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Seeds

for a philosophical conversation on the reality of human nature and behavior

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Prologue

This is not your usual philosophy book, let alone another treatise: it's a bag of "seeds" in search of interesting soils; a list of ideas, empirical and philosophical, hard and soft, tentative and speculative, that might one of these days trigger multidisciplinary dissertations or research projects.

The seeds were introduced in my book *Winter Letters* (2005). Many readers provided encouragement along with useful feedback. I have since reread books which I viewed as virtually constructive critiques of key sections of *Winter Letters*. As a result, I am re-proposing these seeds in a clearer to follow package while maintaining the objective of more conversations with readers. To the authors of these works, as well as all of the readers who have responded, I am wholeheartedly grateful for their interest and collaboration.

Seeds has the objective to initiate, maintain debates toward a renewed understanding of the reality behind human nature and behavior. Reality has remained so elusive through the ages; this is mainly because of the limited knowledge we have about this world's far away past and the consequent "masks" — though well intentioned — that thinkers and leaders have thrown upon its many facets.

Seeds may therefore become the basis for more effective actions; but, roll up your sleeves and walk slowly… plowing is about to start and will take quite a while… planting will follow… and harvesting is for next year or beyond.

I. What is there to philosophize about?

When a neighbor in Wolfeboro asked about my writing project, I explained I was recalling events that had made a lasting impact on my life. Many of them involved people who are no longer living as well as things which are not accessible any more. Having gathered these most significant memories, I intended to philosophize with friends and anyone who might be interested.

He responded, "Reminiscing about past events may be worthwhile, but what is the point in trying to philosophize in the light of your personal experiences and that of a few others? Above all, is there anything to debate beyond eating and sleeping, and finding pleasure wherever and however you can, despite the many vagaries of life? Don't you think we have more than enough books on philosophy? To take action is far more interesting, not to mention fun, than to philosophize about, let's say, justice, equity, war, survival with limited knowledge. In fact, I am always at peace when I am repairing something in or around the house, or taking my sailboat out across the lake."

Sailing beats thinking — big time. There is no doubt about that. But sailing without thinking will take you where you don't want to be. And what kind of boats would we have without first understanding what is necessary to keep them afloat under all possible conditions of wind, waves, water depth and currents?

To a point, I agree with him. But he is implicitly satisfied with the assumptions underlying accepted theories, rules, and doctrines. It is true that too much reflection can hardly be an attractive proposition, but a mindless commitment to action without research, constructive criticism, and renewed understanding can lead to serious problems. Of course, we may take his words to mean that thinking about why we should improve our course of action is unimportant since we have inherited so many effective guidelines from our ancestors.

We all know the chicken-and-egg question, and that if you gather ten experts on any given subject regarding *reality*, you'll come out of the discussion with more than ten opinions. The problem, then, may not be so much with philosophy as with philosophers. Whenever an inspired author introduces *the* theory worth following, we rarely ask about its "starting point": Is it the first human being? The heart? A particular organism? An immaterial thing, the spirit, the mind? Or is it the Big Bang? And even less do we ask about related assumptions that are later on promoted as well-established doctrines: Are there many gods? Is there one and only God? Are there mysterious supreme forces? Is it all material? Is it all spiritual? Is there life after death? Are we all interconnected? Or is there some other big guiding idea?

After a lifetime of studying human nature and behavior and recording his observations in the *Essais*, Montaigne concluded that the human psyche is a dark unfathomable maze wherein monsters abide. And he chose as his personal motto, *Que sais-je?* —What do I know? His humility when dealing with what may be behind our reality is commendable and worthy of emulation. But we should not be discouraged from entering the labyrinth by a sense of futility.

Questions can become the cradle wherein our search for clarity could be nurtured in its infancy. For instance, why do we have so many schools of thought? Why does each of these in turn give rise to diverse theories? Is it merely because we have different perspectives? Or is it because of something more basic? Yes, we have personal opinions, but it's unclear why they lead to radically conflicting theories about reality itself.

What then if we philosophize anew by probing the deepest levels of what exists around us? Why not engage in an inquiry that deals with all that led to our human nature and behavior through many billion years? What could get us closer and closer to the invariables of the foundation of our reality?

a starting point with body and soul
is like forgetting development and evolution
during past twenty billion years

About the long-established ideas: What is their starting point? What are their assumptions? And we must consider other questions to arrive at a general profile of what we have derived from classical philosophy, religious systems, and the scientific method. We will then be like somewhat experienced explorers entering a supposedly known territory but suddenly face-to-face with the need to have different tools and a revised map. The potential payoff is a new approach to understanding the reality of nature and behavior, applicable to all known cellular structures — vegetal, animal, and human. Our new frontier is not more information and action with the credo "do it now". Our new frontier is better understanding of what constitutes our reality (though remaining curious as well as serene in front of so much beyond our reach) and action to follow if and when possible.

I ask the reader to refrain from seeing in this inquiry an exercise in rhetoric let alone an interest in debating whether reality is real. I invite him or her to set out with me on a winding path and eventually contribute further thanks to their additional views either in resonance with or resistance to mine.

Seeds… from heart and head
a compelling need to better understand
for fewer stones to be left unturned

life as layers of space and time
with physical laws… geometry and more
ensembles of atoms and all primal interactions

atoms do not think neither can
genes or organs on their own
but atoms are where movement happens

we can entrust our faith to whatever
or understand all primal interactions at work
driving change and movement… that's life

with this idea… a new picture
nature as it started… all its primal interactions
move atoms to mankind and back again

I traveled far to improve knowledege
resistance here and resonance there
with small and great who aided my task

seeds… to ask many questions
probe our sense of all interactions
layer by layer… within and without

to my ancestors parents and family
to teachers authors and dearest friends
to all who gave me the good… seeds

II. About this book

With its countercurrent ideas, this book may stimulate you to reread philosophy books and review the teachings of great thinkers with a new perspective. The legacy of Confucius and Buddha, the dialogues of Plato and all the great subsequent works, the contributions of physicists, physiologists and molecular biologists, the discourses of theologians and metaphysicians from paganism to monotheism — each approach has an undeniable validity. But do these often conflicting perspectives help us understand our reality?

The main intent of most great minds, some of whom are religious leaders, has been to apply intellectual means to achieve the long-term betterment of society. But how can we improve if we inquire about our reality without reckoning in as well twenty billion years of history that so many have simply disregarded? If you could ask them why they gloss over this span of time, they would probably reply that man is what we know about and the reasonable starting point. But nowadays don't we also know about other things?

In physics and chemistry we learn about atoms. With geometry and the application of mathematical sciences we seek to formulate fundamental natural laws as acknowledged by scientists. For the inorganic world, such laws provide helpful support to our understanding of what's going on at the sub-atomic as well as cosmic levels of complexity. For the organic, non-human world we have made progress in genetics and molecular biology.

Yet for humanity we maintain a belief in additional unique properties, organized sets of principles, to be understood in terms of metaphysics and a spiritual life. When this view was introduced it implied a giant leap of faith and required thereafter strict discipline. The assumptions on which it was postulated are now rooted in our culture; they are central to most life issues as we apprehend them and have become as impregnable as a fortress. However, the fact that our belief seems firm after ten millennia does not make these assumptions the reality.

Plato rejected extreme relativism (the speculation that reality is relative to the perceiver); he set forth a doctrine of reality based on a system of absolutes — qualities and values that are eternal and unchanging. He did not believe that we could arrive at truth by studying the ever changing concrete phenomena of this world. He believed that these phenomena were less real than the unchanging immaterial forms that informed them. These forms in turn could be apprehended directly by the intellect without the mediation of the senses. It has been argued that all of western philosophy is a footnote to Plato. His starting point and that of all the philosophers who followed him was man.

But can we not imagine a time and place before the first form of matter, movement, and change gave rise to any genesis? Let's say, when there were only "free atoms" in the universe. Can we not imagine them as one ensemble of the elements, the matter-to-be, and *all* their primal interactions?

an earlier starting point
is not about atoms for smallness sake

it is an ensemble of atoms with all primal interactions
entering in certain combinations and evolving

it offers a less variable foundation
than genes, cells, mind, or body and soul.

What happened to that ensemble of free atoms and primal interactions through the subsequent billions of years includes what we claim to know about matter and every reaction at all levels of complexity: sub-atomic, molecular, and cellular structures. To understand reality at any point in time, we will need to know of preceding combinations and selection, symbiosis and rejections, diversity and similarities, organization and chaos, subsets of the ensemble that are within a physical enclosure and others without, and increased complexity throughout. An awareness of such a far away beginning was not transmitted through subsequent forms of matter and generations of life, while our theorists have focused on a later starting point with what they then thought to be useful, effective assumptions. The unfortunate outcomes are to have (a) a language that is inevitably influenced by such assumptions; and (b) a "mask" on certain facets of what surrounds us. In fact, many thinkers have maintained that it is pointless to pursue a thorough comprehension of our reality. Should we not, then, challenge both their starting point and related assumptions?

Seeds is an attempt to connect the basic phenomena accessible through science and the phenomena of life on Earth including humanity, beginning with a start as early as empirically imaginable. From there, if you will, let's imagine moving with a *special* recorder — with absolute zero interference at each step of development and evolution — that is, moving forward and providing the ideal set of *observations* for our renewed understanding.

It may be helpful to quickly preview a sample of the seeds.

An earlier "starting point" and "all" primal interactions.
If we consider a tree, a late starting point can be its actual seed but an earlier starting point is the set of ingredients or conditions that made it possible to have the first seed of the species. Now, consider the sequence: original seed, long time no see, current seed, corresponding tree, forest. What comes to mind when you walk through the forest? I doubt it is the original seed of the species. But who can say that it has no importance if at heart your interest is to save the short- and long-term benefits and beauty around you? By all the primal interactions I mean those acknowledged by physicists and more. Their manifestation depends on the stimuli at any particular moment as well as what happened prior to that moment.

At any one time, more than one primal interaction is at work.

Looking forward.
All inquiries about the reality of our nature and behavior should be done looking forward from an earlier starting point as opposed to looking backward — which is what we have been doing until now (with man as the starting point).

Emerging properties.
They should not be introduced simply because it helps explain a facet of our reality. An earlier starting point is what constitutes our foundation and includes all it takes even if we cannot for now explain all the combinations and how each relates to another. We think we know quite a bit about the forest and the many trees but we need to be more attentive to the formation of all the original seeds of each species even if we can hardly visualize how the entire development process took place.

Centrality of the life process.
Man is only part of it. In fact, we are layers of atomic structures, a structure of structures: each showing a resultant primal interaction with the outside world at any particular moment; each depending on its own constituents of matter and primal interactions; and, as a whole, manifesting resonance with or resistance to external stimuli.

Serenity despite the unknowns (past and future).
Many doctrines and subsequent related actions regarding where man comes from and what happens after death were well intentioned and proved beneficial but also led to biases in language and culture — additional carry-on luggage or, rather, masks thrown on the reality behind human nature and behavior.

We will also, in the next sections, discuss and reposition some general supporting notions prior to giving more details of each seed.

III. Shoulders of giants? Only?

To keep any theoretical attempt in perspective, it's worth bearing in mind that we know "one percent" of what has happened or is happening in the universe. Our tiny corner of the universe — the Earth — is about five billion years old, with the earliest signs of life appearing three billion years ago, with living creatures since at least five hundred million years, and the first member of the human kingdom presumed to have appeared two or three million years ago. All this history is largely unknown to us. But while precise knowledge of it may be beyond us, no one should doubt the importance of what occurred prior to the last two thousand millennia. And should we not, in fact, *care* about the far away past?

There are and have been many conflicting theories of the universe, its cosmogony, and life on Earth. Each theory can claim adherents, and whenever another theory is set forth, it is like the appearance of a previously unknown star promising epiphany but often disappointing some of those who follow it. And we will continue — standing on "older shoulders" — to build on what has been done by others before us.

At the beginning of the 11th century Bernard de Chartres wrote: "We are dwarfs perched on the shoulders of giants. We see more than they were able to see and farther away because of their gigantic stature; we are neither taller nor is our vision better."

A few centuries later Isaac Newton (1642–1727) wrote in a letter to a colleague at Cambridge University, "If I have seen further than… Descartes [1596-1639], it is by standing upon the shoulders of Giants."

Alain (1868–1951) wrote in similar vein about this relationship with old masters. But although the subject for Bernard de Chartres and Newton was the transfer of knowledge with all that that implies of improvements and expansion, Alain had human roots at center stage as well as man's mind as the main identifiers of humanity, "I was busy enough attempting to rediscover what the best minds wanted to say. Every successful attempt at this is a discovery in the deepest sense, since it is the continuation of mankind."

Indeed, I look to them as well, the giants of the past and present as we all do, or ought to do; but we need to remember that to climb onto their shoulders one must have what it takes to go that high. And I want to add that the great minds of the past

didn't climb onto the shoulders of well-known contributors to thought and science only thanks to their unique capabilities as individuals. Their success was due as well to life events and subsequent relationships, with people and things who therefore contributed to the effective development of their capabilities, their uniqueness. Small shoulders can be important, too.

The seeds of my discourse were sown during my sojourns in various places and my encounters with individuals, some of whom I met in person and some of whom I discovered through their writings — thinkers in various disciplines, scientists, and poets.

people and things come to us then go
to many we owe… others we may forget
a few we want never to meet again

but some beloved and always alive
confide an enduring presence to us
we embrace especially after they die

life as ocean waves
they pull you upward
then push you downward

life as ocean waves
they caress you softly
then drown you heedlessly

people and things…life
is not short or long
it is once and only

IV. Known theories; and now what?

Whether or not anyone is willing to consider a new approach to any topic depends upon how committed he or she is to an established approach or belief. When it comes to an improved understanding of life, one may be drawn to the views of one theologian or philosopher or scientist or to what a following of great minds has concluded. However, nearly all of their works tend to be grounded upon theoretical views of reality. This is not to devalue the great contributions that have been made, but we better not be hampered by attachment to any revered school of thought, nor should we place any particular idea on a pedestal unless we first clarify its starting point and related assumptions.

Throughout recorded history, humans have attempted to explain their own behavior. Prior to the speculations of philosophers and religious leaders, much was attributed to the influence of gods. Plato explained human behavior in terms of moral psychology, imposing a model of how humans should behave in accord with his view of justice as an absolute. His star pupil, Aristotle, approached human behavior in terms of his dynamic teleological view of reality and asserted that man is defined by happiness achieved through activity in accord with virtue. Our current religious theories start with the human soul (and the body, in some cases) and are invariably based on assumptions that include faith in one or more "supreme" beings or life symbols. It is, moreover, solidly underpinned by dogma, rituals, tradition, and symbols.

In modern science, the search continues for natural laws governing all phenomena, including human behavior, without reference to mythology or the metaphysical. As a result, we now have additional theories that seek to account for other variables or factors. They differ in their basic assumptions about whether all human behavior is genetically determined or whether the newborn infant is a blank slate, or whether only direct experience and observation are meaningful. Such single-focus approaches raise more questions: Why are we so often attracted by a simple criterion? How can we deal with the unimaginable complexity of the organic world if we make believe that we can rely on crisp formulas?

Whatever the case may be, all theories, religious, philosophical and scientific, can be grouped, I suggest, within five "schools of thought" (see graphics, pages 22-23) on the basis of how the scientifically determined relates to the metaphysical. Five? Yes, if you agree that the reality of human nature and behavior is (1) only as empirically determined, i.e. in the scientific domain; or (2) as unreachable with human means, i.e. in the metaphysical domain; or (3) in a coupling of these two domains, interacting

side by side; or (4) represented with the former containing the latter; or (5) with the latter containing the former. Central to all schools of thought, i.e. all known theories, is the concept of law or force or interaction, but how it applies is a matter of dispute. Moreover, their starting points and related assumptions are often not clearly set forth let alone critically examined through time.

In the next part of this section, we will have an overview of more than 10,000 years of thought with regard to our reality, a vast menu of starting points and related assumptions. These outlines may be helpful to a reader as a reminder of the major frameworks of thought — all quite interrelated and certainly not to be taken as linear developments — and illuminate a preliminary description of what is treated in this book.

