

# TELLING THE NEW STORY

*In the beginning there was the Domination  
System and the Organism. Then the Love  
System entered life and meaningful  
Evolution began...*

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## INTRODUCTION: WHY TELL THE NEW STORY?

What follows here is an experimental work in progress we invite the reader to participate in in this special way—with crediting along the way and in the finished book when published.

It's set up for a free download and printing to facilitate your own use of it. If you are a teacher, curriculum developer, or parent, please let us hear of your experience in using it, as well as thoughts about what grade levels are best or suitable for telling the various parts of the following story.

In other words, this is not an all-at-once story for a single “unit” on evolution somewhere along the line, as is often the custom these days. It is a book of thoughts and prospective units written to be parceled out over the entire span from kindergarten through graduate studies. But as we've very roughly indicated in this draft, some of it is only suitable for the early years, some best fits the middle somewhere, and some of it can only be dealt with at the college level and beyond.

As you read, jot down and then for each part of the story let us have your thoughts as to the right level, beginning, middle, and late, or more specifically by grade.

### *Of Love and Domination*

This telling of the new story is based on my book *Darwin's Unfolding Revolution*, which tells of how out of the perspective of modern evolutionary systems science has emerged a new picture of Darwin's full theory as involving at the core, and in its dynamics, a Domination System and a Love System.

Chapter one of *Darwin's Unfolding Revolution* tells of the pivotal discovery young Charles Darwin made in the summer of 1838 at age 28. While pondering the prospect of marriage with Emma Wedgwood, he wrote in his private notebook of the observations that later led to his famous theory of natural selection, or the Domination System. But he was also writing of sex, and even more so of love, in the lines that became his theory of the Love System — subsequently lost to almost all of us for over 100 years.

***In the beginning there was the Domination System and the Organism. Then the Love System entered life and meaningful Evolution began...***

These provocative lines provide a usefully memorable summary of both the theory and the story that emerge from this wedding of the “domination system” Darwin writes of in *The Origin of Species* with his youthful vision of the “love system”— to which he returned in writing *The Descent of Man*, where in contrast to only twice for “survival of the fittest,” he writes 95 times of love.

The two lines were purposefully written to combine the poetic lift of spirituality with the accuracy of science to encourage use of this telling of the new story within progressive religious schools and families as well as progressive educational and progressive scientific settings.

You could, for example, open with this two line summary in telling the story, as here, or write it on the blackboard to serve as the simplest of outlines to refer to.

This can also be a quick way of making it evident that the true story of human evolution as Darwin saw it, and as thousands of progressive modern scientific studies corroborate, involves not just the lost “new” theory of the Love System. It must also include the known and familiar “old” theory of the Domination System.

In only half informing us of our human reality, the “old” theory and story warped and sapped the mind of the 20<sup>th</sup> century. But now the two must be put together if we are to understand and tell of the full reality of life and of evolution.

But is it possible to put the two together? For this is a matter far easier said than done.

***Going Up Against the Paradigm***

To do this, we must catch up with all that was left out of Darwin and the hundreds of corroborating modern studies for the lost “new” theory. We must add to this a century of the science of the known and familiar “old” theory. And then somehow out of the mass—and indeed the mess— of contradictions we must construct a clear and reasonably simple new story of human evolution.

Going by how Darwin’s perception of the Love System was suppressed for a century, we can begin to see how long it normally takes to change anything in science if it

bumps up against an established paradigm. Normally this change could take another century or two.

Going also by how long it takes for what is written in scientific language about anything really new to be translated into and widely published in the everyday language we all use, we may add another fifty years or so. Then of course beyond all that are the schools.

Once such a project got this far one must then add another forty years or so of committees and school boards to decide whether this odd and controversial new hybrid thing of a theory of human evolution (involving so subversive a matter as love! as well as the traditionally much more acceptable matter of domination) is suitable for the instruction of the young. Then one must add another thirty years for consultants to assess and parcel it out by grade levels for the curricula.

I tell you this so the fact I will try to do all of this in this single document may be appreciated and allowances made for the difficulties. And so why is this integrated telling of an integrated new story of human evolution so important— and indeed a matter of considerable urgency?

As a scientist and evolution theorist, as well as a former teacher and professional futurist, and present parent, grandparent, and citizen, it is my driving conviction that unless the educational systems of this earth of ours—that is, the teachers, administrators, school boards, educational departments, supplemented most fundamentally by parents and most powerfully by the media—shift from the telling of the old Darwinian story to the full Darwinian story outlined here our species is doomed to drive itself to extinction.

I really don't know how one could put it more strongly than that.

***Is This The Story That Darwin Would  
Have Told Were He Living Today?***

Customarily I should further explain and qualify this integration for theory and story at great length. But I think the best thing is to simply say that I believe that what follows is reasonably close to how Darwin would have told the story were he able to return at this later point and draw on the scientific information available to us today.

Also there is this. Other than the unmatched scope and intensity of his thought, his other great advantage over most evolution theorists then and now was the grounded simplicity of a man who, self-taught, originally thought of himself as a writer about science rather than as yet being a scientist himself. Thus even when he was later writing

for his fellow scientists, as much as possible he still wrote to be read by everybody. So this has been my model.

I should also say that this task has led me to fascinating insights that I think go beyond communicating what I have found in Darwin to formulate new evolution theory in several places, which I leave to the reader to discern.

The other point I would make is that this integration of theory and story is just to get the full story down in one place and for reading to oneself. In presenting it to others— as a teacher to students, parent to child, writer to readers in other contexts, or researcher out to wed old and new into the full theory— the story needs to be told in the chunks that I will indicate by grade levels.

One would start with the easiest part for the earliest level, then work up by the stages indicated, so that by the time students reach college they would possess the whole story and theory from which to launch out on their own.

## CHAPTER ONE THE OLD STORY AND THE NEW STORY

Like everything else, the old story and the new story can either be told at great length over a lifetime or— within the practicalities of getting a quick grounding— in two or three minutes, as here.

The old story is based on the basic theory that Darwin rocked and shocked the world with in 1858. Evolution, he said, is primarily driven by two great principles. One is natural selection. The other is variation.

Using examples from everything from pigeon breeding to an incredible range of animals and plants of all kinds, he showed how over millions of years all the diversity of life has been shaped out of earlier forms through the action of natural selection on variation.

Like the offering of a wide variety of food in a cafeteria, variation provides the choices. Natural selection then acts as the chooser. And in the case of nature, what it chooses becomes the organism that survives to propagate more like itself, while what isn't chosen dies out.

Within limitations that Darwin himself pointed out, which were ignored, this theory remains basic, valid, and enduring. The problem began with the first significant shift from theory to story, and then from prehuman to human evolution.

To try to make the actually quite involved partnership of natural selection and variation widely intelligible, Darwin used the phrase “survival of the fittest” to gain the popular lift of a sense of story. Unfortunately, this swiftly became the dramatic story line for everybody beyond a tiny corps of biologists arguing over the scientific complexities.

Empire-builders hailed “survival of the fittest” for scientific proof of their right to seize and rule the “backward” people of this earth. The notorious Robber Barons of the 1890s used it to justify their cutthroat seizure of both economic and governmental power.



It even became the scientific excuse for Hitler. The essence of life was struggle for existence. The strong must prevail over the weak. War not peace was the ideal. The gas chambers, after all, the Nazis reasoned, were only more rapidly advancing the purpose of evolution.

All this the scientists deplored. But like a rocket set in motion with no capacity for change of course or recall, along with everybody else most of them were now shaping theory to fit the story.

### *The New Theory and the New Story*

Until recently it appeared that the roots of the new theory and the new story were implanted only by a series of renegade scientists and other scholars who for a century were either ignored or in subtle ways excluded from mainstream thinking about evolution. A theme in common was that “survival of the fittest” might apply to evolution up to the point of the emergence of our species — or to prehuman prior to human evolution. But, they insisted, there was inescapably much more going on at our level of emergence.

Scattered and amorphous over much of the century, in the 1980s and 90s this counter-cultural strain of thought began to consolidate widely throughout advanced science in all fields with the rise of chaos and complexity theory. Along with this shift also came the rise of the feeling in the advanced scientific community of a sharp break with the old theory and the old story.

Out of what was set in motion by this development came the shocking and crystallizing discovery I report in *Darwin’s Unfolding Revolution*.<sup>1</sup> It was that both new and old theory, and the new as well as the old story, were prefigured over 100 years earlier by Darwin himself.

Most striking was what had been ignored in his sequel to *Origin of Species*, *The Descent of Man*. There, I found, he had written only twice of “survival of the fittest,” but 95 times of love, 90 times of moral sensitivity, and 200 times of mind and brain.

Further buried within the book was, in essence, another whole book going beyond natural selection to show how cooperation and education as well as moral sensitivity and love were now the prime drivers not only of the evolution of our species, but in advancing incremental degrees over time, of all species.

Moreover, a new look at *Origin of Species* and Darwin’s early notebooks revealed he quite clearly stated this was the direction in which he was headed, only to be almost wholly ignored for a century.

In summarizing the conclusions of the 18 long years he had put into thinking through and writing *Origin* — indeed on the very last page, where you might have thought it was inescapable — he tells us that “. . .the most important of all causes of organic change is one which is almost independent of altered and perhaps suddenly altered physical conditions, namely, the mutual relation of organism to organism, — the improvement of one organism entailing the improvement or the extermination of others.”<sup>2</sup>

In other words, 20<sup>th</sup> century science and society became overwhelmingly fixated on the “extermination” or “survival of the fittest” part of this pivotal observation. But what Darwin had actually said in *Origin* — for later corroboration by thousands of scientists and other scholars who were similarly ignored, as well as by thousands of years earlier of progressive spirituality and progressive philosophy — was that the “improvement,” or well-being of others, was an equally, and in many cases, even more powerful drive.

Was this two theories, as well as two stories, that wholly contradicted one another?

Had Darwin gone soft-headed with age, as some claimed?

Was this just the case — as others claimed —that Darwin’s original writings were so full of contradictions that, like the Bible, you could find support for almost anything in them?

Or was it what Darwin himself claimed?

“I have been led to put together my notes, so as to see how far the general conclusions arrived at in my former works were applicable to man,” he tells us in the Introduction to *The Descent of Man*.<sup>3</sup>

In other words, it is all one theory and one story.

In *Origin of Species* he gave us the first half. In 1858 this was the new theory and story, which by now has become the old theory and the old story.

In *The Descent of Man* he gave us the long ignored completing half. Corroborated and advanced by thousands of modern studies, this now gives us the completion of theory and an inspiring new story of why and how we can, and indeed must, build the better world.

It also clearly lays the weight of a new responsibility primarily upon the scientist and the educator, but also upon all the rest of us.

It is said we live by story — but to the more intelligent and caring people of this earth it is increasingly apparent that the old story we are living by is driving us to destruction.

The story of what happened to Darwin shows us how theory becomes the story we live by. But it also shows us how by changing the theory we can change the story, and thereby change our lives immeasurably for the better.

It shows us why telling the new story matters.

It shows us why in the hands of each of us, quite literally, now lies the future of the world.

## CHAPTER TWO      TELLING THE NEW STORY

*In the beginning there was the Domination System and the Organism.  
Then the Love System entered life and meaningful Evolution began...*

A good place to start is to think of what was mostly taught and thought for a whole century to be the whole picture for the Darwinian theory and story of evolution, then ask ourselves what is the story that now emerges from a melding of the old with the new.

If we look at both *Origin* and *Descent* carefully in relation to one another, and also at precisely when they emerged within the pattern of Darwin's creative life, it is evident we are looking at a perspective on human evolution based on his perception of three primary entities, forces, or—in the most useful term we use in science today— *systems* at work in the lives of our species over thousands of years.

Out of the creativity of the middle years of his great fame and immense impact on the lives of all of us, there is the Domination System he wrote of in *The Origin of Species*.

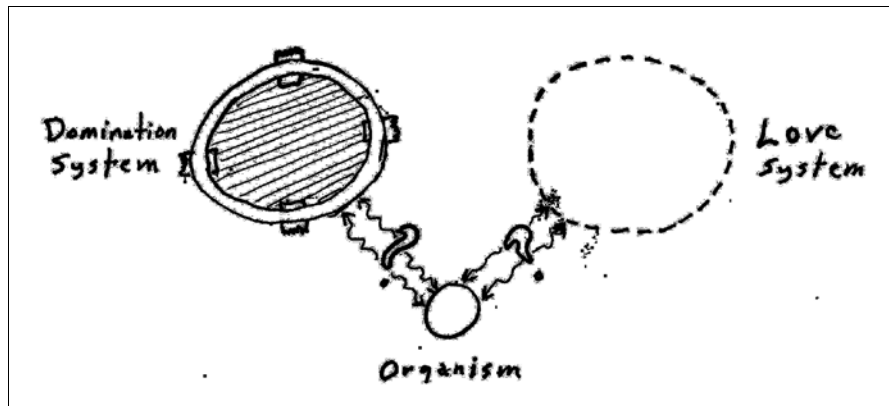
Out of the creativity of his early and final years— with no discernible impact on anybody other than the stray handful I write of in *Darwin's Unfolding Revolution* — there is the Love System he writes of in *The Descent of Man*.

And then there is the third, most vital part of all, the major player in this drama on which he actually focused from beginning to end, but which again was very close to also being ignored: the *Organism*.

There is this life form for every living thing, plant or animal, from the earliest point in the emergence of life on this earth, to all creatures living today from the smallest to the largest. There is this life form that includes ourselves, as the species with the most advanced brains and greatest capacity to change things around on this earth. And what does this mean? It means our species not only has a clear evolutionary responsibility for the well being of all other life forms as well as for the earth itself. It further underlines the fact ours is the chief species capable of recognizing and acting on this responsibility.

This surely puts the weight on us to approach the question of how we are to tell the new story as more than a matter of entertainment, or of only trying to get the science right. It says squarely—to repeat what certainly bears repeating, as it is all too easy to flinch and turn away—that it is up to us to get clear on this story as a matter of species survival. And to then as widely and as quickly as possible start telling this story to try to save us from ourselves by speeding up the process of our evolution.

Here we see a basic sketch for the three primary systems that are the three chief characters for our story so far.



What this sketch is meant to indicate is that the Domination System is like a suit of armor for us and like a dark, walled city bristling with guard turrets for groups and societies. It is a system of fierce boundaries.

By contrast, the Love System is something much more amorphous and open. It is characterized more by a two way flow across minimally self-protective boundaries.

