lets you enjoy the ride. Strategy remains very much like herding cats. But because DNA is involved, there is direction and function and meaning imparted—an evolutionary logic of sorts, leading towards survival and continuation of the DNA world—and, quite possibly, of the strategist's own organization.

Some—emphasis on *some*—of the key DNA factors that can spell success or failure of a company's strategy are described next. The premise is that these behaviors and traits are phenotypic (bodily) expressions of underlying cellular genomic activity. They may find outlet through either the actions of individuals or organizations, or both simultaneously. They also may be shaped and channeled by culture and circumstance. Research evidence to support the premise and interpretations comes from laboratory and field studies by neuroscientists, evolutionary psychologists, behavioral economists, evolutionary biologists, and geneticists.

DNA 1: Economizing and Corporate Strategy

The DNA of principal interest for corporate strategy is those hard-wired behaviors that affect the firm's economic outcomes, i.e., its costs, revenues, profits, capitalization, debt structure, and various fiduciary obligations. When managed properly, these components produce positive economic results for the firm. A convenient term for this activity is **"economizing": a deliberate effort to manage a company's total resource inputs (costs) and outputs (marketable goods and services) to achieve a positive bottom-line result.** Economizing represents a prudent, organization-centered, (usually) competitively driven behavior inherent in a market organized, capitalist economy. It is typically referred to as the profit motive, although profit is only one, often flawed, indicator that economizing has taken place. Economizing behavior, or at least the ideal ends it seeks, suffuses all companies, monopolizes the business mind, dominates corporate culture, defines the very purpose of the enterprise. So ubiquitous, so unquestioned, so foundational, so subconsciously accepted are economizing behavior, outlook, attitude, and tendency within the corporate workplace that one might infer the presence here of an inherent, built-in, hard-wired, DNA-based trait that literally defines the ultimate purpose and goal of the business firm. **Corporate strategy must serve economizing; otherwise it is foolish, meaningless, or disastrous.**

The subsequent grip of nature on both strategy and economizing exceeds even the powerful bonds forged by DNA and natural selection. Note the interlocking relationship of DNA and NET functions within the business firm—both requiring the achievement of a positive economic outcome or balance from operations. The firm can survive only if it meets these twin evolutionary demands, one a positive net energy flow, the other a behavioral/organizational economizing outcome.

DNA 2: Technology and Corporate Strategy

Now segue naturally to technology, corporate strategy's innovative core of creativity, which is absolutely essential to the firm's ongoing existence and success. Among the most active neural/emotional outputs of the human brain—far outstripping other mammalian brains—are curiosity, exploration, and, particularly, innovation, finding new ways to do things. Such traits and qualities have long been essential to evolutionary success in confronting life's many environmental challenges, threats, and opportunities. So, too, has it been necessary to focus and channel this curiosity/exploratory/innovative neural drive which when left alone is capable of generating floods of fantasy, mysticism, mythopoeia, and other nonsensical phenomena having little to contribute to evolutionary adaptation. Enter the human cortex, especially those frontal lobes that house an ability to receive, organize, direct, and execute responses received from a vast neural network of sensory, motor, and emotional signals.

And what does this have to do with technology? The answer: *It is technology* in the most basic sense. *All* organic beings—not just the human variety—come with a built-in technology of adaptation and survival. Call it genetic technology, if you will. Recall the unavoidable requirements placed on all organisms by NET or non-equilibrium

thermodynamics to attain a positive balance of energy input and energy output if life is to continue. The means of doing so are a form of DNA, an inherited genetic system enabling an organism to acquire, process, organize, direct, and execute behavioral patterns that sustain its life. Technology—an adaptive survival technology—is thus embodied within all organic creatures, lying deep within their respective genomes. This entanglement of NET and DNA is equivalent to acknowledging that an adaptive intelligence is stored in chemical/genomic form in the human brain. While most animals have centralized brains housing DNA-based technology, others manage with a more network-like, distributed nervous system of decentralized neural clusters that perform the same functions. Biologist/entomologist Deby Cassill points out that most insects have four brains: one in their head to run the mouth and sensory organs, one in the thorax to run the legs, one in the abdomen to run the gut and another brain in the abdomen to run the sex organs. Sponges lack a nervous system but do just as well with a chemical sensory system. The lesson is simple and profound: It's all in the DNA—survival via genetic technology.