CLASSICAL PHILOSOPHY

STARTING POINT:

HUMAN BODY AND SOUL (OR SPIRIT)

KEY ASSUMPTIONS:

THE UNIVERSE INCLUDES METAPHYSICS
IT IS ENTIRELY MENTAL IN 'IDEALISM'
IT IS ONLY PHYSICAL IN 'MATERIALISM'
EMERGING PROPERTIES ARE ACCEPTED
REDUCTIONISM AS IN ATOMISM IS FOR SMALLNESS' SAKE

OBJECTIVE:

REASON, HAPPINESS, ETHICS, HARMONY, GROWTH, JUSTICE, etc. —
WITH A VIEW TO HUMAN LIFE'S BETTERMENT

SCOPE:

DUALISM, MONISM (IDEALISM AND MATERIALISM)
Actually, five "schools of thought" leading to numerous theories: chief among them… empiricism, epicureanism, existentialism, nihilism, positivism, pragmatism, rationalism, stoicism, utilitarianism…

ETHICS-/JUSTICE-/KNOWLEDGE-/LANGUAGE-/LOGIC-/MIND-/REASON-CENTRIC ONTOLOGY AND EPISTEMOLOGY; DEVELOPMENT AND EVOLUTION

STRETCHING BACK OVER 3,000+ YEARS

RELIGIOUS SYSTEMS

STARTING POINT:

HUMAN SOUL, SPIRITUALITY

KEY ASSUMPTIONS:

GOD(S) AND DEVIL(S). HEAVEN AND HELL
With or without: man's reincarnation, the existence of eternal truth, liberation from earthly evils, final reward and punishment, miracles, myths, magic, separation of religious and social membership

OBJECTIVE:

ORDER, STABILITY, HARMONY, CONTINUITY, GROWTH, WISDOM, FORGIVENESS, etc. — WITH A VIEW TO HUMAN LIFE'S BETTERMENT AND/OR SALVATION OF THE SOUL

SCOPE:

POLYTHEISM, MONOTHEISM, SUPRATHEISM, PANTHEISM
Each with novel assumptions, doctrines, practices, and credos.
FAITH-CENTRIC
CREATION/INTELLIGENT DESIGN AND (RECENTLY ACCEPTED) EVOLUTION

STRETCHING BACK OVER 10,000+ YEARS

THE SCIENTIFIC METHOD

STARTING POINT:

NATURE, BIG BANG, GENE, DNA, ANTHROPOLOGICAL FINDINGS

KEY ASSUMPTIONS:

THE SCIENTIFIC METHOD IS THE ONLY VALID/ACCEPTABLE ONE

SCIENTIFIC REALISM OR INSTRUMENTALISM —— with and without reductionism

OBJECTIVE:

EXPLAIN/PREDICT
PROGRESS FOR ALL SPECIES (PRIMARILY, MAN)

SCOPE:

PHYSICS, CHEMISTRY, PHYSIO-/PSYCHO-/BIO-/COSMO-/PALEONTO-/GEO-LOGY
TEST- AND MEASUREMENT-CENTRIC, THEORETICAL AND EMPIRICAL
DEVELOPMENT AND DARWINIAN EVOLUTION
STRETCHING BACK OVER 2 BILLION YEARS

We could similarly characterize political and management systems: Their authors combine aspects of classical philosophy, religious systems, and the scientific method; they also introduce new terms, e.g., ownership. Their objectives sound different but aren't: order, growth, justice, and security. It all depends on contingencies and boils down to long-term betterment of life — for *their* constituencies. And one key assumption, not unlike that of the religious leaders who claim to be "in touch" with a higher power or the philosopher-ruler who has identified the golden rule, is that leaders know better *and* people follow.

The "starting point" and its related assumptions are rarely mentioned despite the fact that that's where each theory is actually anchored. Furthermore, the status of unknown was considered unacceptable. That's probably why early leaders in philosophy and religion (and likewise in politics and management) felt the pressure to come up with answers to questions for which they actually had no real answer.

And now: what about this for a first taste of what's to come?

STARTING POINT AND RELATED ASSUMPTIONS:

THE SUB-ATOMIC LEVEL OF COMPLEXITY

AN ENSEMBLE OF FREE ATOMS
AND *ALL* PRIMAL INTERACTIONS

NO REDUCTIONISM FOR SMALLNESS' SAKE

NO EMERGING NEW PROPERTIES:
THE ENSEMBLE IS OPERATIVE AT ALL LEVELS OF COMPLEXITY

LIFE PROCESS IS AT THE CENTER OF THE UNIVERSE:
NOT ANY PARTICULAR CREATURE

OBJECTIVE:

RENEWED UNDERSTANDING THAT RESULTS IN MORE EFFECTIVE ACTIONS
IN HUMAN RELATIONSHIPS, INDIVIDUAL AND SOCIETAL

SCOPE:

DEVELOPMENT (ALL MATTER) AND EVOLUTION (ORGANISMS):

STRETCHING OVER 20 BILLION YEARS

V. Where is the devil?

Most theories of human nature and behavior imply a chronology with its starting point (though rarely in explicit terms); they are then developed on the basis of one or more assumptions. As it happens, the starting point can also be an assumption. For instance, the Freudian view of the personality introduces the concepts of the "ego" and "super-ego"; the Behaviorists claim that man is a mechanism. However, the earlier the starting point, the greater the probability that we are dealing with real "fundamentals".

In chemistry, for a long time, each material compound accessible to mankind was described on the basis of a series of observations, one for each application. By contrast, modern chemistry, after Lavoisier, is based on the atomic structure of all inert material in any possible mixture; it refers to the elements of matter in each composition. And no matter what language you speak, for any compound the same formulation and the same theories apply: if we value the fundamentals, we need to refer to the earliest meaningful starting point.

The first healers talked about scents, gods, water, demons, and moving organs; they weren't even aware that the blood circulated. Today's physicians can literally see most of the processes inside the body. We certainly have a long way to go before reaching the invariable foundation in medicine. But our progress has been remarkable. Why should we not aim for our foundation? And why should it be different from that of *the* foundation?

Let's take any conflict between two people (or two communities) and judge it on the basis of the latest shot fired, if you will. Our understanding of the root causes may seem to be clear but is actually incomplete. If we go back a generation, the sources of the conflict will be multifaceted and entangled. We discover that both sides (and others as well) will have had something to do with the origins of the conflict. And if we jump way back in time, the situation will become more difficult to sort out. Understanding who and what is to blame for the current state of affairs must involve analysis of a situation that has evolved through a lengthy and obscure process. This investigation may lead to the discovery of critical evidence of the similarities between seemingly different patterns and the interconnectedness of seemingly disconnected events. Let's say that point in time is 5,000 years old. If you start the analysis from there onward, you'll probably figure out how the justice system evolved through the millennia and how it fostered, for instance, forgiveness and reconciliation through the centuries.

If someone smashes your car, you might suspect that the perpetrator wants to take away your freedom of movement. Or that he has gone crazy. But what if his family lost property in your neighborhood and he felt driven by retaliation? Ultimately, revenge is his chance to be a winner. But for practical or traditional reasons, the process of looking forward can't start as early as we would wish. And justice will punish him for what he does here and now. This may satisfy you, but can "justice" ever be attained in society while at the same time introducing ingredients for future problems?

Darwin's study of meticulously collected data and physical evidence resulted in the natural selection theory, the driving force in the evolution of all species. His work, his thoughtful examination of what he observed, was a major scientific contribution despite its early total rejection by many scholars who in Darwin's time were the representatives of conventional thinking. Today, many scientists support Darwin's natural selection (in some cases lumped together with social implications they introduced and purport as valid) as an all-encompassing explanation of human nature and behavior.

Michael Behe in his 1996 book *Darwin's Black Box* holds, however, that evolutionary mechanisms cannot account for the emergence of certain complex biochemical cellular systems. "Intelligent design" advocates argue, with the support of Behe and other scientists, that all organic systems must have been deliberately engineered by some form of intelligence.

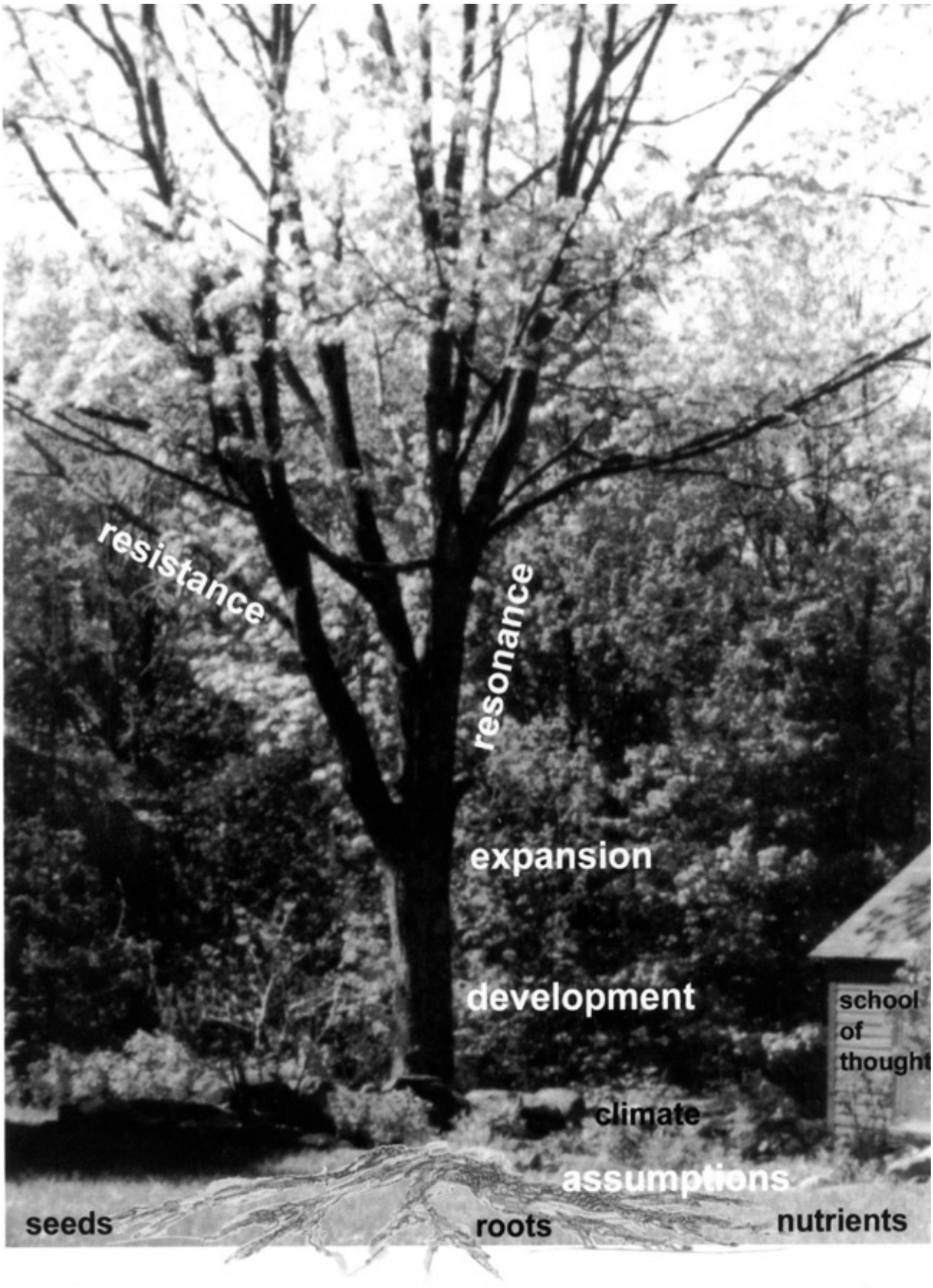
According to the theory of natural selection, genetic variations occur without specific design or intent. Variants that have the highest fitness are then passed on to the next generation of organisms. Change occurs by the gradual operation of "natural forces" over time, perhaps slowly, perhaps more quickly. This process is "able" to create complex structures from simpler beginnings, or convert complex structures from one function to another. Intelligent-design thinking includes the concept of mutations and accepts that natural selection occurs, but asserts that evolution, as Darwin has defined it, cannot account for the parts that would be functional or advantageous only when the entire system is in place. Behe's contention is that Darwin's theory of evolution is of no help with "irreducible complexity".

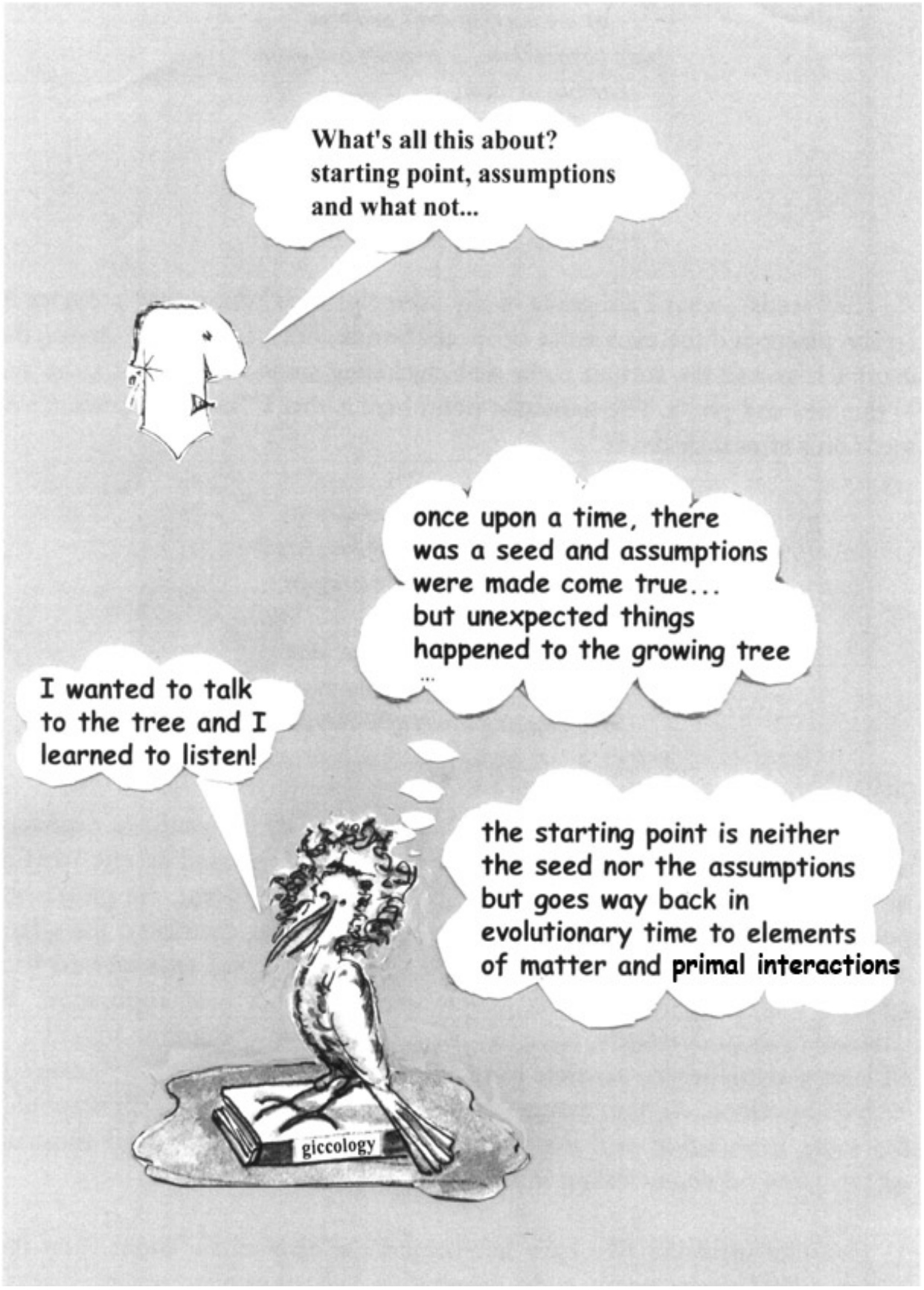
But what underlies either natural selection or intelligent design has not been discussed by their respective authors. Darwin's starting point is the barnacle, a mono-cellular organism implying that natural selection just happened with the first cell. The intelligent-design group's belief is not unlike Aquinas's proof of the existence of God: It is the governance of the world, which manifests the existence of a superior being by whom all natural things are directed to their end. To believe in an Intelligent Designer, one must assume its existence.

Any two distinct theories are bound to have at least some aspects in direct conflict with each other. Should we not first agree on the starting point and then discuss the related assumptions? Differences between two theorists are to be expected if a naturalist is on one side and a biochemist is on the other. But neither should brush away the questions raised by the other. Might they not agree upon a starting point? That's where the devil comes in; especially, if they fail to recognize that their assumptions remain assumptions unless justified by additional discoveries or other considerations.

I am not talking about any *absolute* starting point — there is so much we don't know. The related assumption of primal interactions will be presented in the next sections, after asking more about free atoms and other facets of this dauntingly complex story. And it is hoped that the new understanding will foster the application of philosophy in *support* of science and religions as well as vice versa — more effectively than in the past.