What the sketch indicates is how, via the little wiggly arrows pointed at the Organism (that is, ourselves), both systems impact and shape our lives. But the little wiggly arrows going the other way, back either to the Domination System or the Love System, further build the system of *our choices*, thus shaping the future for our species.

Coupled with the quote, this sketch can serve to open exploration and discussion anywhere from the earliest grades to graduate studies.

I have purposely left this and all successor sketches in their squiggly homespun “natural state,” just as I drew them, in order to give the flavor of something drawn quickly on a blackboard. My goal is to encourage the teller of the new story to, as much as possible, use the quick, hand drawn pictures many of us naturally resort to.

There is something about how the fact of a hand moving in tandem with a mind can engage others better than the best of professional drawings or slides, which risk the sterile “uptown” polish that signals to some readers “this is dead, finished and intimidating, so skip on.”

### CHAPTER THREE      THE DOMINATION SYSTEM, THE LOVE SYSTEM, AND THE ORGANISM

The true story of human evolution—that is, of the evolution of all species up to, reflected within, and including ourselves—does not begin with abstractions such as these or any others at this level of thinking. Nor does it begin, as in the old theory and the old story, with the grim, foreboding weight of Natural Selection as this large mysterious force external to ourselves.

Why was this the emphasis for the old story? An important reason could be what comes to mind if we look at ourselves in relation to all other life on this planet over the 100,000 years of our rise as the species *homo sapiens sapiens*. (Many books don't add the second *sapiens*. But technically, the Neanderthals who preceded our species were *homo sapiens*, with our difference meriting the double *sapiens*).

It would seem that because of our situation on this earth as the chief thinking representative for all other organisms, in the way the mind works, inevitably we were driven to seek large, mysterious ideas to account for the haunting mystery of where we came from, who we really are, and where we may be going.

This certainly seems to be why for centuries before Darwin this space in mind was filled with either the fearful or the comforting idea of God. But with the success of Darwin's *Origin of Species*—as scores of ministers discerned and decried at the time—the idea of Natural Selection began to shove God out of that place for the Big Answer. In further looking at our situation over the past century from the perspective of systems psychology, I am convinced that within the unconscious of the Western educated man and woman the hole in mind this displacement left behind came to be filled with two kinds of patterns for thought that have worked against us. One is what I identify in *Darwin's Unfolding Revolution* as the bog holes of PseudoDarwinian Mind—that is, the powerfully compelling but distorted partial reading of reality rising from *Origin of Species* or “first-half” Darwinism, such as the governing idea that all of evolution, including ours, lock-step involves “the war of all against all” or “survival of the fittest.

This is a complicated matter that many teachers will not want to fool with, nor will most students short of advanced high school, college and graduate school be equipped to deal with it. So I leave it to others to figure out where and how to best fit in this vital aspect of the underlying systems dynamics and what can become the stranglehold of paradigm on our minds. This leaves us with the question of what to do with first half Darwinian science's nightmare creation of Natural Selection—and this despite Darwin's own vehement insistence this is not the case—as the sole, over-riding explanation for evolution.

The history of many centuries and the psychology of the last few has repeatedly shown us that whatever we may find or teach is in the end a small chink of knowledge tossed into the vast boiling pot of much else working within and shaping the minds of our time. So it was I believe that during the 20<sup>th</sup> century within the unconscious of the non-scientist as first child, then adult, there also came to exist within the hole for the Big Answer an unsettling picture linked to the powerfully enduring image of Mary Shelley's Frankenstein's monster from earlier. It was of Natural Selection as this giant invisible force that strides among us, occasionally reaching down to pick and choose and gobble us up as though we are no more than the food that it may arbitrarily eat now, or let us go for later, as though saving us for desert.

Here we see a sketch I suggest for the psychic bugaboo of Natural Selection in pursuit of Variation that seems to operate today in unconscious mind of millions of us—as its analogue in the figure of a vicious deity who must be placated with blood sacrifice still exists in the unconscious of other millions of us on this planet.





It is evident from many things in Darwin's life that from early on he was concerned with looking for something of a comparable and positive power to fill the hole in mind left by the displacement of the concept of God by this new concept of Natural Selection as Creator. How might he counter-balance the potentially dangerous psychic effect for his pioneering articulation of the grim power of Natural Selection?

The roots for this concern can be seen in his early notebooks, in the fact of his active interest in originally going into the ministry, in his lifelong close friendships with "men of God," as well as his expressions of repugnance toward as well as fascination with the great concept of Natural Selection he for the first time with such force was articulating.

"What a book a Devil's Chaplain might write on the clumsy, wasteful, blundering low and horridly cruel works of nature!" he wrote of his feelings at one point.<sup>4</sup>

So we may track in his life, and in his early notebooks and in *Descent* how he sought to identify and articulate this other large idea that for the religious was seen as a manifestation of God, but which he now sought to redefine and ground in science.

In *Origin of Species* he had found an acceptable way of defining the nature and dynamics of the Domination System — for which both a science and society mainly governed top to bottom by this system was well prepared. But now in *Descent* he must somehow articulate something then existing only in poetry and philosophy and progressive religion, for which there was as yet no place in science and all too few in society.

Eighty years before the rise of humanistic and transpersonal psychology, writing 95 times of it in *Descent*, he was driven to try to define the lift and hope and route to transcendence of the Love System. So this uneasy venture now, in counterpoint with the Domination System, was the logical choice to fill the hole in our mind that seeks an answer to the basic questions that the facts of birth, death, and evolution must raise.

So far we have covered what is best told in varying ways at varying levels from the early grades through college.

***But the true story of human evolution does not begin here***, for the Love System and the Domination System comes from thinking backward afterwards as a scientist or anyone else trying to understand evolution after the fact.

The true story of human evolution begins with the lift of the sense of adventure we

deserve to feel about this life and being part of it.

What is indeed the Greatest Adventure we know of — and deserve to be allowed to know it as such — begins with this sense of adventure that is not merely a matter of being romantic. Nor is it dependent on a belief in God or spirituality. We have only to consult our own experience at our times of being open to the wonder of life to see that it begins with just fact in being what the glory of the sunrise and the sunset all those billions of years ago as well as now tells us: that this is a very special place in the Universe, and that any time in all the long span since the hypothetical Big Bang has been a special time to be alive.

This sense of evolution as an adventure, it seems to me, is vital to convey as early as possible in school—and in the realignment for our own thinking and feeling.

The science today underpinning the theory of cosmic evolution tells us this story begins somewhere around 3.6 billion years ago with the emergence of life upon this planet.<sup>5</sup> It begins with the fact of the emergence out of a prior warm soup of chemicals of the living *Organism* upon this living earth about 2.8 billion years ago.<sup>6</sup> It begins with this and—most importantly—a beginning within this organism, and then gradually more of all these new things on earth, these organisms, of the fact of a *mind in action*.

This is what can be seen in the charming story of all of Darwin's experiments to find and test the workings and the level of intelligence in earthworms. Or of Darwin and the barnacles, or even Darwin and the earwigs—among whom he thought he detected evidence of parental affection, or a parent's concern for its child.

Enlisting his children as research assistants, it is this mind in action even within the smallest of mites we can see him attempting to identify and understand by testing the earthworm to see whether it might be responsive to music. Or through probing the anatomy of the barnacle to discover how it manages to reproduce itself when clamped to a rock near a barnacle of the opposite sex also clamped to the rock— but with a distance separating them that seems to deny all possibility of a way for the male sperm to reach the female egg. (The solution, as I write in *Darwin in Love*, turned out to be a penis for the male that could stretch out to nine times its length to find the waiting female!).

Over the years Darwin's search for the emergence of mind in action became articulated well enough for him to begin to grapple with it directly in *Descent*. Again, as with the long overlooked fact that he wrote 95 times of love, a similarly revealing surprise is the fact that in *Descent* he wrote 90 times of mind, plus 75 times of “intellectual powers,” 53 times of reason, and 25 times of imagination.

Behind these word counts lies the fact that in *Descent*, typically long overlooked, he anticipates the rise of what out of chaos and complexity theories only now in our time is being hailed throughout most fields of science as the operation of “self-organizing processes,” which in turn is merely the latest way of looking at mind in action. And there was Darwin over 100 years ago already beginning to track the appearance and operation of organic intelligence in the mind of the honey bee.

As I trace in chapter thirteen of *Darwin’s Unfolding Revolution*, over eleven times in *Descent* he gradually refined his perception of mind in action into the basic capacity for the Organism I decided to call “organic choice.” (This and other chapters in *Revolution* on “organic choice” and “self-organizing processes” contain material particularly useful at college and graduate school levels).

So let us put ourselves in the place of the organism of any size way back there at the beginning of life, and what do we find that might be similar at our own more advanced level of operation today?

Is there anything alike in both cases?

In other words, is there something that is constant, common to all life in the fact of all being living organisms, of whatever level of complexity, living on this living earth?

## CHAPTER FOUR      THE SEARCH FOR THE NICHE OF FULFILLMENT

On immersing myself in Darwin and in other sources he anticipated as well as many more he didn't, I have found that two constants seem to constitute the basic reality for evolution underlying all the interpretations and names we give to it— as well as all the agreements, disagreements, and even all-out, no-holds-barred battles that have been waged within science as well as politics over just what evolution really is.

One constant is the fact of an organism, and organisms, all driven by the desire to find within the “booming, buzzing” mystery of life on this earth a *niche for fulfillment* of what they feel, or sense, or hope may be best or most unique within and about themselves.<sup>7</sup>

In other words, the full, or the whole, or the true Darwinian theory and story of evolution indicates that — unless we are driven to it by predatory leadership, or by wholly adverse or life-threatening circumstances — across the face of this planet, in all cultures, the overwhelming majority of the members of our species are not mainly driven to seek to prevail over all others, if necessary by killing them, as the “survival of the fittest” or “selfish genes” model of the Domination System of first-half or PseudoDarwinism suggests.

But at the same time, neither at the other extreme are we mainly driven to “love thy neighbor as thyself,” or “do unto others as ye would have them do unto you,” as the spirituality model for the Love System suggests.

We are all of us, possibly without exception, mainly driven by a desire to find this niche of fulfillment— that is, a situation within life that allows us to feel that within it what is most unique about ourselves, or the best within ourselves, has a chance for being attained.

This is the situation of all life on earth that either whispers or shouts to each of us that here— against all the odds we soon find are working against it— there is indeed a chance that what is best about ourselves may prevail.

This indicates that not only the Mozarts, or the Einsteins, or the original inventor of the wheel advanced human evolution. It indicates that all of us may find various sizes and placements of niches in which to contribute to the advancement of evolution— or to checking it, as is becoming a concern for our time, or to what among us eternally seeks to drive us backward, as again is ideologically accelerating rather than diminishing.

We, all of us— that is, all other organisms from the beginning up to and including each of us living today throughout our lives— want to find where we might “best” fit in. Isn’t this what becomes apparent if we think back on the course of our own lives?

Wasn’t this what you felt when you set off on that first day to school? Or when you left school for the job world? Or when through the ups and downs of the search, you first sought a mate or lover during your teens? Isn’t the picture over and over and over again of the drive of this universal hunger to find this rare and special place?

According to level of evolution, to varying degrees, aren’t we from the smallest or least equipped to the largest or best equipped of organisms seeking to find the place where we may most feel comfortable with who or what we most particularly are? Where we are best fed, clothed if we need clothes, sheltered, protected, and rewarded in every other possible way?

At the higher levels for evolution, as with ourselves, aren’t we also driven to find the situation where we might best find a sense of something of meaning within and to our lives, as out of the experience of the Nazi death camps Victor Frankl expressed with such eloquence in *Man’s Search for Meaning*,<sup>8</sup> or the teen age Anne Frank wrote of in her haunting diary?<sup>9</sup>

The first constant, then, is this fact, from the most ancient and simple to the most recent and complex, of *an organism seeking fulfillment*.

The other fundamental constant is the emergence out of the interaction of all that composes life on this planet—out of this ongoing, ever-flowing mix of organisms, places, and events we experience for better or worse as life’s stream —of the port, or stopping place, or way station that constitutes the niche of fulfillment into which the searching organism may, or may not, fit.

Sometimes this niche is there because of something within ourselves that fits what comes up—our particular mind, skills, or charm. Sometimes it is there because of a favoring event—someone dies and we are next in line, or suddenly there is an unexpected inheritance. Sometimes it is a matter of what we call luck or happenstance. Sometimes it emerges from the mystery we cannot as yet fathom, but can begin to guess at within the

emergence within science of a new 21<sup>st</sup> century mix of physics, social and systems science, spirituality, and poetry.<sup>10</sup> Most often it is all of these things coming together to form the niche in ways that are difficult to track afterward.

*Sometimes we create the niche, sometimes it is created for us.*

## CHAPTER FIVE            A SIMPLE THOUGHT EXPERIMENT

The skeptic, or anyone else still too immersed in first-half Darwinism to see otherwise, may feel this is too “New Agey.” Certainly, it seems, this is not the hard-headed, nose-to-the-grindstone, or substantive sort of thing that Darwin wrote of.

But a surprise awaits us on looking at what he actually wrote in the early notebooks.

“One may say there is a force like a hundred thousand wedges trying force every kind of adapted structure into the gaps in the economy of nature,” Darwin wrote in laying the groundwork for his vision of the structure and dynamics for both the Love System and the Domination System.<sup>11</sup>

So what is this “force like a hundred thousand wedges”? Isn’t it the long ignored drive of mind and the “organic choice” he wrote of eleven times in *The Descent of Man*? And what are these “gaps in the economy of nature”? Aren’t they precisely what I am calling the “niches of fulfillment”?

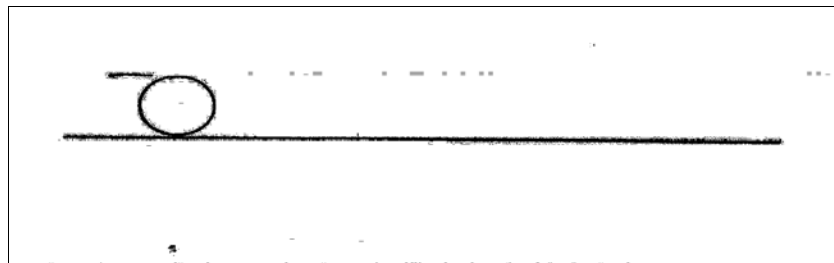
Within either the education that we receive from others or the self-learning that drives us all, the so-called teaching device has been found useful. The Indian “talking stick” for establishing dialogue, for example. Whether one calls it a “gap in the economy of nature” or a “niche for fulfillment,” I find the evolutionary operation of the search for, and unexpected emergence of this pathway to the better future that all of us seek, most easily visualized by the kind of “thought experiment” out of which modern physics from Einstein on has been built.

