

PART I:

A YOUNG MAN'S BOLD

VISION

CHAPTER ONE SEXUAL REVOLUTION

As with all revolutions, it began with a seemingly small observation that violated the prevailing proprieties.

“Sexual desire makes saliva to flow/ yes, *certainly*/ curious association.”²

Lifting his pen from the notebook, young Darwin likely paused to think over this entry. Then he must have returned to pursue the thoughts that pushed themselves at him, inviting him either to accept them or reject them as not worth recording.

But already something foreshadowing the future has happened. For sixty years before Freud and seventy years before Jung he was discovering the value of rejecting nothing that came to one in the flow of the free and uninhibited mind.

The rule for these private notebooks he was rapidly filling, it increasingly appeared, was that no matter how trivial or shocking it might seem, one should record everything that came floating up from “below.” Peripherally fascinated, he was beginning to perceive that the rejecting agency within the mind that later Freud was to call “the censor” kept us prisoners of our own time and who others thought we were. But in the privacy of one’s diary, or notebook such as this, we are free to roam who we actually were, or could become, as well as the greater or the lesser future. Back there long before Freud or Jung were born, he was beginning to

perceive how what they were to call “free association,” and put to use as the prime tool for psychoanalysis, could lead one to the truth we hide behind surfaces.

“I have seen Nina licking her chops. —someone has described slovering toothless jaws as picture of disgusting lewd old man. one’s tendency to kiss, & almost bite, that which one sexually loves is probably connected with flow of saliva, & hence with action of *mouth* and jaws.”³

Yes, how true, how true: the pen likely now raced across the page as if driven by what, in increasing recognition of the power of the preconscious and unconscious, came to be called automatic writing.

“—Lascivious women are described as biting: so do stallions always. —No doubt man has great tendency to exert all senses, when thus stimulated, smell, as Sir C. Bell says, & hearing music, to certain degree sexual. —The association of saliva is probably due to our distant ancestors having been like dogs to *bitches*. —How comes such an association in man. —it is bare fact, on my theory intelligible.”⁴

Delighted— but about what he had no idea as yet—he sat back to read over what he had written. He must have glanced guiltily behind himself and about the room. But there was no one here. Besides, and he must have chuckled over what was to frustrate scholars for the better part of a century, who, after all, could easily read his handwriting?

Looking in on him sitting there at the desk that had once been his in the old childhood home, at first glance one would have said that young Charles Darwin was a pleasant looking chap, but undistinguished in any immediately discernible way. One of the crowd, so to speak. But looking at the picture today of the young Darwin, one can see that already the look of the thinker was beginning to shape the soft and gentle face into something more portentous. Already the soft brown hair was receding, so that the brow rose high above the intense, ruminating, set back

eyes. And about his lips, as lovely then as those of a girl, already there hovered the determined set to mouth and jaw that said that here was one who once his course was set would persist.

He was 29 then, home again from the sea, as the line from the old folk song might have put it—home from the voyage on the good ship H.M.S. Beagle that had taken him around the world via the jungles and pampas of South America, the palm strewn beaches and mountains of Tahiti, and the lands of the oddest and most intriguing of species, on the Galapagos Islands off Chile and in Australia.

On getting back he had settled into bachelor quarters at 36 Great Marlborough Street in London. For the past two years there his life had alternated between intense days of science and the carefree nights of parties. During the day there were all the crates of specimens of everything from the skins of rare birds and seeds of exotic plants to the immense bones of the fossilized megatherium he had found in Patagonia to sort through and catalogue.

There was the nose to the grindstone labor of writing up and polishing his journal of the voyage. Above all there was the intense pleasure of the talk, the discrete politicing, and the touch of hand to the back that signaled a prospective comrade in the scientific meetings one went to if one was out to make science one's career—as he was determined now to do. But then evening came and he became another person.

As the street lamps were being lit, in would swoop his older brother Erasmus and the two were off to sample the heady and fancy free night life of the bachelor of good breeding in the London social life of that time.

It was a whirling world of good-looking girls and handsome men, dancing, drinking, flirting. The discourse ranged the gamut from nothing but mere froth to the most ardent probing of the big questions of life—which at times did make the

world of science seem rather narrow and constricted.

It was the night world in which on one hand he was increasingly comfortable, outwardly growing in the modest grace and wit and good cheer that he could see were gradually endearing him to a select set of potentially significant others. But inside there was always this sense of incompleteness, of loneliness and yearning.

But now all that had been and still was London was somehow receding. It was a peculiar feeling, this ostensibly carefree life he was still in but already more than half out of and into. . . what he didn't know.

He had come home to the sprawling but plain old red brick house they called the Mount. It was here he had been born and had grown up, along the Severn River on the outskirts of Shrewsbury. As we do when young—and later, thinking back, with a twinge realize it—he had returned to the old home of his childhood at one of those junctures growing up where, feeling a sharp sense of an impending dividing line between the past and the future, one wants to sort out what is in one's mind.

He had returned to as gently and carefully as possible draw upon his father's grounding presence more than his advice.

One had to be careful with the good Doctor Darwin who prided himself on his uncanny accuracy for quick diagnosis. Without warning, on the slightest misinterpretation of what you were saying, he could suddenly form a firm opinion it was difficult to shake him from.

First there had been his fierce conviction Charles would become a doctor like himself—then the jolt when forced after two years to face the fact his son was a medical school drop out. Then the switch to father's reluctant second choice, Cambridge for training for the ministry. This, he did agree, was something for which he himself felt far more attuned. But then came the jolt of jolts when the wild idea of dropping out of Cambridge for five years to voyage around the world

came up.

