

THE ORIGIN OF HUMANNESS IN THE BIOLOGY OF LOVE



HUMBERTO MATURANA ROMESIN
AND GERDA VERDEN-ZÖLLER
EDITED BY PILLE BUNNELL

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**Humberto Maturana Romesín
and Gerda Verden-Zöller
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Originally published in the UK by
Imprint Academic, PO Box 200, Exeter EX5 5YX, UK

Originally published in the USA by
Imprint Academic, Philosophy Documentation Center
PO Box 7147, Charlottesville, VA 22906-7147, USA

Digital version converted and published in 2012 by
Andrews UK Limited
www.andrewsuk.com

Editor's Foreword

The Origin of Humanness in The Biology of Love

A path of changes

When Dr. Humberto Maturana handed me the manuscript for this book at the first American Society for Cybernetics Conference I attended in 1995, I had no idea that this would lead to a substantial change in my own life and career.

As a systems ecologist, I had known of his work, and had even attended a seminar he presented in my home town the year prior, but I had not then understood the depth of the work and its substantive implications for how we think about ourselves and all our relations – both in our cultural matrix and in the biosphere. It's not that the seminar had not been meaningful. In the 1994 Vancouver seminar, Maturana had spoken about the shift in the lives of children as they moved from the matristic ambience of a home culture to the ambience of a more patriarchal "real world" culture. As a result of the reflections this stimulated, my husband and I were willing to accept our then teenaged son's choice of an alternative school – a choice that all three of us look back on with gratitude.

Of course Dr. Maturana knew nothing of this as he handed me the manuscript. He was passing out copies, and I imagine he was hoping that someone would make a suggestion for where this little book could be published.

I was naïve enough to offer to edit the work. I did not realize how presumptuous I was, and how gracious he was in being willing to consider my offer. Nor did I realize that this would become a lengthy process that would afford me the enormous privilege of what amounted to personal tutoring from a foundational scholar of cybernetics. And I did not even dream how deeply these ideas would affect me, to the extent that I changed my career from a successful international environmental consultant to a university professor. I

now love to teach, to inspire, and to expand the vision of students who in turn consistently find the material deeply and abidingly inspiring for how they live, both personally and professionally.

Once we began editing, Maturana generously and impeccably answered many emails, and sat with me, reviewing my proposed edits, during the breaks in several further conferences. I had secured a publishing agreement and the publisher waited patiently for the completion of the manuscript. Eventually both of us were content with the accuracy and the readability of the book. At that point, however, various extenuating circumstances intervened, and publication of the book was curtailed. Fortunately, the original edited manuscript has now been resurrected and we are all happy to present this book to a readership who may find it as seminal as I did.

Significance of Maturana's work

Now I would like to say a few words about why I find Maturana's body of work so important, and also why it is sometimes seen as difficult. My students have variously called it "chewy," "mental calisthenics," and "practical philosophy."

If I were to claim that any of the following is either true, or an interpretation of Maturana's work, then I would be acting inconsistently with the understanding that I have gained from it. All I can do, and all I wish to do, is offer my own understanding based on my own experience. I have found the work illuminating, compelling, and evocative of a manner of social and ecological living that I find vital, attractive and deeply resonant.

I write with the desire that what I say may trigger some insight or illumination in others. I cannot know – I am constitutionally not competent to know – what understanding or action now will later result in a world that we, as *Homo sapiens amans*, would like to have lived forth, along with all our relations, human and other. I do not know what words and actions lived now will have the eventual result that we, or our children, will not later live in regret. Yet, yet – I do think and believe that a manner of thinking that conserves

reflection as well as love has the highest probability of becoming a world that we can live in through conserving our lineage as described by Maturana and Verden Zöller in this book. So this is what I want to speak of here – namely why I think Maturana’s work leads to conserving reflection as a manner of thinking (as does the work of his colleagues, and of the many people around the world who have been inspired by it).