Traditionally we think of this as something for the college level, which of course it is. However, as this approach also lends itself easily to pictures, or to the simple teaching device it indicates, it can be meaningful from I would say the third grade on.

It is also important to keep in mind that by this expedient I am not saying that the following “picture-story” is supposed to cover either the theory or the story of evolution in all regards, once and for all.

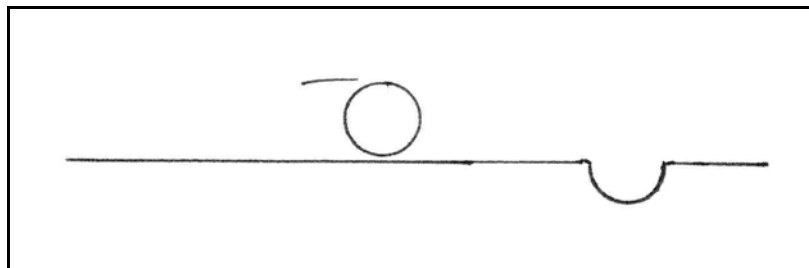
For very good reasons known to us from the work of the great scientist-philosopher Immanuel Kant on, that is simply something impossible for any theory or story ever to do. This just happens to be the best way I know of conveying what I have pieced together out of Darwin and other sources and tried to put in a way that—in contrast to most other attempts I know of— can be easily followed and easily remembered by people of all ages without years and years of specialized education.

First we may picture the organism at any place in time— or ourselves— as in effect on a journey through life that is like the rolling of a self-propelled ball along a relatively smooth surface.



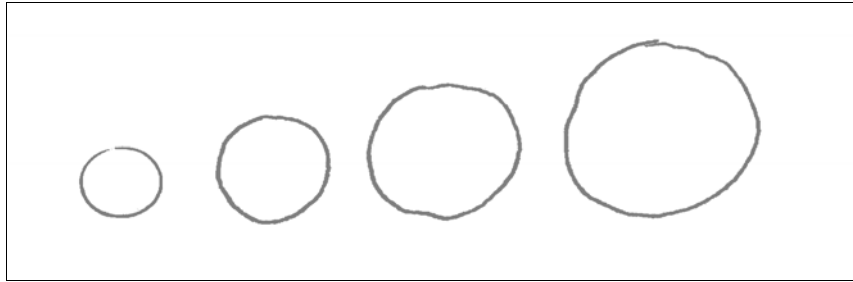
A useful image here is the roll of a bowling ball along the smooth polished wood of the “run” for a bowling alley, or in golf the roll of a ball aimed hopefully at a distant hole in the green.

However, ever so often within this particular surface on which the ball is rolling there appear holes, as in a pinball machine, or pachenko game. These holes, let us say, represent the *niche of opportunity* that awaits all organisms within the movement through space and time we know as our lives.

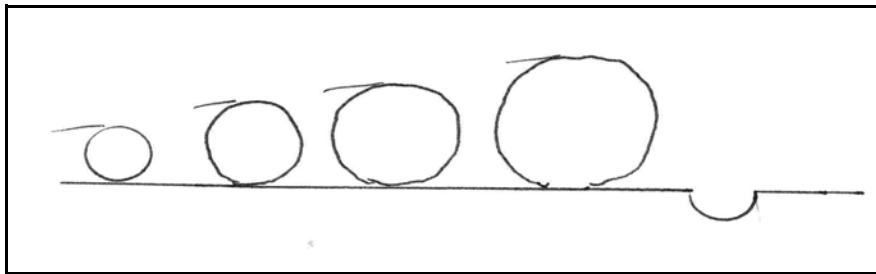


A useful perspective on what becomes evolution can then be seen in the following series of simple pictures. We start with four organisms all of whose differences—in speed, in size of brain, in strength of muscle, in attractiveness of appearance, et cetera—are summed up here as difference of size. The four consist of a large ball and three progressively smaller balls.

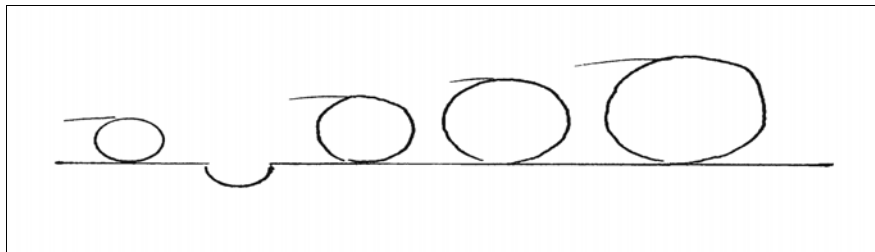




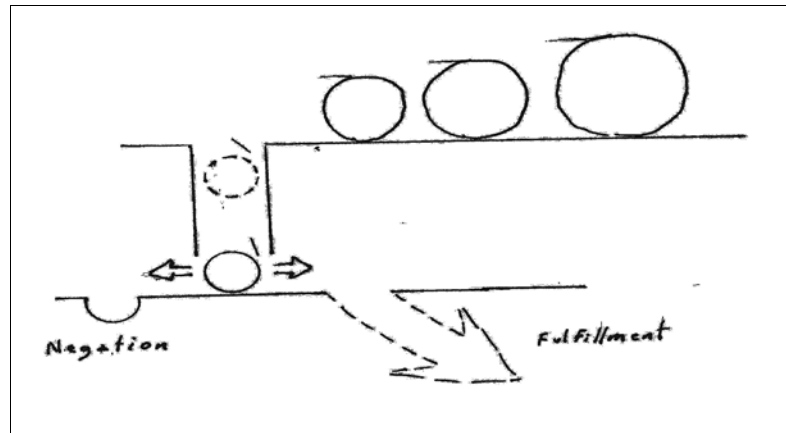
Now we add to the picture the following line, which represents the surface along which these four balls are to roll through “life.” For a bit the surface along which they are rolling runs in a straight line, but then, as with the pinball machine, this line drops to form a hole into a pit or cup or niche of a certain size.



As they are larger than the opening into this pit or cup, the first three balls roll over this *niche of opportunity*.



The last ball, however, being of the precise size to do so, drops into this pit or cup.



You may recognize something like this that happened in your own life—or students can be encouraged to bring up memories.

You met someone you were attracted to—who just happened to be also attracted to you rather than to the other girls or boys. Or you happened to come on something others hadn't observed, which led you in a useful direction.

In terms of the rolling balls, the interesting thing that happens at this point is that the niche of opportunity is in effect a chute down which the ball that fits it drops onto a new rolling surface, along which the ball may roll in one or the other of two directions.

As we see here, it may roll backwards into a *niche of negation*, where it is stopped and can go no further. Or it may roll forwards into a *niche of fulfillment*, which becomes in effect a tunnel through time into the future.

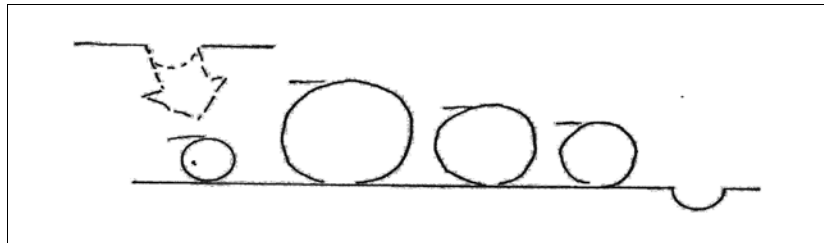
***This transformation “through a tunnel through time” elsewhere opens the route to evolution.*** This is the case for the biological origin of new species. Or for culturally the origin of every significant departure (or bifurcation) in thinking, or feeling, or doing anything different from what previously existed. (For the college level, it is essential to show this departure in terms of the dynamics of *bifurcation* in advanced evolution theory.)<sup>12</sup>

You can make this come to life for students or others by encouraging personal examples. Like how meeting the “right” boy or girl led to a meaningful friendship, love affair, or marriage. How seeing something special about something everybody else overlooked led to a paper in school for which you got an “A,” or a stock investment that

paid off.

In either case, what happened in effect “dropped” your life onto a track headed in a different direction from where you were going before.

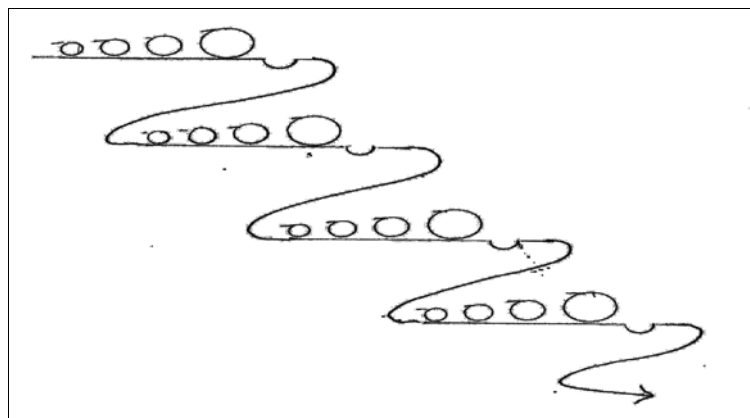
It is as though with a change of frame or slide the original surface and hole disappear along with the other three balls that didn’t fit the niche for fulfillment in that frame. Left behind now is only the fourth ball—which now rolls along a new surface with other balls in which there similarly appears the drop in line for a new niche of opportunity.



This time the ball we are following—the ball of our destiny one might say—may either pass over the niche, in being not quite the right size, or it may again drop into the niche to pass on through the tunnel through time to the next frame.

And so in this way, frame after frame, the flow of life proceeds as if it were a series of still pictures that via a projector equipped with a motor to drive a sprocketed film becomes a movie.

It is as though through this sequence of frames— with each offering the *niche of opportunity* that can lead to the *niche for fulfillment* that all organisms seek — there runs the continuity of the fact of evolution.



Of the “tunnel through time” — scientifically critical to our understanding of evolution— we will turn next. However, before we do so, let’s consider where we are in this story—as well as, now from a deepened perspective, once again why it is important for us to make this shift in telling the greater life story in which, from beginning to end, all our own personal life stories are positively or negatively creatively entwined.

## CHAPTER SIX

## SCIENTIFICALLY, SOCIALLY, AND PERSONALLY, THE NEW IMPORTANCE OF THE NEW STORY

Psychologically, socially, intellectually, morally, and spiritually, the important underlying point is that by telling the story from the viewpoint of the organism seeking a niche for fulfillment we are shifting away from the 20<sup>th</sup> century perspective of the menace of the Great Robot in the Sky to the perspective of all the creatures that our children love to pet and cuddle— as well as to what there is of mind and will and courage and caring in ourselves.

Mind, will, courage, caring—these are the personal qualities of the organism at our level that, after all, drive the “ball” in this simple picture-story. These are the capacities that reach out from us to catch the baton in mid air, or the gauntlet flung at us in challenge, that call us to the adventure that is the great lift to life.

It is also these capacities that signal to everybody and everything that seeks to divert us away from the niche we seek that we will not be easily stopped. They also signal to all who are ready to help — or not to help— advance us toward the niche we seek that here is someone that it will pay to help, that here is the special, caring and thinking person worth betting on.

Take away the fear in which others or we ourselves seek to keep us enthralled, and in plot line this new story, it seems to me, is not radically different from what we had before. It is mainly a less frightening and more hopeful way of looking at roughly the same process as is captured by the accurate but more ominous interaction of natural selection and variation.

The main difference scientifically is that we are looking at life from the perspective of the living organism that accounts for, but is hidden within the mysterious abstraction to all but biologists and statisticians of, the word “variation.”

The difference is that from this perspective life becomes a game in which the deck

is not stacked in favor of the Great Robot in the Sky as dealer, but that offers the organism as the wily player at least some chance, and possibly a good one, of beating the odds. Life becomes the Great Adventure— rather than an indeterminate sentence in a noisy prison with nothing more to look forward to than execution at the end of the line.

It is the main difference socially, however— so monumentally ignored to our detriment by evolutionary science throughout the 20<sup>th</sup> century— that now matters most.

The main difference here is that we are looking at evolution in a shift away from the hidden logic of the goal of death to a newly scientific goal of life for our species.

It is a shift from a perspective hidden by a paradigm that seeks to disguise itself, but which remains four square aligned with the dominator model tyranny of authoritarianism and regressive religion, to a perspective repeatedly beaten under, but which aligned to partnership model democracy and progressive spirituality will push for ascendancy as long as our species breaths and breeds on this earth.

Natural selection and variation and the brutality that of necessity goes along with them can and must—as we will shortly see— enter the picture for our education from I would suggest roughly grade seven on. But getting underway in the earlier grades with the new focus on the organism, and organic choice, and the wonder and the excitement and the social significance and responsibilities of the adventure that can unfold before us is the vital shift in mind that the lost completing or top half for Darwin’s theory brings us.

Isn’t this the kind of story you would rather your students and your children and grand children learn of life and themselves in the early years at school? Or the kind of story you yourself would like to tell them, when little, of the basic story line to life?

Isn’t this niche for fulfillment story the kind of approach that might help end the opposition of many Creationists to the teaching of evolution—an opposition that is far more successful than most people realize— by offering them something they could feel more comfortable with seeing their children learn in school?<sup>13</sup>

Isn’t this the kind of story that you yourself, given this chance to say goodbye to PseudoDarwinian Mind, may now use to break free of the old story and theory into the new story and theory— and given a new sense of your personal importance in this story to do what you can to make the 21<sup>st</sup> century a better place for us than it looks like it is going to be unless things change?

“What the world needs now is love, sweet love, it’s the only thing there’s just too little of,” the Beatles sang back in the 1960s and 70s and the other earlier years of our

great hopes for this century that, for better or worse, is now ours.

It's a record and a song for singing that can be brought in to good effect in all the early grades. For the full song, verses and chorus—which can be picked up easily from the internet using a search on the phrase “What the world needs now”—covers quite a good bit of ground.

“What the world needs now is love, sweet love, no, not just for some, but for everyone.”<sup>14</sup>

Love—and the courage and the will to join those who have set out to *make* rather than break the back of evolution.