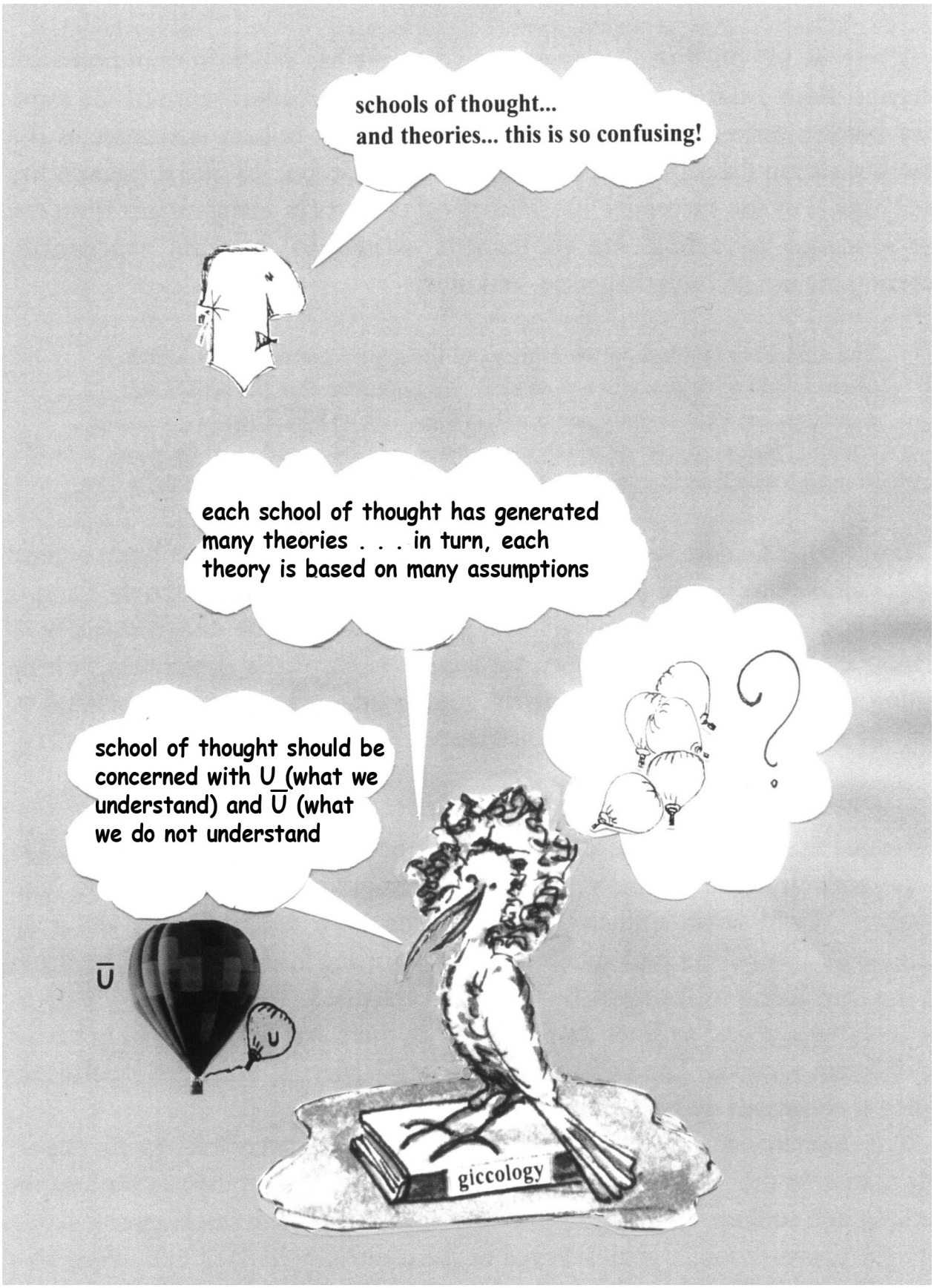
(The following six illustrations relate to and expand
on the main topics brought up so far;
seeds, starting point, and schools of thought.)

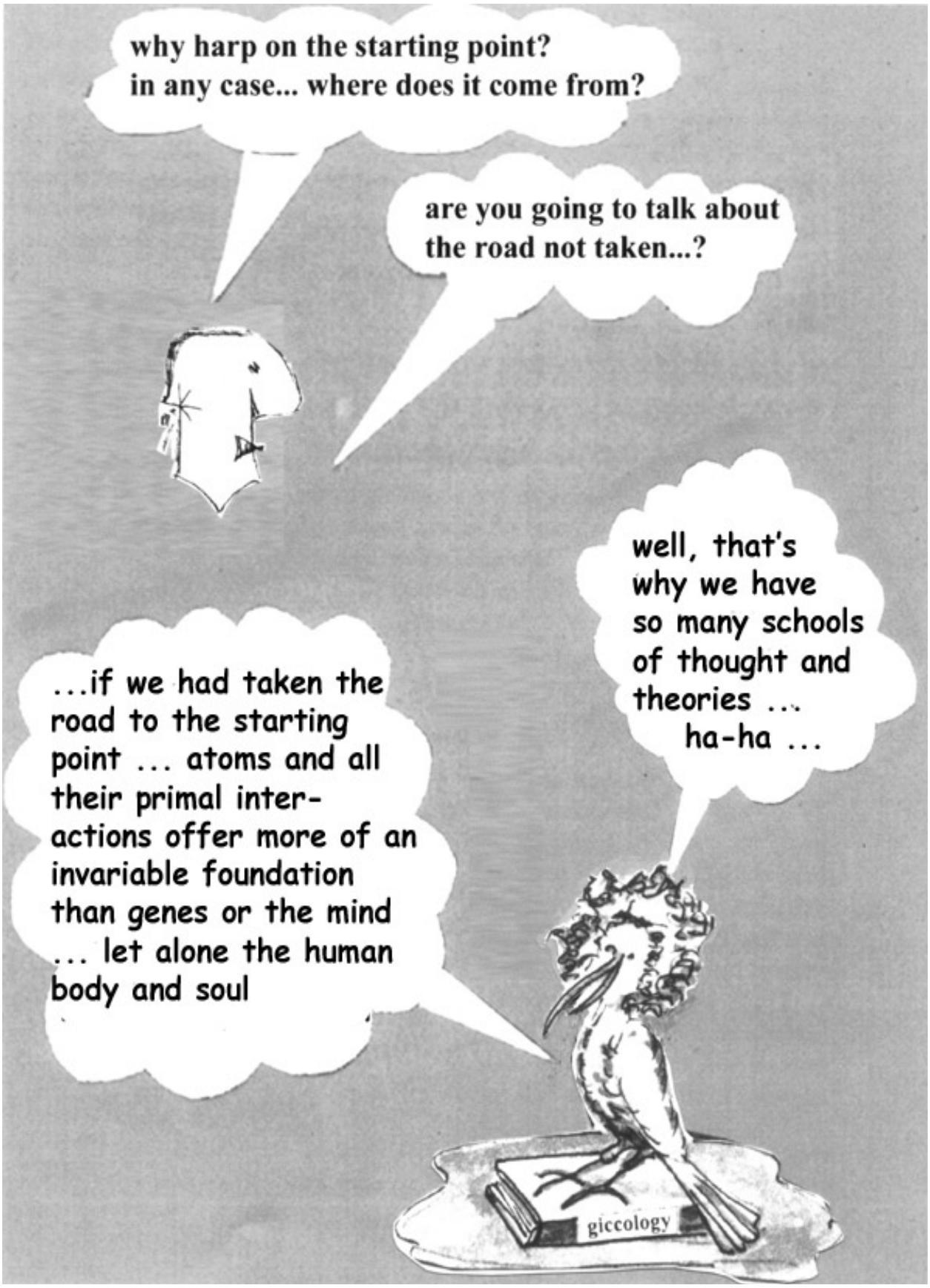




S = Science = physics, chemistry, biology, geometry, astronomy

M = Metaphysics = faith, spirit, mind, soul





The suggested earlier starting point may sound synonymous with reductionism. But we ought to compare apples with apples. In many cases, reductionism has been synonymous to a closed system of procedures explaining one static set of features in terms of another static set at a lower level of complexity; and, more often than not, selecting the reference set at a lower level is done for smallness' sake. It should also be noted that reductionism is at the base of important developments of modern science. In the case at hand, however, the focus is on the dynamics within any given set (ensemble under observation) as well as on what is at play around it as it moves to the higher level of complexity.

Nor is the suggested approach a new version of vitalism, the doctrine that life is self-determining or self-evolving; unless we want to equate the evolving ensemble of matter plus primal interactions as the guarantor of what happens along life's timeline. But that is not a correct representation as I have just indicated in the above discussion regarding reductionism.

Finally, it is not determinism or materialism. Atoms are *not* considered for smallness' sake. That original ensemble led to the diversity, complexity, and chance events (primarily resulting from the increased diversity and complexity) along the development and evolution that we can see all around us. The fact that elements of our DNA are common to all organisms is a clear indication that we have common ancestors going back in time a long way. From that earlier ensemble of ensembles we have moved on to certain organisms, still in existence today, that have a well determined life, as is the case with most plants and bacteria, while many others show different degrees of indeterminism and unpredictability; of course, the major one is possibly our own species with memory, brain, senses, thought process, and consciousness. The distinction between determined and undetermined, material and non-material, arises because certain ensembles had a different evolutionary path thanks to the particular circumstances at one or more moments in time.

VI. Free atoms

Once upon a time the universe was made up of "free atoms" (arguably, with lots of different elementary particles floating around). All matter, as well as all that surrounds matter, was thereafter composed of atoms. The movement of atoms, random and otherwise, is the root cause of pressure, energy, wind, water, heat, fire, currents, electromagnetic fields, and light. There are many kinds of atoms; each has a characteristic arrangement of electrons moving around the nucleus. Actually, each atom is an arrangement of elementary particles, and each kind of matter has its particular atomic structure. The real world of atoms has been extensively studied, especially during the last fifty years. It remains, however, difficult to grasp; most physicists would agree that they really do not know how achievable a total understanding is.

T. H. Huxley (1825-1895), in *On the Physical Basis of Life* (1869), wrote, "We live in the hope and faith that, by the advance of molecular physics, we shall by-and-by be able to see our way as clearly from the constituents of water to the properties of water, as we are now able to deduce the operations of a watch from the form of its parts and the manner in which they are put together." But D. H. Lawrence (1885–1930) observed, "Water is hydrogen two parts, oxygen one, but there is also a third thing that makes it water and nobody knows what it is."

Richard Feynman (1918–1988), who won the Nobel Prize in Physics for his research in quantum electrodynamics, explained in one of his lessons, "The 'atomic hypothesis'… all things are made of atoms — little particles that move around in perpetual motion, attracting each other when they are a little distance apart, but repelling upon being squeezed into one another. In that sentence, you will see, there is an enormous amount of information about the world, if just a little imagination and thinking are applied. Everything that animals do, atoms do."

Feynman's point that the laws of physics are all it takes to complete our understanding is encouraging, but doubts persist to this day.

Let's have a closer look. Water is the most studied material on Earth. However, many of its unique and anomalous properties continue to puzzle scientists. Clearly, an expert on the subject can explain today, thanks to advances in physics and chemistry, how the complexity of the water molecule meets the requirements for life as no other molecule can; and, of course, he can explain all that goes on (thanks to electromagnetism) between the two atoms of hydrogen and the one of oxygen.

But can we skip the *why* question? For instance, why do certain large arrangements of atoms interact in such distinct ways? Scientists — with Einstein in the lead — have observed phenomena that do not relate to the precise details of how a few atoms interact with one another. All recent developments in physics, experimental and theoretical, are great advances in our knowledge, but the itchiness to consider an "additional thing" is not going away.

To imply that atoms have some sort of consciousness is unacceptable from a scientific standpoint. I agree, but the *why* question at the lower levels of complexity is different: it asks about the inherent finality not unlike fundamental laws of physics. In fact, what we usually call consciousness — awareness of what is happening to me — applies *only* in the presence of my brain somehow connected to my senses.

There have been various attempts to postulate a "special force" as existing in matter. Some have even claimed consciousness in plants. The most celebrated among these theories, vitalism, is now a dead one. Its thesis is that life processes must contain a non-material vital principle and cannot be explained entirely as physical and chemical phenomena. Vitalism, unlike most of the other attempts, is compatible with a belief in intelligent design. I suggest instead that, if there is this additional thing, it must be looked at as an integral part of the elementary particles, that is, of the free atom itself.

We'll get to all the assumptions in the next sections. Before we address them with details, let's tackle an intriguing question. What was there that originated our beloved free atoms? The question was eluded for a long time. Among primitive peoples, the chief of a tribe and the designated shaman (assumed to be more enlightened than others) had to come up with explanations of odd phenomena. The concept of reverence toward things dead or alive was adopted early on. Then gods were invented to further explain natural events and the mysteries of human behavior. With monotheism came the belief in one God beyond space and time, a belief sustained by faith and maintained by ritual and ceremony. But why are we, believers and non-believers alike, still so worried about "what was there before"? The persistence of this deeply felt interest through the ages might have been part of the process whereby the brain, body and mind co-grew as a result of and a response to the pressures of dogma and indoctrination.

So, let's accept the questions *and* the fact that we do not know — and let's be serene about it. We might one day know, and we ought to continue our search, though at present we have no clue as to how our inquiry ought to proceed.

VII. Reality?

The Cro-Magnons lived more than 30,000 years ago. They physically resembled modern Europeans and were biologically similar. They also painted the walls of their caves; when their artifacts were found they were declared to be "the earliest known human art". Did they perceive the reality underlying the bonds of society or family life as we do? Only partly, one would guess.

Each individual perceives reality in his or her own way, thanks to how the brain processes the information received from the outside through the senses interacting with all the conditions *inside* the body. In fact, the variety of all possible perceptions has increased enormously in the last four millennia as our cultures have evolved. We value the disciplines and beliefs that have shaped our cultures, but we forget that they are like biological filters or masks attached to many things. That's an important reason why we refer to "relative reality".

For instance, we say, based on our modern perception of reality, that time is money, time goes by, time heals, or time is a force. But are these views really any more convincing than the idea that water is a force? The real force is not water; the law of gravity is. Water in a bathtub neither shows nor exerts any force. But the law of gravity is such that the same amount of water falling on your head from high above can kill you. If you are in a bathtub full of water, with the temperature to your liking, you will have a feeling of well-being. You can say that water is a healer, or that its energy is helping you, but in reality you are being comforted by the soft pressure on your pores and the slower loss of heat — thanks to the particular combination of atoms that make up your skin and those of the surrounding water at that moment.

Dealing with time, we ought to consider that everything and everyone comes, stops sometime, and goes. Shouldn't we therefore ask, is it time or is it we who are passing? And before any judgment on that is made, if we want to have the starting point of our own choosing we ought also to recognize that many events have preceded it and indeed shaped the reality that we claim to see here and now.

Once, while crossing the Drake Passage, I considered the reality of time, and set down my thoughts in an essay. It began with a poem:

here is… for all… the New Year
there is right in what is wrong

to seed… when disorder is near
to laugh… even when despairing
to stop… before losing too much
to learn… despite the darkness
to gather… through the emptiness

there is wrong in what is right
here is… for all… the New Year

And I then thought: Old, wise Gregorius! His calendar provides humans with a stable time line. But our senses, feelings, and desires zigzag along an almost unpredictable path. They grow, move, rest, resurface, and owe part of their vigor to the sun's brightness, the moon's melancholy, the clouds' softness. Wouldn't it be interesting to see what's *really* going on behind the scenes, in atoms, cells, genes, tissues, heart, brain, all organs, and in our sensory apparatus — when we meet people and things?

The French positivist philosopher Auguste Comte (1798-1857) said in a letter he wrote in 1846 to John Stuart Mill, the English utilitarian philosopher: "A complete agreement in philosophic doctrine can never come to be. However great the intellectual normalization which humanity may eventually attain, differences in organization, education, and circumstance will always exert sufficient influence to determine a habitual diversity of opinion on many secondary questions. Still, once the revolutionary transition has come to an appropriate close, much more philosophic agreement than we find today on all ideas (which truly matter in the final harmonization of modern society) will certainly arise."

When a view is presented to us so different from the one we hold, we will not accept the new one easily. And the longer we have been holding our own view, the harder it will be to understand the new one, let alone adopt it; especially if we do not question our starting point and related assumptions. For instance, how can we really make progress in understanding the origin and diversity of language unless we are prepared to also consider what took place before the advent of man?