Could anything be more doubtful, more potentially disastrous, more inadvisable— one had to search for words. Beagles as dogs were one thing, but however armed and properly administered and serving the nation, Her Majesty's Ship the Beagle as the floating indulgence for a young man who planlessly drifted from one thing to another was a monstrous mistake. Ruefully, one could sympathize with the old man, picturing how it must have been from Charles' father's view—now not only nothing ahead that was clear careerwise, but fearing that in all likelihood that he was now for a son to be saddled with a rootless playboy whom he would be forced to support for the rest of his life.

Now five years later, whatever his father might think, Charles at least was sure of himself, sure of his career—but even to form the thought was to open in mind all he was still unsure of.

The Wide World of Greater Mind

He was being hailed as a potentially good writer of travel books and light articles on science, but journalism wasn't what he aspired to. He wanted to be a full-fledged, widely recognized naturalist. But how could he ever hope to do this with so little formal training he couldn't possibly qualify for any substantive teaching job? Could he really make it as a sort of jack-of-all-trades along the periphery of science? Someone you hired for a pittance to edit papers? Or a journal?

Or to assist in all the delightful drudgery for which one could never hope to get the credit for the major achievement to which he aspired—for the notebook was beginning to reveal to him the drive of an immense ambition that was part of what

lay behind this sense of incompleteness and of yearning that periodically gnawed at him.

It was all such a jumble— so much in science pouring through his mind, but also so much else beyond science. And always there was this press upon him, more delicious than any drink or possible drug addiction, of the need to bind parts of it all into theories— even hopefully some day all of it into the One Big Theory he dreamed of.

This, he was beginning to see, was very much behind this sense of incompleteness and yearning. But also, increasingly difficult and even more complicated, adding to the incompleteness and yearning, there was pressing upon him the special loneliness that no longer could be avoided. There was this nudge again and again and again of sex as a matter of person overwhelmingly more than of science. It was a matter of sex but also more than sex, or rather of the more that sex led to. He had come to see he could wait no longer. He either had to get married—or not marry at all.

He huddled with his father, trying to sort it through. Marriage would mean the incredibly heavy responsibility of the family man. For one of his social class and place— that is, for one of the Shropshire gentry—it meant an enormous outlay of time and money, for how else could he meet the expectation of anywhere from six to a dozen children and a large establishment replete with servants? How on earth could he ever amass or regularly earn the requisite mountain of money? Or more to the point, how could this ever leave him a scrap of time for science? And yet he burned and yearned.

Often he must have thought of Fanny Owen, the gorgeous first love he had rolled in the strawberry patch with, whom he had kissed so long and frenziedly his lips were so swollen he had to treat them with arsenic. But Fanny had married while

he was gone at sea. Now just 30 miles away by horseback across the English countryside was his cousin Emma.

Emma daughter of Josiah Wedgwood, founder and Croesus of the Wedgwood potteries of the famous blue and white ware so beloved today among collectors of antiques. Emma who besides being very attractive and talented musically, a pupil indeed of Chopin, would some day inherit a fortune.

What was one to make of it all?

With requisite caution on his part, his father was helpful to talk to, but limited as all fathers are. So he had turned to what so many of us have discovered at similar junctures. It was that best of all things for stepping outside of or aside from time, with no interruptions other than one's own—the privacy of a notebook where one might jot down one's thoughts and see where they led.

So this is what he was doing. It seemed he had barely got home again, and already he was through one notebook and beginning another.

About the problem of marriage and the question of Emma he was talking over with his father there remain today the fascinating sheets of pros and cons he laid out in a careful analysis. But the notebooks were reserved for science and all else that filled his mind still then as a matter of the open ended venture or quest.

Ah, how good it was to feel no need for closure, no cause to be careful, or practical, he must have thought, opening the M notebook to continue to jot down the puzzles and surprises flooding into his head — nothing mattering but the freedom of mind and the search.

The Long Time Out of Mind

And so left behind, to remain unpublished for 136 years, were these

notebooks that take us into the mind of Charles Darwin at one of the three most creative periods of his life—in this case when he first discovered what was to become the lost completion for his theory as well as what became the known theory of evolution.

He did not jump immediately to sex. It only creeps in gradually, and then swells to the grand union with the greater stream of incompleteness and yearning that from time to time swept through him to form the lost theory.

Typical of earlier thoughts that were to lead to both the lost theory and the known theory — as well as the startling connection over nearly 150 years ahead to the science of the future we will look at in chapters eleven, twelve, thirteen, and fourteen —was this note.

“— chance governs the descent of a farthing, free will determines our throwing it up,” he wrote in what is known as the M notebook.⁵

Is there or is there not free will? Are we free agents, or is every last thing about us determined by larger forces? Or the weighty principles of philosophy? Or by God?

Are we in essence free or are we the slaves of all that is larger than ourselves that dictates who we are and what we can become?

Philosophers and theologians had gone back and forth on the question for hundreds of years— and so they are likely to go on into the future. But for young Darwin what was not only most important, but over time was to shape both his known and his lost great contributions to human advancement, was to try to pin down the practical, down-to-earth reality of whatever it was before getting lost in abstractions. This to him was the attraction of science at its best.

So was there, or was there not free will?

“With respect to free will, seeing a puppy playing cannot doubt that they

have free will, if so all animals...If so free will is to mind, what chance is to matter.”⁶

To range freely from the world of the concrete, observable and lovable thing-in-itself, the puppy. . . into the world of the mind and the emerging new field of psychology . . .into the world of matter and the long exploding field of physics —how delightful! But for how long? For how long was he to know such freedom?

And did he really have the mind for science, indeed for science at its highest, which was to range beyond the mundane low lands into the peaks of theory-building? Or was he cut out to be some lesser grind?