## CHAPTER SEVEN      ON WITH THE STORY AS MANY STORIES, MANY OF WHICH TO VARYING DEGREES MAY BE TRUE

By now it can be important to briefly focus on something else going on here of neglected fundamental importance in telling the new story of evolution. It is of the more broadly gauged and tolerant kind of mind that the difference between the old theory and story and the new theory and story opens up to us. Our take off point is all we have seen emerge from what, using new language and a new emphasis, is but a slight change in perspective as far as the basic processes of evolution are concerned.

In what follows, I will present the story as it might be told anywhere from the third grade or so into college. By the second year in college or so, I would say, it will be important for this perspective to be identified as that mysterious modern *in*-thing for evolutionists known as *semiotics* — or consideration of how the story changes according to differences of personal and social situation and language.<sup>15</sup>

What I am stressing here is the strength rather than the weakness of how the same story can change according to viewpoint.

In other words, the science of the 20<sup>th</sup> century, by insisting upon one be-all and end-all and no ifs, ands, or buts about it story, not only distorted but also impoverished the theory and story of evolution. Thus, it is important in the new telling to newly open our minds to all the ways the story of evolution is told not just as lesser stuff of no importance in comparison with the one and only scientifically or religiously thrice-blessed story of evolution cast in concrete—and you shall forever flunk the test if you try to change it by a hair or perceive it otherwise.

As long as the retelling remains true to the basic processes, there is room for many versions. This can be seen in how over thousands of years we have sought to understand and explain evolution first with the ancient stories of the spiritual visionaries, then with the speculations of philosophers, and now with the theories of modern science.

Here, for example, for those comfortable with this approach, one can bring in the



myth of the still body of water and then the ripple that becomes the wave of new emergence in the story used by ancient Hindu visionaries to capture the change process of evolution.<sup>16</sup>

Or find obvious ways of classroom illustration—even via bevvies of giggling students stepping into two pans of water of different colors—to get across the later observation of the early Greek philosopher Heraclitus, that “we do not step into the same river twice.”

Chapter thirteen of *Darwin’s Unfolding Revolution* provides a brief glance at the world’s first attempt to move beyond the story into the theory of evolution with the development of *I Ching*, or *The Book of Changes*, by ancient Chinese thinkers. A look at and discussion of the implications of the explosive power of Fire in the Lake, the image of Revolution, can be useful in high school, as well as later on the use of the layered progression of open and broken lines to express the basic duality and interaction of Yin and Yang. Move ahead then to modern times and one is in a good position to look at Darwin and 20<sup>th</sup> century evolution theory as yes, most certainly, the interaction of “natural selection” and “random variation”— but also of much more at our level of emergence.

Here is a way, for example, to put natural selection and variation within the context of the perspective of the niche in the flow of life. One points out that the organism seeks the niche for fulfillment through the differences it offers from all other organisms through *variation*. The niche for fulfillment then opens up the junctures at which *selection* of the variation that is to be favored occurs.

On one hand, the variation of the organism seeks the niche for its specialness. On the other hand, how selection then occurs differs according to the make-up of the forces external to the organism, either in nature or human-made, which shape, direct, or otherwise control the flow of evolution.

From this kind of historical and cross-cultural perspective, one can see how, from different viewpoints over the ages, the same process can be perceived in different ways and also given different names.

As indicated earlier, it seems to me that although a particularly bright child might be open to an explanation of this sort earlier, as a general rule this level of explanation— particularly Darwinian natural selection and variation— is best delayed until at least the sixth or seventh grade.

The main thing is to keep the focus on the organism and the perspective of the organism from the first grade on.

For too long we have been intimidated and boxed in by the fearful, top-down, Big Message from Above of authority— or those who would rule us—down through the ages from the worst of religions, to the worst of philosophies, to the worst of science in our time.

## CHAPTER EIGHT      ON WITH THE STORY AND ORGANIC CHOICE

Now let's move inside the head, so to speak, of the new heroine and new hero for this new story of human evolution to look at what we—and all other organisms—use to seek and find the niche for our own special fulfillment.

The story now becomes of how the mind of this new thing on earth, this Organism, began to work in exploring the new possibilities that, just as we are each newly born into life on this earth, life still offers to each of us today.

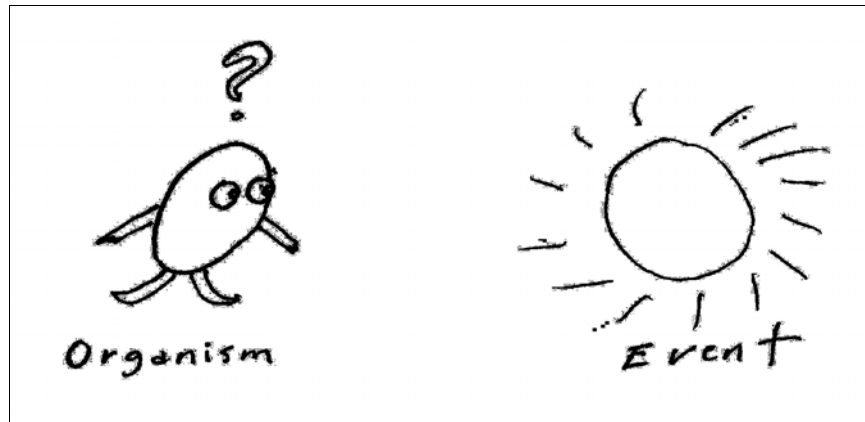
Here the operation of Organic Choice, which Darwin found at work in the mind of the bee as well as in us, enters our story. Chapter thirteen of *Darwin's Unfolding Revolution* tracks how organic choice operates step by step in terms of words alone. But here we will take a new look at this step by step process using the kind of pictures that can engage children as early as the first grade.

Starting that early also serves to lay down a vital early building block in the self-learning or educational sequence for gaining the new understanding of ourselves and our place in evolution that, both subtly and with cumulating power, can begin to liberate us in innumerable ways from the past.

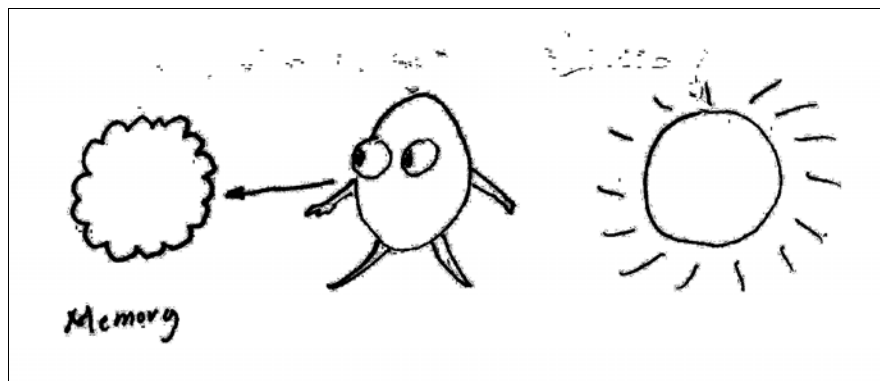
It can do this by giving a child—or ourselves as an adult first coming to this full realization—a vivid sense of the power of our own minds that we might not otherwise gain short of the special kind of experience that has been celebrated historically, which repeatedly opens to each of us during our lives.

It is the experience of wakening to the power of one's own mind that drove, for example, Frederick Douglass from being a black field hand to being the most forceful voice for the abolition of slavery in his time. It is the experience of the awakening of Gautama to the larger reality that became the core legend for the rise of Buddhism. It is also what many of us experience today through the advantage of the right courses and the right teacher in psychology in college.<sup>17</sup>

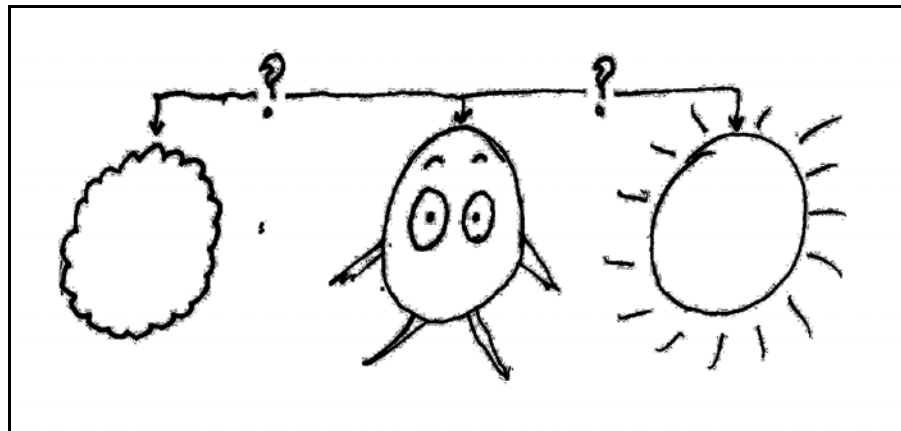
First comes attention to something that happens.



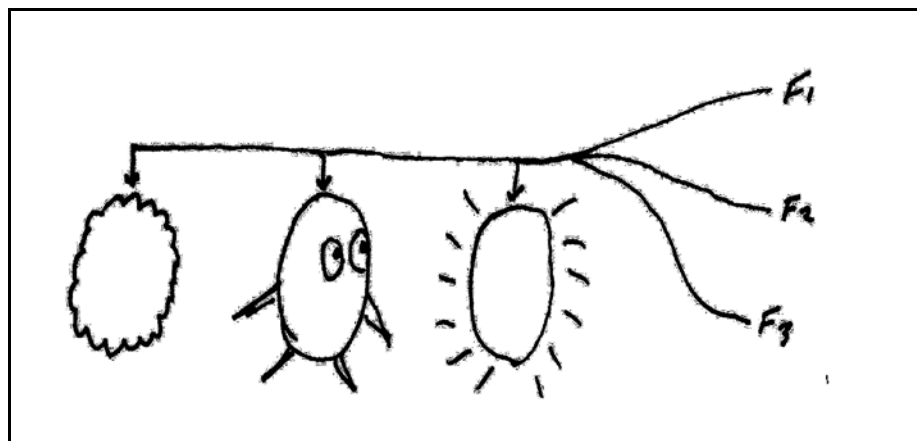
Second, this perception is referred to our memory of everything that has happened to us in the past.



Third, we look for a similarity to—or difference from— this perception of the present and what happened in the past.



Fourth, drawing on our data base in memory of what happened in the past, we project possible scenarios and action paths from the present event into the future.

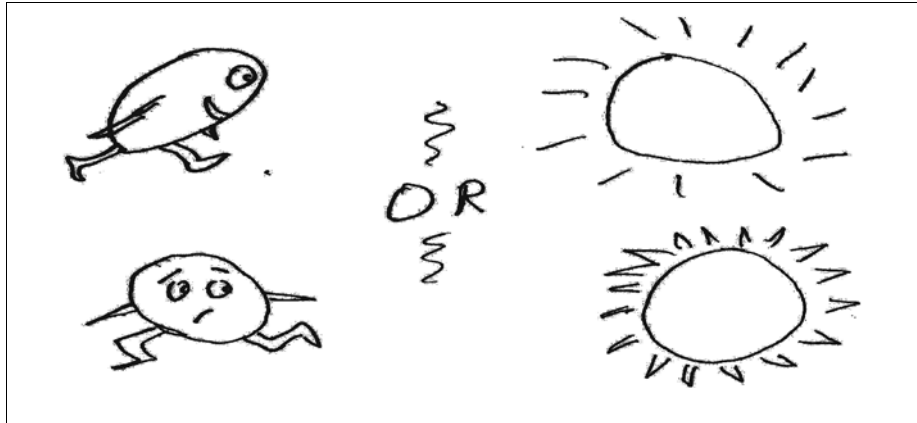


Next comes the decisive step for Darwin that is too complex to explain or understand short of the later years in high school or early years in college—which for this reason I am holding off on it until the very end of this telling of the new story.

I will only signal here that it is the step that, for Darwin, not only drives moral evolution but evolution as a whole in the grand departure for the highest level of mind and of responsibility for which our species alone has been given the capacity and the

evolutionary mandate.

Last is the *choice of action* or of *inaction*— whether we are to welcome and approach or back away from and avoid what has happened— that either drives ahead, or checks, or drives backward *personal evolution*.



This is the step only foreshadowed in Darwin, but which was articulated in enormous detail throughout the 20<sup>th</sup> century —although generally not by his formal successors as evolution theorists.

Instead, it was articulated by thousands of psychologists, psychotherapists, action science researchers, system scientists, management scientists, chaos theorists, and social and political activists. Most of them, however, had no idea they were writing of Evolution Per Se —and here we have the crux of the tragedy of science in the 20<sup>th</sup> century. Most of them didn't know or emphasize they were writing of Evolution Per Se because they had been so effectively shut out of the process of building evolution theory by theorists focusing on only the known half of Darwin and the mechanisms of natural selection, random variation, genes, and the Domination System more generally.

In other words, now we can see that our lives are shaped by the billions, even trillions of choices that in this basic way— and in elaborations studied by many new fields of science<sup>18</sup> — we make over our lives from birth to death. And we can see that the shape that our lives take in our search for fulfillment of what seems unique and best in us constitutes what is generally known as our development, as a child and as an adult.

Within the larger story within time and space that we are looking at here, this becomes our own story —as well as that of all other organisms.

It becomes the story of how we personally change over time, hopefully for the better, which becomes the story of our *personal* evolution.

## CHAPTER NINE THE TUNNEL THROUGH TIME

And so we come to the tricky part for both the old theory and story and the new story and theory to explain. How does evolution work in life, in thought, and through us in our journey through the “tunnel through time.”

The Harry Potter books rife with magical transformations—or for that matter *Alice in Wonderland* earlier—may ready the child for this insight. And certainly those with an early interest in all the science fiction from H.G.Wells *The Time Machine* on should be ready for it earlier than most. But I would guess that expanding our understanding of organic choice to its link to evolution via the “tunnel through time” needs to wait for late high school or college.

Why is this step so important for both theory and story? Because within this “tunnel” take place the changes, that is, the processes of evolution, that move life, thought, or ourselves from an earlier form or situation to a later form or situation in time that may or may not be “improved.”

In other words, the old idea of evolution, spiritual as well as Darwinian, has led us to think of “evolved” as always meaning something toward or for the better. But the new multi-dimensional view of evolution explored in another exceptionally useful new resource, *The Great Adventure: Toward a Fully Human Theory of Evolution*, shows why this is not always the case. We have only to look at the development of the atom and then the hydrogen bomb to see that technological evolution can mean going backward in moral and other dimensions of evolution.