In *Language and Myth* Ernst Cassirer (1874-1948) wrote: "So the question of the origin of language tends always to become — even for the thinkers who have taken it most profoundly and struggled hardest with it — a veritable monkey puzzle. All the energy devoted to it seems only to lead us about in a circle and finally leave us at the point from which we started."

Cassirer seems to blame the complexity of language for what happens to the thinkers. He was concerned with the relationship between reality and language in the context of classical philosophy. In my opinion, the main assumptions here are (a) man's mind is the starting point; (b) language triggered our cultural development; and, (c) for Cassirer as well as most thinkers following Plato, metaphysics is a key part of our story.

But, with an earlier starting point, we'll realize that language and culture became reality in conjunction with the evolution of several physiological parts in the human body including eyes, hands, and legs. I would argue that our culture began to assume reality the moment our bodily functions allowed the use of tools (an extension of the hands and legs) and the generation of sounds (an expansion of the larynx and vocal cords); these events, along with others, must have corresponded to significant developments in the brain which in turn opened the way for what we call today language and culture — and consciousness.

The mystery of consciousness started to be a subject of growing interest to Francis Crick (1916-2004) shortly after his Nobel Prize in 1962 for the discovery of the molecular structure of DNA in collaboration with James D. Watson. In *The Astonishing Hypothesis* (1990), Crick wrote, "It is important to emphasize that the Astonishing Hypothesis [that 'You', your joys and your sorrows, your memories and your ambitions, your sense of personal identity and free will, are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules] is a hypothesis, What we already know is certainly enough to make it plausible, but it is not enough to make it certain as science has done for many new ideas about the nature of the world, and about physics and chemistry in particular. Other hypotheses about man's nature, especially those based on religious beliefs, are based on evidence that is even more flimsy but this is not in itself a decisive argument against them. Only scientific certainty (with all its limitations) can in the long run rid us of the superstitions of our ancestors."

Can an assembly of nerve cells in our body be a dependable representation of the reality behind our nature and behavior? A more critical question ought to probe whether or not we will ever be able to describe how the brain has become that organ surrounded by a web of interdependencies as we know them today. There is so far no evidence that advances in micro-biology, along with increased insight into the workings of ions, synapses, and molecules, will be sufficient for our scientists to provide the long history of experiences that makes us live with the brain that behaves the way it does — "with mental activities as intuition, creativity, aesthetic pleasure, and in so doing grasp them more clearly and, it is hoped, enjoy them more" as Crick wrote.

Furthermore, as we are interested to get closer to the foundation, the question will arise: Why do nerve cells function as described by our state-of-the-art scientific method? At any rate, Francis Crick concluded in the mid-1990s that, "The Astonishing Hypothesis may be proved correct. Alternatively, some view closer to the religious one [and to those of great philosophers] may become more plausible. There is always a third possibility: that the facts support a new alternative way of looking at the mind-brain problem that is significantly different from the rather crude materialistic view many neuroscientists hold today and also from the religious point of view. Only time, and much further scientific work, will enable us to decide."

To understand the reality behind human nature and behavior, I think we will need more than ever a multidisciplinary approach despite its inherent constraints.

VIII. Looking forward versus looking backward

The renowned biologist Richard Dawkins says in his latest book, *The Ancestor's Tale — A Pilgrimage to the Dawn of Evolution* (2004), "Our backwards pilgrimage has been a series of swelling mergers, as we were swallowed up in ever more inclusive groupings: the apes, the primates, the mammals,… and so on back to the arch ancestor of all life. If we turn around and move forward now, we cannot retrace our steps. That would imply that evolution, were it to rerun, would follow the same course, putting those same mergers into reverse gear in the form of splits… the backbone would [need to] be rediscovered, and so would eyes… eventually a swollen-brained biped would emerge… So although my return as host will not be a retracing of steps, I shall be publicly wondering whether something a little bit like a retracing might not be appropriate."

Dawkins seems to acknowledge that a looking forward from where it all began might be valuable even if it results in the rediscovery of things we already know about. But his "pilgrimage" has DNA as the starting point, i.e. he assumes that the first gene (a sequence of DNA) just came from somewhere. Is he not neglecting a few billion years of development and evolution?

My proposal to look forward means to focus on the possible precursors, which may not be discoverable, of all major events as we empirically know them: the succession of combinations that resulted in molecules, genes, cells, tissues, organs, and species as well as the development all along that voyage of catalysis, symbiosis, and other phenomena. Each event, or level of atomic complexity, embeds what its constituents must have had to make it happen. The task is therefore to be guided by the actual course of development and evolution and hope it sheds some light on the most interesting transitions — for instance, from the first class of vertebrates to the subsequent precursors of bone structure, brain, and nervous system. These dark alleys of our evolution must hold secrets about what and how we think, see, hear, smell, and touch… that is, about our consciousness, feelings, emotions, and spirituality.

In the same vein, I would like to quote parts of *The Fifth Miracle: The Search for the Origin and Meaning of Life* (1999) by Paul Davies, a theoretical physicist and author of several highly acclaimed books. He reviews the available theories of how life started and introduces concepts such as "self-organization", "law of complexity", and "autocatalysis".

Davies favors a bottom-up approach of looking forward from the earliest starting point imaginable in the organic world but his key assumption is again that only known laws of physics can apply. He then sees — he assumes — the inevitability of some new superior law, introduced where/when convenient. According to Davies,

there can be only two diametrically opposed "world views": either "orthodox science, with its nihilistic philosophy of the pointless universe" or "a self-organizing and self-complexifying universe, governed by ingenious laws that encourage matter to evolve towards life and consciousness".

Let's consider the following excerpt: "Life is not haphazard complexity, it is organized. Disorganized complexity is found all over the place, from the spatter of raindrops on the ground to the tea leaves at the bottom of the cup. But organized complexity, though scarcer, is by no means restricted to biology. A spiral galaxy, a rainbow, and a diffraction pattern from a laser beam are both complex and organized. Yet they form without any genes to specify them or any Darwinian evolution to create them. If nonliving systems can generate organized complexity spontaneously, just by following the laws of physics, why can't life do it that way, at least in the beginning?... [However] the theory of self-organization as yet gives no clue how the transition is to be made between spontaneous, or self-induced, organization — which in even the most elaborate non-biological examples still involves relatively simple structures — and the highly complex, information-based, genetic organization of living things."

The idea of a self-organizing property at any given point in time is an elegant construct. The related event corresponded to the emergence of a behavior that could simply not be reconstructed by adding the properties of all the organism's parts. But we leave hidden what has taken place prior to that particular event. I suggest that a more effective approach would be (a) to start from an earlier point in time; (b) to imagine our special observatory moving forward despite the uncertain terrain; and (c) to speculate in what sort of circumstances, combinations, close and distant reactions might have been at work prior to the emergence of an empirically determined new property.

I am reminded of how Stefan Zweig (1881-1942) describes the creative task of the historian in his biography of Marie-Antoinette: "To understand history, historians need to rely on more than documents… the historian ought to act as a scientist with what is well documented… on the other hand, the historian needs to be a psychologist as well, to interpret and decipher the complex, where tangible proof is unattainable… he will be able to understand human behavior much better than with any document." Similarly, to renew our understanding of the reality that is behind the diversity and complexity around us, a multidisciplinary study team ought to start at an earlier point (with all available documents on what we have empirically determined), move forward through successive interpretations (time and again corrected), and therefore obtain an improved "description" of our history.

IX. Emerging properties?

In the traditionally accepted Western culture view, genes obey Mendel's law of heredity, all live organisms evolve as Darwin's natural selection prescribes, the Big Bang and Chaos theories are widely accepted constructs, and human beings are subject to forces and drivers such as war, love, fear, and self-interest. In other words, we have added emerging properties or laws as we have discovered new phenomena — looking backward. Needless to say, these are (or could be) real phenomena. The problem with looking backward from man's standpoint is that we cannot be an independent observer, and therefore reality is liable to be ever so slightly masked. I have picked up the following examples:

In *What is Life?* Erwin Schrödinger (1887-1961) wrote, "For it is simply a fact of observation that the guiding principle in every cell is embodied in a single atomic association [the gene] existing only in one copy (or sometimes two) — and a fact of observation that it results in producing events which are a paragon of orderliness… It appears that there are two different 'mechanisms' by which orderly events can be produced: the 'statistical mechanism' which produces 'order from disorder' [in physics] and the new one, producing 'order from order' [in biology]." Schrödinger further explained that the mechanism in biology is different because an organism is made of solids, i.e. it avoids the disorderly tendencies encountered in atomics physics. He concludes with, "… the [hereditary substance] is the finest masterpiece ever achieved along the lines of the Lord's quantum mechanics." A new mechanism, an emerging property that comes from a reliable source; we have to have faith because we cannot understand how we went from atoms to the precursor of a gene.

Jacques Monod (1910-1976) was of the opinion that everything in nature is the product of chance and necessity. In other words, the world as we know it is due to a somehow self-sustaining process of building up, but one with lots of surprises; in particular, there is no intelligent designer. He wrote in *Chance and Necessity* (1971), "The universe was not pregnant with life, nor the biosphere with man."

Christian de Duve (1917-), another Nobel laureate, wrote in *Vital Dust: Life as a Cosmic Imperative* (1995), "You [Jacques Monod] are wrong. They were." The debate is an old one and will certainly continue.

Monod and de Duve disagree with regard to the degree of intelligent design (if any) in organic life. To say that there is "a self-sustaining process" or that "the biosphere was pregnant with man" is elegant and provocative, but I am left wondering what initiated the process or impregnated the biosphere with man.

In *Consilience — The Unity of Knowledge*, Edward O. Wilson (1929-) wrote, "The central idea of the consilience world view is that all tangible phenomena, from the birth of stars to the workings of social institutions, are based on material processes that are ultimately reducible, however long and tortuous the sequences, to the laws of physics. In support of this idea is the conclusion of biologists that humanity is kin to all other life forms by common descent… These considerations do not devalue the determining role of chance in history. Small accidents can have big consequences… The map of the material world, including mental activity, can be thought a sprinkling of charted terrain separated by blank expanses that are of unknown extent… Where are our deepest roots? We are, it seems, Old World… brilliant emergent animals, defined genetically by our unique origins, blessed by our newfound biological genius, and secure in our homeland if we wish to make it so… ".

There is more than one emerging property in Wilson's book. His reminder that "A united system of knowledge is the surest means of identifying the still unexplored domains of reality" is, no doubt, appealing. But, in fact, it only adds to a series of assumptions.

I know of many scientists who would agree that life processes obey laws beyond those of physics as we know them, and they talk of "gray areas" (i.e. the 'third thing', as quoted in p. 31) for which science has no explanation. That is why billions of people — slowly but surely persuaded that humans ought to know their origin and their destiny — feel the "satisfaction" of a spiritual life, usually associated with one or another religious faith. Whether a spiritual life necessarily entails religion is a debate for another day. What is certain, however, is that religion does, among other things, provide "answers" to questions like *Who can give life? What is the purpose in life? What happens after death?* and *Why is there something instead of nothing?* As long as there is so much gray around, there is no chance that religions will become obsolete.

What I am suggesting may direct us to identify at the heart of the entire development and evolutionary process the contribution by the ensemble of matter and all primal interactions — from an earlier starting point onward. We may not need to define properties as 'necessities' and 'imperatives' as we move into higher complexity; however, chance (as one consequence of movement in the midst of increasing diversity and complexity) plays a role, though much less than in Monod's view. As Schrödinger has been quoted as saying, "The task is, not so much to see what no one has yet seen; but to think what nobody has yet thought, about that which everybody sees."

X. Primal Interactions

In their theoretical and experimental work, physicists have identified four fundamental ways in which elementary particles can interact with each other; they, the primal interactions, are classified as strong, weak, electromagnetic, and gravitational. Most phenomena in inanimate matter can be analyzed — and predicted, under certain circumstances — with the help of these four interactions and other basic considerations. More laws are, and maybe new ones will eventually be found to be, part of this foundation. They are often referred to as the natural laws or laws of physics.

All that can happen involves atoms. But atoms and all that is at a lower level of structural complexity do not plan ahead or have intent. For instance: How come a drop of water is spherical and the path of the moon around Earth elliptical? The quasi-complete answer would include references to the laws of physics, with no implication of finality. But the actual dimensions of the sphere and the ellipse are a function of chance events (as in unforeseeable hits by molecules or stars). In other words, the four primal interactions acknowledged by physicists and the addition of chance (essentially caused by movements within the increased complexity) are the basis with which to explain how a drop of water and the path of the moon happen to be shaped the way we see them.

Our modern knowledge of physics goes deep into the microscopic world of elementary particles and their related waves and fields as well as into chemistry and molecular biology. But all is not clear. And the knowledge gap is quite wide when we move from inanimate to organic world. Why are all living creatures capable of self-reproduction via a relatively simple organism? What gave to humans such a particular organized memory? Why is the process leading to death inevitable and not stoppable by natural selection? And how did feelings, emotions, passions, consciousness, and spirit develop from combinations of atomic structures?

In his *Adventures of the Heart*, Alain referred to Plato's three-animal metaphor for the major centers of the body — brain, heart, and guts. "What is in this skin bag which we qualify as just or unjust, wise or crazy? I see three animals in one, and they constitute a strange society. The brain, a calculating animal, is where memory and logic reside, much like some Pythagorean, entirely dedicated to external phenomena and willing to forget the requirements of the body. The chest, where the heart resides, is for the lion and his roaring, his exultation. In the guts, crawling and fearsome, awaits the Hydra."

I agree with his basic point: that our emotions are intimately tied in with our organs, or, as I would prefer to say, their respective atomic structures. However, the metaphor leaves something to be desired. The heart (and, for that matter, any organ) never adventures alone. If we confine the "lion" to the heart, then a passion with its base

in the brain will never be considered as roaring. What about our thirst, hunger, sexual urge, or intellectual frustration? Surely none of these reside in the heart. But do they roar!

How about a lion as a metaphor for the resultant primal interaction at each layer of atomic structures in all organs? One or more of these lions will roar every time a roar is called for. And the lion with the strongest roar will overpower the other lions.

Alain also wrote in *Adventures* that a person's behavior progresses from love to ambition to miserliness — the three stages of life (not interactions, as considered here): "This subdivision is excellent on a theatre stage, in a novel, and in a speech; I want to use it. But I also want to dissect it. These three passions correspond to the three stages in life; and that ought to warn us against making simplistic judgments of characters and their differences."

I agree that we should not rush into simplistic conclusions. Are these three the strong markers in life's stages? Love, in our earliest moments of life? Ambition, when we enter adult life? Miserliness, as we take action in old age? As I would like to postulate, the primal interactions, though behind the three markers, are not confined to a particular stage of life: Each is likely to be at work in an open interplay from the lowest levels up — and does so until death. Of course, the resultant interaction varies with each possible condition within (structural complexity, the impact of past events, and age) and without (affinity with other matter and their interactions on the outside). Resultant interactions can gain or lose strength.

We will never know how any of the great minds of the past would have described emotions and feelings had they found some validity in the idea of an earlier starting point and that of an evolving ensemble. Nor would we know how to get going in a dialogue with them after having introduced such a new frame of reference.

What we do know is that Alain said, paraphrasing Comte: "The lower levels are the support for the higher ones. But we need the higher levels to understand the lower ones." He also insisted: "The error of errors is to want to be free of, far away from, the obstacle. To complain about the difficulties and to forget that difficulties give strength. If I have a new idea, I must first contradict that idea; it is my way to test my idea. If we shake the tree of knowledge, the good fruits will be saved and the bad ones will be thrown into the bin of useless items."

The objective of this section is to test my repeated reference to *all* primal interactions.

The additional primal interactions

Is it true, as many religions claim to know for sure, that life emerged as an independent new start — an ontological discontinuity, a supernatural gift? Or can we assume that there actually are more than the primal interactions acknowledged by physicists? Under this second hypothesis, I suggest that these additional primal interactions had a discernible effect only after a certain level of complexity has been reached *and* until specific surrounding atoms created certain conditions of heat, pressure, light and other radiation. Crucial new movements and changes were then triggered that led to the first manifestation of life.

Essential to life, beyond the exceptional circumstances acting as a trigger, is a constant inflow of energy. But that is only one prerequisite. The life process is also based on rules; and needs a control/maintenance feedback loop. Looking forward from the postulated starting point, these three-pronged life prerequisites go from their elementary beginnings with energy flowing as part of the merging of atoms, their follow-on successive combinatorial patterns, and then becoming bearers of information, memory, hence rules, as well as weavers of control feedback loops — all resulting from matter and primal interactions as ensembles evolving into increasingly complex atomic structures.