Ah, but what about human technology? Isn't it primarily external and non-bodily in form? All of those tools, machines, structures, systems, buildings, electronic devices, transport vehicles, power systems, manufacturing plants, supply chains, production lines—many operating automatically without any human involvement at all—surely they are not "embodied" nor do they appear to bear a recognizable DNA stamp. Are not these technological marvels, possessed by no other living creature, a step beyond embodied DNA, in fact a phenomenon standing wholly apart as an extra-organic, extra-bodily manifestation of learned, not organically inherited, human culture? No, not really. The reason is that what we call human culture is only an extension, an elaboration, an extra-bodily projection of neural activity that is itself genetically based. A giant neurocognitive stride beyond the primitive physical tools of our primate cousins, human technology in all of its physical and symbolic grandeur only appears to be different in kind and origin. In its entirety, it only manifests what is true of and found in all organic technology—a DNA-driven impulse towards evolutionary adaptation of its *Homo sapiens'* carriers. Cultural forms of technology perform precisely the same adaptive functions as genetic technology, and for good reason: both are expressions of an in-built DNA/NET-based impulse to adapt, survive, and flourish. The only barrier to understanding this functional sameness is a lingering tendency to believe that humans stand apart in some transcendent way from all other of Eden's creatures, relying upon nurture rather than nature.

Thanks to such scholars as Steven Pinker, Matt Ridley, and Andy Clark, the nature-nurture debate resolves itself by dropping the standard anthropocentric insistence on a barrier between the two that requires cultural learning to give a leg up to innate human traits. Pinker's *The Blank Slate: The Modern Denial of Human Nature* essentially destroys the idea that the human mind is largely dependent upon having its "blank slate" filled in by learning how to be human. Matt Ridley's *Nature via Nurture: Genes, Experience, and What Makes Us Human* reveals the diffuse, membranous linkage of inborn nature and cultural learning, while Andy Clark's *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* hails the fusion of human minds and technologies that foretells an even closer future functional link of brain and technology.

Corporate strategists need to know that technology is their firm's central means of economizing, innovating, calculating, communicating, predicting, planning, and functional organizing. Knowing further that technology's creative power—its literal roots—extend from deep within the triune brain's ancient impulsive layers outward, there to be organized and directed purposefully by more recently evolved neocortical lobes is the apex of strategic wisdom.

DNA 3: Organization and Corporate Strategy

In conventional strategy theory, there is a rather easy, although somewhat incomplete, link made between DNA 2: Technology and DNA 3: Organization. As one leading strategy textbook puts it, a corporation's organizational structure performs a core technical function—reconciling all of the highly specialized tasks typical of a modern corporation by coordinating them with each other and focusing them cooperatively on the firm's strategic goals. Rules, routines, shared workplace values, financial and other incentives, supervisory controls—all of these are said to be the raw materials that go into building a corporation's organization.. Holding it all together is **hierarchy**, which traditionally invokes the idea of top-to-bottom, command-and-control managerial authority where coordination and cooperation mean "follow the boss's orders or else." As one leading strategy theorist says, "The critical issue is not whether or not to organize by hierarchy—there is little alternative . . . [H]ierarchy is present in virtually all complex systems . . . ." The underlying aim is to pull together all of the disparate but related specialized components into a coherent system capable of achieving the firm's overriding purpose and strategic goals.

Take special notice, though, of how "hierarchy" is conceived as a purely instrumental, operational, even technological way of accomplishing strategy's purpose—through coordination, cooperation, common rules, established routines, shared values, workplace incentives, top-down control and guidance. Neat. Cool. How it's done. As the experts say, no other way is possible.

But wait a minute. Something is missing. Hierarchy has another meaning beyond the orthodox technical/instrumental one adored by strategy theorists. What they have largely missed or downplayed is **organizational power**. Oh, they haven't overlooked it entirely but have dressed it in language less provocative, less menacing, less threatening than the term "power" usually invokes in those who have been subject to its worst excesses. Generally speaking, "authority" and "control" are felt to be a more acceptable manner of referring to power exerted by those who hold favored executive and managerial positions with corporate hierarchies. The index of a leading textbook on corporate strategy has only a single listing for power, with no reference as to its general applicability to corporate organizations. A conceptual ophthalmologist, if you will pardon the term, would diagnose this lack of visual clarity as **power myopia**—a nearsightedness that blurs and screens out the role of organizational power within business corporations (and many other kinds of organizations).

