

Education and Humanness

By Ward Mailliard

For a variety of reasons, many quite understandable, change in the educational system is slow with little room for experimentation. Parents naturally seek predictable results for their children. They hold a generalized faith in the implicit promise that vigorous engagement with the current educational process will ensure that their children will find security and status in well-paying jobs. The mental stress and behavioral conditioning that students go through to achieve these goals is rationalized as preparation for the competitive world they will enter. It is just the price they must pay to succeed. The primary actors in the educational drama, students and teachers learn to live in the pressure zone between parental hopes and expectations, and the systemic norms and measuring standards that determine who moves forward and who gets left behind.

We as teachers, in the urgency to meet those standards, are often required to engage in practices that go against our inner promptings, and do not ultimately serve the best interests of the children we are trying to prepare for meaningful, successful lives. I believe it is of the utmost importance that we take time to reexamine our commonly held beliefs about the educational processes we employ in our schools. This essay, inspired by neuro-biologist Humberto Maturana's seminal work, examines what we must do to support the emergence of human beings from our schools who can live together more cooperatively as citizens and create a more equitable and sustainable world.

I begin with a few premises. First, all education is local. How we educate depends on who, where and why we are educating. To educate appropriately we must understand the context from which our students arise. There can be no universal prescription for teaching that will serve all situations. Culture, economic strata, family status, religious views, language all play a major part in assessing the needs, processes and desired outcomes of any educational enterprise.

Second, there is more at stake in our work as educators than we or our societies realize, including the unintended outcomes of the processes of schooling that impact our manner of living together as human beings. Beyond the goal of simply preparing students for careers, which is the general way of thinking about school, the education system is one of the most potent and ubiquitous mechanisms for shaping human beliefs, goals and relationships. Hence, it is important for us to reflect on the assumptions we make about educational aims and processes as we engage our children in the learning process. It is essential that we reflect on how the practices of the classroom contribute to the environmental, socio-economic, psychological, relational and political outcomes that manifest in our living as human beings in our societies.

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This is not a call to an ideological revolution, or an attempt to convert the reader to a particular method of teaching. It is a call to a shared reflection about three basic questions related to education derived from Humberto Maturana's work.

1. What kind of human beings do we want leaving our schools one day?

2. What are the processes by which those human beings can emerge?
3. How can we cultivate teachers who can facilitate those processes?¹

In the effort to improve and reform education, there are many initiatives that do not meaningfully address the first and most critical question, *“What kind of human being do we want leaving our schools one day?”* While deceptively simple, Maturana’s maxim that children become the adults with whom they live, may be the most profound awareness we as teachers can hold. In his book *“From Being to Doing”* he writes, *“A student does not learn mathematics in school. They learn how to live together with a mathematics teacher....My claim is students learn teachers.”*² We need to be aware that children consciously or unconsciously tend to conserve aspects in their behavior that are derived from the interactions and general culture of those with whom they live in the classroom. The primary culture of a student is the family system, which is in turn a product of the history of the family, and the history and present of the socioeconomic context of the family in which children are raised. Then, from age four onward children are also conditioned extensively in our schools by interactions with their peers and the teachers who guide them in the process of structured and unstructured learning.

There is a basic concept regarding biological evolution which says, what is conserved in a species manner of living in relationship to its medium (environment) and passed on to the young of the species will determine the direction of the evolutionary drift of that species. I first learned this principle through the ground-breaking work of Humberto Maturana. It was my good fortune to meet with Maturana on several occasions at the Matriztica Institute in Chile. As a result of long reflection and experimentation with Maturana’s work, my thinking as an educator has changed in some very fundamental ways. Today, the most important question I try to hold in awareness when entering my classroom is, *“What am I conserving in my manner of living with my students?”* In this essay I explore what we as educators, individually and collectively, consciously or unconsciously conserve in our manner of living with our students, and reflect on the impact that may have on our society and environment. More broadly, I would like to consider how our work may even impact the evolutionary flow of our humanness.