A network of ideas

I have noted over the years that different people find different entry points into the network of ideas, insights and explanations that constitute the lifework of Dr. Maturana. The different entry points¹ lead to different emphases. The original work was clearly in the domain of biology; and many people refer to Maturana’s contribution of *autopoiesis*² as the central aspect, with further attention on structural coupling and *lineaging* (which they may consider equivalent to *evolution*). Others are enchanted by the experimental work on the nervous system, which leads to thinking about cognition and to our inability to claim any sort of privileged access to “reality.” These people often refer to the body of work

[1] I have noted entry points, but these are not the same as motives, though motives may influence which entry points appeal. As indicated in the logo of the institute formed around Maturana’s work, namely Instituto Matriztico, people are usually interested in this work either due to curiosity or pain; or both. In my own case my curiosity was that of a scientist, and my pain was the angst I feel about the course of human activities on earth.

[2] For a brief explanation of Autopoiesis as the organization and realization of living systems, see Appendix 2. A more detailed treatment is found in Maturana, H. R. (2003). Autopoiesis, structural coupling and cognition: A history of these and other notions in the biology of cognition. *Cybernetics & Human Knowing*, 9(3-4), 5-34.

as the Biology of Cognition. Yet others are more deeply taken by the relational dynamics of *emotioning* and *linguaging*, and the consequent cultural implications, and see the whole as the Biology of Love. This book emphasizes the Biology of Love, as is evident in its title. There are also people who approach the work from a philosophical interest, and are concerned with ontological and epistemological implications.

In my view all of these are encompassed in what Maturana and his colleagues now call the Biological and Cultural Matrix of Human Existence. For ease of introducing it to students, I refer to it as a network of ideas, insights, and explanations. I also tell my students that this is a peculiar network. Let's say the letters of the alphabet represent the various concepts and ideas where they have to learn A before they can understand B, but they cannot really understand A fully until they have learned B. The same is true for C, D, E and F; each of which contributes more depth to A, and to B, as well as to each other (*Figure 1*).

Thus it is a coherent network that deepens as one engages with it. However one has to begin somewhere, so I propose that we begin with the concept represented by the letter A (which varies according to the interest of the group being addressed). I caution them that since they know that A will appear different after learning B, they have to approach the whole with the willingness to not assume that any element is complete in isolation from the rest. One has to be willing to let go of what one knows about any aspect at any moment in order to understand it, and the whole, more fully. The process of becoming an expert in any field relies on a similar approach.

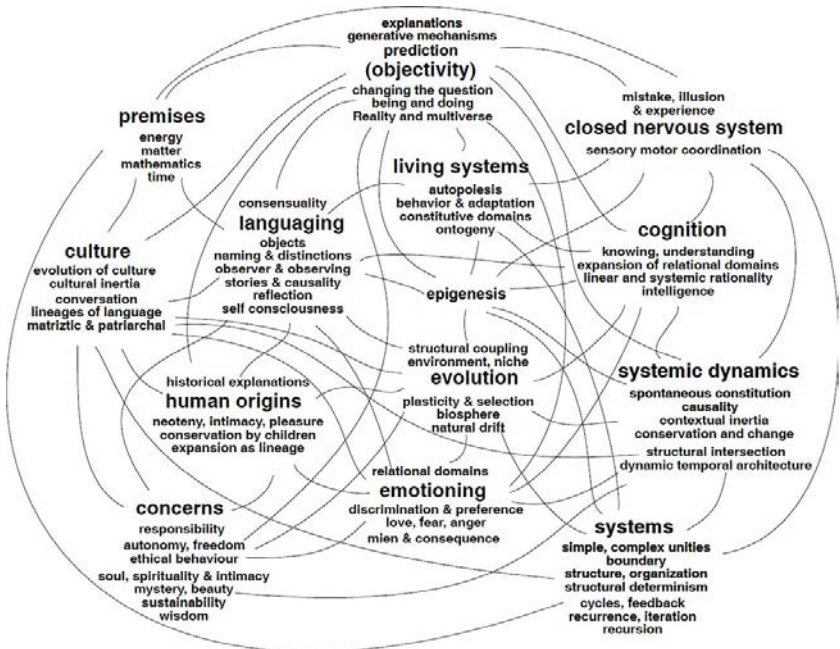
None of this means that the insights one first gains from A, or from A plus B, are invalid; it just means that the implications and applicability deepen as the insights themselves become both epigenic³ and reciprocally illuminating. Such is, after all, the natural course of learning; even if we often think it is simply cumulative