Two reasons likely account for this conceptual blight. One is the overweening **rationalistic mind** of corporate strategists and their academic counterparts who, for good reason, seek operational, pragmatic means of plotting and carrying out a firm's strategy. After all, as noted earlier, survival is at stake. The NET monster lurks everywhere, ready to snatch up any firm that fails to achieve the positive-energy balance needed to offset entropy. Hence, the conventional focus on techno-pragmatic organizational methods and designs, as described above. A second reason is a bit more subtle and, in all likelihood, is subconsciously held or is an unrecognized attitude found generally among those scholars who teach, research, and write about corporate strategy. I am speaking here of **an uncritical acceptance of the broad institutional character of market capitalism**, including the conventional top-to-bottom allocation of power and authority, along with control of policy formulation and decision making by a corporation's top-level executives and the scalar ranks of loyal subordinates who carry forward the directives issuing from above. Generally speaking, the presence of this hierarchical power arrangement is unquestioned. Its very existence is the intellectual lens that blurs the vision of strategy practitioners and scholars alike to the coercive, and at times the corruptive, power that lies at the very core of corporate organization. One is tempted to label this disorder as **corporate strategy's avoidance theory of organizational design.**

But, one might protest, I thought we were talking about DNA-derived behavioral traits that are important markers of corporate strategy. And indeed we are, so let me show how.

Hierarchical organizational power is virtually ubiquitous in human and much animal life. Reams and volumes of social science research in anthropology, sociology, psychology, history, political science, and (even) economics record the presence of, and some of the problems connected with, power wielded by hierarchical authority. From shamans to priests, village elders to tribal chieftains, from Genghis Khan to Ottoman Emperors, Pharaohs to Caesars, feudal princes to monarchs, popes to imams, autocratic dictatorships to property-based republican governments, central planning to government regulation, and on and on—all of these and countless other examples testify to the universality of organizing and controlling the behavior of people by means of coercive power, whether imposed by force or accepted (willingly or grudgingly) through more subtle sociocultural conditioning.

The same picture emerges from research in the natural sciences. Today's human brain owes much to our primate lineage and our ancient Paleolithic human ancestors. In both cases, dominance and power played key roles in directing the behavior of organized groups, whether hunting, seeking sexual mates, fending off predators, or engaging in primitive trade. Evolutionary psychologists have famously argued that the modern *Homo sapiens* brain houses neural algorithms or modules evolved from the adaptive experiences of Paleolithic hunter-gatherer groups, passing along to us the neurological pathways that proved adaptively useful for their survival. Primatologists have revealed the dominance hierarchy so typical of hominoid apes which is popularly known as the alpha male complex, shared with many other mammals as well as business executives.

Corporations are perfect exemplars of dominance hierarchies, whose pyramidal shape allocates power from the top-most levels—CEO, president, board chairman—on down to those holding intermediate power—vice presidents, divisional heads, legal counsel—and thus on down the pyramidal steps until one reaches those at the bottom of the heap: loyal employees performing their assigned functions of production, accounting, distribution, marketing, information transfer, public relations, and various administrative tasks. Aligned very much like, and socio-historically derivative of, military organizations, the lower-ranked corporate soldiery are expected to obey the orders of their executive generalissimos. And although an evolutionary extension of the well-known primate and Paleolithic alpha male dominance pattern, the same top-to-bottom command-and-control process occurs regardless of those few occasions in which a female executive is found atop the corporate pyramid. Long has it been so, as demonstrated clearly by *National Geographic*'s recent report about Queen Hatshepsut, Ancient Egypt's Pharaoh who ruled 3,500 years ago. Revealingly entitled "The She-King of Egypt," the story marvels not so much that a female could become a pharaoh as that she acted precisely as all male pharaohs had done before her. Hierarchical power, then and now, is literally the order of the day. This mode of organizing—along with all of the negative and maladaptive behavior it spawns—is built into our genes, a product of mammalian, primate, and human evolution.

The manic pursuit of power over others by organizational means can, and does, strew havoc in human organizations, including modern corporations. It can diminish a firm's economizing activities and potentialities. It wastes and diverts technology's generative productivity. It arouses and magnifies negative workplace emotions. It violates marketplace trust. It sabotages ecosystem cooperative symbiosis. Some of these problems and issues are discussed later on in Eden I and Eden II.

So, what are the lessons here for corporate strategy, both operationally and theoretically?

- Organization involves more than the technical, rational coordination of a firm's specialized functions. **Hierarchy is not merely a *technological* way of organizing the workplace.**
- Organizational power, in the form of **a dominance hierarchy** that allocates policy making, decision power, organizational authority, and operational control in scalar top-to-bottom fashion, **is typical of corporate organization**.
- The near universality of these two kinds of hierarchy—technically coordinative and dominance power—plus socio-evolutionary research in support of each organizational type—are strongly suggestive of **a genetic (DNA) origin for corporate organization.**
- Therefore, corporate strategy, both in action and in theory, must be formulated, and its successes and failures must be a consequence of, organizational systems derived from and consistent with **natural, adaptive evolutionary processes**.