*“What am I conserving
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with my students?”*

To enlarge on the implications of the natural tendency of children to emulate their parents, friends and teachers, Maturana discusses the this biological imperative that, what is conserved in the manner of living of a species with its medium and passed on to the young will determine the direction of the evolution of that species. This is the basic concept behind the phrase, that phenotype leads genotype.³ A phenotype is what an organism is as part of its class and as a result of the interaction of its genetic constitution with medium in which it lives. It is not that organisms evolve because their genetic structure changes. It is that the genetic structure changes because of what is conserved in the manner of living of that organism as it lives in relationship to its

¹ Maturana: From Being to Doing - page 129

² Maturana: From Being to Doing - page 129

³ Maturana: From Biology of Love - page 63

environment. We begin life with a particular genetic schemata or pattern. As we live, we generally conserve those inherent characteristics in our manner living in our environment or medium. We also may, due to circumstances in which we live, or by choice, begin to conserve different ways of living, which we then pass on to our young. What we conserve, consciously or unconsciously in how we live affects our genetic programming. The changes, however subtle are passed on to our children. When particular aspects of how we live are conserved generation after generation they become part of a lineage and our genetic make-up adapts.⁴

Love
The domain of those relational behaviors through which another arises as a legitimate other in in coexistence with oneself

The Evolution of our Humanness

From a historical perspective our human species shares about 94% of our genetic structure and 98% of our chromosomes with our cousins the chimpanzee from whom we separated as a lineage about 3.5 million years ago.⁵ At that time the human brain was about one third of the size that it is now. One of the questions Maturana explores in “The Biology of love” is why the chimpanzee brain remained at that same size and lived in the same patterns, while we as humans evolved, becoming more intelligent, more self-aware, and developed a complex language structure? Maturana states:

“We think that the increased brain size in the evolutionary history of our lineage is the consequence of systemic reproductive conservation of a manner of living in cooperation rather than in competition and aggression. We modern human beings have a languaging, loving and cooperative brain, so to speak, because we belong to a lineage in which language, cooperation and love were systemically conserved in an evolutionary trend in which all genetic variations were systemically co-opted in the conservation and expansion of that manner of living.”⁶

From paleontological studies Maturana posits that this transformation took place because human beings began to live in small groups of eight to ten that lived in the conservation of cooperation, intimacy and trust while the chimpanzee continued to live in groups which conserved the dynamics of dominance and submission. Essentially, the origin of our humanness is result of what Maturana calls the biology of love; living in the conservation of intimacy trust and cooperation. Living in this fashion, as it turned out, helped us to succeed in the process of natural selection as it created more resiliency in times of environmental stress.

Maturana tells us language emerged as the natural result of the “coordination of coordinations of living together in cooperation.”⁷ Over the millennia, living together in an atmosphere of intimacy, trust and cooperation caused the human beings to expand intelligence, develop new capacities,

⁴ Maturana, Biology of Love - page 67

⁵ Maturana: Biology of Love - page 56

⁶ Maturana, Biology of Love - page 76

⁷ Maturana, Biology of Love - page 72

develop language and become what we are today, which he describes as *homo sapiens-amans* or human species living in the fundament of love. He defines love as “*the domain of those relational behaviors through which another arises as a legitimate other in coexistence with oneself.*”⁸

Further, he explains love is rooted in the mother-child relationship of intimacy, trust and cooperation and carried through life by the biological process of neoteny. Neoteny is defined as a process by which the patterns of relations we experience and learn as children are then carried out through an entire life. If we learn intimacy trust and cooperation as children it is more likely became a permanent feature throughout our lives, and more likely to be passed on to the next generation and then the next. If these features are conserved, they will become generalized features of our lineage as *homo sapiens-amans*⁹ (human beings living in love).

Intelligence

Maturana makes the case that living in cooperation offered human beings the opportunity for a virtually unlimited systemic expansion of intelligence.¹⁰ He basically defines intelligence as “flexibility of behavior in response to the circumstances of living,”¹¹ or we could say, a flexible response to context. In other words, intelligence allows a human being to respond adequately to circumstances in any given moment. The term I prefer to use for this is “discernment,” and consider it a key feature that needs to be cultivated in our educational systems.