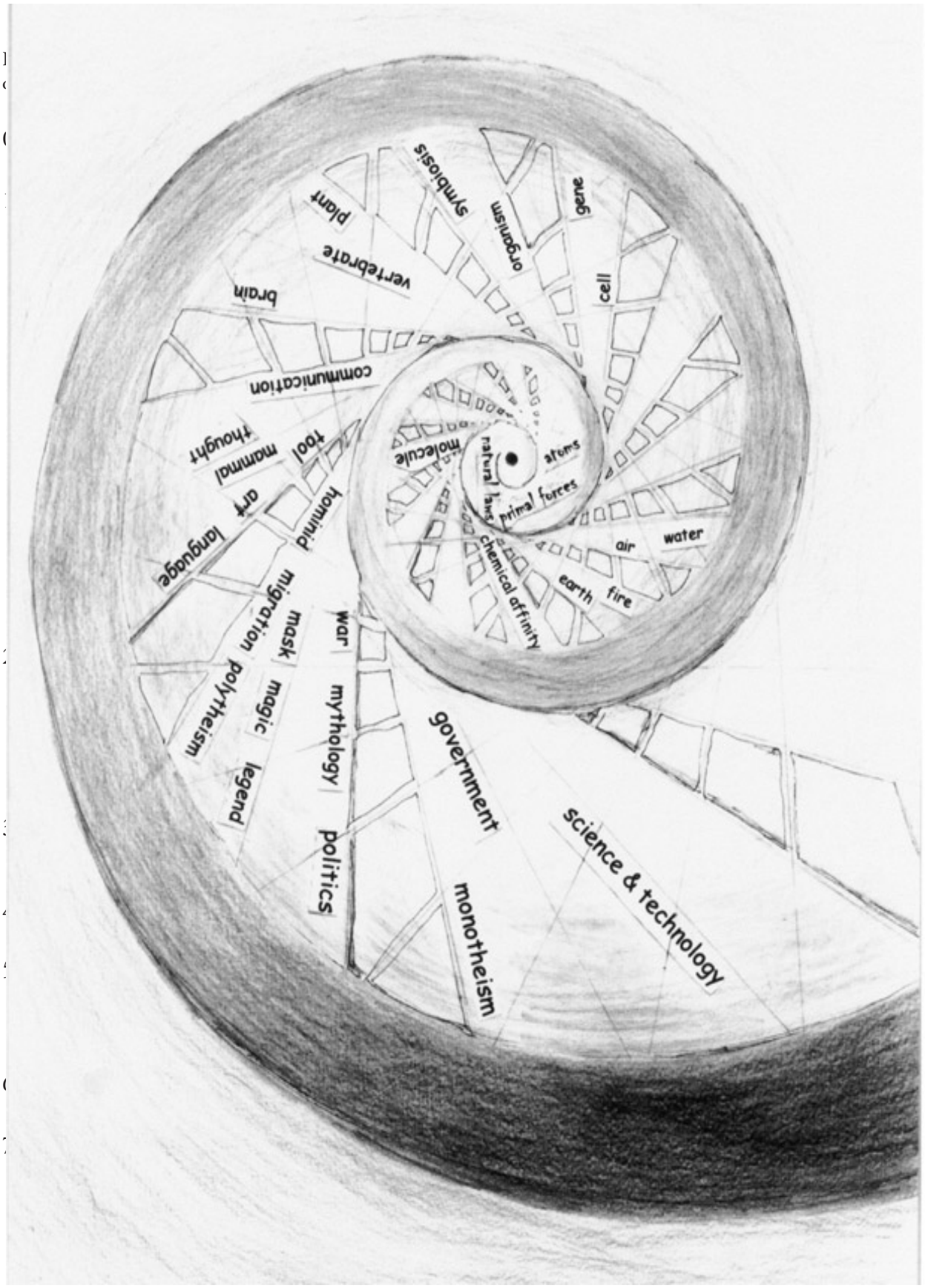
These three life prerequisites are the structural means: to grow in size via respiration, food intake, and digestion; to build and maintain a self-organizing information-based process as the complexity level increases; and to provide the life-saving/replicating or self-perpetuating capability, from cell splitting to sexually-based new birth. But where do these means come from?

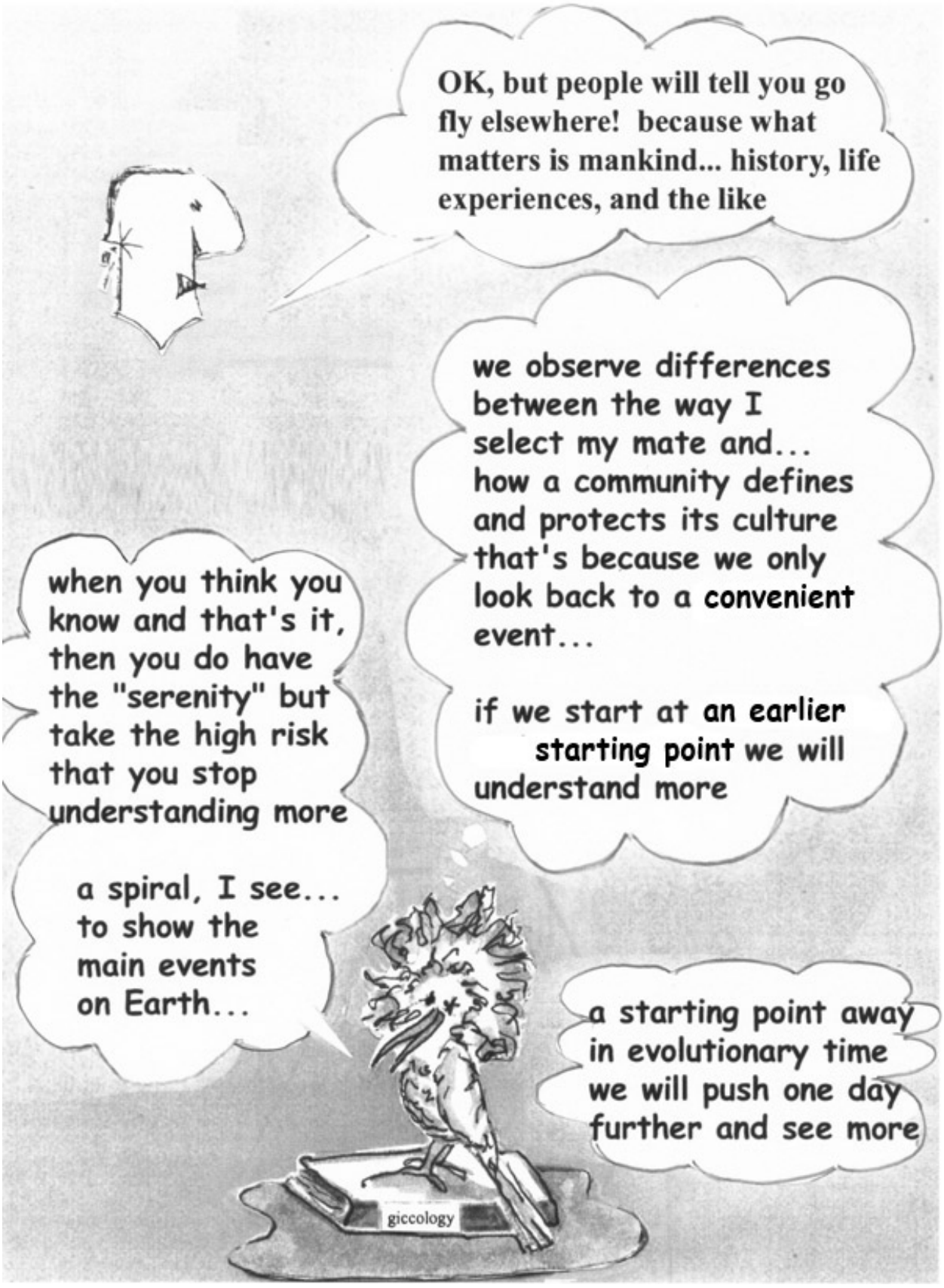
The ensemble of atoms and all primal interactions is the building block of all that is part of the three prerequisites noted above. My suggestion is to imagine the increasing levels of complexity along the evolutionary time line, some twenty billion years long, looking forward. Any person doing such a walk-through will inevitably be influenced by his already acquired knowledge. But I have introduced earlier a special cumulative recording from which we obtain a set of observations. So next page is just an example, in seven hypothetical levels, of what the voyage main stops may look like and as it has, in small part, already been empirically determined.

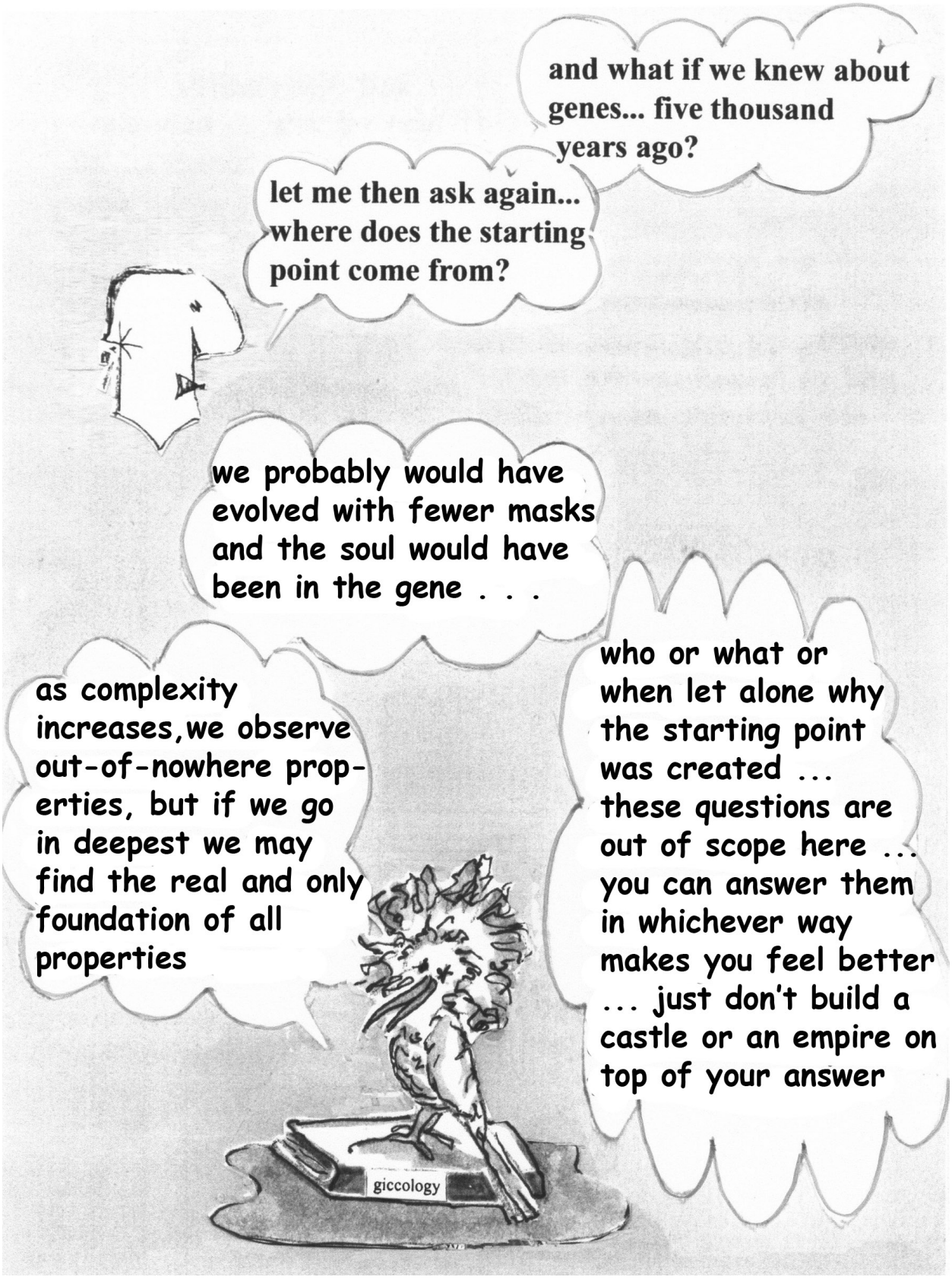
Lest we forget, we are talking hundreds of millions of years between major observations. A tree would be a nicer representation. The trunk, or level 1, includes the development of galaxies and whatever else constitutes the physical foundations on which the life process was sparked on Earth. There would then be millions of tree-like branches for each of the kingdoms with branches for each species. Or, maybe, we should have more than one tree, or a spiral.

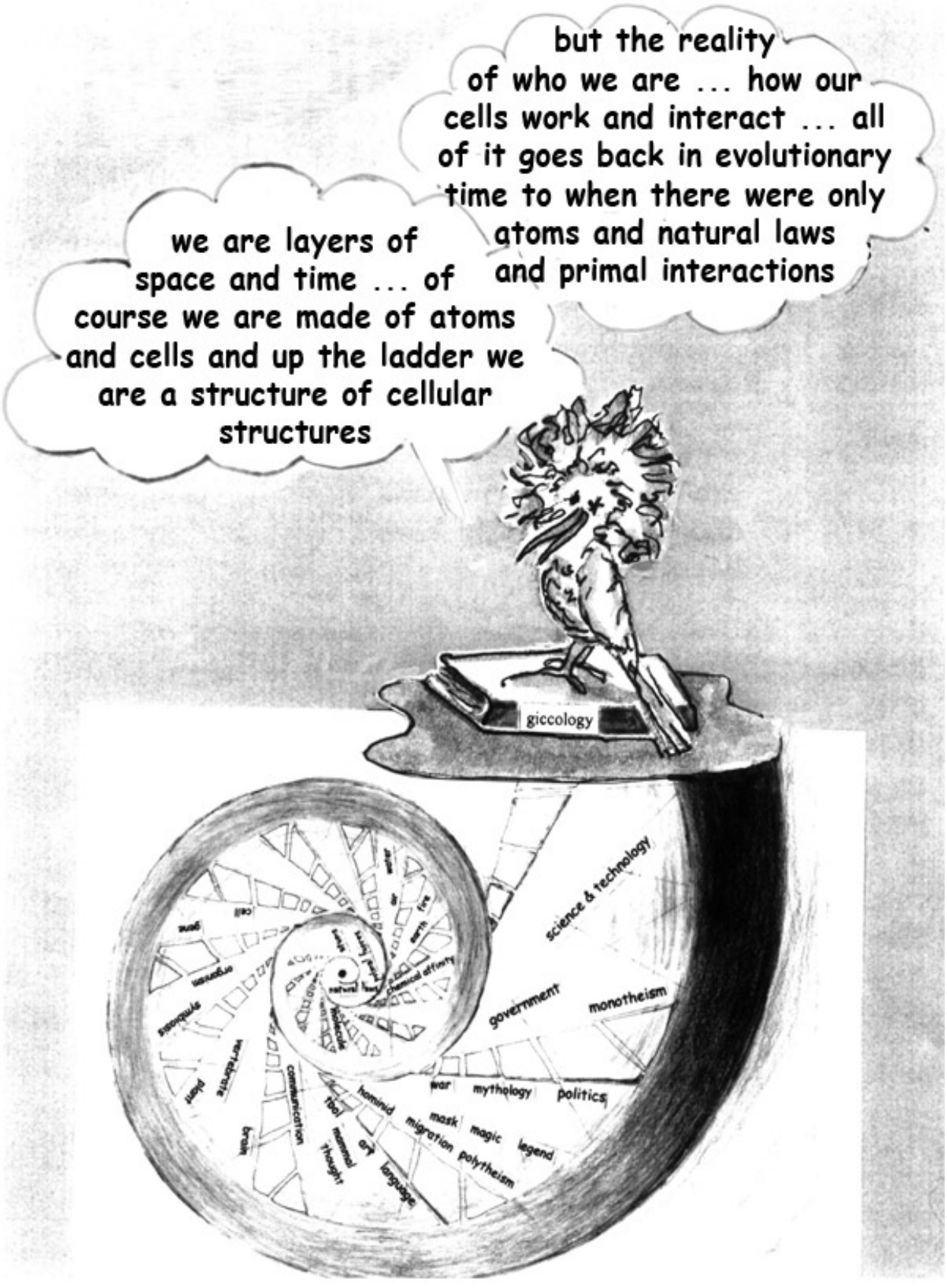
First Timeline

Increasing level of complexity	OVERALL COSMOGONY
0	total unknown (includes, however, precursors of atoms and all primal interactions)
1	ensemble of free atoms and all primal interactions (a.k.a. primal forces) *(the herein postulated earlier starting point)*
	first accumulation of matter sun light first molecule grouping hydrogen, nitrogen, carbon, phosphorous atoms first grouping of molecules to include sugars and acid; first mechanistic memory, chemical affinity, earth-air-fire-water
	the precursor of the first nucleotide and mechanistic rules the first chemical information memory (precursor of rules)
	the first amino acid (the building block of proteins) and feedback loop the first protein, mitochondria (with rules) the precursors of the three life prerequisites
2	the first "gene" in the precursors of the first cell, of the first "DNA", and the first bacterium *(the starting point for modern biologists)*
	the precursors of intra- and inter-structural coordination and communication, nerve cells, memory (with more rules), and… brain
3	the first multi-cellular organism *(the starting point for Darwin)*
4	the precursors of the vegetal kingdom
5	the precursors of the fish kingdom the precursors of the bird kingdom the precursors of the reptile kingdom
6	the precursors of the mammal kingdom; …
7	the precursor of the first human… *(the starting point for many philosophers, religious leaders, and others)* with a succession of events that actually started to form within level 5: intra-structural tolerance, extension of biological functions… tools, language, art forms… hominid, migration, polytheism, masking reality with myths, magic and legends, war, politics… monotheism… government, science and technology… >>> see spiral next page >>>









Actually, my preferred symbol would be a three-dimensional spiral: its starting point is at the center; we have no clue as to what is behind it; we don't know either where the spiraling line will actually end; but we know about some of the events along the spiral and especially those corresponding to the sprouting of daughter spirals that somehow grew apart from the main line.