DNA 4: Emotions and Corporate Strategy

Strategy jocks like to think of themselves as ultimate forms of rational, calculative, reasoned behavior, driving their firms unerringly toward clearly defined goals with precision and certainty. Industry environments are surveyed, competitors present and potential are sized up, suppliers boxed in or bought off if possible, buyer susceptibility to rival products predicted, and consumer price sensitivity calculated—all of this the famous Porter Five Forces Model of corporate strategy. Nothing very subtle about it, just what might be called The Strategy Way. Figure it out, design a system, put it in motion, watch it work, tinker with it, and then sit back and bask in the glow of bigger revenues, lower costs, and enhanced profits. In getting there (or trying), strategists employ a dazzling array of alphabet-soup tools: SWOT, PIMS, CMM, CAPM, ROA, ROCE, ROIC, FFM, etc., all of them thought to be the very soul of strategic rationality.

So, why talk about emotions? Can't they just mess things up? Strategy is about reasoning, not emoting . . . isn't it? Well, yes and no, but mainly no. In fact, it is possible to say that **strategy is as much about emotions as about reason and rationality**. So, let's look at the evidence, once again drawing on that remarkable, ever-surprising *Homo sapiens* genome, this time with a focus on the primate brain.

Affective neuroscientists, the ones who search for emotional impulses in the brain, have tracked down the major neural circuitry responsible for what might be called emotional signaling. Intriguingly, these signals (or cues, as one evolutionary scientist calls them) emerge from the deeper layers and the ancestrally most ancient human brain tissues. A three-layered affair, the human "triune brain," as one scientist labeled it, reflects successive phases in the evolutionary adventures of *Homo sapiens* (as well as other animal species) over many millions of years. The innermost, oldest, and most deeply embedded part is the Reptilian Brain, which houses the most basic instinctual actions necessary for survival, such as search-and-find food impulses, aggressive dominance, and sexuality. Eons-long interactions with a challenging environment eventually produced a middle layer, the Old Mammalian Brain, which mediates important social emotions, such as social bonding, social distress, and nurturance. A greatly expanded top layer—the icing on the cake, so to speak—is the Neomammalian Brain, the neural home of reasoning, logical thought, and more complex cognitive functions, sometimes also known as the seat of executive decision processing (and therefore the darling of standard strategy theorists).

Embedded thoroughly within that neural layer cake are the dominant emotions that enabled humans to react successfully to a constantly evolving environment filled with challenges, threats, and opportunities. They include fear, panic, rage, and seeking/exploring, each one spawning behaviors and attitudes supportive of survival and continuity. Beyond these primitive, basal emotional impulses, one finds more complex socioemotional networks that spawn patterns of nurturance, social play, sexuality, and what we now call consensual social contracts. Traceable neural circuitry exists for transporting these emotional signals and cues from the older, emotion-generating

Reptilian and Old Mammalian brain sites to the more cognitively expressive, executive Neomammalian Brain.

This means only one thing—listen up, strategists! **The emotions you would prefer to banish from so-called rational decision making are an indispensible part of all human actions, whether in business or elsewhere.** The most recently evolved part of the mammalian brain—the neocortex—can modulate and moderate emotional signals sent from the older paleobrain layers, but deal with them it must. At best—and preferably—emotions might be channeled purposefully, but they cannot be banished, although sociopaths, some in high places, may try. Jaak Panksepp, a foremost neuroscientist specializing in emotion research, has an important message for strategists caught up in rationalist thinking: "There are reasons to believe that cold reason, unfettered by the impulses of social emotions, can yield personalities that are egoistic, selfish, and willing to hurt others for their own gratification. . . . The existence of the social emotions within the human brain provides no shield against the existence and future evolution of cutthroat, self-serving individuals who have no desire to advance cooperative altruistic behavioral tendencies in human societies. . . . [and] such individuals may be especially highly motivated to aspire to positions of political and economic power. . . . The brain of 'the lizard' still broadcasts its selfish messages widely throughout our brains." Strategists, beware the Reptilian Brain.

Can all of these raw, primitive emotional remnants of human evolution be molded into something useful for corporate strategy—as useful as they were for getting us to where we are today? Can our emotion-driven brains serve the fruitful economizing needs of business firms, thereby helping them and their stakeholders attain their goals and purposes? An impressive array of scholars and corporate advisors say "Yes, unequivocally!"