He may well have sighed. With all that he had brought back from the voyage of the Beagle to puzzle through, to venture seriously into the exploration of the mind with thoughts like these seemed—as indeed it was to prove—a long way in the future.

Today in those notebooks we can find the roots for what 21 years later became *The Origin of Species* and the theory for which he became famous — the known theory of how evolution emerges from the interaction of natural selection and variation popularly known as “survival of the fittest.”

“Whether every animal produces in course of ages ten thousand varieties (influenced itself perhaps by circumstances) and those alone preserved which are well adapted?” he jots down at one point.⁷

“One may say there is a force like a hundred thousand wedges trying force every kind of adapted structure into gaps in the oeconomy of nature. or rather forming gaps by thrusting out weaker one,” he writes elsewhere in the notebooks.⁸

At the time, however, the track pointing toward the known theory remained loose and unfocused while the track toward the lost theory steadily gained

substance. As the days passed and faithfully, religiously, even obsessively he returned to his notebooks to jot down the rush of all that was boiling up within his mind, sex becomes the recurring theme.

“Hunt remarked that he had never seen any of the *American Monkey* show any desire for women...A very green monkey he has seen place its head downwards to look up women’s petticoats.”⁹

“Jealousy probably originally entirely sexual; first try to attract female (or object of attachment) and then failing to drive away rival.”¹⁰

“Expression of affection is accompanied by slight protrusion of lips, as if going to say ‘my dear,’ just what smile is to laugh.” Lavatar, he wrote, carefully identifying the reference, “Says fleshy lips denote sensuality.”¹¹

There comes the note we quoted in its entirety in opening this chapter.

“Sexual desire makes saliva to flow/ yes, *certainly*/ curious association...ones tendency to kiss, and almost bite, that which one sexually loves is probably connected with flow of saliva...Lascivious women are described as biting: so do stallions always.”¹²

“Blushing is intimately concerned with thinking of ones appearance—does the thought drive blood to surface exposed, face of man, face, neck, /upper/ bosom in women: like erection.”¹³

“Do testes, and ovaria when they first appear occupy their *proper* positions...In my theory I must allude to separation of sexes as very great difficulty, then give speculation to show that is not overwhelming.”¹⁴

“My theory gives great final cause ((I do not wish to say only cause, but one great final cause, nothing probably exists for one cause)) of sexes.”¹⁵

So he ruminated in what went on from the M notebook to become the N notebook as he jotted down his thoughts. Then came what was to disappear for

more than a century.

"May not the moral sense arise from...our strong sexual, parental, and social instincts," he jotted down in the M Notebook.¹⁶ This was at some point between June 23, when he began M, and September in 1838, when he finished it.

This was the first, most basic, and far-ranging statement for what became the lost theory—or more specifically, the lost *completion* for his theory, to which we'll return.

As we have seen, the notebooks reveal the degree to which sex was on his mind at the time—and understandably. He had been mainly at sea for five years on the Beagle. And while the “fast” young men of his age, including his older brother Erasmus, or “Ras,” as he was known, had already plunged into the lacy and racy enticements of lower class Victorian London, Charles was simply not the type. Behind him lay the prudent young man's years of burning and yearning now pressing upon him the prospects and question of Emma. But what was this other stuff he now begins to write about “parental and social instincts” and, of all things, a “moral sense”?

Within the same note in M, he ventures on toward complete incomprehensibility with 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.'"¹⁷

Soon thereafter he completes the pivotal triad for the lost theory by seeming to go on over the edge into the ultimate thicket of mystery.

"Therefore I say grant reason to any animal with social and sexual instincts and yet with passion he *must* have conscience."¹⁸

Whatever all this means, one has to admit it showed promise in one regard. The capacity to weave loaded words into a web of incomprehensibility has long

been a popular aspect of science— as well as for the appearance of “deep thinking” among scholars more generally. In these three cryptic notes, one might say that already young Darwin was revealing the talent for obfuscation that can advance one in science by leading others to confuse the foggiest ramblings with the equally incomprehensible clear thinking of genius. This last possibility, however, it’s now apparent, was the case here. Although still unformed and groping for his identity and career at the time, already at age 29 Charles Darwin was tapping into the mind level of genius.

At first reading these notebook jottings may seem no more than a strange mix of Jesus, the Bible, and sex. Yet in these three terse notes, jotted down after he returned from the pivotal voyage, it is now evident that young Charles made a striking and far-ranging statement of scientific theory.

Yes, this is at first difficult to see. But when, through reconstruction, we bring to these long-lost passages the perspective out of which they emerged, they loom as a first statement of theory akin to Einstein's famous $E = mc^2$ in its capacity to pack much into a small space.¹⁹

The Biology of Love

To follow Darwin’s thought at the time—as well as to marvel at all that out of the past and the future comes together in these three brief notes— let’s restate what it’s now evident was the first level for the lost theory. To do this I will use an approach that used to be routine for building theories, but has since passed out of fashion. We’ll restate these notes in the form of three basic propositions, or “tenets,” in order to see how step by step they became the foundation for Darwin’s “better half.”

Tenet I:
**"May not the moral sense arise
from our strong sexual, parental,
and social instincts."**

A problem for us today— as well as for Darwin himself at the time, had he tried to substantiate what he quite accurately intuited— is that he is here compressing at least one billion years of evolution into a single line.

What he is saying is that we are impelled both toward goodness and to build the better world by a step by step process of specific events or stages in evolution.

Or to put it within the framework of what we know today, he is saying that bit by bit, within trillions of creatures over millions of years on this planet, there was embedded within us a special need, or thrust, or impulse that in the same way that hunger drives us to eat, or thirst drives us to drink, in this case drives our species to change ourselves for the better— or to evolve.