### *The Chamber of Many Doors*

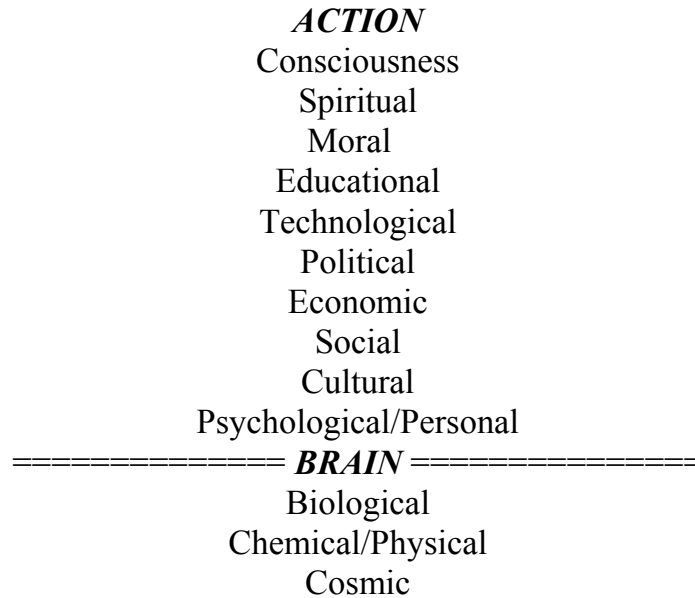
Within the kind of advanced evolution theory that during the 20<sup>th</sup> century managed to nudge its way past the gates of neoDarwinian biology into comprehension by a tiny fraction of scientists for a while the most widely engaging example was the famous “dissipative structures” theory of Belgian chaos theorist Ilya Prigogine.<sup>19</sup>



This is definitely graduate school level theory that does not lend itself to explanation that would be useful here. But in terms of the history of science that becomes meaningful at the advanced high school and college level—where the student seeks to get “the real scoop,” which presumably lurks beneath the surface education of earlier years—comprehension of the multi-level operation of evolution becomes an educational imperative.

For much of a century this understanding was blocked by the focus of mainstream evolution theorists — and understandably compliant science teachers — on the explanations of physics (Big Bang, formation of planets and earth) and biology (emergence of life on up to and including us) as the be-all and end-all for evolution. But beyond the tunnels through time of cosmic and biological evolution what other definitions can there be?

Here is a handy visual from *The Great Adventure* and *Darwin’s Unfolding Revolution* you can repeatedly put to use for enduring effect at levels from high school on up through graduate studies.



Moving from bottom to top, this sketch shows the revolutionary unfolding of the “tree” of evolution from its “roots” in cosmic, chemical, and biological evolution up through its branching beyond the brain into all the levels and activities that characterize the marvelous range of human evolution that Darwin and both earlier and later thinkers visualized.

When you first put this up on blackboard, easel, or projector with screen, please in particular note how — placed there at the top, like the star or angel atop a Christmas tree — is the *moral* imperative of the *action* of each one of us, which determines whether we are checked, move backward, or ahead individually and as a species.

Here you see not just the two or three “hard science” tunnels that have been mainly emphasized for a century. You see the tunnels that for 100,000 years have actually shaped our species and account for practically everything involved in human evolution. You see the so-called “soft science” tunnels through time of the evolution of the brain and psychological/personal, cultural, social, economic, political, educational, technological, moral and spiritual evolution, and the evolution of consciousness and ACTION — fifteen in all.

Here we will look at just three of them— all of which Darwin identified and entered, but was cut off by death before he could go very far. They are the cultural tunnel and the moral tunnel, which we will come to, and the psychological tunnel, through which we have just passed.

### *The Psychological Tunnel Through Time*

What we have briefly looked at in the radically simplified picture I’ve presented of Organic Choice is best called the psychological tunnel because, although many other fields probe its meaning today, it was earliest and most extensively probed by psychology as the science to which was first assigned the task of finding out what mind is and how it works.

A first big insight for psychology was that mind, like Caesar’s Gaul, has three parts or functions: affection, cognition, and conation—or feeling, thinking, and the will to go beyond feeling and thinking, or the intentionality, the power to decide on what to do and to *do it*.

By the late 20<sup>th</sup> century this became mainly clumped within the fields of cognitive psychology and cognitive science—both of which tended to focus on the “cognitive” or “thinking” part of it and let the other two absolutely critical parts go, without which we are essentially looking at the mind of a robot.

Darwin’s great original strength was that in the lines he wrote on organic choice at work in the mind of the bee, the barnacle, the earthworm— and most fetchingly in his infant son Doddy, or William as later known — he not only gives us a quick picture of mind *as a whole* at work. He also puts it within the action-oriented, problem-solving context that step by step demonstrates how through passage through the psychological tunnel of brain and mind *we* evolve — and thereafter, through cross-generational

cumulation of the change through personal evolution, our cultural evolution occurs.

Something happens—and thereafter in a sequence of steps that can take place in anywhere from a split second to years, we move from one place to a new place in mind.

So much for personal evolution through the psychological tunnel through time. After considering some other things it is important to first be clear on, we will get to the specifics of evolution through the cultural and moral tunnels through time.

I could furnish visuals for these “tunnels,” but I think it would be far more useful in teaching, or in learning for oneself, to set the stage with the rolling ball niche for fulfillment visuals earlier shown here, then ask students, or oneself, how the operation of each tunnel might be shown in drawings.

## CHAPTER TEN THE ROOTS OF DOMINATION

So we have seen how from the beginning with the earliest organisms, we have been given this basic equipment of mind to make our own choices and shape our own lives. But now we come to the story of how in fact many choices— and in many cases even most of the choices— are made for us.

This is the chapter that was the whole theory and the whole story of evolution for most of what was taught at all levels in most of the schools of the Western world throughout much of the 20<sup>th</sup> century. It was also the whole story for most of what was popularized in books and television programs for adults as well as children.

Because this part of the story can only unnecessarily instill in the younger child a vague but powerful fear of what she or he is not yet prepared to fully understand—and indeed both political science and sociology indicate this is the functional purpose of this “scare tactic” within the paradigm of social control we characterize as “the powers that be”— this part of the story should not be told prior to the later grades.

I feel that perhaps seventh grade is the right place, for by then the child in normal circumstances has learned enough of what is wrong with the world to seek a deeper explanation. Also, by then, they must begin to gain the kind of widening and toughening of the mind that will be needed to cope with what comes on with the pressure to achieve a viable and marketable adult identity in high school and with entry into the adult world.

In other words, it is time they learn how to deal with the world of bullies beyond those in the neighborhood or school yard. It is time they begin to learn to face up to and stand up to and outwit and outmaneuver the multifarious minions of the Domination System. It is time to begin to learn how to fight for the good, the true, and the beautiful in the work place and everywhere else in the wider world.

There are many ways of telling the familiar story of the two great principles of evolution that Darwin established in *Origin of Species*. Based on one of Darwin’s own ways of explaining them, here is one good way of explaining “natural selection” and “variation.”

One tells of how, among other sources, he got the idea from observing how breeders of fancy pigeons shaped prize winners by *selecting* from the flock those that looked “best,” or that displayed the most impressive *variation* of basic pigeon characteristics.

These breeders looked, for example, for pigeons sporting the most flamboyant tails, most assertive chests, or most commanding stance and compelling gaze. Prize winners were then produced by breeding and rebreeding the “best” of the variations over several generations.

In looking at nature—which the famous voyage of the Beagle over five years around the world furnished Darwin with so exotically and amply—he was struck by how a similar process seemed to be going on throughout all life forms. Only now instead of human breeders something inherent in nature was selecting the “best” of variations within all species for reproduction, hence the term “natural” selection.

One might then go on from this point to present the well-worn case for how natural selection takes place in terms of the interaction of generations with environment. A useful book here is *The Beak of the Finch* by Jonathan Weiner, which provides text and pictures showing how the beaks of the finches on the varying Galapagos Islands made famous by Darwin were shaped into radical differences by the need to adapt to radical differences in environment.<sup>20</sup>

One can show how exceptionally tough nuts as the main food from a tree native to one island over time forced the development of tough nut cracker beaks in the finch native to this island, while on another island a slim bill emerged through the action of natural selection on variation over time.

Depending on the grade level, one ideally takes time to spell out how this process works in terms of the many generations of organisms required to either gradually, or occasionally through sudden leaps, approach the shape that will function best under the prevailing environment. Particularly important in the age of the increasing threat of global environmental devastation and degradation our species is now entering is the big lesson from the past one should get across from high school on. ***This is how with a change in environment the dominant species can be wiped out.***

How 80 to 90 percent of all species on this planet were wiped out 570 million years ago during the Cambrian Era is probably the most dramatic of such facts about the dynamics of evolution. Once again today the question looms along dimensions of which global warming is currently the most alarming and compelling.

This is a vital matter of education, for upon the sensitizing of the numbers of environmental activists needed to spell the difference lies whether survival and fulfillment or extinction lies ahead for our own as well as other species.<sup>21</sup>

For reasons of history, science, and environmental activism it is vital to get across this traditional perspective on evolution. However, the new challenge for telling the new story is take a new look at the big picture action of natural selection on variation from the perspective we have been developing to this point in the story—that is, of the mind of the active organism.

The question to raise for ourselves, and then for a class, is this. Over the billions of years that eventually led to the emergence of our species, how did the early evolutionary forms likely first encounter what Darwin later identified as the two great principles he saw at work.

That is, what did the earliest organisms logically find they had to contend with by the very nature of life on this planet?

### *Who Eats Who*

Some of what follows can be pursued in the earlier grades by the skillful teacher raising questions and then guiding discussion. It will be a delicate job of pick and chose, however, to avoid the grimmer aspects of what follows. The idea here is mainly to help create a new mind space for the scientist and the teacher to explore at the high school and college level.

It is apparent, then, that one of the earliest lessons that a large number of the earliest organisms to emerge on this earth would have had to learn — which then over many generations of natural selection became instinctual — was to look for the smaller creature they might eat. At the same time, closely interlinked, was the fact of what at all times they had to be alert to, and ready to avoid or evade—the larger creature built to eat them.

This was and is the grim fact of the food chain structure for life on this planet.

Prior to Darwin, it was generally thought that this inherently brutal and bloody process was decreed by God as one of those things we were simply supposed to accept without question as one of the uncomfortable mysteries that went along with His creation of everything. But whether they dared to raise it or not, the troublesome question the food chain brutality forced on everybody was why did God set it up this way if He was supposed to be All Good as well as All Powerful.

What also came to haunt earlier religious visionaries, driving some of them to become vegetarians, was the realization that, as we were not only involved in but on top in the life structure of the food chain, we are the greatest murderers and slaughterers of all species.

Somewhere in the religious community there must have been a great sigh of relief when some began to realize that Darwin had at last taken God off the hook on this sort of embarrassing question—for now they could lay the blame on Darwin and the repellent idea of natural selection and variation. By now thousands of studies support the observation that aeon after aeon the structure for the food chain was indeed built by the interaction of natural selection and variation, which as a whole, since the early dawn of life on earth, while creating much of life as we know it has steadily gobbled its way through time like some giant invisible eating machine.

Those who successfully ate the smaller and avoided the jaws of the larger long enough to pass on genetic “copies” of themselves became the “fittest” who survived. They were the species that seeded the future, while steadily the others passed out of existence or into extinction.

For plants and for plant-eating animals evolution operated according to other stories. But again at their core, as Darwin probed in other books, lay the working in tandem of natural selection and variation. This is the basic and best known picture for what goes on in the biological tunnel.

As I’ve indicated, it can be told and shown accurately in many ways by now long established in schools. It is vital, however, to understand and to stress, as Darwin himself did to be largely ignored, that there is another side to the picture of both the earlier and the later stages of evolution. This is the operation of the factor of *sybiosis* — or cooperation as well as competition, which we will shortly come to.

To further gentle the psychological impact of this grim side to evolution one might also use the perspective on variation and natural selection of the rolling balls of differing sizes and the opening in the rolling surface of the “niche of fulfillment” to stress that this arrangement offers to all of us our chance to participate in the grand journey of evolution. But it would be a disservice to the growth of mind every child and adult must achieve to contend with and outwit the brutalities of reality to try to evade entirely this aspect of evolution in the education of ourselves or our children — as has become the misguided tendency for otherwise well-meant schools of spirituality and philosophy.

The brutal side to the biological tunnel must be faced or we rob ourselves of a vital aspect of the liberated power of mind.

A point insufficiently realized by most teachers—as well as, I am beginning to suspect, all scientists—is also this. For all its apparent surface simplicity, how natural selection works in tandem with variation to produce evolution is actually very difficult for most people to grasp, either as students when young or as adults later on.<sup>22</sup>

I strongly suspect, for example, that if the Candid Camera show on television were to ask the so-called man or woman on the street to explain what natural selection is and how it works, even in a university town—and after more than 100 years now of the efforts of educators—few could provide an intelligible answer.

Frankly, I'm heartened by this high probability for ignorance, as it indicates it may be easier than one thinks to open the way for the rest of the theory and story as presented here. Information moves easiest into a vacuum. Yet again it would be a mistake to neglect this part of the story. For by now it reflects a powerful aspect of life on this planet that it is high time we begin to more deeply and comprehensively understand.

It is of the greatest urgency that many more of us in a hurry understand how throughout the 20<sup>th</sup> century the “survival of the fittest” interpretation of natural selection was made the sacred doctrine for social, political, and economic policies of the Domination System that have helped do incalculable damage to us. This is a part of the story of the development of a science of evolution that *Darwin's Unfolding Revolution* covers in depth and at length because of its importance in the evolutionary liberation of mind. How and why half of Darwin was made the whole theory and the whole story while the other half was ignored must become a firm part of the curriculum for senior high, college, and graduate studies if as a species we are to cope with and cure ourselves of the disastrous effects of this case of partial biological fact made wholesale social doctrine.

On one hand, then, along the track for the Domination System we have the picture of the evolution of all species that is built over time through the bloody operation of the devouring of the smaller by the larger. As time goes by and organisms become organized into spreading communities of others like themselves this also becomes the age-old rule of conquest.

This is the picture of nature “red in tooth and claw” celebrated throughout the 20<sup>th</sup> century as Darwin's great contribution to science and to society. This is the picture presumably indicating the inexorable law of survival of the fittest by which the organism of any size—including ourselves—must supposedly abide if one wishes to succeed on this earth.