Intelligence
*flexibility of behavior
in response to the
circumstances of living*

Dominance and Submission

The opposite of living in intimacy, trust and cooperation is living in dominance and submission. Our cousins the chimpanzee conserved this as a primary feature of their living together. Dominance and submission are the negation of love or not seeing the legitimacy of other. In that manner of living dynamic cooperation is lost. The study of chimpanzee social dynamics shows that when a chimpanzee becomes an adult it moves from the care of the mother into a world that is hierarchically organized with a dominant male at the top of a system that demands submission from all others.

From the work of Maturana, there are some important inferences to be drawn when we think about the primary features of modern education. If we know that intelligence expands from living in cooperation, trust and intimacy, it would stand to reason that those would be fundamental features we would want to cultivate in our classrooms as the educational experience is one of the primary conditioning forces in a human life. In most countries beginning at age five or even earlier, a child will spend anywhere from six to seventeen years in various school systems. It would be hard to find any aspect of life where a human being spends more of his or her life learning to live in a social structure as influential as the medium of school. Schools consciously and unconsciously

⁸ Maturana, *Biology of Love* - page 120

⁹ Maturana, *Biology of Love* - page 78

¹⁰ Maturana, *Biology of Love* - page 56

¹¹ Maturana, *Biology of Love* - page 54 & 55

impact the psyche of a child as it cultivates social value systems, motivational dynamics, world views, training in peer relations and an experiential understanding of power dynamics.

Explicit and Implicit Curriculum

School is generally based on an understanding that the content of the subject areas taught in school (explicit curriculum) has critical value that expands the student's knowledge awareness and ability to engage productively with the external world and the many possibilities it holds. It is essential to the functioning of society. What is not understood fully is the critical impact of the processes we use to support students learning the content, and how those processes of learning impact the dynamics of relationships (the implicit curriculum). Most of the focus in education is on the delivery and measurement of information, the explicit curriculum, without understanding the impact of the implicit curriculum on the development of the beliefs, reasoning, emotions and character of the child. If it is correct, as is often stated, that the amount of available knowledge doubles every twelve months, we are engaged in a losing race if we think that schools are going to keep up, and we need to consider a different paradigm for learning than simply knowledge or content acquisition. As we struggle unsuccessfully to funnel an ever-expanding flow of information into the relatively static capacity of a human being's ability to assimilate and integrate, we have reached a point where many assumptions we hold about the educational process need to be reexamined. If intelligence is a flexible response to context as stated by Maturana, then the development of intelligence (discernment) needs to be considered as essential to the process of education as the current norm of teaching and testing based on information retention.

If we accept Maturana's conception of how human beings evolved to become the intelligent and languaging beings we are, and the assertion that we developed our capacities in a lineage that was characterized by intimacy, trust and cooperation, then we must consider as stated earlier whether intimacy, trust and cooperation should be a primary feature of the educational institutions that guide the development of our young. We must consider what the long-term results will be if the processes of education are predominantly dominant, submissive (competitive, stressful and motivated by punitive consequences). Our evolutionary drift away from our cousins, the chimpanzee, indicates that dominance and submission as a feature of a lineage does not expand the intelligence. We know that fear does not engage many of the available capacities of the human brain because the brain does not integrate, reflect or become as creative under "fight or flight" conditions. Neurobiologically the blood flows to the part of the brain called the amygdala, the bodies alarm circuit stimulated by fear and loss of control. The tendencies will be to seek survival by obedience or resistance to the perceived threat, or to avoid engagement with that which we fear. It is important to consider the unintended consequences if the learning processes over the long term are stimulated by fear or threat. Essentially, we must examine the effects, conscious or unconscious, that are result of the conditioning processes to which students are exposed over a substantial portion of their lives.

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If we consider the biological process of neoteny in which patterns established as children are carried through an entire life, it would stand to reason that if the patterns of dominance and

submission are conserved as core features through seventeen years of schooling, those patterns would be integral parts of the emotional/reasoning or psychic make-up of the adults emerging from the educational system. How will the impact of the process of schooling reflect in the emotioning/reasoning or psychic behavior of the adult who is conditioned in this way? In the long term, what effect will this have if it is conserved through generations on the direction of the drift in the lineage of the human being?