First came not only the evolutionary but, as we are to see, the revolutionary emergence of sex. Then out of this thrust and level of emergence arose the parent's caring for her or his offspring. Then out of this thrust and level for emergence gradually arose sociability, or a caring for other organisms beyond ourselves and the immediate bonding of ourselves with our own family.

Is this how it really happened? Let's see what lies behind his bare bones

statement in terms of the rich play of discovery by later scientists that make it possible to now understand the power of the original insight that came to Darwin when he was only 29.

Sex and Morality

What Darwin called “the sexual instincts” obviously emerged at whatever point in evolution occurred the first act of what we know as sex today.

To say that this happened around one billion years ago may seem inconceivable, but the fact is this. Through slicing and eyeing through the microscope hundreds of fossils to determine the sexual capabilities and activities of the earliest life forms on this earth, a billion years ago is the estimate of one of the leading authorities, biologist Lynn Margulis. This is the point back in time at which she has identified the first appearance of meiotic sex—or the mating of one organism with another. But before this great leap forward for ours and all similarly derived species came an earlier stage important for us also to understand. For sex as the act that captivates and fascinates us throughout most of our lives today was preceded by *two* billion years of organisms with different ways of reproducing themselves involved in just working up to this point.¹

What this shows us is what a huge investment was made by evolution in sex and how primary is this drive. Sigmund Freud, Wilhelm Reich, and a host of later psychologists have explained in many books why sex is of a profound importance beyond the obvious.² But science generally labors page after page and still falls far short of the mark in expressing the full dimensionality of sex.

As this is such a pivotal part of the lost story as well as the lost theory, here is how Walt Whitman explored this basic fact of life in a passage remarkably

mirroring the evolutionary scope of young Darwin's original intuition.

“A woman waits for me, she contains all, nothing is lacking,
Yet all were lacking if sex were lacking, or if the moisture of the
right man were lacking.

Sex contains all, bodies, souls,
Meanings, proofs, purities, delicacies, results, promulgations,
Songs, commands, health, pride, the maternal mystery, the seminal
milk,
All hopes, benefactions, bestowals, all the passions, loves, beauties,
delights of the earth,
All the governments, judges, gods, follow'd persons of the earth,
These are contain'd in sex as parts of itself and justifications of
itself.³

What we know today greatly enlarges but doesn't change the priority or the precise grounding of young Darwin's original intuition. Moreover, this is the first instance for the striking fact we are to see again and again—the corroboration by the most advanced work in science today, over 100 years later, of practically every aspect of what became the lost theory. To see this transhistorical connection clearly, let's pursue the seemingly strange link he makes between sex and the development over time of what we know today as moral sensitivity and morality.

From the work of Margulis and others we know, as I've indicated, that prior to the billion-year-ago emergence of sex differences, life perpetuated itself through asexual reproduction. This included forms of self-division whereby an organism

would in effect make a copy of itself.⁴ Though opinions vary today among biologists as to why "fully" sexual or meiotic reproduction came into being, two things about this evolutionary emergence directly relate to what Darwin during the summer of 1838 was fishing about to identify and pin down in those early notebooks.

The first is what happens when all of a sudden $1 + 1 = 3$ biologically. By joining the subtly different gene pools and structures of two separate beings through mating, this biological innovation vastly increased the possibilities for generating the *variation* that is central to his known theory of evolution—that is, the variability, diversity, and complexity of species that accounts for the richness that is the wonder of life on this planet.⁵

In other words, out of a more sterile earlier time of self-reproducing "clones," reproduction by sexual coupling released an explosion of creativity through a process compelling a sexual partnership with another organism.

Now if next we carefully consider the situation of one of those long ago nubbins out of which we eventually popped into being, something else rather striking becomes evident. It is that at that time—before sexual reproduction emerged—as far as the basic need for life to perpetuate itself was concerned, each of those early nubbins existed in a situation of comparative self-sufficiency and isolation from other organisms.

I say *comparative* self-sufficiency because, as the work of Margulis points out, there were numerous arrangements for what is known as the *symbiotic* involvements of one organism with another.

One organism, for example, would provide the housing for another. Or—rather dreadful when you think about it—the waste products of one would provide food for another. Most dramatically, according to Margulis, one ingredient of what

we think of as sex today may have originally come from a predator-prey relationship.

In other words, one picture she provides—with no doubt appeal to the old paradigm Darwinist case for our essential depravity—is of the emergence of sex as being most fundamentally rooted in cannibalism.⁶

According to her theory, first one organism ate another. Normally the attack of acids will dissolve everything living or dead within the stomach, but somehow in this case the eaten creature found a remarkable way of remaining alive within its host. And out of the intimacy of this habitation, through later stages of evolutionary ingenuity, the organism that had been eaten found a way to impregnate the creature that had originally had him, her, or it for lunch or dinner.

This may seem a strange beginning for one evolutionary track for the build-up of the symbiotic relationship. But what Margulis notes seems to describe a process that, by combining the insights of *The Origin of Species* with those of *The Descent of Man*, we can now see also lay at the core of young Darwin's original vision.

"Partnership between cells once foreign and even enemies to each other," Margulis says, "are at the very roots of our being."⁷

Wholly contrary to the picture we were given of him throughout the 20th century, Darwin himself was saying much the same thing over 100 years ago!

Indeed — radically contrary to what both science and rightwing politics and economics has emphasized for a century—he quite specifically tells us the improvement of one organism also entails the *improvement* of others.⁸ The last chapter of *Origin* prior to his conclusions is headed not *Animosities between Organisms*— as what we have been told would lead us to believe. Instead, across the top of page after page of the next to the last chapter of *Origin of Species* are

clearly emblazoned in bold print the words “*Mutual Affinities of Organic Beings.*” Key to “the mutual relation of organism to organism” and the process of natural selection, he tells us, is “the improvement of one organism entailing the *improvement* or extermination of others.” (Emphasis added).