[3] Epigenic is a word that originally derives from embryology; where each new development can only take place on the ground of

Figure 1. A Network of Explanations

This drawing is not intended to describe the whole matrix of ideas encompassed by Maturana's work, nor that of his colleagues at Instituto Matriztico. Indeed, some of the ideas included here may differ from what they include or emphasize. I show my figure here partly to give a sense of the breadth of ideas involved, but mostly to emphasize the network nature of the whole. All the lines in this figure imply reciprocity in understanding. Not all connections are shown; my purpose here is to suggest a density of connections among the ideas – which thus constitute a coherent whole.

(A similar type of figure was presented in Maturana and Varela's *The Tree of Knowledge*, and mine is not intended as a replacement for that).



– with the unfortunate consequence that often our educational system tends to reduce understanding to knowledge and knowledge to collections of facts.

Of course many elements contained in this network of ideas have been explored by others before; Maturana himself has often claimed that there is nothing new in what he says. However if readers or listeners stop their own engagement with “Ah, yes, that is what so and so said” – then their understanding is limited by what they knew before. Perhaps what is new is the re-invention of these elements as a whole network of understanding in the modern context of science and humanities. In the long run, authorship is rather less relevant than the consequences of *living* an understanding. It is in the relational domain where the acknowledgement of contribution or inspiration, from any source, is a manner of living in love and respect.

Domains

In writing this foreword I had thought to highlight several key themes. I find myself immediately caught in the network; unable to leave out A or B or E or F, as they are all relevant to the whole. So instead I will address an aspect that I have been thinking about lately; namely domains. Though domains and their implications are in the foreground of my thoughts now, I am aware that I too will think differently some time later. Understanding always follows an epigenic path, so that one is always where one is, where the current ideas rest on what preceded and act as the ground for whatever may yet arise.

In a recent article⁴ Maturana shows how cultural inventions such as time are natural outcomes of our living together. These inventions

the previous development. This applies generally to many processes, and particularly to learning.

[4] Time as an Imaginary Spatial Dimension, *Cybernetics and Human Knowing* Vol 15. No. 2

do not cause us problems as long as we accept the operational coherences relevant to the structural domain to which our actions pertain, and as long as we do not confuse domains.

Domains are easily confused because we are generally not aware of them. In one respect they do not even exist, as they represent a slice, or perspective of an imaginary n-dimensional matrix, and the making of the slice is an act of simplification that enables local action. In another view, we live always in one domain or other. We are never present, or acting, in the whole of the imaginary n-dimensional matrix. Each domain is complete in itself, and only partial if we imagine a whole in which they all exist. Yet each is different in its internal coherence, its relevance, and its possibilities. We, like other animals, flow easily from domain to domain in the course of our daily living. Unlike other animals, we do this emphatically also in language, and in language it causes us problems because we often operate under the implicit assumption that all that we speak and all that we know exists in a single domain called “reality.” When we cannot co-opt our perceptions, ideas, or experiences into this supposedly singular domain, we often consider them delusions or aberrations of one kind or another.

As Maturana has said every distinction reveals some regularity in our living, and obscures others. As each distinction also brings forth the domain in which it is valid, each domain also reveals some regularity in our living and obscures others.

We do not live in a “flatworld” of one domain, or one collection of regularities. We shift planes, dimensions, or domains in the flow of our activities and relationships, and the flow of emotioning and languaging is commensurate with this flow. Our pedestrian rules of logic are valid within any given domain, but become problematic if we shift domains, as we may easily do without noting it, even in the middle of the argument. Logical constructs only work properly as long as we are careful that we do not cross domains. Paradoxes arise when we do not pay attention to changes in domain.