This is the picture of the *predatory* side to the Domination System that, no question about it, is there. Indeed, 150 years of biology make it quite clear it would be foolish to



think otherwise. Extended from biology into society, this structure for predation is, as I've indicated, the core to the single most powerful paradigm, or mindset, still not only shaping but on an immense scale warping our lives over most of this earth. But modifying this effect is the other side to the matter we will look at now— and the even more important challenge to Domination as paradigm run amok that we are coming to.

While in the devouring of the smaller by the larger may be seen the dynamics of the predatory side to the Domination System, in the more subtle operation of the rolling ball and “the niche for fulfillment” can be seen its *regulatory* aspect.

In other words, while on one hand the Domination System is probably the grandfather to the images within our unconscious of the monster at work, it not only serves to provide one fundamental track for evolution— but it also makes it possible for life itself to exist by cutting back the incredible fecundity of nature.

To paraphrase a remark I once heard, without natural selection the earth would be knee deep in rabbits and wrapped with a mile-thick layer of kudzu vine—a particularly fast-growing vine used as cattle feed in the American south.

So along this track for the emergence and growth of the Domination System, through the juggernaut operation of its bloody predatory side and the bureaucratic efficiency of its quiet regulatory side — both destroying life on a vast scale but also preserving and steadily advancing life as it rolls through time — the evolution of species advanced up the scale from the earliest organisms to the emergence upon this earth of our own species, Homo Sapiens Sapiens.

That is, this was the story that Darwin uncovered and told in *Origin of Species*. But now come more of the chapters to the true story of human evolution that were hidden from us for a whole century.

Or to touch on the actual dynamics, despite the efforts of hundreds of scientists to tell it, this is the story that was damped out and otherwise excluded by the economic and political power structure control of mainstream science, mainstream education, and the mainstream media.

## CHAPTER ELEVEN THE ROOTS OF THE LOVE SYSTEM

How striking all of it is now that so much that for so long has been left out begins to fall in place.

Why, culture after culture, has there been the obsession with sex that not only overwhelms the movies, television, and books of our time but also fills the pictures and the writings that practically every earlier culture has left behind? Why, culture after culture, should our songs and poems overwhelmingly be of love?

Why over the span of mind at its heights at work should we find in Plato and the early Greek philosophers the same perception repeated and deepened thousands of years later in “our time” by Freud and other social scientists—that is, the perception of Eros, or love, as one of the two great driving forces in life on this earth?<sup>23</sup>

At the deep inchoate layer of our being, which exists through the evolution of organism and culture through space and time, is what Darwin also tapped into at age 29—a resonance to that point in time, around one billion years ago, when the fact of sex first surfaced within the stream of evolution.<sup>24</sup>

"May not the moral sense arise from our strong sexual, parental, and social instincts," he jotted down in one of the long unpublished early notebooks that opened the way to an understanding of the new theory and the new story.<sup>25</sup>

A few pages further in the same notebook he takes the next step for this line of thought: "May not this give rise to 'do unto others as yourself' and 'love thy neighbour as thyself.'"<sup>26</sup>

In terms of the work of Lynn Margulis and other biologists, the first chapter of *Darwin's Unfolding Revolution* shows how from its roots in the first emergence of sexuality the Love System evolved in precisely the stages young Darwin intuited in these and other brief entries in his early notebooks.

Here were all these organisms that prior to then reproduced themselves by ever so often splitting themselves in half, like a two for one stock bonus. Already, as the work of Margulis and others extensively articulates, the factor of symbiosis, or the cooperation of one organism or class of organisms with another as a matter of mutual benefit, was operating as a powerful countering force to bloody competition in evolution.<sup>27</sup> But now for the first time there appeared organisms with the differing equipment for functioning as female and male.

Now for the first time there entered into evolution the vast upward step in emergence of the fact of the special awareness of and the special need for another that over time was to fix, and bind within us for survival, the capacity for caring for another.

The next great jump upward came, as we have seen Darwin intuited, with the emergence of the capacity for the parent to care for the child. From the brain research of Paul MacLean and others we know this would generally have been around 256 million years ago, with the emergence of the higher reptiles.<sup>28</sup> Certainly, one has only to observe the care with which the nest is selected and defended, to detect by now the spark for what we are later to call love.

Next comes the stage for the higher reptiles and above all the mammals, with their particularly intimate physical relation to the child.

Now the child resides within the intimacy of the womb within oneself—this rather than in the egg laid outside oneself, which can be abandoned or even eaten if the necessity arises. Now emerges the need first for the protection and then gradually the enjoyment of being part of the herd, flock, or for fish the “school,” which becomes one’s larger identity. Thus, around 216 million years ago with the emergence of the mammals, caring widens beyond the spark to become in a sense the glowing coals of sociability and the gradual expansion of a capacity for love.

At this point, one can implant the story most memorably for oneself and most grade levels through use of pictures, or even simple blackboard drawings, showing the pattern for emergence of ascending brain structures in terms of differences between the brains of reptiles and of mammals.

With the higher mammals, most distinctively ourselves, comes first the limbic expansion of brain giving rise to the coloring of all aspects of life with the brush of emotion, possibly around 26 million years ago for the emergence of the first human, *homo habilis*.

Then with the incredible thrust upward and outward of the frontal brain, which out

of the stream for apes begins with the branching of the hominid line leading to us, there emerges, 100,000 years ago or so, the capacity for the level of reasoning that is ours.

Now there stands, runs, hops, swims, and begins to play, dance, and sing upon this earth for the first time an organism equipped by evolution for the full range for caring for oneself, for others, and for the lift of love that Darwin intuited and the research of Margulis, MacLean, and many others by now confirms. Sex, parental caring, sociability, emotion and reason all come together to provide this organism that is ourselves with the special equipment not just of the Domination System—that is, not just for hunting, or working the land, or for fighting with one another and either prevailing or going under.

Now the Love System is equipped to prevail. Now there is this organism equipped to put the genetic capacity evolution has given us to work to build this new thing on earth, a culture, and gradually to build cultures into the markedly differing civilizations that are to spread across this earth.

## CHAPTER TWELVE ORGANIC CHOICE II AND CULTURAL EVOLUTION

So having come at last this far, how did we get from there to now?

The answer in all its complexity not only requires many books. It also requires the rare capacity from scientists and other scholars to stop trying to find a single track or two, and to name and claim this particular track for oneself and try to fight off or discount all other views— which, among other things, is the mindset that buried the rest of Darwin. What is needed is the capacity to see that all but the most shallow or outrageous of guesses is probably true— that by now we live in a multi-leveled world of incredible complexity and richness.

The question is to what degree each story of how we got from there to now is true, for when, for how long, and how it intermingles its force with others to shape history into where we are today and on into the future.

At this point comes the great shift from personal/psychological evolution to the vast spread of cultural evolution, which drives and binds together the interlocking tunnels through time of social, economic, political, educational, technological, moral and spiritual evolution, and the evolution of the leading edge of consciousness and action.

Here one of the most widely compelling and useful resources for the educator is the work of cultural evolution theorist Riane Eisler, with whom I have worked closely over nearly three decades. No other work so forcefully shatters the old Darwinian power of the idea that, whether we like it or not, we are the prisoners of a single track for evolution.

In terms of the nature and the dynamics of the Domination System and the Love System, this work is unsurpassed. Bringing vividly to life 35,000 years of our cultural evolution, in a book that has been published in 22 languages including Arabic, Chinese, Japanese and Korean — and thereby available to teachers in much of our world today — in *The Chalice and the Blade* Eisler shows how the Love System prevailed in peaceful cultures shaped by the “partnership model” prior to about 5,000 years ago. But then via

violent invasions by predatory hordes governed by the “domination model” and other dynamics, within only a thousand years or so, came the shift to the global ascendancy of the Domination System.

Bringing together the results of thousands of studies by archeologists, anthropologists, psychologists, historians, and other scholars, Eisler shows how over the past few hundred years our species has been trying to break the hold of the Domination System and — with increasingly significant success — gain the better world the best of science and spirituality clearly reveals.

Another advantage of this work for the educator at high school, college, and adult education levels, is its application in other books and papers by Eisler to sex, politics, economics, the environment, spirituality, family life, child raising, and other primary concerns, including education itself in her book *Tomorrow's Children* — recently published in Urdu to hopefully begin a educational revolution in the Arabic world. A complete guide to resources is provided by the website [www.thepartnershipway.org](http://www.thepartnershipway.org).

An outgrowth of the work of The Center for Partnership Studies, co-founded by Eisler and myself, is the website for The Darwin Project, [www.thedarwinproject.com](http://www.thedarwinproject.com). By now it must be apparent a central challenge for educators worldwide is to speed up the shift from the rote learning of the old story to teaching and telling— as well as living by— the new story. To this end, The Darwin Project has developed the distance learning courses in new evolution studies for global availability via the outlined in *The Great Adventure* section of its website.

Earlier we tracked the story of personal evolution through what happens within a psychological tunnel through time. How besides as well as within the two primary tracks that Eisler outlines do we get from there to cultural evolution through cultural tunnels through time?

Bypassing thousands of marginalized studies which indicate that consensus along traditional lines is still far away, here is a quick answer that can be useful by bringing into the picture the experience of every one of us, children and students as well as teachers, and of where we each soon come to know our personal journey through life is inevitably headed.

Basic to all of us, as we all may observe, is the life story of impregnation, birth, massive learning, and eventually death.

That is, an impregnating of our mothers by our fathers brings us to life. We are born, and thereafter we do and learn from an incredible range of things during our lives.

And out of all this— transcending our death by being passed on to the next generation— comes whatever is to add to, or subtract from, the cultural evolution of our species tunneling its way ahead through time.

Here is a concise picture of what happens in the cultural tunnel through time. Again the advantage Darwin offers is that the vision of this man who wrote 95 times of love in *The Descent of Man*, while far from able to embrace everything involved, does provide a clear and forceful way of cutting through the confusion of the surface complexity to the underlying core of the central process moving us ahead through the drive of the Love System.

Again our perspective is that not of the top-down perspective of large forces or “principles” at work, which all too much of science over the ages—as well as religion, philosophy, and government— has favored. It is the perspective of the *organism*— of ourselves, of your mind and my mind, and of organic choice at work.

But now we are to look at the drive of organic choice operating through the interaction of many of us working together toward the goal in common of the social and spiritual as well as personal construction of a *cultural niche for fulfillment*.

Where does this fit in school? Earlier, in terms of Darwin’s interest in the mind of the bee, earthworm, Willy, etc., and the cartoons I provide, we looked at how the basic explanation of Organic Choice at the personal level can be explored with children as early as the first grade. Now we will begin to look at Organic Choice II, or group organic choice— which in terms of the top or completing half for Darwin’s theory from the sixth grade on can be parceled out and repeated throughout high school.

In this way, by the time the child reaches college, this rather than the old story —and the old way —can be the story and the way they will view no longer as merely or only the ideal, but as the *norm*, as what is routinely expected of one, as the “given.”

In other words, the emphasis on individual choice of and responsibility for personal evolution becomes the basis for the next step up to group choice of and responsibility for the evolution of our species. Which in turn becomes the bedrock base for mind and all we call humanity. From which we can now explore all the higher ramifications of this relationship that — at its best, *in keeping with the original reason for their founding* — psychology, sociology, anthropology, economics, political science, as well as the humanities and philosophy and religion explore, seeking at their best to ever more closely approximate some ideal.

Now let’s look at the powerful sequence for both science and education that Darwin

carefully laid out over 100 years ago for the telling of the new story, which to my knowledge has been almost wholly ignored by both science and education ever since.

Here is what he was convinced made us what we are today, and as surely as the sun rises daily will impel us toward the better future — in contrast to the old impression and the old story that we live out our lives cycling as squirrels in the cage of first half Darwinism and the Domination System, as those who seek to hold us in place or drive us backward have tried, and will continue to try, to convince us.



## CHAPTER THIRTEEN      THE EVOLUTIONARY POWERS OF CARING, REFLECTION, LANGUAGE, AND HABIT

Now once again we may see how the fragments of Darwin's full original vision fit together into a single striking whole. For what is the first step for the process of cultural evolution that, from this point on, is to drive forward human evolution?

It is what level by level upward was built upon this earth following the initiating emergence of sex in evolution. It is again *caring*.

It is the power of caring as the single most vital ingredient in the recipe for an effective life on this earth as well as the ongoing reflection of the widening drive of the Love System.

And why, contrary to what one might expect, does caring come first in the sequence of steps upward for our newly emergent species, as originally clearly outlined by Darwin in the ignored writings I bring to life in the reconstruction of the completing half in *Darwin's Unfolding Revolution*?

It is because of a simple fact of psychology that Darwin understood through long immersion in its matrix. It is that to act we must be *motivated*.

Much research indicates that the strongest of all motivators is fear—hence the incredible power of the Domination System.<sup>29</sup> But here we are looking at the difference between what the founder of humanistic psychology, Abraham Maslow, so brilliantly identified as the *defense* motivations, which are linked to and help hold in place the Domination System, versus the *growth* motivations, which derive from and drive the Love System.

If we look at history as the written record of the human experiment in evolution, for example, it is certainly easy to see how it has been shaped by fear as the strongest of drives at the primary or lower order level of defense motivation. This is the message of all the battles, beheadings, torturing, massacres, and bloody conquests that century after century have led the higher order human to despair of ever seeing anything better come of

the human experiment.

But as a surprising number of historians have observed—for example, Richard Tarnas in the superb *The Passion of the Western Mind*, or macrohistorians such as Arnold Toynbee, Pitirim Sorokin, Teilhard de Chardin, or Riane Eisler<sup>30</sup> — history is not only the dates we memorize of all the bloody battles but also in some ways even more so, the record of the thrust of the highest order drive for growth motivation, the level of love that Maslow called *metamotivation*.<sup>31</sup> Massively confirmed both by Darwin’s reasoning and the data he drew on, this is the level of caring for something transcending oneself.

It is the level of caring for others—as well as caring for an idea, for an ideal, for the cause— that has driven evolution both forward and backward, but mostly forward, for as far back as we are able to reach with understanding today.