Now, what could these "additional" primal interactions be? How could they co-exist and complement the pack of those already acknowledged by physicists in such a way as to open the road toward the first organism? Can they or their effects be somehow isolated, identified and measured? How do they participate in the so-called driving forces we refer to in physiology, sociology, psychology, and history? The list of pertinent questions can be quite long. But this idea of additional primal interactions has neither been measured at the sub-atomic levels nor considered within any of the schools of thought.

The *naming* of these additional primal interactions at the sub-atomic level of complexity, let alone providing intelligible answers to some of the above-stated questions becomes an uphill battle. The additional primal interactions are central assumptions to the new approach; interdisciplinary research is needed; and, in any case, all primal interactions should be considered always at work as introduced in the previous sections.

This may have no interest to many readers. Religious doctrines are firmly established. On the other hand, scientists may one day be in a position to determine Alain's three stages of a person's behavior as well as Goethe's "elective affinities" with the help of mathematical equations; to show how genes are formed from atoms; and to demonstrate how various chemical compounds surreptitiously carry, with particles and waves through coordinated movements around the nucleus, what is needed to explain the origin of — to further understand the reality behind — our human nature and behavior.

In *Elective Affinities* (1809, tr D. Costantine 1994), Goethe (1749-1832) tells us the story of two relationships. Here are some excerpts from a dialogue among three protagonists:

"We say of those natures which on meeting speedily connect and inter-react that they have an affinity for one another. This affinity may be very remarkable. Alkalis and acids, although opposed, will in a most decisive way seek out, take hold of, and modify one another and form, in so doing, a new substance together. "

"When you speak of these wondrous entities as related they seem to me not so much blood relations as related in spirit and in the soul. In precisely this way true and

important friendships may come about between people: opposing qualities make an intenser union possible."

"These comparisons are very entertaining, everyone likes playing with analogies. But a human being is after all superior by several degrees to those natural substances, and having been rather lax in our use of the fine words 'choice' and 'elective affinities' we might do well to return to our inner selves and ask in all seriousness what the validity of such expressions in this context is. Alas, I know of enough cases in which a close and, as it seemed, indissoluble relationship was annulled by the casual arrival of a third party, and one of the pair, previously joined so beautifully, driven out into empty space."

Alan Lightman's essay "Smile" in his *Dance For Two* (1996) suggests a similar questioning. The subject is about a man and a woman who just happen to "stand on the wooden dock, gazing at the lake and the waves on the water. They haven't noticed each other. The man turns. And so begins the sequence of events informing him of her." Lightman describes for us what happens with photons, vibrating air, and their effects within the bodies; he concludes the essay with, "Eventually, a large fraction of the trillion neurons in the man's brain become involved with computing the visual and auditory data just acquired… Electrical currents speed along neuron fibers. Molecules flow from one nerve ending to the next. All of this is known. What is not known is why, after about a minute, the man walks over to the woman and smiles." Or why, under different circumstances, the same man walks away and does not pay any attention to the woman.

In essence, past and modern thinkers have had to tackle the perplexing problem of that *third thing*. The idea of additional primal interactions is my way of dealing with it.

Overall, the fundamental laws of physics are applicable at all levels of complexity, from the sub-atomic world to the Milky Way and beyond, without any need to introduce a new law when we go from the lower levels of complexity (e.g. large molecule through chemical bonding) to the higher ones (e.g. nuclear electric generation). I therefore suggest that we can make a parallel assumption with regard to the organic world, that is, the same primal interactions apply from the start (sub-atomic particles) to man (the most complex organism). Observing the life process in the vegetal and animal kingdoms as well as with humans I have been in contact with led me to consider additional primal interactions as crucial to go from atoms to inanimate to animate matter, from nuclear to chemical reactions to multiple combinatorial patterns to memory and to information, from cells to tissue, from tissues to muscles and brain, from brain to thought, and so on.

The following table encapsulates this naming challenge along the increasing complexity and diversity (with reference to the First Timeline in page 40):

Second Timeline

Increasing levels of complexity	MAIN EVENTS
0	total unknown… includes precursors to atoms and primal interactions: Big Bang? … quarks and gluons… particles, quantum, waves, geometry, determinism and uncertainties… strings? … other exotic physics at play?
1	ensemble of free atoms and all primal interactions accumulation of molecules, matter, galaxies… manifestation of laws of physics… sunlight… chance… chemical affinities, organization, mechanistic memory… first manifestation of **additional primal interaction**…
2	the first cell… level 1 plus more manifestation of: chance events, additional primal interactions… elective affinities… initial intra- and inter-structural **coordination and communication** in turn exhibiting structural **tolerance** (upper limits of size, volume, and stress)… in turn leading to the formation of first nerve cells, organic **memory, rules, and information flow**… (The cumulative structural/interactions feature: from now on referred to as **stuff from within)**
3	the first multi-cellular organism… all the above getting into increasing diversity, initial manifestation of **natural selection**… leading to, among other things, **dancing and seated cells**… the basis and precursors of eyes and other senses… and organic order, organization, balance… with almost all seeming deterministic… bacterium, virus, but also the initial manifestation of symbiosis…
4	the precursors of the vegetal kingdom… a major daughter spiral leading to some specific new features though all dependent on what was available at the separation from the main spiral…
5	the precursors of the fish kingdom… new developments regarding senses, elective affinities, respiration, reproduction… the precursors of the bird kingdom… and novel behavioral features… the precursors of the reptile kingdom… more and more of the above…
6	the precursors of the mammal kingdom… and more… in particular: brain development, less determinism…
7	the precursor of the first human… with a succession of precursors/events that actually started to form between Levels 3 and 5: hominid… feelings, emotions… homo sapiens… brain and extension of biological functions… fear, tools, language, art forms… culture… consciousness… less determinism… new chance events… migration, polytheism, gods and possessiveness… reason, generosity, abusiveness… medicine… overpopulation, government, war, politics… wise men, myths, man-made concepts, and legends… monotheism… soul… social engineering, chance and coincidences… science and technology… Note: *The actual list can be made longer with details of particular interest (e.g. focused on the evolving thought process); each event or feature: (a) depends on most of what happened earlier, and (b) continues with a new name but actually carries a resultant interaction (i.e. stuff from within plus external conditions) out of ensembles (atoms plus all primal interactions) getting into increasingly complex combinations.*

We may speculate that future developments may reveal a universal "string theory" that will define all the ensembles at the earlier starting point are but the outcome of a yet lower level of complexity characterized by even more fundamental laws or forces. And that will be that. For the time being, we either go for: (a) one of the well established and obviously elegant systems where all unknowns are "clarified"; or (b) the scientific systems where certain phenomena are ascribed to chance for want of a better explanation; or (c) with additional primal interactions where we are serenely aware of how much is unknown and that the road to further understanding is a series of "horizons". It follows that my answers have to be modest; and they must be sketchy, because many segments in the "spiral of life on Earth" have interdependent processes, and unfortunately we can only address one or two processes at a time.

The presentation of the additional primal interactions may appear linear and even simple but what is actually taking place is not. Among the main behind-the-scene complicating factors, we have: (a) many primal interactions are always at work; and (b) the schema of interdependencies is mind-boggling. Here goes with a plea for indulgence on the part of the reader as regards my choice of names:

pro–working-ensemble

The precursor of the first gene took a long time to appear. Complex structures had to be formed and proved workable. The first clue of an additional primal interaction is: if atom *A* works well with atom *B* but not so well with atom *C* then *A* stays together with *B* when they have the first opportunity to be close enough. This inherent characteristic is the first additional primal interaction; the essential part of what an assembly of atoms or atomic structures needs to have to be a working ensemble.

From such elementary beginnings, this additional primal interaction went through the successive levels of complexity as part of the evolving ensemble of matter and all primal interactions. For instance, it must have played a key role in the formation of the first virus (levels 2 and 3) as well as symbiosis through subsequent levels. In fact, it might be useful to give successive names to this additional primal interaction depending on the level at which it is the primary part of the resultant interaction; for example, the name of "quest for harmony" when it is at either the level of complexity of an organ or the human body.

if truly you are where you like to be
and beautifully do what you want to do
you know as much as you need to know
and are the best you can possibly be

pro–expansion

We need to account for what happens after initial assemblies of molecules are formed whereby another kind of interaction breaks other molecules and thus favors (though without the intent to achieve it) the transfer of more energy from the interaction.

In this case, as we move from lower to higher levels of complexity, this additional primal interaction could be named "call for power".

con–expansion-of-others

and

con–lack-of-working-ensemble-in-others

Finally, we need to counter both the pro-working-ensemble and pro-expansion interactions with: the third additional primal interaction that will limit an expansion and a fourth that will impart additional energy wherever it is needed to achieve a working ensemble. Both could be viewed as reactions to a lack of balance throughout the evolving structure; to allow the exchange of energy/matter where it is needed and to stop it where it is not. The fact is, without these two, there would be no constraints and the world would certainly not be as we know it. And at higher levels, I have named them "fear of loss" and "courage to give" respectively.

The challenge in naming these four primal interactions can now be made a little bit clearer. For instance, concepts of "working ensemble" and "expansion" are born out of our language, culture, intentionality, and consciousness; they co-grew with the human mind. Naming a phenomenon at a lower level (let's say, when the precursor of the first gene happened to get going) may appear as implying the presence of a spirit or a soul. That is not why I have chosen these names; I would rather use existing words — and caution the reader — rather than inventing new ones.

For instance, we use the word "gene" instead of carrying forward what is going on. In fact, millions and millions of molecules constitute the gene and represent complex interactions; these are, to a great extent, the manifestation of memorized rules.

will working ensemble
and single direction
give us the life process

the call for power builds strength
with more gain… it corrupts
opens the road to incompetence

disruption sure follows
while the fear of loss grows
and develops a new challenge

can these interactions contribute
with the courage to give
the first live step to burst

A few details about some of the combinations or properties that have emerged (looking forward) along the timeline came about during my conversations with interested readers; here goes:

> *coordination and communication* — interactions lead to movement; in turn, movement in a structure of structures can lead to communication and coordination.

As a general principle: in any given structure, a movement imposed on one of its parts will usually cause a movement at one or more of its other parts. In the inanimate world, that is a form of communication. Furthermore, if one of the parts is formed in a particular way, the transmitted movement can then be relayed only to a pre-selected part; and that is a form of coordination. The same can be observed in the organic world.

> *memory, rules, and information flow* — like musical instruments and music score; each one is next to nothing without the other.

> *Is the human soul concept the shorthand for the four additional primal interactions plus, let's say, whatever other features we can identify along with these properties of coordination, communication, memory, rules, and information flow?*

The resultant of all primal interactions at work is subject to change; the cellular structure becomes a storage place for "information" through the successive interactions; in fact, different circumstances will apply to the many cellular structures that are engaged in the phenomena we see. The soul, on the other hand, is regarded as an "entity" that remains constant *and* it is assumed to be non-material. But all matter is subject to change. Plato and various Christian teachers who adapted his philosophy believed in the immortality of the soul. Aristotle, unlike Plato, did not separate it from matter but saw it as a form actualized in matter. Though it has no physical or material reality, it is credited with the functions of thinking and willing, and hence determining all behavior.

Interestingly, all these concepts make the path of evolution purposeful. The earlier starting point and the idea of an evolving ensemble open the way to an understanding of how our thought process has been shaped and why it will continue to evolve. The classical approach on the basis of metaphysics and spirituality can only claim that the soul is what it is.

tolerance — any structure shows weak and strong parts versus any stress

I was reminded of relevant tolerance by recent reports about new thinking in oncology. Theories have emerged to challenge the view that cell mutations are the decisive events in the transformation of healthy cells into malignant tumors. One such theory suggests that damage to a few master genes corrupts the chromosomes, which then become dangerous. That makes sense. Each gene is a cellular structure. If we could measure how tolerant it is of the primal interactions at work, it would be evident especially before and after a mutation, an accident, an infection, or their repeated application. Then we should endeavor to estimate how fast the tolerance threshold is likely to be reached and whether anything can be done to slow down the movement now resulting from the influence of undesirable, unharmonious cells. This procedure would indicate when and where the deterioration (increasing pain, approaching death) will become irreversible.

To stay in the medical arena: prayer and positive thinking are often mentioned as effective steps (in the healing process) available to the patient. There is no denying that they can both be supplements to the medication (on which the tolerance, as defined here, depends so much). The question is: what is actually going on? Indeed, both represent a way of being that is focused and that, taken to the lowest levels of the cellular structures in the sensory apparatus as well as in the immune system, may cause the primal interactions to favor the optimum working ensemble. Conversely, misplaced or "forced" positive thinking can make things go worse for a weaker cellular structure.

dancing/seated cells — cells with/without space for change

This is similar to Aristotle's notion of essential and accidental properties. He taught us that for all things, not just living things, there are two kinds of properties: the essential properties without which things would not be the particular kinds of thing they are; and the accidental properties that are free to vary within the kind. The essential properties are determined by cellular structures such as genes with only seated cells (or, more precisely, with a high seated-to-dancing cells ratio). The accidental properties are determined by a low ratio. The color of the skin, the strength of the bones, the constitution of blood cells, and the breaking points are what they are because of seated cells. The dancing cells will typically cause a degree of "freedom" — that is to say, a degree of susceptibility to change due (in part) to outside influences. They will be responsible for such properties as internal and external coordination, physical and mental growth, and resistance to illness and death. Indeed, recent research has provided scientific evidence that genetics has to deal with components (at both the DNA and RNA levels) that have an innate degree of variability until they are subjected to some new and as yet undefined high-impact (positive or negative) new regimen or breakdown.

Interestingly, the inert materials may have the minimum number of dancing cells, while the human being may have the maximum. And within each species, some plants, some animals, and some human beings will display more dancing cells than others. All this is part of "our" evolution.

> *stuff from within* — for an atom, the stuff from within is the ensemble of elementary particles and all primal interactions; for a cell, the stuff from within is composed of its billions of atoms (including its genetic components) and the resultant capability to interact with an approaching atom or molecule or whatever else.

A recent report has shown that the genetic code of a tiny worm one millimeter long includes a "death plan". The code establishes the number of reproductive cycles that can occur before cumulative stress causes final breakdown. But saying that there is a death plan is equivalent to saying that the worm has a strategy. What about simply saying that the worm has a certain potential performance in its reproductive parts (or some of its cellular structures)? The stuff from within defines the number of times such reproductive action is tolerated and beyond which there is a breakdown.

Are the four primal interactions "additional"?

The question is of primary importance for all those who accept only that which is based on positive observable, repeatable scientific facts, and who reject speculation on or search for ultimate origins. While their positivist views are supportive of sound scientific method, we need not accept their assumption that what cannot be measured by current means does not exist. Many great scientific theories have sprung from bold assumptions. Moreover, if it is nowadays credible to say that all living creatures have one common "ancestor", no expert, scientific or otherwise, has so far been able to show why so much diversity and complexity exists around us after the organic life first came out of inanimate matter.