I began to notice this prior to encountering Maturana’s work as I noticed what I considered careless logic in the figures that people

drew to explain various systems dynamics. Now, one of Maturana's seminal figures serves as a referent for my own vision and for my teaching. Maturana's figure (Figure 2) is iconic, and I think evocative. The circular arrow represents a living system in recursive autopoiesis, (its constitutive domain, or physiology). The living system as a whole also has a reciprocal adaptive relationship with its niche (its relational domain or behaviour). I find it easy to explain that a living system cannot persist as such without conserving both. Yet we cannot claim that one causes the other, nor can we explain either in terms of the other, even though what takes place in one does alter the dynamics of the other.

Pedagogically this figure serves as a touchstone for noting the difference between the generative domain and the phenomenal domain – and for recognizing that confusing these looks leads to troublesome misunderstandings.

Inasmuch as domains are sets, or networks of relevant regularities, they can be distinguished according to various different looks, as these arise with different interests, contexts, or concerns. Thus we can name the kind of concern that appears to prevail, and we can speak of operational domains, generative domains, relational domains, and more. If someone wants to analyze domains as if they had an existence other than in either action or in reflection, this can lead to confusion. Relational domains, which Maturana equates to emotions, are thus distinguished through different constellations of possible actions as one lives a particular local regularity. Again, we shift domains fluidly, so we flow easily from one relational domain or emotion to another (hence *emotioning*), and if we pause to reflect we see that the internal coherence, or logic, of these differs. We think and act differently in different relational domains.

Like other domains, relational domains cannot thus be collapsed one into another. However, we can navigate from one to another such that the social consequence is harmonious. Sometimes this becomes a delicate matter as we find ourselves engaged in multiple incommensurate relational domains. When this happens we sometimes simply isolate our presence in one from our presence

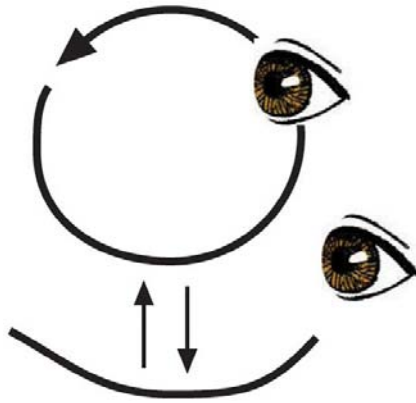


Figure 2. Two different looks of an observer in noting either the generative domain (top eye), or the resultant phenomenon in a different domain (lower eye). This figure is Maturana's iconic representation of a living system that remains conserved as such as long as both autopoiesis and adaptation persist.

in another. Indeed it is socially not only acceptable, but “proper” to keep our emotional family lives separate from the emotions in our working relations. At other times we cannot fully isolate our relational domains, and we either find a path of behaviour that is acceptable in all, or some of the relational domains change or even collapse. I think we feel best when we don't experience a sense of dissonance as we move from one emotion to another, as we do remember at least our actions, if not how we ourselves were when we were different. This is of course easiest if one retains the overarching emotion of love, as the basic constituent of our humanness – as is described in this book.

Writing from within the matrix

One further point I would like to address is the complaint sometimes heard that Maturana's writing is difficult to read. Of course part of the difficulty is that each element is part of a matrix,

or network of ideas. It isn't linear, and thus it requires a manner of thinking that differs from our cultural habits. Though there may be other reasons for the perceived difficulty, I want to address here the notion of circularity in writing.

Maturana has found that editors sometimes try to clarify his work through removing what they see as repetition or redundancy. In many cases what they are doing is removing the circularities. Circularities are important because they launch and sustain a generative process. The understanding that they are intended to evoke arises only through the operation of the circularity.

All circularities, whether they consist of iterations (the process is reapplied to the result of the process) or recursions (the process is applied to itself) operate like this. The phenomenon, whether it is considered tangible or psychic, only lasts as long as the generative process continues to operate. This isn't easily apparent to us given that we can name the phenomenon, and then use that name as if it replaced the phenomenon. What happens is that the same word can either evoke the generative process which gives rise to the phenomenon (and it does this quite rapidly as one becomes expert in that particular circularity), or it can be "flattened" into an object that is used in another domain of coordinations. The same word that signifies or triggers a generative cognitive operation can also persist as an object that coordinates behaviour in an entirely different operational domain.