In other words, even here in this earlier book, which has been told and sold to us ad infinitum as conveying only the conflict and fight to the death of organism *against* organism, Darwin is already talking about the other side to the picture—of the complementary and eventually transcendent bedrock drive of mutuality, or the cooperative relationship of organism to organism.

Why did so few see what is so obvious now? How could they look straight at what was there on the page and not see it?

As I will detail at length elsewhere,⁹ incredible as it may seem, the main reason seems to be that with their minds already cocked only to look for support for the bash ‘em and trash ‘em view of evolution that is what practically everybody saw and reported.¹⁰

The amazement further deepens if we look at everything about “mutuality” that showed up even earlier in the immense work usually portrayed as merely the drudgery that delayed the writing and publication of *The Origin of Species*.

This was the great labor of Darwin’s forties that one seldom hears anything of any more—the seemingly strange affair of the sex life of the barnacle.¹¹

CHAPTER TWO

BARNACLES, BRAINS, AND THE BLINDING OF SPECIES

I could spend another month on it, & daily see some more beautiful structure!¹

I don't know whether you live near the sea, but if so I should be very glad if you would collect me any that adhere (small and large) to the coast rocks or to shells or to corals thrown up by gales, and send them to me without cleaning out the animals, and taking care of the bases.²

I have been getting on well with my beloved cirripedia, & got more skillful in dissection: I have worked out the nervous system pretty well in several genera, & made out their ears and nostrils, which were quite unknown. I have lately got a bisexual cirrepede, the male being microscopically small & parasitic within the sack of the female; I tell you this to boast of my species theory, for the nearest & closest allied genus to it is, as usual, hermaphrodite, but I had observed some minute parasites adhering to it, & these parasites, I now can show, are supplemental males, the male organs in the hermaphrodite being unusually small, though perfect & containing zoosperms: so we have

almost a polygamous animal, simple females alone being wanting.³

You will perhaps wish my Barnacles & Species theory al Diabolo together. But I don't care what you say, my species theory is all gospel.⁴

So some years later Darwin wrote, respectively, to his ex-shipmates, Robert FitzRoy, former Captain of the Beagle, and Syms Covington, the Beagle's fiddler and odd-job man who had been his chief assistant on the famous journey, then in May of 1848 to one of his closest lifetime friends, the biologist J.D. Hooker.

Beginning as no more than the plan for a single article, barnacles became the eight-year obsession and two-volume set of books that almost allowed Alfred Wallace to nose Darwin into second place in the discovery of what became the sacred principle of natural selection.⁵

This has become the classic tale that has haunted every scientist aspiring to go down in history as the pioneering discoverer for anything. Here was Darwin, by then 49 years old, who had labored away for at least eighteen years to pin down and substantiate beyond question the concept of natural selection as fundamental to evolution. And here was young Alfred Wallace, only 35 at the time, who had been puttering about the islands of the Pacific. And all of a sudden there arrives by mail to Darwin the short paper whereby he, Alfred the dabbler rather than Charles the drudge, may claim the distinction of being first to announce the discovery of natural selection.

How the horrified Darwin was saved by the ingenuity of his friends is the cherished denouement for countless biographies. Here, with other things in mind, we are looking at what was going on earlier, before the big jolt came.

In 1846, having married Emma, with the birth of six of their children so far, at age 37 in all innocence he began the barnacles affair.⁶ It was supposed to be a single paper on cirripedes, as barnacles are scientifically known. When the first fifty specimens had swelled to 100, he began to see what he had got himself into.

“I groan under my task,” he lamented to a friend.⁷

It was during this time, however, that he took the giant step beyond the early notebooks toward his comprehension of the foundational nature of sex in evolution. The most striking aspect of this advance was his discovery of tiny male barnacles that lived *within* the females of some species.

As he vividly put it in his huge report, "half embedded in the flesh of their wives," in some cases little more than an "enormous coiled penis," they lived within a pocket in the flesh of the immensely larger female in which "she kept a little husband."⁸

Earlier evolution had experimented with the possibilities for the experience of being swallowed alive. Now it seemed to be trying out the idea of the man who came to dinner and wound up staying forever, or how one may continue to live within and impregnate one's hostess en route to the development of meiotic sex—that is, the first coupling of the first pair of organisms for the first transitory act of sexual union.

Whether in ancient biology or modern courtship such arrangements can become quite confusing. As it bears greatly on what was to become the lost theory and the grave consequences of this loss for our species, let's take a deeper look at what is going on here.

Prior to the first true sexual coupling, the organism certainly had to be intimately aware of "the other."

This seems beyond question evident if one has been eaten and from within

the bewilderment of finding oneself awash in the ferocity of waves of stomach acids, yet still alive, one has to find some way to survive within one's strange new host. So even in this extreme instance, in the very fact of symbiosis—that is of the cooperative need of one organism for another in order to survive—the basis for *caring for another* was biologically established. This is also the motif of Margulis' theory of symbiogenesis, as the generation of new life forms through the merging of species.⁹

At the same time, it seems evident that before the decisive stage of sexual coupling, each organism was impelled to care mainly for *itself*. The organism would have been aware of, and in some dim way beginning to care about the existence of the other. But it seems unquestionable that prior to meiotic sex *caring for oneself*—or what eventually became selfishness at the bedrock level for human functioning—would have remained the overwhelming consideration.

Within the complexity of the situation back in the days when some great ooze constituted the habitat of life on earth, the emergence of meiotic sex must then have represented *the pivotal crystallization, or step upward, of the idea of caring for another*.¹⁰

In other words, the fact of having to depend on sex with another organism for the perpetuation of life itself would have forced the organism to stretch whatever mite of mind and nub of a beginning for emotionality out of itself in this particularly enticing new way.