- Corporate advisor Paul Herr in *Primal Management* points out that emotions are "logical survival mechanisms" inherited from our evolutionary past. He calls them "social appetites" and identifies five major ones—cooperation, competency, skill-deployment, innovation, self-protection—that underlie the major motivations found in organizational life. The implication is clear: employees have an instinctive taste and a DNA-derived thirst for emotion-based behavior, which if knowledgably guided by organizational managers can move a company towards its strategically chosen goals.
- In *Driven: How Human Nature Shapes Our Choices*, two Harvard Business School professors, Paul Lawrence, a well-known pioneer in the field of corporate strategy, and Nitin Nohria, an organizational behavior expert, argue that human choices are the outcome of four basic, inborn natural drives: to acquire, to bond, to learn, and to defend. Closely akin to Herr's emotional social appetites, these four "skill sets" push a firm to profitable performance, to reach out and bond with stakeholders, to innovate through technology, and to protect what has been achieved. If that sounds like attaining a company's strategic goals, that's the authors' point.
- The same case is made by London Business School professor of organizational behavior Nigel Nicholson in *Executive Instinct: Managing the Human Animal in*

the Information Age and in two articles in *Harvard Business Review*. Nicholson points out the futility of ignoring what long-term evolution has laid at management's doorstep in the form of inherited behavioral traits, impulses, and attitudes. His advice to corporate management: build on these neurological potentials if you wish your company to succeed.

- And if you want to be amused while absorbing the same lessons, try Richard Connick's *The Ape in the Corner Office* where phenomena like Herr's social appetites, Lawrence-Nohria's drives, and Nicholson's instincts are revealed to be very much at home in the executive suites—all of them behavioral extensions of an evolutionary primate heritage.

Back now to the triune brain, whose more ancient Reptilian and Old Mammalian emotional impulses surge upward to be mediated by the higher-level neocortex where reside the cognitively complex areas of command and execution. What role, then, for cortical reason in directing business firms toward their strategic goals? Emotion scientist Jaak Panksepp puts it this way (emphasis added): "[T]he neocortex provides an ever-increasing flexibility for the simpleminded dictates of the more primitive emotion and motivational systems [and opens them] to more subtle forms of environmental modulation. . . . [S]uch activities required the emergence of a general-purpose, neuromental apparatus for thought, deliberation, decision, and action that now constitutes the cortical menagerie *that can yield human rationality*. . . . [T]he cortex assumed a critical role in evaluating and generating new behavioral plans to help sustain emotional and motivational stability . . . ." That's a scientist's way of saying that **emotions and reason play complementary, not contradictory, roles in human affairs generally and, translated into business-speak, in the successful pursuit of strategic corporate goals**.

DNA 5: Reciprocity and Corporate Strategy

Markets operate on a *quid pro quo* (a Latin phrase: "something for something") basis. But this reciprocating principle that guides modern market exchanges is far more ancient than Rome and is found in many other kinds of interchanges (gift giving, kinship obligations, game playing), and can even be observed among some of our primate cousins. Reciprocity—give-and-take, tit-for-tat, a see-saw balance, commutative exchange—is in fact a deeply rooted feature of human society. It far outstrips, though supports, mere economic market transactions. It is in actual fact another of those behavioral derivatives of the human genome (DNA). And its presence in the marketplace bears directly on the firm's ability to design and implement an effective strategy. Here's how.

Social reciprocity is an evolutionary outgrowth of the social cooperation needed to get work done—"You do your part, and I'll do mine." We are hard-wired for this impulse and have been since ancestral times, say, 2 to 3 million years ago. It's another example of a behavioral trait embedded in the human genome. This leads to an intriguing kind of exchange calculus that promotes a positive social and economic result that is not

normally imagined to be present in market exchanges: a kind of prudential altruism benefiting both exchange partners. It works this way: "I'll give you this benefit (fish I caught this morning) if you'll give me bananas from your tree (your cost for the fish). That way both of us get something valuable." "Well, OK, but my bananas aren't ripe yet, so you'll have to wait another month. Is that OK?" "I guess so because the fish will spoil if you don't take them now." "But you're giving me a benefit without getting anything in return." "That's OK, I trust you to give me the bananas next month." "OK, it's a deal." This kind of reciprocal altruism—each exchange partner giving and getting a benefit—underlies all market exchanges, making trade possible on a global scale. It's a kind of social contract among exchange partners, and takes the form of legally-enforceable economic contracts in modern business.