It is not always easy to note whether a word is being treated as a generative process or an object, even when one realizes that these differences exist. And it is very difficult to realize that one needs to operate mental circularities for the phenomenon of meaning inherent in those to arise if one expects only descriptions and definitions. Since Maturana's writing and thinking include many circular, generative processes, this may render understanding difficult until one perceives that circularities need to be operated (sometimes through several cycles) in order for the whole to be understood.

The second point I wish to address is the style and apparent intent of some of the writing. I have asked Maturana why he writes as he does, and he has answered that he wants to be understood. Someone trained in writing for a broad public would find this claim almost incredible, as that form of training emphasizes representing ideas in terms that the readership already understands. The writing has to be different when one wants to evoke the arising of new understanding, and wants to do so in a manner that will not be misunderstood.

Metaphorical explanations are easy to read, as are stories that exemplify a particular idea. The problem with this kind of writing is that the direction is largely set by the prior knowledge of the listener. Metaphors and stories are constitutively open to being understood very differently by each listener. However, if someone wishes to understand what the speaker or writer intends, or the speaker or writer wants to be understood in the terms that he or she specifies, a different kind of writing or speaking is required.

In speaking, in personal presence, the listener can be enchanted to follow a path of explanations, stories, and evocations such that the understanding results. Many people have told me that once they have heard Maturana speak, they can then read his writing with much greater ease. They have learned how to think along the paths he evokes in the multifaceted, consensual dance that personal presence allows. In writing, however, evoking a new understanding is more difficult as there is no opportunity for the writer to respond to the flow of the reader. Hence when a writer wishes to be unambiguous, he or she has to provide an unambiguous operational process for understanding what is written. With this sort of writing the reading is slow, and one may have to read a sentence several times to obtain the resultant understanding.

That said, I think Maturana presents his views here in an easy flow. More technical or more demanding bits have been moved to the appendices.

Conserving the impetus to reflect

Early in the initial editing process I told Maturana that I thought his work was a cosmology. He was quiet for a moment, then asked me what I meant by *cosmology*. When I answered that a cosmology was a coherent way of understanding and explaining all of one's experiences, he conceded that he also had tried to use that word but had found it evoked the wrong sort of listening. Within my meaning of the word, we all live in a cosmology, creating our cosmos in a way that is congruent with the culture in which we find ourselves, and with our individual life experiences. I do not have a word that better expresses "everything" than the word *cosmos*, so for the next few paragraphs I ask the reader to temporarily accept my meaning of cosmology which to me feels more encompassing than *world view*.

When I was first learning this material, there was a point when I felt as if I were on a magic flying carpet from which I could perceive everything. It was heady, exhilarating. Then one day I noticed that in fact there was no carpet. I was alone in "mid air." Yet; I did not crash and fall, nor was I isolated. Instead I found myself comfortable in a newly sensed radical responsibility. This did not appear to me as a burden, but rather as a sense of delicious autonomy that came with a comfortable ethical care for how I engaged with the world. Of course I have since committed many mistakes, that is, I have acted in ways that in retrospect were not the best way of navigating some delicate matter. What I have found myself conserving is a willingness to engage in reflection, of seeing and changing that is not dependent on any thing or any idea.

An individual always grows in a culture in a manner that is in part determined by that culture. Basic premises regarding existence, relevance and even how to think, are acquired prior to having developed the capacity in language to reflect, or to experience self consciousness.⁵ The individual accepts and lives according to

[5] Maturana, H. 2006. Self Consciousness: How? When? Where? *Constructivist Foundations*, Volume 1, No. 3.

a cosmology implicit in these premises and thus acts in a fashion that is coherent with that understanding. This in turn constitutes the cultural matrix, which then validates that understanding and is conserved as the cultural context for new individuals. Thus a cosmology is usually conserved in a culture through an intergenerational circularity (Figure 3 A). In this situation culture and cosmology appear as one and the same, though they occur in different domains. I take a culture to comprise a network of activities and relationships among a group of people, it cannot be encompassed in a single individual. A cosmology (as I am using the word here), on the other hand, pertains to an individual – though of course it can be abstracted and described as typical of a culture.