They would periodically have been forced out of a previous comparative isolation by this urgent new need for another organism of a very special type—an organism very much like themselves in general appearance, but at the same time subtly and seductively differing from themselves in sexual equipment.

They would have been, for the first time, for however brief a moment—even

for a split second in a tiny lifetime —forced to consider intimately the separate nature and separate needs of another organism. In other words, they would have been forced to assign the special value to another that today, at the level for our species and for all higher mammals, we would call *caring for another*.¹¹

So here we may see a substantiation of Darwin’s intuition of how early organisms were 1) impelled to cross the barrier between organisms to form the symbiotic bridge of sexual connection, which 2) became the grounding for the special connectivity of life to life that, alternating with conflict, gradually became for Darwin a duality, or the “two faces” to the *primary* drive for evolution.

Here we are looking at the previously generally hidden core to both his known theory and the lost completion of theory.

As with the interlocking symbol of Yin and Yang for the ancient Chinese, or the two faces of Janus the ancient Roman god, on one side we are looking at the aspect of Darwin’s theory stressed by “survival of the fittest” and “selfishness *uber alles*” Darwinists during the 20th century. This, as we will see, had much to do with how badly that century turned out for us.

But on the other side we are now looking at the lost “face” to his theory that today is so critical for the 21st century and for us to at last begin to understand.

For this is no mere matter of an arcane plaything for scientists, and even among them only for a relatively tiny handful of specialists. *We are looking at the theory that most importantly gives rise to and shapes the story of who we are, and how we got here, and what it is reasonable to expect of us and the human future.*

The line I have found that seems to most forcefully get across our situation is that we live by story—this most find easy to understand and agree with. But what almost daily becomes more evident is that the story we are living by is driving our species to extinction. Hence the need to join the old theory and story to the “new”

theory and story in keeping not only with Darwin's original vision but also with the evidence and beliefs of by now thousands of modern scientists whose work has been similarly ignored.

So far in tracking this development over at least one billion years we can see how in modern biological research and theory lies confirmation for the long buried "higher" theory. Now let's turn to modern brain research to see how what young Darwin jotted in his notebook is further confirmed.

That is, let us see how out of sex rose the evolutionary basis for all we know today as love, including at the driving core what eventually became *moral sensitivity*.

The Parental Instinct

"May not the moral sense arise from our strong sexual, parental, and social instincts," 29-year-old Darwin had jotted down in the N notebook. We have looked at what he called the "sexual instinct." Now let's see how out of the immense evolutionary step upward and thrust of sex emerged the parental instinct.

It is evident this would have been the result of trillions upon trillions of matings over many millions of years, with the vast birth of multi-billions of new beings characterized by one very revealing thing: *The new born had to be able to immediately care for themselves in order to survive.*

Not only did newborns provide food for all the roaming Archean, Proterozoic, and Paleozoic hordes of well-established foragers and predators. Often, as we may still see today among species of reptiles, unless the newborns were by instinct clever and quick in getting the hell out of the way, their own parents ate them. But eventually, 235 million years ago, came the Mesozoic era and the giant

step up for evolution that Darwin characterized as the development of *the parental instinct*, where organisms are instinctively impelled to protect and nurture rather than eat their young.

Here the work of the man whom I and many others consider to be one of the two greatest living brain scientists is particularly revealing. This is Paul MacLean, beloved retired chief of the Laboratory of Brain Evolution and Behavior for the National Institute of Mental Health, internationally known for his triune brain theory— as this book is being completed still active at the age of 89. As uncovered by the work of MacLean and others, although this step is foreshadowed earlier, the capacity for the parent to care for the child appears for certain with the evolutionary emergence of the reptiles.¹²

In work again both anticipated by and corroborating the 29-year-old Darwin's intuition, MacLean found that for organisms to reliably care for their offspring, their brains must be developed to the point where they contain a certain vital part of what is known as the limbic system. Known as the septal subdivision, this structure first reliably appears with the reptiles.

This new capacity for the evolution of life upon this planet—the caring for the offspring by the parent—frequently can be seen today in museum representations and in movies of the dinosaurs. In the movie *Jurassic Park*, for example, what chiefly excites us and we mainly remember is the violence and the question of who will escape and who will get eaten alive before our eyes with legs wiggling from the fiercesome jaws. This fascination, I must note, derives in part from our old style “Darwinian” cultural conditioning. But also in this movie — as in the fascinating animated children's film *The Land Before Time Began*—are touching factual reconstructions of the other side that so often tends to be ignored: how 235 million years ago the dinosaurs cared for their offspring in building nests,

and in sitting upon to warm or otherwise protect the eggs out of which the new being is to emerge.

The Social Instincts

Sexual instincts, parental instincts, and now finally— as the decisive flowering later within the Mesozoic era —we have the situation that gives rise to what Darwin called the “social instincts.”

Out of all this coupling and parental caring driven by the sexual instincts and the parental instincts—out of this vast process of gene-swapping and the "mystery dance"¹³ of variability—millions of organisms of widely varying kinds and developmental levels have spread over the planet.

Stage by stage they have emerged: jellyfish, sea pens, flat worms. Trilobites, clams, snails. Jawed fishes. Insects. The first trees, the first amphibians. The dinosaurs.¹⁴

And now began the grounding of the third giant step in evolution— the imbedding of the "social instincts," to which in Part II we will see Darwin as an old man return in order to probe how far up the line the operation of natural selection explains evolution and then what else takes over, that is, what lies *beyond* natural selection.¹⁵

Clustering together by species for more millions of years are all these organisms preying upon one another, as the “old” Darwinian theory and story emphasize. *But far more often they are also sharing shelter, warmth, mates, sometimes food, and protecting one another.* Indeed, as I came to understand during my early years producing news and documentary films, in only a tiny fraction of the time are they eating one another.