This is why what has been called the love of God by a variety of names—Jehovah, Allah, Ahura Mazda, earlier the Great Goddess or the Queen of Heaven— drove the spread of all the religions over the face of this earth. It is also what has rightfully been called the love of science, which drove Darwin and that has driven the development of science at its best since the 14<sup>th</sup> century. It is also what thousands of our ancestors and fellow human beings today, out of the hunger of living under tyranny, have known as the love of freedom and equality that has driven both the revolutionary and the evolutionary spread of democracy since the 18<sup>th</sup> century.

It is for all these and hundreds of other reasons that in Darwin’s reasoning of the steps taken by our species to move toward fulfillment of the special potential given us by evolution first came the *power of caring*.

### *The Power of Caring*

As Darwin did originally, we may visualize how this force implanted by evolution within each of us formed and then acted within the earliest humans living in families composed of the parents and the children. We would logically expect them to be motivated to reach out to other families to form the earliest clans for mutual protection against the predators of their time, and for advantages in food gathering or in hunting.

This we know from many sources was true.<sup>32</sup> But more fundamentally important than such practicalities in the full Darwinian understanding is the motivating fact embedded within the organism much earlier. This, as we have seen, is how following the evolutionary emergence of the drive of sex, and then the drive of parental caring, there arose the brain and body-embedded evolutionary requirement of sociability.

There arose this need to join and move together with others to find the basic niche for fulfillment we are to share for whatever span of time is possible—to find a large cave to share originally, or a campsite. Then to found a village, a town, a city, a nation. Thus the movement upward over the long span of time began—and again and again begins—with caring for others as well as oneself, with this caring for the companionship of others of one’s own kind.

### *The Power of Reflection*

Thereafter the logic of the sequence as outlined in the “lost” Darwin unfolds. The association with others driven by caring leads to the inevitable complexities of relationships, which requires the next step of *reflection*.

Because of all the perplexities in this regard in their own lives, this is an evolutionary step easy to bring to life in discussions involving children and students of all ages.

Way back there, what was to be done about all the disagreements as well as agreements that came up in those early times—as well as today?

What was and is to be done about the misreading of what has been said or done, about the fear of rejection, about the inevitability of lying, cheating, thieving—and the abiding drive of the predatory few to dominate or exploit the gullibility of the well-intentioned many?

What, on the behalf of the good for all involved, is to be done to control all this and everything else that threatens to destroy the minimal bond of trust that holds all groups and societies together?

For our ancestors at the outset there were also all the questions for which we assume someone has the answer today, but which were wholly open and awesome back then. What also was the meaning of the rising and setting of the orb we know today as the sun? Of the changes of the seasons? Of the mystery of birth and the mystery of death?

So inevitably there entered into our lives—as again and again it has over the ages and in the lives of every one of us today—the need for the power of reflection.

But just to think about things such as this is not enough. Reflection leads to action—and for the organism bound together with others in the life process to act requires the next step.

## *The Power of Language*

We may picture way back there in time how the increasing complexity of all the questions arising from groups living together forced the development of some way to jointly look for answers to increasing thousands of questions.

First come the gestures and the sounds, at the level of communication that still prevails for all other species. Over time these gestures and sounds became the symbols for the level at which today we can teach dolphins and apes to perform— punch the button with one picture on it and you get a banana, punch another and you get a fish. And then out of this long time groping upward emerged what for the “lost” Darwin came next and is only normally possible at our species’ level of evolutionary emergence—the incredible, transformational power of language.

There is upon this earth now this new way of stringing symbols together to cover all the nuances of sharing wisdom to arrive at the answers that become the consensus upon which all the higher stages of mind and of society are to be built.

There is also now upon this earth the chief means by which we have evolved—not primarily by the transmission of genes, selfish or otherwise, for that set the limits for the kind of species we are 100,000 years ago. Now the cultural tunnel from the niche for fulfillment into the future widens into an immense passage as step by step, at an accelerating rate, we move as a species bound together by caring, by reflection, and by everything that language leads to into the future.

For a long time this language is verbal, with the expanding wisdom of cultural evolution transmitted across generations chiefly through stories told or sung by the early bards. Then comes the explosive acceleration of the written language making it possible for us to evolve in an array of new ways. These range from the expansion of trade and the surge of economies through the precision of written orders and record keeping to the preservation and spread of the rituals for the religions—which not only first bound together humanity within a sense of some higher purpose in common, but asserted against all temptation to act otherwise the bedrock requirement of *morality* that was Darwin’s chief concern.

Typical for the culture that for so long buried this aspect of Darwin, making him instead the icon for the commercially useful but predatory doctrine of survival of the fittest, is the fact that we are still generally taught that the earliest language was that of Sumer, with symbols for carrying out business transactions. But the work of archeologist Marija Gimbutas and others— whose work threatens the prevailing paradigm and thereby faces the same exclusion that buried Darwin’s “better half”— provides another story.

Out of the long period of high creativity and comparative peace and plenty of our earliest culture, Gimbutas quite clearly shows, emerged an earlier written language. Developed to serve the ritual purposes of spirituality—developed to give thanks for our abundance rather than how to add to it and divide it up as in business— its symbols bear a striking correspondence to what is later generally identified as the world’s first alphabet.<sup>33</sup>

So language becomes the means whereby the colors of caring and the threads of reflection are woven into the vast, intricate tapestry of meaning that the final step for Darwin, *habit*, then roots in place.

### *The Power of Habit*

This of course is a seemingly hum drum if not indeed repellent word that few have found interesting other than the thousands of psychologists who have studied it and educators who have made use of its impact. But call it what you may, by doing whatever is felt to advance rather than retard us over and over and over again over either the short or the very long span of time, the power of habit has sunk in place everything we value in mind, every skill we have, every law or moral precept we have learned to respect.

Brushing our teeth. Doing our homework. Feeding the cat. Going to church. Or boy scouts or girl scouts. Or away for vacation at Granma’s every summer — it is also a topic for personal examples and lively discussion anywhere from kindergarten on up through the sixth grade.

So this became the cycle for countless repetition by the successors of those earlier humans. This was what bit by bit branched into and built the varying customs and cultures of this earth.

This was the pattern for the drive ultimately of all that falls within the nature and dynamics of the Love System. For 100,000 years this has been the pattern for the cycle of caring, reflection, some rudimentary form of communication, and habit — and then, more rapidly escalating upward, for possibly the past 30,000 years or so, with the development of a full-fledged language.

Caring...leads to reflection...leads to talking and writing to share and test our reflections with others...which via the repetition of habit is built into the consensus, both constant and shifting, that moves us ahead.

In other words, no matter what our color, culture, or creed may be, practically everything we believe, say, and do today is the result of this cycle whereby a large part of what exists today was built through the repetition over and over and over again of what

was believed, said, and done earlier.

This is the sacred body of social being that those among us who are called conservatives normally seek to defend, and those among us called liberals normally seek to change for the better.

That is, this is true when we serve what is apparently the mission rather than the distortion of our evolutionary functions.<sup>34</sup>

## CHAPTER FOURTEEN      DARWIN THE REVOLUTIONARY

Is this still part of the lost grounding in Darwin for the theory and story of evolution we need for the 21<sup>st</sup> century? Can we step out of the super-cautious box for most educators and scientists today and legitimately bring politics into the picture?

We not only can but must, and most usefully because Darwin was a liberal in many regards but also a conservative in others, and this fact I believe is increasingly meaningful in trying to arrive at the new and true story of human evolution.

The matter of politics is of course tricky for schools. Because of parental and school board sensitivities and other practicalities, the subject is usually and understandably avoided in public grade schools. With the teen years, however, the subject of politics becomes vital to engage in preparing students for the responsible citizenship upon which the preservation and advance of our species, and indeed all life on this planet, depends.

Moreover, it grows rather than lessens in importance within the larger dialogue that constitutes the education of adults required for the health and security of democracies—to which those of my generation are particularly sensitive, having known the face and fact of fascism at its worst in World War II, who now perceive our children and grandchildren newly threatened both externally and internally by the old, old authoritarian alternative.

As a matter of history, of evolution, and of practical urgency, the time has come to face the question of the relation of politics not just to the health and welfare of our particular neighborhood, town, or nation over the next few years, but to the global evolution of and future for our species.

As *Darwin's Unfolding Revolution* makes evident, the story of Darwin himself is far more than we earlier realized an integral part of the true story of human evolution. I also believe what we may now discern of his own political beliefs can be surprisingly useful not only in helping to ground our own thinking, but in guiding the discussion of students regarding the relation of politics to evolution.

If we look at his life, it is evident he was both liberal and conservative—a matter

vital to bring up at this point, for out of convenience, and out of being sold this notion by those who stand to gain if we believe it, all too many of us as students, parents, and as teachers not only believe the traditionally conservative idea that evolution at our level happens all by itself. They are further duped by the idea that if we try to interfere—that is, change anything on our own—this can lead to horrible consequences.<sup>35</sup>

The so-called New Age version of this idea—spread among others by devotees of the eminent and widely popular psychologist Carl Jung—is that one can never be sure what is good or what is evil because the good we attempt in this world can all too easily lead to evil.

Evolution does not happen by itself. Nor must we avoid doing good because it can lead to evil. As the endless repetition of the thrust to the cycling of caring, reflection, language, and habit makes beyond question evident, evolution requires *action*.

And down beneath what often seem to be no more than the shenanigans of the game of politics the single most powerful dynamic either driving us forward, checking movement, or shoving us backward is the struggle by a variety of names over long centuries between those who want to maintain and those who want to change what exists.<sup>36</sup>

Given Darwin's pioneering understanding of how hard and how long has been the struggle to get to where we are today, he had a deep love and the greatest of respect for the best of what exists. This was to him all that was decent, fine, and noble in the England of his time, as well as what he found and treasured of the qualities of what used to be considered "character" among individuals of all kinds in the wider range for humanity. Wherever he felt this was to be preserved, he was very much the staunch conservative.

But at the same time, he had a passionate hatred of and could freely rage against the injustice of slavery, the brutal treatment of women by many men, the barbarous and by any measure of intelligence the stupid and even vicious customs of many cultures and religions. He also resonated to other causes for the Whigs, or liberals, with whom he and his family over several generations were identified.

Back of this political surface lies the larger picture of the reality of evolution that the suppression and distortion of what was in the end most important about Darwin—as well as most important about the evolution of our species—did to make the 20<sup>th</sup> century such a dangerous and confusing juncture for the evolution of our species.

We see not just the man who, by uncovering the foundational power of the interaction of natural selection and variation, most forcefully articulated the working of the Domination System via the biological tunnel in biological evolution.



And we see not just this single system—which everywhere tends to be favored and supported by conservatives— as supposedly the over-riding answer to every question not only of how we emerged, but to how supposedly we are to conduct ourselves in trying to advance further in this great open and fearful but enticing journey through space and time.

We see the man who as a young man and as an old man, in his focus on caring, mutuality, sympathy and love, was driven by his feeling—which tends to be favored by liberals— of an increasingly heavy responsibility to identify with and assert the place of the Love System in evolution.

We see the man who further, similarly ignored, along with the dynamics of natural selection and variation discerned the central importance within this picture of the vital third ingredient— the organism, ourselves, and the nature of mind that at all levels, even against the most staggering of odds against one, is driven to attain freedom and equality of choice.

Socially, politically, and economically, we see Darwin's scientific confirmation of the ancient position of the highest or prohuman, non-authoritarian level of spirituality regarding the question of whether or not we are to advance in evolution—and indeed, as the point we have reached in the cumulating devastation of our planet is beginning to underline, whether we are to survive.

Psychologically, the thrust of the old story and the traditional perspective is that of the impact of all the things larger than ourselves, to which we must adapt. This of course is a fact of life all organisms, including ourselves, must learn or perish.

But it is the half-truth centrally embedded within the paradigm for first-half Darwinian science that ironically, outrageously, and tragically not only perpetuated the authoritarian mindset within religion that historically science fought over 300 years to free us from. Even worse is what it points to today.

As great as the threat to the physical environment that science focused on in the past is now the threat to the *cultural* environment the science of the 21<sup>st</sup> century must focus on. For increasingly entrenched at all levels in business, government, education, and the media today are the power seekers out to encourage the development of the half-truth-blinded mind that can be controlled from above, rather than liberated from below.

As the work of cultural evolution theorist Riane Eisler has emphasized in book after book — and as I am beginning to develop in a new Triadic Theory of evolution — at the core of all of this lies the old, old question of the choice between the Domination System and the Love System in child raising, in schooling, in marriage, in living together more

generally, in science, in scholarship, as well as in politics and economics and all the many other ways this question presents and re-presents itself to us throughout the whole of our lives.<sup>37</sup>

## CHAPTER FIFTEEN THE MORAL IMPERATIVE

This then is a brief look at the old and the new we must meld together in telling the new story. It is an experimental reconstruction of the theory and the story of human evolution that Darwin laid out in the books and papers of his familiar and his “lost” years— except for the one thing of greatest importance to him about our evolution.

At the core of the meaning for the word evolution is the question of perfection. The rolling ball in our picture-story depicts a life span that, albeit adventurous, could in the end be mainly a matter of cycling in place.

So what takes the “ball” in our picture-story to some higher level of functioning or being? That is — as we saw in chapter one Darwin himself raises the question, so long ignored on the very last page of *Origin* — what *improves* both the organism *and* the niche it seeks for fulfillment?

The Darwin of *Origin of Species* and the Domination System says it is a matter of expiration and extinction, that evolutionary advance is shaped by the destruction of the lesser form. But the Darwin of *Descent* and the Love System says it is a matter of aspiration and distinction, that evolutionary advance is shaped by the pull of the ideal or the search for perfection.

Wholly contrary to the paradigm of PseudoDarwinian Mind that imprisoned the 20<sup>th</sup> century is the work of thousands of scientists and theorists corroborating this lost part of Darwin—for example, the drive of evolutionary love for the man now considered possibly America’s greatest philosopher, Charles Peirce. The ego ideal for Freud. The actualization hierarchies of Eisler. Metamotivation and self-actualization for Maslow. The superconscious and the will for the influential psychiatrist Roberto Assagioli. The higher structure for the limbic system and the prefrontal brain for the great brain scientists Paul MacLean and Karl Pribram. Love versus power in the work of sociologist Raymond Bradley and Pribram. The biology of love of Chilean biologist Humberto Maturana and British biophysicist Mae Wan-Ho. The psychology of love for American psychologist Robert Sternberg.

Moreover, the thrust for the great educational theorists from Pestalozzi through Maria Montessori, John Dewey, Jean Piaget and Paolo Friere to Nel Noddings and Ron Miller in our time is of teaching and of parenting to the ideal that generation after generation drives our cultural evolution at all levels.