The difference between most cosmologies and what I have come to understand from Maturana's work comes through the inclusion of a second kind of circularity within the culture-individual circularity. Here, the cosmology is applied to the cosmology; that is the process is applied to itself, which makes it recursive. In order for this to be possible, the process of reflection is required; and reflection takes place in the locus where a cosmology exists as such, that is within an individual. Reflection implies the ability to release what one believes or thinks, and to metaphorically step outside of that to consider it (external eye, Figure 3 B). Of course one immediately sees that one is not really outside, so one sees oneself both as reflecting on the cosmology, and as the individual who reflects on the cosmology, embedded in the culture (inner eye, Figure 3 B). This double look has a peculiar effect that I, and others, experience as an emancipation, a sense of freedom, or a psychic mobility.

Though any particular reflection easily collapses into a description or observation, the function of reflection itself remains, so it regenerates itself. There is thus the possibility of an endless progress of reflections, each one grounded on whatever preceded it. Indeed I find it difficult to experientially retain an awareness of reflection as a process beyond one recursion, namely the "reflection of reflection." If I try to mentally actually make further recursions, it becomes an abstraction that describes the process, as in Figure 4.

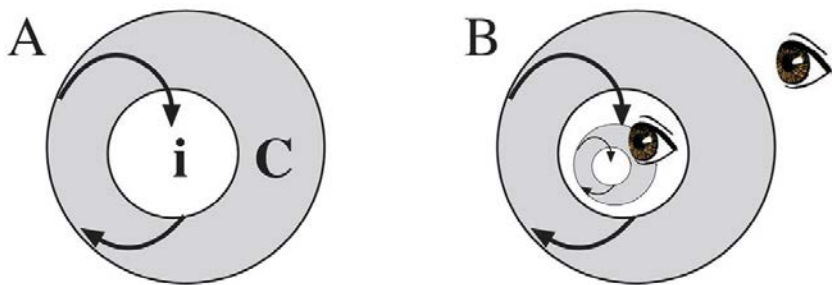


Figure 3. Conservation of cosmologies in cultures. The individual (i) is the small white circle and the culture in which s/he lives is the large grey circle (C). A represents the general case, and B represent the addition of a recursive reflection as an element of the cosmology.

Yet the description may be enough to engender in us an intuitive grasp of how reflection is conserved, and may evoke a new reflection on reflection, or a reflection on the process of recursive reflection.

For a cosmology to be recursive, it must conserve reflection, and for it to conserve reflection, the process of reflection must be inherent in the cosmology. This is made possible by a significant aspect of Maturana's cosmology; namely he has impeccably avoided grounding his network of explanations in any externality, including those that are difficult to refute because they are invisible or taboo. If there were an externality, one would not be able to "get outside" that externality, and thus the application of the cosmology to itself could not take place. In this cosmology there is no referent other than the happening of the process of human living, with all that we do and experience as we live and reflect on ourselves, our doings, and our world.

Implications of conserving reflection

The consequence of reflection cannot be predetermined. Thus as reflection is conserved, a culture will change along a path of changes that cannot be predetermined. This may concern anyone who wishes