One version of reciprocal altruism is called "strong reciprocity," which describes what happens when an exchange partner (the banana grower above) fails to deliver as promised. The tit-for-tat attitude is so strongly felt among humans that contract cheaters are in for punishment in a big way. To receive a benefit without paying the reciprocal cost is cheating. To incur a cost without getting anything in return is to be cheated. Extensive research by evolutionary psychologists and behavioral economists has found a strongly expressed punitive attitude toward cheaters persistently expressed among people everywhere. It is so vigorously held that cheated exchange partners will punish the cheater—"get even"—even if it costs them more than they gain from the exchange. The lesson is clear: *Trust is a built-in DNA trait of all social and economic exchanges, including modern markets*.

For corporate strategists, there are two implications, one internal, the other external. **A reciprocal calculus is hard-wired into a firm's entire workforce, running from top to bottom**. And why not? They're all members of *Homo sapiens*, the end product of millions of years of evolutionary trial and error, whose collective DNA has wired them to confront and cope cooperatively with life's challenges. The workforce has contracted with the firm—they provide services in exchange for benefits. Whatever the bargain they have accepted, they expect to be treated reciprocally by the firm. So too does the firm expect the bargain to be upheld. Not doing so triggers that punishment impulse on both sides. Forget about attaining strategic goals if management cannot be trusted by its workforce, if the basic management-labor agreement is trashed, if either side believes it has been cheated by paying costs without receiving expected and promised benefits. Strong reciprocity will kick in automatically, possibly even to the point of leading each side to punish the other, even if it leads to strike, shutdown, lockout, or worse—and hang the foregone benefits.

The same can be said for the firm's relations with external stakeholders. Like it or not, business is located within—actually surrounded by or embedded in—a social network of communities, institutions, organizations, religions, nations—in other words, people and their values. These social entities have various expectations of business. Unlike the legal and financial contracts struck between the firm and its suppliers, workforce, creditors, shareholders, and customers, the company's relationships with its surrounding societal networks takes the form of informal "social contracts"—to be

responsible, responsive, aware of corporate impacts on the network's members, as well as expecting a reciprocal recognition of the firm's contributions and financial limitations. There is a double jeopardy for business in this situation: not realizing the force that *social*, as opposed to economic, contracts have in the public's mind; and overlooking the *natural* DNA-derived power of reciprocal altruism to punish actions deemed to deliver less-than-expected social benefits to the firm's stakeholders. **Corporate strategy requires a maneuverability that embraces reciprocal trust—economic and social—between the firm and its publics.** The firm's strategists ignore the societal and naturological components of reciprocal altruism at the firm's peril. Never mind that some of these social "contracts" were not negotiated or agreed to by the firm, or that they appear to be one-sided, or too costly, or unattainable, or unsustainable over time. They are part of the operating landscape in which business does business. Strategy must deal with them, not overlook or ignore or deny their presence—or particularly, their force. Nature is a tough bargainer. Deal with it.

Subtleties and downsides are present in market reciprocity. Values may be miscalculated. An unbalanced exchange may be coerced, and accepted, out of necessity. An expected value may turn out to be less than represented. A promised product may be ineffective or defective. The downsides include the possibility of corruption: an illegal exchange of government favors or contracts for monetary bribes, or payoffs to politicians for passage of corporate-friendly laws, or sweetheart pacts between labor unions and corporations at the public's expense, or granting rights to exploit a nation's resources for secret deposits in foreign banks, or non-competitive contracts and price-fixing arrangements. These and similar violations of market reciprocity ring alarm bells and automatically trigger the DNA-based cheater-punishment impulse. And recall, the punishment often not only does not "fit the crime" but may far exceed the bounds of reciprocity itself, as the punisher accepts self-imposed excessive costs in order to "get even." It is easy to conclude that successful strategies are a many-splintered thing.

DNA 6: Ecologizing and Corporate Strategy

Ecologizing is a form of ecosystem collective behavior that sustains the lives of those organisms whose adaptive genomes interact both competitively and cooperatively with other members of the ecosystem. It is closely akin to economizing (DNA 1 above), which is the productive acquisition, use, and management of life-support resources by individuals and firms, although ecologizing exerts its effects on a far vaster scale of ecosystem dynamics. Indeed, ecologizing behaviors embrace both living organic forms (people, animals, plants, fungi, bacteria) and non-living physical and chemical processes (topography, temperature, meteorological cycles, riverine and oceanic flows, volcanic and seismic activity, planetary and astronomical forces). A complex ecosystem is, in a sense, a platform or stage upon which organic life goes forward (or not). Individual organic lives are interwoven to create a web or network capable of sustaining a total biomass far larger and adaptively stronger than can be achieved through the isolated economizing efforts of what may appear to be independent or autonomous organic agents.