Embracing all this but beyond it was the conviction for Darwin that, as chapters five, six, seven, and eight of *Darwin's Unfolding Revolution* develop, to a significant degree accounted for the burial of the top half for his theory for 100 years.

It is what for Darwin forms the driving core to the Love System. It is also what — because of the fact he wrote of it 90 times in *Descent* and still it could be ignored — tells of why our species faces extinction unless at last we take the time to understand, and value, and care enough to reflect upon, to talk and write about, and to more surely plant it within ourselves through habit and action.

It is why all democracies, rightfully worried about preserving the separation of church and state, can no longer afford to use this as an excuse for avoiding this rapidly accelerating challenge to the intelligent, caring, and morally sensitive educator.

It is also why it is high time scholars and educators within all the religious faiths that maintain schools shaping the minds of billions of us across the face of this earth— either with or without the boost of the completion for Darwin's theory— at last, to a widely significant degree, achieve this level of understanding, expression, and action.

It is the prime driver to justify evolution's 100,000 year investment in us of *moral* evolution.

“Of all the differences between man and the lower animals,” Darwin wrote during the hard winter of 1869-70, “the moral sense or conscience is by far the most important. It is the most noble of all the attributes of man, leading him without a moment's hesitation to risk his life for that of a fellow creature; or after due deliberation, impelled simply by the deep feeling of right or duty, to sacrifice it in some great cause.”<sup>38</sup>

“The moral faculties are generally and justly esteemed as of higher value than the intellectual powers,” he wrote. “This affords the strongest argument for educating and stimulating in all possible ways the intellectual faculties of every human being.”<sup>39</sup>

Ultimately, through the step by step upward process over generation after generation and century after century that we have examined, our “conscience then becomes the supreme judge and monitor.”<sup>40</sup>

And then there was this conclusion so wholly contrary to much of a century of the science of his successors.

“Important as the struggle for existence has been and even still is, as far as the highest part of man's nature is concerned there are other agencies more important. For the moral qualities are advanced, either directly or indirectly, much more through the effects of habit, the reasoning powers, instruction, religion, &c., than through natural selection.”<sup>41</sup>

In a sequel to *Darwin's Unfolding Revolution* I will probe in depth the reasons why on this fundamental point he was for so long ignored. But perhaps the most damning fact of all is that for practically every reader of *Descent* throughout the 20<sup>th</sup> century — that is, by now countless thousands of scientists and millions of the rest of us over the face of this earth in all the languages into which this book was translated — the appearance of the word “moral” in the text was the signal to quickly skip on.

Like the ring of a bell for Pavlov with his dog, it seems to have been the signal to us for something to avoid or immediately tune out on as sure to be dull, old fashioned, or otherwise no longer of consequence in this glittering new world of ever larger, faster, and more ingenious gadgetry and entertainments.

Yet in relation to the emphasis in telling the new story for oneself, and for one's children and students and others of all ages, what is actually involved here?

Within the basic operation of Organic Choice that Darwin first writes of in his analysis of mind at work in a honey bee lies the operation of the last of the four evolutionary tunnels through time that must figure in both the theory and the telling of the new story — *the moral tunnel*, or how we become good or better rather than bad or worse over time.

### *The Moral Tunnel Through Time*

As illustrated earlier with cartoons, here, once again, is the process that Darwin and by now many thousands of other brain and cognitive scientists have observed.

First comes attention to something that happens. This perception is referred to memory of everything that has happened to us in the past. We look for a similarity—or difference— between present and past. Then drawing on our memory of what happened in the past, we project possible scenarios and action paths from the present event into the future.

Now comes the complex but decisive step for Darwin that surely by the sophomore

year in college, if not earlier, should become an essential part of the curricula—as well as embedded in the understanding of the intelligent, caring, and morally sensitive parent. It goes back in time to that first emergence of sex within evolution, and to the sequence of parental and social caring that over millions of years implanted within us the central natural guidance mechanism for our being on this planet.

What happens is this. Here we are in the present. Behind lies the past, ahead lies the future. And now out of our comparison of past, present, and future arises the perception of a discrepancy between what exists— or the *real*, or what is here before us and what we are about to do— and the *ideal*, or the driving normative or moral goal that dangles before us what we should have done in the past as well as what we should do now.

This for Darwin—beyond survival—was the single most critical aspect of organic choice, and thereby of mind itself.

Do we do what “our better half,” the Love System, tells us is right? Or do we do what our foundational but lesser half, the Domination System, tells us to do?

Or do we simply buy out of the decision either way— and in effect buy into the life that is neutral or meaningless either way?

After the decision one way or another, the last step is the *choice of action*, of which bit by bit over time our personal evolution is shaped from birth to death. It is the step of moral choice just prior to action and then choice of action that, by adding to or subtracting from the choices of others, either drives ahead, or checks, or drives backward human evolution.

And so we have come to the end of our story. And what have we learned?

Is it not this—that no matter whether we tell this story beginning in kindergarten. Or to children in grade school, in high school, in college. Or we write of it to make it come to life in books and television programs, or we tell it to our own child or grandchild as we make the opportunity or the opportunity arises, we are back to where we started.

***In the beginning there was the Domination System and the Organism. Then the Love System entered life and meaningful Evolution began...***

## RESOURCES FOR TEACHERS, STUDENTS, PARENTS, WRITERS, AND SCIENTISTS AND OTHER SCHOLARS

Of books mentioned in the text, the two most basic to this little book are *Darwin's Unfolding Revolution*, of which I am the author, and *The Great Adventure: Toward a Fully Human Theory of Evolution*, of which I am the editor.

Other books mentioned in the text are covered in the notes and references.

For telling the new story, the single most useful resource I know of is the online Library and Book Store for The Darwin Project at [www.thedarwinproject.com](http://www.thedarwinproject.com). An earlier print media version is in the back of *The Great Adventure: Toward a Fully Human Theory of Evolution*.

This online library provides quick access to scores of useful books of the following types:

1. Useful Books for Exploring the 15 Levels and Activities of Evolution.
2. Books on Darwin and Darwin's Theory.  
This includes books on Darwin's life and works; Darwin's "lost" theory—that is, the second half, moral developmental, or humanistic completion for his theory; and Darwin's truncated theory—that is, the first half, pre-moral developmental, or pre-humanistic beginning for his theory.
3. General Evolution Theory and Story—for scientists and most readers.
4. General Evolution Theory—for theorists and more advanced readers.
5. The Case for and against Neo-Darwinism, Sociobiology and Evolutionary Psychology  
This includes books making the case for the "Neos" and the "Super-Neos," and books making the case against the Neos and the Super-Neos.

6. More books by Darwin Project Council members.

As the Darwin Project Council is composed of leading American, European and Asian scientists and educators, an additional good resource is books listed in the short biographies of Council members in About the Darwin Project at [www.thedarwinproject.com](http://www.thedarwinproject.com).



## NOTES

1. Published online by The Unquiet Revolutionary Press, this book contains the hundreds of references for both the old theory and story and the new theory and story that lie in the background to this telling of the new story.
2. Great Books *Origin of Species*, p.243.
3. Great Books *Descent of Man*, p.253.
4. Desmond and Moore, *Darwin*, p.449.
5. Laszlo, *Evolution: The Grand Synthesis*, p.71.
6. Ibid.
7. “Booming, buzzing” is a quote from William James that would take me forever to track down, so I leave it to those so impelled.
8. Frankl, *Man’s Search for Meaning*.
9. Frank, *The Diary of Anne Frank*.
10. This is the new level for a science attempting to articulate with the means of science a level of understanding probed in ancient spirituality, but thereafter cut to pieces by the machinations and ways of the Domination System takeover and make over of religion. Leading edge work in this direction includes a mix involving such figures as Laszlo, Bohm, Pribram, Eisler, Hartmann, Capra, see references.
11. Gruber and Barrett, *Darwin on Man*, p.456.
12. See Laszlo, *Evolution*; Jantsch, *The Self-Organizing Universe* for the dynamics of bifurcation in the work of Prigogine, Csanyi, and all other major modern theorists of evolution.
13. I am convinced an uncomfortably large part of what I increasingly suspect is the hidden scandal of teaching evolution in American schools is the degree to which it is trivialized and minimized through successfully labeling it “controversial,” hence to be avoided as much as possible by the savvy school board and teacher. This leaves unchecked and uncorrectable the nationwide reign of NeoDarwinian Mind. The near-successful attempts to outlaw the teaching of evolution in Kansas and Oklahoma are only the tip of the iceberg in this regard.

14. Most of us assume this is a Beatles song, but the lyrics are actually those of Hal David set to music by Burt Bacharach.

15. An excellent source on semiotics is Salthe, *Development and Evolution*.

16. I have searched high and low unsuccessfully for a good reference here, which hopefully will now emerge from some reader. Both wave and ripple are used throughout Hindu and Buddhist sources in many creative and highly imaginative ways, and the image was picked up for use by Ken Wilber, but the particular tale I had in mind eludes me.

17. In my own case, it was a remarkable psychoanalyst turned philosopher, Francis Gramlich, during my first year at Dartmouth following World War II.

18. For example, cybernetics, second order cybernetics, sociocybernetics, artificial intelligence and all the other fields of study engaged in trying to develop capabilities of the computer to begin to mirror the reach of the human mind.

19. Prigogine, *Order Out of Chaos*. A good source for the detailed explanation and diagrams that visually make this as well as comparative theories come to life is Jantsch, *The Self-Organizing Universe*.

20. Weiner, *The Beak of the Finch*.

21. Swimme and Berry, *The Universe Story*, p.270.

22. There is the story of how we got saddled with “survival of the fittest.” Darwin was complaining to Alfred Wallace about how difficult it was to explain what natural selection was. “Why don’t you use the phrase ‘survival of the fittest’ that Herbert Spencer came up with?” Wallace suggested. So Darwin did—and soon along with all but Spencer came to regret it..

23. Plato and Freud express essentially the same view of Eros that Darwin, as detailed here in chapters one and two, intuited at age 29. That is, of the emergence and re-emergence of sex as the physical base for the spread of all the “higher” drives and meanings of love. See Freud, *Civilization and Its Discontents*. For Plato and Parmenides, see Tarnas, *The Passion of the Western Mind*.

24. Prehistoric dating on these pages is based on the very handy Timeline appearing in Swimme and Berry, *The Universe Story*, pp.269ff.

25. Gruber and Barrett, *Darwin on Man*, p.295.

26. Ibid.

27. Margulis and Sagan, *Origins of Sex*; Ryan, *Darwin’s Blind Spot*.

28. I am assigning this to the hypothetical emergence of the first so-called warm-blooded reptiles, the therapsids. However, as MacLean makes clear in *The Triune Brain*, e.g., pp.91-92, there is much guesswork involved in all these dates in the sense of give or take 50 million years or so.

29. I had this point ground into me in the old days training for a psychologist by being forced to learn and memorize the more intimate details of the following experiment to pass the test in the psychology of motivation. After increasing electric shock to dogs to the point just short of killing them, during the heyday of behaviorist research three experimenters found it was almost impossible to extinguish this fear afterwards. “Such studies,” the author of our textbook remarks to justify this incredible routine brutality in the name of science, “could never have been done with human subjects.”

30. See Galtung and Inayatullah, *Macrohistory and Macrohistorians*. Identifying by their criteria the 20 top macrohistorians of the past one thousand years — including Marx and Engels and Adam Smith as well as Riane Eisler — this is an invaluable guide to the basic perspectives on history that have shaped our cultural evolution.

31. See Maslow, *The Further Reaches of Human Nature*. For historians, see Lewis Mumford’s portrayal of historian Henry Adams use of the imagery of the Virgin and the Dynamo as counterposed forces in history in Mumford, *Interpretation and Forecasts*. For four of those the authors have designated the 20 leading macrohistorians, see the accounts in Galtung and Inayatullah, *Macrohistory and Macrohistorians*, for the theories of Ssu-Ma Chien, Pitirim Sorokin, Riane Eisler, and, the surprise of surprises, Adam Smith, for it turns out he has been miscast as solely the advocate of selfishness and solely greed-driven capitalism. What emerges is actually a view very much akin to Darwin’s of the Love system and the Domination system.

32. Among modern sources Schlegel’s *Wisdom from a Rain Forest* is good. Among the classics of anthropology one of the most interesting is *Ancient Society* by America’s first anthropologist, whose work Darwin admired. Students interested in Indians will also find Morgan’s *League of the Iroquois* meaningful.

33. See Gimbutas, The Sacred Script, pp.307-321, in *The Civilization of the Goddess*. Figure 8-23, p.321—which lends itself to copying for classroom use—particularly makes apparent the fact the earliest written language emerged during the period of prehistory scholars in many disciplines are once again trying to erase from the references. See Eisler, *The Chalice and the Blade*, for reasons why.

34. I go into this in depth in *The Leadership: A Psychology of Ideology* in terms of the relation of norm-changing and norm-changers to norm-maintaining and norm-maintainers, or Changers and Maintainers.

35. Historically, as I write of in *The River and the Star*, the arch conservative Herbert Spencer was the originator of this idea under the guise of evolution theory.

36. Many years ago I began the work I hope to yet resume to support this claim. See Loye, *The Leadership Passion* and *The Knowable Future* regarding the personal, interpersonal, and historical dynamics of norm-changing versus norm-maintaining, or Changers versus Maintainers. I have also done a study of this dynamic in terms of Darwin's identification of motivating values that I plan to get into still another book on Darwin, should I live long enough to get to it.

37. By far the most comprehensive work on this subject is Eisler's in the development and wide application of the domination model and the partnership model of her cultural transformation theory. Best known for the *The Chalice and the Blade*, which lays down the prehistorical, historical, anthropological, archeological, and psychological data base for the models and her theory, Eisler applies her powerful domination-partnership-model analysis to sexuality, gender relations, child-raising, and politics in *Sacred Pleasure*; to a comprehensive reformation of American education in keeping with advancing the evolution story and theory expressed here in *Tomorrow's Children: A Blueprint for Partnership Education for the 21<sup>st</sup> Century*; and outlining a comprehensive program of action for shifting from the Dominator to the Partnership Way in every area of our lives in *The Power of Partnership*. See also Bradley's work in Loye, *The Evolutionary Outrider* and *The Great Adventure*.

38. Princeton Descent, p.84

39. Ibid, p.525.

40. Ibid, p.526.

41. Ibid, p.531.