Maturana states,

“The kind of being, or the kind of human being we become along our lives, is therefore, determined by the conscious and unconscious psychic coexistence that we live as we grow, realizing a particular psychic identity in a particular human community. This psychic identity is systemically conserved through our body dynamics as we operate in the human community in which we arise as human beings, but it is also modulated by what we live in other domains of interactions in which we also exist. We change our doings, we change what we manipulate, and we change the form of the rational arguments that we develop to justify or to deny our emotioning as we grow and become adults, but we conserve systemically the psychic identity that we learn to live and generate as little children through living it. We do this unaware of what we do through systemically conserving the configuration of emotioning that defines our psychic identity as we co-create with other beings the human community in which that particular psychic identity takes place as the natural manner of living.”¹²

This essay then is a call to reflect on and examine the dynamics created in the process of schooling. If students are conditioned for a significant period of their lives in a system characterized by dominance and submission they will consciously or unconsciously tend to conserve those characteristics as part of their “psychic identity.” Submission to coercive strategies, loss of self-respect for those who do not conform to the narrow standards of how we measure performance, destructive competition, absence of time for self-reflection, loss of creativity and self-direction all work against the creation of a society of caring, cooperative, and trusting individuals.

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Again Maturana writes,

“Accordingly, if we want to conserve loving humanness, we have to conserve the biology of love culturally (in our epigenesis), and to do that we have to conserve culturally the conditions under which our children may grow naturally as self-respecting, socially conscious, courageous, honest, intelligent, and responsible loving human beings. And to do so we, the now living human adults, must generate to our daily living the psychic relational space of the biology of love around our children as the cultural psychic space in which they become adults.”¹³

¹² Maturana: Biology of Love - page 103

¹³ Maturana: Biology of Love - page 133

According to Maturana, the “psychic space” in which a child becomes an adult is based on the “relational encounters that we live consciously or unconsciously with others.” This governs the emotioning and reasoning response we have to our circumstances as an adult.¹⁴ What is not often discussed is how our emotions, conscious or unconscious affect our reasoning.

we cannot have a “psychic identity different from the one that we have learned and conserved systemically” in the process of our living.

“Furthermore, and more specifically, all the emotions that we live as human beings, regardless of whether we are conscious of them or not, and regardless of whether they arise in a us through unconscious or conscious relations, are relevant to our reasoning because our emotions guide the course of our reasoning by specifying the conscious and unconscious fundamentals on which our reasoning stands at any moment. In different words: our conscious and unconscious psychic existence modulates our emotioning on which our reasoning stands, and our conscious and unconscious reasoning modulates the flow of our emotioning.”¹⁵

Maturana states that of largest concern is the unconscious responses we have, as we are not able to reflect on the emotions that determine how we chose to respond, because we cannot have a “psychic identity different from the one that we have learned and conserved systemically” in the process of our living.¹⁶

It is essential that we examine the relational aspect of schooling as it is one of the most profound conditioning aspects in the lives of human beings. If that conditioning is predominantly one of patriarchal dominance and submission, we are going to be engaged in cultivating a different kind of human being than will be produced in the matristic dynamic of cooperation, intimacy and trust. I should clarify here that the terms patriarchal and matristic as used by Maturana are not gender specific. He states that

“Cultures, as networks of conversations, are composed by human beings of both sexes. The expression patriarchal is not to be associated with men only; similarly the expression matristic is not to be associated only with women..... Matristic and patriarchal cultures are different manners of living, different forms of relating, different manners of emotioning; that is, different closed networks of conversations that are realized in each case by both men and women.”¹⁷

The term matristic arises because it is most aptly depicted in the manner in which a child lives in love, intimacy and play that are part of the mother child relationship. Maturana states,