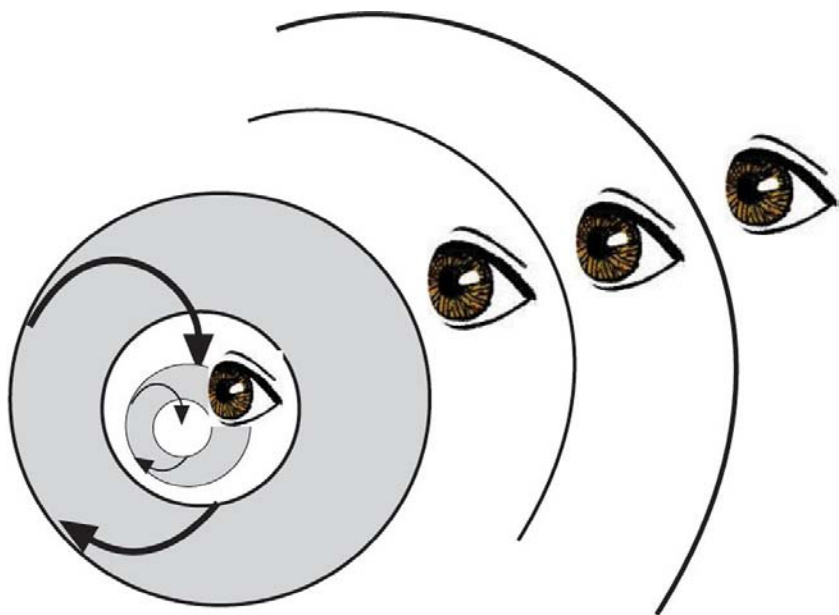


Figure 4. An endless progress of reflection, as enabled by the recursion on reflection.

to retain or be loyal to a particular idea, belief, or even moral code. It is only really comfortable to contemplate the matter of openness in cultural change if one accepts that humans have evolved as loving animals, as described in this book. Of course we could further evolve to become *Homo sapiens aggressans*⁶, or *Homo sapiens arrogans*, but

[6] My original suggestion in 1995 had been *Homo sapiens amans* for the species and subspecies, with the subspecies *H.s. aggressans* and *H.s. arrogans*. Maturana has just reviewed a draft of this foreword and has offered what I think is an excellent refinement for this notion. He now speaks of *Homo sapiens-amans amans* as the original form, where the hyphenated *sapiens-amans* refers to the arising of languaging under the emotioning of love in the original small family group. The second *amans* refers to the manner of living since then, which means that further subspecies would take the

at this time, most of the people I have encountered indicate that they feel well when acting as *Homo sapiens amans*. Furthermore, and again in my experience, a propensity to act as *H.s. amans* shows up when reflection begins; as indeed is inherent in many practices that encourage people to “stop and think about what you really want.” Hence I believe that this biological constitution is still fundamental in us humans, and that reflection appears to enable us to act in accordance with our biological constitution. I think this is part of the sense of emancipation I referred to earlier.

Without the ability to reflect on all the premises inherent in one’s cosmology, one is constrained to acting only within the constraints of an inherited, usually implicit cosmology. Though the specific consequence of an open-ended cultural drift cannot be determined, I can trust that a drift which conserves wisdom (*sapiens*) and love (*amans*) will result in a world that I would like to imagine for our children and for the earth. I believe that a change in culture that arises along a path of reflections is far more likely to lead to humans becoming a sustainable species than the conservation of currently prevailing cultures and cosmologies.

In conclusion I claim that the network of ideas, insights and explanations of Maturana’s cosmology conserves an opening for reflection that allows an escape whenever the answers to the deep questions about humanity and life become treated as if true and rigid. Dr. Humberto Maturana Romesín, I thank you most deeply for all that you have contributed. I hope that the readers of this book will experience the pleasure of insight and the delight in reflection that I have had in following this path.

Pille Bunnell
Vancouver, BC, October 2008

form of *Homo sapiens-amans aggressans* and *Homo sapiens-amans arrogans*. This makes it clear that we claim that our basic fundament remains *sapiens-amans*, the “wise-loving” hominid, and the other manners of being are variations on top of that.

Humanness

Now ... what makes humanness?

Languaging.

What makes a man a man?

Nothing more than his sex.

But ... what makes a man a human being?

His sensuality and tenderness in
open awareness of his earthly
interconnections as he dances the
recursive dance of eating
playing, and kissing.

And ... what makes a woman a woman?

The same

through her own sexuality.

But ... what makes her a human being?

Her tenderness and sensuality in
open awareness of her earthly
interconnectedness as she dances
the recursive dance of eating,
playing, and kissing.