What one sees in all those films about the non-stop slaughter of wild predators on the PBS program “Nature,” or even more relentlessly on the Discovery Channel, is the joining of snippets of film that required hours or days or weeks of a photographer’s time waiting for the split second action of “a good shot of the kill.” Most of the time, while the photographer drinks many a six-pack waiting in frustration, all those killers are either resting or otherwise peaceably foraging.

Again back in those early years for life on this planet, we may see the spread in time of a rudimentary but fundamental degree of caring interwoven with conflict with one another. But then about 216 million years ago, with the appearance of the first mammals, comes the single most decisive step upward toward ourselves. For now, again as fascinated Darwin, foreshadowed earlier among insects, there appears a new kind of creature with a new level of the capacity for valuing others beyond the mate or child.

Now with a deep driving need for, and even cherishing the company of others, what become known as the *social animals* emerge. This is the step up from the so-called cold-blooded species of fish to dolphins and whales, or among land animals from most reptiles to mammals including eventually ourselves.

In terms of brain development, once again the work of Paul MacLean reveals how with the arrival on this planet of the social animals the capacity for caring for others and for love is specifically reflected in the emergence of the third of the three main parts of the limbic system—the structure given the jawbreaking name of the thalamocingulate division

Few other brain structures so dramatically reveal the evolutionary building of this caring for others that— wholly contrary to what we have taught and been taught and told for more than a century—Darwin in actuality saw as the chief driver of human evolution. Beyond the raw thrust of “survival of the fittest,” which readied

the ground for humanity, for the real rather than the fictional Darwin what and who we are rises from the sexual, the parental, and the multi-million year thrust of what he called "the social instincts."

In 1937, the pioneering brain scientist James Wenceslas Papez first observed that a structure within this third, and newest, part of the limbic system "may be looked on as the receptive area for experiencing emotion."¹⁶ Also noticed by others was the fact that humans with injuries to this area were subject to wild fits of laughter or uncontrollable crying.¹⁷

Monkeys so injured "showed no grooming or acts of affection." Hauntingly suggestive of all too much that happens at our supposedly advanced level—and this not just in the worst of human circumstances, but also at the highest levels of the kind of so-called leadership that can smile and callously defraud millions, or routinely fire thousands, or order the unnecessary war — these brain-bashed monkeys would walk over their cage mates "as though they were inanimate."¹⁸

The most striking thing that Paul MacLean found in his own studies of reptile and mammalian brains, however, was that this particular structure was not found in reptiles. It only appears with the emergence of our own direct evolutionary precursors, the mammals.

Looking more closely at this third part of the limbic system, he found that it added three highly suggestive new capacities to the animal behavioral repertoire that is also our own. To the earlier rudimentary capacity for parental caring found at the reptile level, this third expansion for the limbic system:

- 1) Adds a new capacity for the more prolonged and intimate nursing of the infant by the mother. Not only does this involve the suckling of one's child at the breast. It also involves the drive to find and build a safe and suitable

place for taking care of the child. Moreover— highly suggestive of a widespread social change underway today— this third emergent new brain part not only impells this “nesting behavior” among mothers, but also in *fathers* as well as even other *unrelated* males.¹⁹

2) It adds a new capacity for maintaining "audiovocal" contact between infant and parent. In other words—as most parents can recognize and appreciate— among animals at this level of evolutionary development there are special arrangements for mother and child to stay within sight and hearing of one another. This advance, in particular, gives rise to the development of the "separation cry" by the infant as a signal to the mother for help.²⁰

3) Most suggestive of all to MacLean is the addition, for the first time in evolution, of a new capacity for that wonderfully sportive enjoyment of one another that we call play.

The first two of these new capacities laid down the basis for the establishment of the family as the basic social unit in evolution, MacLean notes. But it was play that rocketed life out of the mud into the freedom of air and open sky.²¹

It was play, MacLean says, that must have "served originally to promote harmony in the nest, and then later in life, affiliation among members of social groups."²²

*The Difference Between the “Real” World
and Our Blinding by Paradigm*

Why must we take the time to search for and carefully build this picture of biology and brain involved in the evolution of caring? We must do this to make up for what increasingly looms as the single greatest deficit in the official cross-generational education for our species. But beyond this it is to make it possible for us to begin to see what, through poking around behind scenes in science and behind the official story for more than a decade, I found to be the single most overwhelming fact about the lives of practically all of us during the 20th century.

This was, and continues to be, the incredible blinding by paradigm of practically every last one of us given the privilege of an education in, or who have been regularly bombarded by the media of, the Western world. For here we are beginning to see the vast difference between what is emerging out of modern sources—many as widely ignored as was Darwin’s better half—and the grim picture of our evolution within which old paradigm Darwinism so successfully imprisoned us throughout the 20th century.

Out of the old paradigm emerges the cartoon of the cave man dragging the cave woman by the hair. Or the picture of fearful and quivering cave people of both sexes clustering to the mighty Chief for protection. Or the Chief and minions arming themselves to become the best killers and exploiters of others— these “strong men” who, differing only in a change of clothes and more polished language to disguise their predatory purposes, are to rule the history of the history books age after age right on into our time and, if they continue to have their way, on and on and on.