Truth to tell, and a tough lesson for business strategists to absorb, **economizing (read "profit-seeking") by an individual business firm *cannot* occur independently of ecologizing.** Here is nature's formula that explains why: each living unit within an ecosystem must economize if it is to live; the collective total of individual economizing activity comprises the bulk of ecosystem substance; economizing outside of support from other ecosystem components is necessarily and definitionally impossible; the functional interdependence of all economizing units within the ecosystem sustains the adaptability of individual units and the collective biomass. The economizing fate of any organic unit is dependent upon the collective state and well-being of all other organisms within the ecosystem. It is a *living* (DNA) and *non*-living (NET) system, capable of either sustaining or diminishing the life prospects of any single organic unit. Corporate strategists—those who want to succeed, that is—have no choice. Their task is to economize within the collective forces that generate ecologizing behavior. **Absent harmonization of these two naturological forces—economizing and ecologizing—no corporate strategy will long succeed, if at all.**

Doing so is a tricky business. A firm's biotic environment is richly populated by competitors, predators, parasites, and prey, each posing a challenge and calling for matching strategic and tactical maneuvers. In any given biome, invasive species may offer unique competitive threats—US businesses these days look askance at the rising economic power of China and India, as with earlier industrial thrusts by Japan. Planetary cycles make themselves felt—whether through industry-induced atmospheric and oceanic warming trends or more directly through pollutant-laced brown clouds covering much of the globe. The Internet, an electronic creation of the technologizing process (DNA 2), transforms and expands human communication networks worldwide, both enabling and disabling conventional business planning and strategizing. Paralleling the biotic threats are culturally-induced cycles and breakdowns, such as the 2008 collapse of global financial and banking systems, which add to an ecosystem's woes by activating emotive/cognitive impulses (DNA 4) of fear, anger, hostility, and social distress. These and other self-protective adaptive responses override favored culturally-generated conventions and myths, such as the reputed virtues of unregulated free markets, expanding globalization, corporate citizenship initiatives, broadened stakeholder dialogue, etc. Ecologizing's collective impulse narrows down towards a DNA base of individual economizing.

Amidst such ecosystem turmoil, symbionts to the rescue! These are the biological agents of cooperation and mutual support, producing a symbiotic effect for all involved parties. Just as food-seeking bees pollinate the flowers whose nectar they collect—thereby providing life support for bee and flower—so too do powerful once-competitive Wall Street financial giants (now-defunct Lehman Brothers, Bank of America, JP Morgan Chase, Citigroup, et al.) line up to sup the sweet life-sustaining monetary nectar manufactured (or rather printed) by government fiat. It is all quite natural and to be expected, and for good reason: **economizing and ecologizing are intertwined aspects of DNA-based adaptive survival behavior**. You can't have one without the other. Symbiosis—or just call it mutual benefit—can knit the two together. As the 2008

financial panic demonstrates, if a choice must be made between prevailing cultural myths—e.g., free ungoverned markets—and a firm's survival, the DNA mutualistic impulse wins out every time. Well . . . most of the time. Fratricide (Lehman Brothers), cannibalism (Morgan Stanley-Bear Stearns; Bank of America-Merrill Lynch; Wells Fargo-Wachovia), and self-induced suicide (Enron; Arthur Andersen) all occur occasionally. Or former predators may suddenly find they have become prime prey (Morgan Stanley, AIG). All in a day's work. Life on the corporate savanna.

So, What's a Strategist To Do?

The major strategy lesson to take away from Eden I is found within the forbidden naturological fruit of Eden's Tree of Life. In the original Eden story, Cherubims and a flaming sword protected The Tree of Life from all who might eat its fruit, learn its secrets, and thereby live forever. That's a pretty big order that still escapes the human grasp. The most that can be claimed for today's secret-of-life seekers—corporations being one type—is that they have only nibbled at some of the fruit. Most will settle for something less than perpetual life, such as: Just get me through the next quarter!

Eden I has identified some key Tree of Life limbs that corporate strategists might want to grab as they swing through the ecosystem's jungles in pursuit of business success.

- **Limb 1**: Economizing is central but not the whole story.
- **Limb 2:** Hard-wired technology is the innovative life of strategy.
- **Limb 3:** Organization is a function of technical coordination and power dynamics.
- **Limb 4**: Emotional payoffs and punishments pervade strategy and can be harmonized with rationality.
- **Limb 5**: Reciprocal trust cements all market exchanges; betraying it gets you penalized.
- **Limb 6**: Strategic economizing occurs within ecosystem mutualizing, to the advantage of all.