What is the difference, then?
None and everything, since the
woman is always aware of being
in her humanness a cosmic source
out of nothingness, while the man
has to learn this anew when he
becomes seduced and enchained by
the delight of linear reasoning that
the woman has always known to be
a transitory winter blossom.
And novelty, what is novelty in all this?
An unexpected turn in an always
recursive dancing dance.
Empty seems human life to be!
Yes! ... Or rich, in the fullness
of an always changing present
of eating, playing, and kissing.

Humberto Maturana

Preface

This book arose in the crossing of two paths of research and reflection in relation to the origin of humanness. The first of these was my intent to visualize and understand the evolutionary origin of humanness, and the other, that of Dr. Gerda Verden-Zöllner, was her attempt to show observationally the arising of self-consciousness in the child in the early mother–child play relations. Although this book was written in 1994–96, I think that its contents are still valid now, some fifteen years later.

In my approach to the theme of evolution I had developed some unorthodox notions about the actual mechanism that drives the process of evolution that I shall summarize in the following statements (see Maturana and Mpodozis, 2000):

- The actual mechanism that drives evolution is structural drift in the conservation of both living and adaptation in the present, in an independent and continuously newly arising changing medium, not the selection of those best adapted to a preexisting medium.
- Natural selection is a consequence of natural drift, not the generative mechanism of evolution. The generative mechanism of evolution is natural drift.
- Living systems occur as discrete organisms in the medium that makes them possible.
- Adaptation is not a variable; adaptation is a relation of operational congruence between the changing organism and the changing medium in which it lives.
- If the relation of adaptation is lost, the organism dies. So an organism either slides in the medium in the path in which its living is conserved, or it dies (disintegrates).

- What is conserved in the constitution of a lineage through reproduction is adaptation, namely, the organism-niche relation in which its manner of living is realized and conserved.
- A lineage of organisms arises when a particular dynamic organism-niche relation begins to be conserved as a manner of living from one generation to the next through systemic reproduction.
- Systemic reproduction occurs as both the organization of the reproducing organism and the configuration of the medium in which it realizes its living are conserved together as a simple result of the conservation of the realization of that manner of living by the offspring of that organism. This occurs in the interplay of genetics and the behavioral preferences that guide the living of the organism in its niche. When this happens, the manner of living conserved from one generation to the next, as a particular configuration of organism-niche relations, becomes the operational dynamic center around which everything else is open to change; thus defining the class identity of the lineage through its systemic conservation.
- A lineage lasts as long as the dynamic configuration of organism-niche relation that constitutes the manner of living and defines its class identity of an organism is conserved through systemic reproduction.
- The evolutionary path that a lineage follows is the path of structural drift in which the organism-niche relation that defines it is conserved. So, if we wish to understand the origin and history of a lineage we must find the initial manner of living that began to be conserved as an organism-niche relation and the variations of that manner of living conserved as part of it in its natural drift, so that the members of that lineage live now as they live now.

- The present manner of living of the members of a lineage is the result of a history of natural drift, not an attainment of progressive improvement of its adaptation to a pre-existing medium.

Under this manner of thinking, if I wanted to see how humanness arose and has become what it is now, I had to answer the question “What manner of living (organism-niche relation) began to be conserved in our ancestors so that we live now as we live now?” These were my central reflections when I met Dr. Verden-Zöller.

What Dr. Verden-Zöller basically wanted to understand was the arising of self-consciousness in the child; and she thought that this took place in the early childhood of each child in the course of his or her intimate relation with his or her mother. Accordingly she thought that the place to research this question was during the early mother–child play relations, and she turned to study those relations in relatively isolated communities in West Germany after the war. Here I summarize in my words what I thought were her basic findings at the time we met:

- The main task in the growing child is learning his or her body, and he or she does so in the intimate and playful close contact with his or her mother.
- The worlds that the child lives arise in the mother–child relation as the child does together with his or her mother whatever they do together.
- It is in the mother–child play that the baby creates his or her self-distinctions. And he or she does so as a matter of course in the flow of his or her play in intimate body contact with his or her mother as they touch each other reciprocally, and in their handling and touching whatever they manipulate and distinguish together.