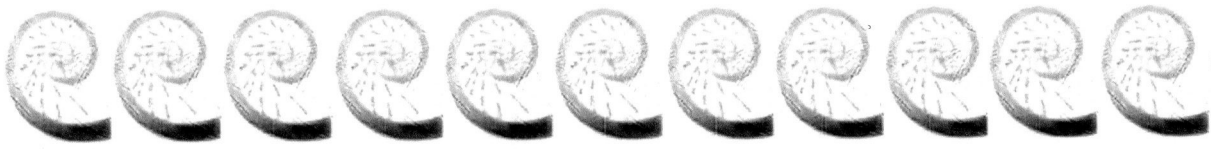
However, the challenge to answer the question with an acceptable report on additional primal interactions is bewildering; especially because of the high likelihood that each leader will reject the idea to re-discuss starting point and related assumptions pertaining to his/her cherished school of thought.

Here is a panoramic view of the landscape for my answer: Scientific theories object to religious credos, biblical scholars disagree with the dogmas of Eastern schools of thought, and today's science contradicts or modifies the results of yesterday's scientists. There is a strengthening of modern religious movements which are based on the crucial role of faith but also on the rejection of any criticism. And skeptics seem against any kind of dogma without offering any solution.

So my honest answer to this subsection's title question is: I dunno. I say this in a way similar to the way Mark Twain said it in his essay "The Damned Human Race: Man has been here 32,000 years. That it took a hundred million years to prepare the world for him is proof that that is what it was done for. I suppose it is. I dunno. If the Eiffel Tower were now representing the world's age, the skin of paint on the pinnacle-knob at its summit would represent man's share of that age; and anybody would perceive that that skin was what the tower was built for. I reckon they would. I dunno."

Mark Twain derides those who say they know what is what and, particularly, when they claim to know the purpose of this or that. But I would like to think that Twain also addresses the issue of misrepresentation when looking backward — the result of the homocentric standpoint — at the reality of human nature and behavior.

The next two sections
are my further steps toward
answering this important question:



Are there primal interactions
in addition to those acknowledged
by the scientific method?

XI. Reflections

I wanted to meet again with my neighbor and ask him to review the manuscript in its working-draft shape. In vain: he was sailing. So I imagined our conversation on the dock… he would surprise me with, "You should write a book about the stories of your life and how you managed to publish your own first book. It would be a success… most people I know who are near or just beyond retirement age talk about writing and/or travel alone in search of some new excitement but end up achieving none of the above. You have done it all and will have plenty of curious readers with that kind of book. Forget philosophy!"

But, on the other hand, he *might* have changed his mind for a while. Maybe, the day after he witnessed, let's say, a deadly accident on the lake: He started re-reading about the great questions in philosophy; and he would greet me with, "Why all this? No one seems to care about starting point and assumptions. Life and death: that's what matters."

It does look like I am trying — with a few wild conjectures — to fit a square peg in a round hole. The round hole has been worked at by expert hands for a long time. And I am well aware of the many studs that could obstruct (or break) the peg if I ever succeed in fitting it in. Oh well…

life without humor
oh… I cannot conceive
no… I will never enjoy

but I shall yes accept
to be without life
in harmony and with humor

How important can the questions of life and death be? I think the more important question is, "What can we do with what is unknown to us — besides smiling at our human condition?"

At any rate, the short answer to the *why all this* question is: (a) we should welcome an improvement, a step ahead in our knowledge; (b) most theories have answered key philosophical questions but also thrown masks on the reality behind them… an open-ended conversation can only be healthy… it will open the avenue toward peace of mind and hence a more productive life; and (c) while the known theories have done a great job nurturing hope after every disaster, wars continue to take place, and it may be worth it to try anew.

So I propose a few reflections with the new approach in mind: about thought and behavior, human relationships, and more to follow.

"The difference in mind between man and the higher animals, great as it is, is certainly one of degree and not of kind. We have seen that the senses and intuitions, the various emotions and faculties, such as love, memory, attention, curiosity, imitation, etc. of which man boasts, may be found in an incipient, or even sometimes in a well-developed condition, in the lower animals." That's what Darwin wrote.

Animal life is predictable and consistent. Most of an animal's behavior is essentially dependent on its genes and its needs of the moment. Animals hunt, eat, play, sleep, and copulate. Some have asserted they do it all instinctively — as if the biological process supporting their instinct has no common ground with the one pertaining to thought in humans. But that's shortsighted. There are similarities. There are also unmistakable differences in behavior. And there are also substantial differences between different animals, but the variability within each species is relatively limited if compared with that of humans.

With humans, differences in behavior are readily observable. And there may be differences in the thinking modes. A person may be thinking in a kind of soliloquy, with eyes and ears shut. There may be thinking and acting during a conversation, and thinking and acting in a fight. Thinking, therefore, does not always play its role with the same importance relative to whatever else influences behavior. The coordination and internal communication related to each mode will mean cellular/atomic structures are engaged in varying degrees. And that will show in the behavior.

Each of us is a single entity. We don't have multiple personalities, though some experts believe in "multiple personality disorder". We have, no doubt, a definition problem. At any rate, no observer of an action, including the agent, "sees" the whole dynamic involved. Rather, our behavior will vary according to our thinking mode or state of mind, and more. In turn, all these variables are influenced by the internal and external interactions at that particular moment.

It is widely asserted, especially by believers in a non-material immortal rational soul, that the human mind is too complex to be the product of natural selection. It must be, they claim, a distinct and divine creation. For the ancient Stoics, it was a spark of divinity within man, and with some modification, Christians adapted this concept. More in line with the belief that the mind is a product of natural selection are various materialist positions. The disagreement between these theories would seem to be irreconcilable without first being clear on how any given theory we adhere to has been developed — that is, what its starting point and its assumptions are.

The novelist and essayist André Gide talked about the "similarity of souls" as a precondition of enduring love. He wrote, "Two souls met one day while picking flowers and thought they were similar because they had the same desire. They held hands and wanted to remain together along the way. But the road already traced by their pasts would keep them apart. Their hands would be separated and each soul would continue its own way. This separation was inevitable because only a similar past will allow two souls to be similar. In the world of souls, all is continuity. Some travel parallel paths and will never meet or, if they do, will never get close to each other. That is why our two souls who met one day did not stay together. For one summer moment, their two lines merged but not for long. They soon started to look elsewhere. They also wanted, from time to time, to reestablish their love. But it was a pleasure without surprise. It was a tired thing. He was happy whenever he thought about leaving. She did not really want him to stay."

With two different pasts, Gide asserts, two souls, instead of being in concert, will be in conflict. Their ensemble will not work well for long. But then how to understand two souls who live harmoniously together despite striking differences? And those with similar, compatible pasts who nonetheless behave as Gide describes?

My suggestion is firstly that the past is formed by: heredity (genes) as well as interactions and development (from childhood to adulthood) within family, school, and neighborhood. Cultural influences come with language, other symbols, conventions, ceremonies, and arts in a given community.

André Gide was an admirer of Goethe; he often zeroed in on harmony, if harmony can be achieved in human relationships, and how man can live on Earth while being in heaven as well as in hell. My reflection regarding human relationships: (a) we have to expect that any two people will be capable of working well together only for a limited continuous time; (b) on the one hand, some of us will be able to adjust if some aspects of the other are not in harmony; (c) discipline and uniformity have been practiced to ensure harmony but that's not the real thing.

Secondly, all primal interactions are subject to stimuli, within and without. Assuming some harmony is fulfilled (as is the case with Gide's souls when they meet), other primal interactions (within structures of structures behind our perceptions, feelings and emotions; and those additional molecular structures behind our memory and whatever else is part of what we call will power and character) may cause movements that we interpret as charisma, self-esteem; or egocentricity, aggressiveness; or initiative in order to win, gain control, possess; or seduce; reward; or take revenge (with reference to an external event), abuse; or punish. In other words, we need to find out more than just the past.

In The Psychology of the Masses (1895), Gustave Le Bon, writes: "There is a crucial transformation going on in the human thought process. Society is now entering the era of the masses. No more royal councils and decrees. A nation's destiny will, from now on, be directed by the masses — by their souls."

There is a sort of "wisdom of the crowd", as many have since suggested (recalling Adam Smith's "invisible hand"). Le Bon's proposition is appealing but it is not complete: Democracy (with the view that "freedom" to all will bring peace to all) has been strengthened by a series of positive measures but has come to incorporate some negative ones as well. Let's review two general ideas.

Nietzsche (1844-1900) wrote that "all of history is a metaphysical struggle between two groups: those who express the will to power, the vital force necessary for the creation of values, on which civilization is based; and those who do not, primarily the masses created by democracy".

In his study of French political life following the First World War, Alain wrote: "I have observed that any position of power will be developed with self-preservation in mind. Such passion to govern others is without doubt the cause of many societal problems. The person holding power becomes more aggressive and domineering. Earlier in my life, I had concluded that ensuring peace would slowdown the development of power centers. Now, with my experience as a slave during the war, I say that society must strive to limit all kinds of power centers, in spite of the many negative consequences, if we do want peace."

Le Bon focused on the evolution of the masses. But there are masses, and there are masses. There is the general population, and then there are political parties, trade unions, students, the military, special interest groups, sports teams and fans, entertainment and media, professional protesters, and terrorists. Each group of followers within each one of these masses has become more vocal and visible in our times.

Both Nietzsche's and Alain's attention were on the leader; respectively, the creative and the abusive leader. Leaders take charge; they hold keys to the creative process and control any changes to it — and their energy depends upon being worshiped by their followers.

An improved understanding of this masses-leader interdependency is needed before we can assert as Le Bon did that the masses can or should direct changes in society. It is important and appropriate to analyze anew the psychology of the masses; but we ought to study at the same time the psychology of the increasingly diverse community of leaders: The embodiment of both the absolute, abusive ruler of the past and the leader-inspirer continue to survive with a somewhat new appearance: primal interactions affect the behavior of both masses and leaders. Two recent examples follow.

Slobodan Milosevic was a leader-dictator. His objective of reviving the Greater Serbia was an expression of a resultant primal interaction in favor of more and more expansion. Did the masses lead or follow? To the extent that any demagogue creates policy in response to the desires of the masses it can be said that they lead. To the extent that he manipulates their desires to support his own interest it can be said that he leads. In the case of Milosevic: he acquired unlimited power and got an illusion of invulnerability. But did he notice the rise of incompetence? Could he? In fact, he rejected all opposing views and crushed internal dissent. Abusiveness and possessiveness spread among his officers. His short-sighted, self-serving policies led to wars and his downfall.

Vaclav Havel, president of the Czech Republic, was a creative leader-inspirer. He was democratically elected to lead his country, and he dedicated his last years to the well-being of the Czechs. But many power centers developed within and around his government. No doubt, minor corruption followed, hamperingpolitical development. But all along, Havel was an unusually good example of adjusting where circumstances appeared to be unfavorable for harmonious fulfillment (as opposed to fabricating an illusory harmonious environment). He reminded his fellow citizens that for a tree to grow, we must provide not only light and nutrients, but love and patience as well. "I have never yearned to hold power," he said, "nor do I see any advantage in holding it. It has been interesting, though; it has given me experience and knowledge that I would not have otherwise had". An exemplary courage to give.

In one of his recent books, *Ignorance*, Milan Kundera argues in favor of "a critique of human memory as such". He says, "A reality no longer is what it was when it was; it cannot be reconstructed… And no one knows why the memory retains a particular bit but not some other one; a choice that occurs mysteriously outside our will or our interests."

But memory does not have a "brain" or a "strategy", and is not part of a conspiracy among unknown entities. What we refer to as "our human memory" is a process involving brain, sensory apparatus, other vital organs/tissues, and nerve cells. That ensemble of distinct, physically identifiable smaller ensembles has its stuff from within (including its set of genetic rules) — namely, matter in structures of atomic structures with their tolerances and dancing/seated cells. There is, at each moment, a resultant primal interaction. So there are various capabilities and constraints. And it cannot be reconstructed if some of its constituents are no longer available.

The harp can deliver a variety of notes. They in turn depend on the length and the diameter of each string, and the size and shape of the resonator. These

physical measurements must be related to the specific materials used as well as to the manufacturing process. But the harpist's stuff from within joins in and we therefore have a new expanded ensemble. The harpist enhances the overall achievement if the coordination and communication with the conductor or other musicians are well executed. The final outcome may, however, be unexpectedly limited by what is inherent in the components of the instrument, the acoustics of the music hall, and the health of the musician.

When you retune (or modify) an instrument you should not expect the harmonics to be exactly the same as before. A small variation can have measurable lasting effects. And as for the memory mysteriously retaining certain bits but not others, if we could look into the cellular structures, we might be able to detect the interplay of primal interactions, the dancing cells, and make progress in our attempt to understand.

We have two classes of ensembles: that which is physically contained (cell, organ, body, mind, will power, musical instrument) and that which is only virtually so (orchestra, concert hall, clan, family, political party, society). The former represents a balance, a wholeness that was achieved more harmoniously (birth defects, cancer, and terminal illnesses are cases of disrupted internal harmony); the latter requires continued direction.

Our stuff from within is the "birthplace" of our will and the determinant of the highest possible performance for our thinking and our actions. We can train and expand our perseverance, endurance, compassion, but we cannot all be Mother Teresa. We can all learn to innovate, but we cannot become Leonardo, Einstein, or the next movie star. Mother Teresa, Leonardo, and others must have had exceptional internal coordinating and communication capabilities between their respective structures of cellular structures. And our memory is but a part of our stuff from within.

Schopenhauer (1788–1860) wrote, "How can it happen that what we normally think of as the first law of nature and self-preservation is suddenly dissolved?" Schopenhauer's question was sparked by a short story about a policeman who stopped a man from throwing himself off a bridge. A reporter wanted to know why the policeman didn't let go considering the great risk. The policeman said that he couldn't let go; if he had, he couldn't have lived with himself another day.

And Schopenhauer went on to reflect: "Such a psychological crisis represents the breakthrough of a metaphysical realization, which is that you and that other are one, that you are two aspects of one life, and that the apparent separateness is but an effect of the way we experience forms under the conditions of space and time. Our true reality is in our identity and unity with all life. This is a metaphysical truth which may become spontaneously realized under circumstances of crisis. For it is the truth of your life."

But the truth of your life and mine is as bewildering as the working of any cell in our bodies. Philosophers, scientists, and religious leaders ought to work more closely *together* to try to discuss it. In my opinion, we will find that there is no one single thing that alone determines the truth of life. But let me continue. Schopenhauer's ideas on the will had many connections with those of Plato, Kant, and with the traditions of Hinduism and Buddhism. He viewed natural processes, whether they were a tree's growth or a human's behavior, as manifestations of willpower. He regarded will as "inner life", the fundamental metaphysical principle underlying all reality and common to all phenomena.

Schopenhauer's system also centers on individual misery and salvation — the tribulations of the will. He argued that life consists of suffering, that suffering is caused by desire, that suffering will stop only if desire is eliminated, and that the saintly life is the way to eliminate desire. Schopenhauer is saying that besides will there is another metaphysical "truth" in life, one that is realized only in a moment of crisis.

My own view is that in an instant of great shock, with all his senses galvanized, the policeman moved as one ensemble and in accordance with the resultant primal interaction at that precise moment; he showed — under the particular circumstances — an extraordinary courage to give.

Jacques Barzun wrote, "Let us face a pluralistic world in which there are no universal churches, no single remedy for all diseases, no one way to teach or write or sing, no magic diet, no world poets, and no chosen races, but only the wretched and wonderfully diversified human race."

I invite the reader to meditate upon Barzun's suggestive picture; it's not utopia; it depicts things as they are. And I would like to think that most people, though doubtful, will be in favor of its realization. The question is: how do we go about achieving it? As it happens, it is the answer to the initial question (Why all this?); if we wish to start living in the world described by Barzun… we need to renew our understanding of the reality behind human nature and behavior.

we take charge… we… our primal interactions
inner tolerances and stuff from within

all silently defining our human behavior
in a dance with natural laws and matter

if it's a touch of a solution,
then it's not a solution

XII. The bag of seeds

In this last section, I would like to add a few more comments in support of this new approach. And, in particular, I need to tackle two overall problems that you, the reader, may have already identified as "must be clarified".

Is there a problem of induction? The case at hand is that I have observed through my adult life many instances (relating to vegetal, animal, and human conduct) while experiencing different situations; and I have reasoned that there ought to be corresponding instances, billion of years earlier, of which I cannot have any experience. In other words, I am not inferring from past instances that a specific new instance will happen in the future — that's *the* logical problem of induction. I have offered assumptions on the basis of these observations; in addition, I have emphasized the importance of an earlier starting point. Karl Raimund Popper (1902-1944) wrote: "Since it is possible for some conjectures to be *preferable* to others, it is also possible for our conjectural knowledge to improve, and to *grow*. (Of course, it is possible that a theory that is preferred to another at one time may fall out of favour at a later time so that the other is now preferred to it. But, on the other hand, this may not happen.) We may prefer some competing theories to others on purely rational grounds. It is important that we are clear what the principles of preference are."