In the sharpest possible contrast is Paul MacLean’s discovery. Instead of

solely bashing one another to scramble up the ladder of evolution, his analysis of the significance of the emergent brain structure for play instead evokes the picture of rollicking youngsters rolling about in the meadow, or some early intertribal game of what over time became the American Indian game of stick ball.²³

"From the standpoint of human evolution, no behavioral developments could have been more fundamental" than this capacity for play," MacLean tells us. In observations considerably expanded by psychiatrist Roderic Gorney,²⁴ it "set the stage for a family way of life with its evolving responsibilities and affiliations that has led to worldwide acculturation."²⁵

This "social bonding," in turn, MacLean observes in the clearest possible indication of the link between his pioneering brain research and the bold vision of young Darwin at age 29, seems "to have favored the evolution of the human sense of empathy and altruism."²⁶

So we have this situation so far: . . .

Strung together aeon by aeon, generation after generation, is this vast chain linking of *caring for one another* that over billions of years, acting through the lives of multi-billions of predecessor organisms, lays down the basis for the morally sensitive process of education and learning in our planetary ancestors.

In other words, step by step we are observing from this later point in time the widening circle, age by age upward, of the capacity for love as well as for the struggle with one another that has brought us to where we are today.

Now let us return to young Darwin back there at home for a bit writing in the

M notebook. Let us return to what he was the first scientist in the history of our species to intuit about the single most impactful experience in the lives of every last one of us living today.

Whether red, white, black, yellow, or brown, woman or man, rich or poor, wherever on the face of this earth we may live, now we may see how from the moment of the joining of sperm to egg in our own conception. . . to the moment of our birth. . . to the moment of our first suckling at the breast. . . to the moment of the first clustering of relatives and friends to beam down upon us in the crib, and to talk to us, and to take us up in their arms to hold us and to look upon us with love. . . the evolutionary foundations for a morally sensitive process of education and learning is laid down within each of us today, and into the reach for our species into the future.

Where others glimpsed part of this process before Darwin, and others into our time have understood more of it, no one else before or since that I know of so clearly perceived the linking of love and caring to learning and moral sensitivity as the primary force impelling human evolution.

CHAPTER THREE MORAL TRANSFORMATION

“Society could not go on except for the moral sense, any more than a hive of Bees without their instincts.”¹

Was this true? Was the rudder of moral guidance that critical for our species in coursing the troubled sea of space and time?

Looking at what he had written in the note book, there at the old home place during the summer of 1838, it must have seemed a rather bold leap to young Darwin. Particularly the link to the bee. But more and more we can now see he felt this was the case—and who was to question him?

As he closed the fascinating jumble of the M notebook for the day, the question of the bedrock function of morality might have led him to think of Ras, Harriet, and Hensleigh. Yes, it could be a good thought to try on them once he was back again in London. For amid the gaiety of the night life, the four of them were involved in that most unlikely and instructive of things for our time—a high-spirited argument about ethics and morality that was nothing like a Sunday school picnic, rather more like a hopping, dodging, slashing and often merry duel of mind against mind.

Ras of course was Erasmus, his older brother. Harriet was Harriet Martineau, Ras’s lady love of the time—a pioneering writer about sociology and

economics who, until the feminist movement of the late 20th century, was destined to be forgotten for everything but some fame as one of the most brilliant women of her time. Hensleigh was a Wedgewood cousin, brother to Emma.

Why return again to that time and these forgotten figures one might think it best to get from a biography? Why not go on here only to focus on more of the lost or neglected science?

I am going back to 1838 because only by understanding who Darwin really was—only by using the method both of the novelist and the methodology known in sociology as the “*verstehen*” approach² to re-experience a bit of his times, his life and what filled his mind then—can we adequately reconstruct the completed theory out of its roots in the days of his great early burst of creativity. Only in this way can we come to fully understand the difference between the old theory and story and the new theory and story along the pivotal dimension of love that for the first time in science with the forgotten Darwin was coming to life in anything approximating its emergent reality.

Ah Emma, should he or should he not marry? From the delicate portrait of her painted by the same artist who with such sensitivity had captured Darwin as a young man we may see today that, while not the raving beauty his first love Fanny Owen had been, Emma was a lovely girl.

Her large eyes look out from the portrait at you with a quiet gaze that seems to say “I am my own person, honest, willing to be open, but not to be taken in by any pretense or lies.” Her hair is gathered straight across the top with curls about her ears and her delicately etched lips seem about to break into a smile—as apparently was frequently the case. She was notably fun-loving, active, skilled both at archery and in playing the piano. So Charles continued to huddle about whether to marry or not with his father, the immense and autocratic Doctor Darwin

with a firm opinion on everything. And if marry he must, should it be Emma only 30 miles away across the English countryside?

As the days passed and he browsed the beloved old library of his childhood, or puttered in the miniature jungle of the greenhouse, or walked alongside the nearby Severn where he had fished so often as a boy, he must have basked in all that this interlude back in the old childhood home might some day come to mean to him, were the future to fall in place in any sensible way.

Was this destined to be the last break before he abandoned the so-called free life of the bachelor for all the responsibilities and worries that might soon now lie ahead— of wife. Then house. Then children and all else that awaits the serious family man?

Almost frenziedly, as though it might be his last chance to think about anything other than work and the responsibility of procreation that seemed to be closing in on him, he wrote to fill the notebooks, sixty entries alone within his brief two week stay.

“These instincts,” he wrote, picking up the earlier strain of thought about this ‘moral sense,’ “consist of a feeling of love and sympathy or benevolence...in other animals they consist in such active sympathy that the individual forgets itself, and aids and defends and acts for others at its own expense...Therefore in man we should expect that acts of benevolence towards fellow feeling creatures, or of kindness to wife and children would give him pleasure, without any regard to his own interest.”³

Soon afterward he added this:

“I believe that certain feelings and actions are implanted in us, and that doing them gives pleasure and being prevented uneasiness, and that this is the feeling of right and wrong.”⁴