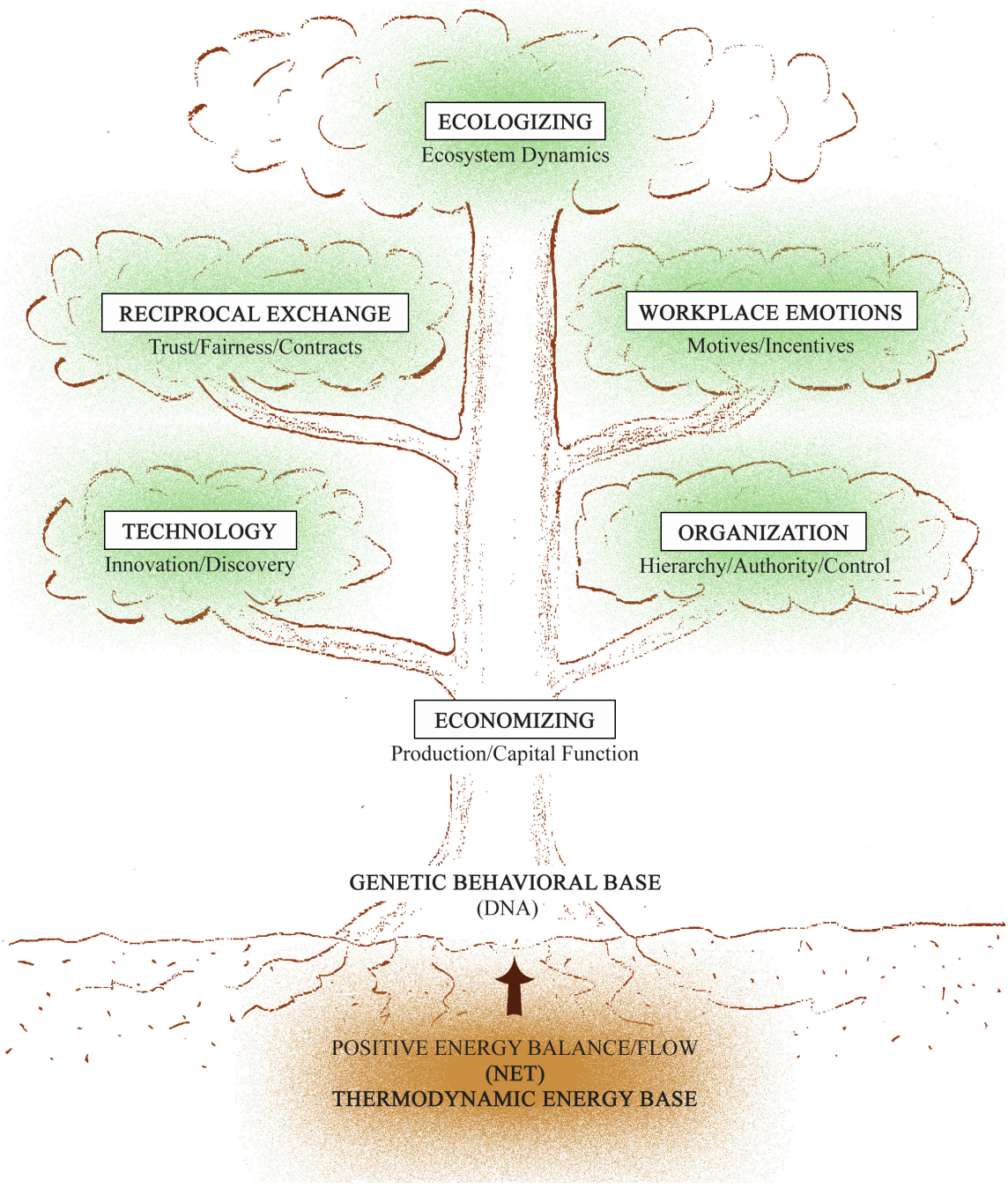
These limbs on The Tree of Life are hard-wired outgrowths of evolution. Fail to grab just one of them on your jungle swing, and you pay nature's fine in the form of strategic failure.

The Eden presented here through the eyes of science may seem at variance with the Biblical Eden, and indeed it is in some respects. But I shall argue in Eden II that the naturological parallels between the two Edens outweigh the culturological dissonances that separate them—and in surprisingly productive ways for corporate strategists. Yet to be explored are the possibilities to be found in Eden's other Tree: The Knowledge of Good and Evil. Does it yield a fruit with normative implications for corporate strategy and for the entire business function? I invite you to read Eden II for the rest of the story.

Now, let all those whose dull minds are still vexed
by failure to understand what point it was
I had passed through, judge if I was perplexed.
Dante Alighieri

Note: Eden I is depicted graphically in the following figure.

EDEN I
CORPORATE STRATEGY'S
TREE OF LIFE



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