The other overall problem: What I have postulated is obviously "through man". Am I contradicting myself when I propose the "looking forward"? I don't think so: Objective repeated observations through man are commonsense realism. Looking backward from such instances is bound to be conditioned by the knowledge acquired by the time of the observation. The suggestion to look forward from an earlier starting point (as defined in Section VIII), though more difficult, may have great rewards; if nothing else, the dialogue between scientists, religious/political leaders, and philosophers might be mutually illuminating. It requires a self-positioning "outside the problem" and a better chance to deal with the most pressing aspects of any given problem.

In another essay, Popper wrote, "I think that scientists, however skeptical, are bound to admit that the universe, or nature, or whatever we may call it, is creative… it has produced Darwin, and so created the theory of natural selection… I think that Darwin himself, who could not 'keep out of the question [is there a Creator?]', would have agreed that, though natural selection was an idea which opened up a new world for science, it did not remove, from the picture of the universe that science paints, the freedom to create; and the freedom of choosing our own ends and our own purposes."

All previous quotations are from *Popper Selections* (1985), ed. D. Miller.

I am not sure that I have clarified these two overall problems; however, thoughts like Popper's and others' have persuaded me to stay the course and publish these pages. In addition, the following will provide more details for each group of seeds; this is with reference to the general profiles inserted in Section IV, pages 18-19-20. For easier future reference, I have named the new approach: giccology… with:

g = gentle/global/going forward
i = independent/inquisitive
cc = counter-current
logos = philosophy, study

STARTING POINT AND RELATED ASSUMPTIONS:

THE SUB-ATOMIC LEVEL OF COMPLEXITY

AN ENSEMBLE OF FREE ATOMS
AND *ALL* PRIMAL INTERACTIONS

NO REDUCTIONISM FOR SMALLNESS SAKE

NO EMERGING NEW PROPERTIES:
THE ENSEMBLE IS OPERATIVE AT ALL LEVELS OF COMPLEXITY

LIFE PROCESS IS AT THE CENTER OF THE UNIVERSE:
NOT ANY PARTICULAR CREATURE

I dare say the reader's focus has remained on the "all primal interactions" part of these assumptions. It is a wild conjecture; and there are at least three related perplexing questions.

The first one can be stated as follows: what do we know about "chemical affinities versus elective affinities"? Chemical affinity has been acknowledged since the 12th century when initial observations were made of a compound combining with another compound of unlike nature. Building on the works of Lewis, Heitler, and London who were the first to apply quantum mechanics to the study of chemical affinity, Linus Pauling (1901-1994) identified the rules of the phenomenon at the sub-atomic level and called it the chemical bond (1931). Elective affinities is the term introduced by Goethe; it was originally used during his lifetime by chemists to describe compounds that interacted with each other only under certain circumstances, and Goethe used it as a metaphor for problems of man's responsibility and passion.

Let me recall the modern scientific appraisal: (a) biology, e.g. an organism, is a physical system where chemistry laws apply which, in turn, are based on the laws of physics; and (b) organisms look different from inanimate matter because of emerging properties such as replication, information flow and memory, natural selection, and more. So my answer to the question is that we really do not know enough about what makes the difference between inanimate matter (physics, chemistry) and organisms (biology). We have also learned a lot from classical philosophy and religions but the main uncertainty remains. With inanimate matter: we have the primal interactions as defined by the laws of physics. With organisms: we accept emerging properties but wait for missing answers; or we buy into the concept of ontological discontinuities; or we assume additional primal interactions were there to start with. I opted for the latter because I suspect it is the cause of the emerging properties, and it more clearly supports the observed increasing complexity and diversity. At any rate, I remain fully aware that more knowledge may influence the final answer.

The second question is how these additional primal interactions relate, or don't, to the laws of physics, to psychology and history. At this stage, my only honest answer is by way of an illustration. A longtime friend has a dog-breeding project in which it is customary to choose the male only after X-rays have shown that its hips are structurally as near to perfect as possible. Indeed, there is scientific evidence on how that feature determines the strength and consistency of the breed. But there are other considerations we do not bother to test for, or for which we haven't as yet designed the means to measure. They may matter a lot in the life of a dog. Take resistance to disease. It has been observed that some "bad" genes may coexist, and work well together, with good ones; and sometimes they work only with extraordinarily good ones. The strength of the bone can be quantified by the use of instruments designed in accordance with what you call "traditional forces". But the foundation is that the related cellular structures in each bone depend first of all on each atom of calcium finding itself in many cellular structures and certain primal interactions. The same can be said for all the other parts of the body and their interrelationships. The identification of each gene in terms of the traditional forces may help you eliminate a bad one so as to obtain an even "better" dog. But then you run the risk of starting a chain reaction with undesirable consequences. In the same vein, some prefer to talk about how "selfish" the gene is, and then detail its grand strategy. I suggest instead that there are movements, changes thanks to primal interactions. The laws of physics cannot explain everything, nor can natural selection and I would like to quote Popper again, from the same collection of essays referenced earlier, "… as with so many biological theories; and considering the random character of the variations on which natural selection operates, the occurrence of exceptions is

not surprising. Thus not all phenomena of evolution are explained by natural selection alone. Yet in every particular case it is a challenging research programme to show how far natural selection can possibly be held responsible for the evolution of a particular organ or behavioural programme."

The third question is about atomism and determinism. Are we in a cage made of predetermining primal interactions?

According to "atomist" Lucretius (96?-55? B.C.), everything is subject to the random movement of matter, the new arises from the old in a determinate order,… men may be driven or constrained by an external force, yet there is within the human breast something that can fight against this force and resist it. That was his elegant assertion of an emerging property. What I am postulating, thanks to advances in scientific knowledge obviously unavailable to Lucretius, regards what is behind such a property.

I reject determinism if it is considered as the only reality of human nature and behavior. We have determinism, for sure, but through the development of senses, brain, and more we have been enriched with more or less capability to make decisions that are not strictly speaking pre-determined by fixed patterns in our structure of structures. Let's consider a bacterium: it is genetically all predetermined — in my terminology, its stuff from within has only seated cells. In comparison, a chimpanzee will show some indeterminism depending on where it lives and the human interactions required in studying its behavior. A man will show more indeterminism as already noted; this is one of the results of having a larger, more-developed brain, sensory apparatus, and nervous system. But there are fixed features also for the chimpanzee and for man, and there is no way around them unless we make changes to some of the structures.

If you say that there are laws of, let's say, love, ambition, and history, you are opening the discussion with a late starting point. Of course, the advantage is that we are all accustomed to such words and we know what they mean. We may therefore benefit from a new glossary with my approach. In all likelihood, I think, if you want a meaningful renewed understanding of any topic, your effort will be hampered unless you reconsider those preconceived notions that have come to be regarded as fundamental truths.

A large amount of work by philosophers, writers, historians, and theologians is available on what is just, true, right, moral, ethical; on freedom, reason, war, government, beauty; on any other of the thousand words in the dictionary describing feelings, emotions, and passions. But it seems that very little energy is spent on discussing what really causes two parts to form a "working ensemble" and flourish as a single entity and then die, let alone what happens to each part if they cannot work together. The implied

movements of these ensembles, why and how any number of interactions happen within and without the cellular structures, seem to belong for most thinkers in a second-class category of issues.

There is little, if any, that one can read about the interdependence between behavior and the interactions at the level of our atoms, cells, tissues, and organs. Compare this with what one can read about, say, the forces of faith or ethics or justice or morality or truth or modernity and their effect on an individual or a group. And let's not forget the political and cultural forces. It seems to me that there is an enormous chasm. The main cause of such a state of affairs is that we have been busy talking about the reality of human nature and behavior only in terms of body and soul, myths and culture, and war and survival since the beginning of our time.

It's only natural that we did not concern ourselves with the internal interactions at lower levels of our cellular structures. But it is only a partial solution: the feelings, the emotions, and the "body language" are but expressions of the resultant interaction at any given moment — the interactions taking place in response to an outside stimulus and being composed of primal interactions at all the pertinent levels of complexity, such as feelings and emotions, in our superstructure made of atomic structures.

There is a vast difference between "invariable foundation" involving things with tested empirical evidence (chemistry, physics, etc.) and things without, so that leaves an interesting thread for a lifetime discussion. A reader wrote, "I would love to be able to understand various concepts at a starting point of my own choosing, given that the effects should be there regardless. I know many friends who will resist the atomic starting point as an absolute, particularly because this is so invisible and abstract to most."

Our focus is on the atom as an ensemble of elementary particles plus all primal interactions. All matter is therefore composed of atomic/cellular structures that are ensembles of ensembles, as identified here. That is to say: it is not a new form of atomism. And, in particular, organic matter will include the effects of many billions of years expressed as memorized rules, genetic mutations, colors and shapes, whatever. A starting point of your own choosing may be the practical approach in many cases; that's certainly an available option as long as you keep in mind that the scope and validity of the understanding you then reach depend on the starting point you have adopted and the assumptions you have made.

OBJECTIVE:

RENEWED UNDERSTANDING AND MORE EFFECTIVE ACTIONS:
IN HUMAN RELATIONSHIPS; INDIVIDUAL AND SOCIETAL

SCOPE:

DEVELOPMENT AND EVOLUTION

STRETCHING OVER 20 BILLION YEARS

The problem of attaining happiness. People frequently use the metaphor of the pendulum to represent how life goes from happiness to sorrow, from victory to defeat, and then swings back. And I've heard the question, "is there anything one can do to shorten the pendulum's swing from positive to negative so that the impact is less stressful?"

The pendulum metaphor — or, more generally, the view that everything goes through cycles — is popular, but on close scrutiny becomes less persuasive. When we are in "positive territory", we are happy, but at the same time also less aware of the consequences of wanting more; we act as if the sum of all that makes people stay in positive territory is limitless.

Given the enormous number of variables, it is no wonder that the resultant of the interactions is easily reversed, which is to say someone else outside one's group is now getting the positive swing. Therefore, when we are happy we forget that there remains the risk of entering negative territory. When positive and negative are adjacent, it may be too late to effectively correct a deteriorating situation. Now, when we are in negative territory, unhappiness and stress can cause us to be more careful and act until the reverse process begins.

If you choose to see life in terms of a pendulum or cycle and accept it as inevitable, you may let anxiety take you over and be unable to determine ways either to stop the pendulum or at least reduce it to an acceptable swing. If instead you see it for what it is, a series of patterns dependent on matter and primal interactions, then you are in a better position to choose a course of action that minimizes the extremes of movements and reduces pain. While pain may not be the only evil, as Lucretius thought, it is a major evil, and much of it is caused by anxiety. Seeing things as they are, just as things composed of swerving atoms, was his way of relieving the pain of anxiety. Similarly, by seeing things in terms of matter and primal interactions, you can do much to relieve the stress and pain of being subject to movements.

With either a pendulum or a cycle, it is far from clear how one could identify what to do in order to either stop the movement or even reduce it in some way. But if one sees

it for what it is, a series of patterns dependent on matter and primal interactions, then chances are that something might usefully be done to minimize the movement — often the cause of pain.

An experienced physician will define how to cure what is going wrong with your heart but all along will also make sure that no problem will develop with the other organs so as to put in jeopardy the improvement of the heart conditions. The heart never adventures alone; neither do any of the other organs. They all represent working ensembles. And the one word that applies to a working ensemble is harmony: the better the one, the greater the other. But it's not that simple; there are other interactions.

Similarly, we talk about laws for society, community, family, individuals, and the animal world, but they all basically relate to the adopted starting point. Of course, this is not to suggest a change in our language. But it s something to think about. The natural laws and primal interactions are the behind-the-scenes players with variable intensity due to the increasing complexity and changing conditions. In addition, as complexity increases, the interactions and interdependencies at their boundaries get more complicated (and distorted) in view of the great number of influencers.

I had a math teacher so proud of his motto, "If you are a calf it's for one year, if you are stupid it's for life". It was meant to be funny. But as it happens he also took it quite seriously. And my mother disagreed with him on that. No surprise. In her opinion, if a pupil makes repeated mistakes, teacher and parents ought to try alternative approaches to the teaching before concluding that the case is hopeless. Was he right? Yes, if you are persuaded that all is in the genes. But how could it possibly be so if the starting point of our inner movements is a distant ancestor to the first gene?

We also need to think about how we deal with the positive and negative aspects. The positive is the basis for a working ensemble. The negative implies that one or more cellular structures have been shattered (i.e., their respective tolerance thresholds were exceeded). Why can't we have a working ensemble without interruption? Why is peace so fragile and health elusive? The first answer that seems to make sense (besides declaring "that's the way it is") is that there are too many variables. But is that convincing? Hugely destructive geological events in the unimaginable past have been followed by major new developments. Think of the advent of water, the first respiring cell and the first primate with what was then the precursor of eye-hand coordination, or the first creature that appeared after the abrupt disappearance of dinosaurs. And then in the last four centuries: how many reforms came about only after major wars? Such reforms may have been positive, yet they never actually prevented further wars, despite innumerable assurances from political and religious leaders that the disaster would never happen again. Why? The destruction of an ensemble of atoms and all primal interactions M by one N will

take *M* "backward". And, I might add, the destruction represents the resultant primal interaction — a big win for *N*. But now *M* will suddenly be faced with a very different set of circumstances, and the same goes for whatever was in its environment. The new situation favors another set of primal interactions that were previously unable to be effective and new combinations occur. Whether *M* is one of the earliest molecules or the first invertebrate or hominid, the aftermath of the destruction may turn out to be a big step forward for some of the cellular/atomic structures but certainly not for all. One successful combination can be enough: a new era develops.

Reminiscing on this event reminds me of something about my first history teacher in primary school. He emphasized that what matters is not to memorize rules, dates, maps, and names: He presented in simple but inspiring terms (that I am unfortunately unable to reproduce here) his idea that each student needs instead to go deeper into the historical event of interest; identify the earliest starting point possible; determine all interactions along the appropriate timeline; figure out a theoretical model; remain open-minded; agree with other parties to the study review team that any of their pre-established assumptions/conclusions ought to be made optional for a while; and always put your initial reactions to an independent test.

I remember how good I felt at the end of this first history class, with no words to describe why. Our teacher died shortly after the end of that school year. Most of my companions and their parents went through the rituals organized by the school and expressed their sorrow. Would they still have any appreciation for his wisdom and guidance? I don't know. But I know I do.

an old man is dying
a library is burning

he asks to see me alone
to come closer and listen

with all its elements
the soil is for the seeds

Notes

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ABOUT THE AUTHOR

The interest in debating inherited ideas and theories came early, as a teenager making initial attempts to understand the starting point (with its related assumptions) of the great thinkers (in philosophy, religion, science, politics, and other human intellectual endeavors). It resurfaced as a possible writing project when my father asked what my plan was after my graduate studies at the Sorbonne were completed. But writing was brushed aside for the sake of other priorities in my life.

I saw writing early on as a way toward good conversations; in particular, with people claiming to have found the solution to a problem. Good conversation is hard to find. People talk, talk, and talk. But, too often, it comes down to opinions: people like to dump opinions, and few are actually available for a follow-on exchange. Most people appear to have little time to think about their own opinions, let alone to understand a different opinion.

In fact, I obtained in 1958 my university graduate degrees in sciences and engineering in Paris. As a contributor to General Electric's research lab, I was granted five U.S. patents in electronics with actual application in mainframe computers. A few years later, having held various management responsibilities in that large multinational corporation, I started my own management consulting practice in Boston and worked as a general management advisor to large and small enterprises in many countries. I have also occasionally lectured at Babson College.

When I retired from full-time business engagements in 1996, I started my writing project in earnest at MIT's Humanistic Studies Department. I then published The Legacy, a book of three essays on certain management challenges that are rarely considered by gurus. In 2005, I published Winter Letters to present who and what in my life experiences left the deepest impact on me; these observations, in turn, strengthened in my research the importance of considering an earlier starting point (and I do not mean: the absolute starting point) with its related assumptions, which is what any proposition or theory ought to specify and maintain/change as the case may be. More specifically, my research focused on an earlier starting point that could offer more of an invariable foundation than human nature and the genes.

Information about these books (now including Seeds) can be obtained on my personal Web site, www.ugik.com.

And conversations with readers, though difficult to find, encouraged me to continue.