¹⁴ Maturana: Biology of Love - page 103 in text

¹⁵ Maturana: Biology of Love - page 98 in text

¹⁶ Maturana: Biology of Love - page 103 in text

¹⁷ Maturana: Biology of Love - page 87 in text

“Through this process the child develops self and social awareness and self-respect and respect for the other, in self-acceptance and acceptance of the other. At the same time through this process he or she creates the world that he or she lives, and will live, as an expansion of his or her body through his or her relational dynamics. When this primary mother/child relation is not basically disturbed, the condition of loving humanness is directly conserved as a manner of living into adult life. If the mother/child relation is disturbed, but there is at least one other human being with whom the growing child finds total acceptance, trust, and care, the condition of loving humanness can be conserved or recovered through the biology of love.”¹⁸

what are the predominant characteristics that we are conserving in the dynamics of the educational process?

In this way we can understand that it is in the relational dynamics, regardless of gender that the psychic nature of a child is developed. If love, intimacy and cooperation are the essential aspects of the child’s experience, the child that will eventually carry those characteristic as they grow into an adult. The essential questions that arise from this awareness are a.) what are the predominant characteristics that we are conserving in the dynamics of the educational process, and b.) what kind of human being is that producing? By extension we must also ask what kind of society will be created by those individuals?

The patriarchal dynamic produces what Maturana calls political living. This results in changing the basic nature of human relationships. He writes,

“Political existence destroys intimacy, as it is founded on relations of domination and submission, not on relations of love. Whatever trust there is in it, or appears to be in it, is transitory, either because it is hypocritical, or because it is instrumental in a political design.”¹⁹

“As a result, in our historical present the expansion of the patriarchal emotioning, that leads to the utilization of all human relations as political as well as commercial instruments, makes it almost impossible for a child to grow spontaneously in a manner centered in the biology of love.”²⁰

In other words, if children grow up in an atmosphere of dominance and submission it creates a culture of mistrust in which relationships are engendered for the sake of developing control and primacy in a world which is not governed by mutual love and respect.

Can we at least stop to consider if dominance and submission are primary features of our current educational system? Has competition for grades in the race for college admission created an atmosphere that inspires inauthentic actions as students engage in activities that pad their

¹⁸ ibid

¹⁹ Maturana: Biology of Love - page 93

²⁰ Maturana: Biology of Love - page 94

resumes to appear more worthy than another? Do we unknowingly encourage our students in becoming hypocritical performers playing a role of pleasing or deceiving their teachers who hold the power of grading? Are we willing to consider the long-term impact of years of this kind of conditioning? Can we do as Maturana suggests when he writes,

*“In this process, self and social respect, cooperation and mutual trust, and the expansion of intelligence that the biology of love entails, become features of life that require to be reflected upon in order to be realized as desired aspects of the conservation of humanness. That is, we must now create a rational justification for having love as features of the child’s upbringing through the expansion of our understanding if we wish to conserve loving humanness, because love is fading away from the spontaneous world of the child”?*²¹

This is perhaps a radical notion, that love is a necessity and must be a primary feature of the culture of schools. Could we consider that love is necessary fundament, and not just in the hearts of the teachers who engage with their students out of a sense of caring and a desire to help them to a productive life? My assertion is, if we want respectful and loving human beings to emerge from our schools, there needs to be a reexamination of the processes and the relationships derived from those processes by which we engage with our students. That engagement must conserve self-respect and self-love as a primary feature of the learning environment. Children carry the future of our society. Maturana writes,

*human loving
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of the children*

*“The history of human beingness is carried by children, not by adults – even though adults make the present through their living. Children learn to be whatever they become by living with others, and they become adults of one kind or another according to how the adults with which they live, live. It is for these reasons that we claim that the upbringing of a child takes place as a transformation in coexistence, and that human loving humanness will be conserved or lost through the upbringing of the children.”*²²

The ethics of society are formed in the relational experience of children as they grow and engage in their living with adults. One of my favorite aphorisms from Maturana’s work, as stated earlier in this article is the one in which he states, *“A student does not learn mathematics in school. They learn how to live together with a mathematics teacher....My claim is students learn teachers.*

Today there is a great deal of discussion about values and ethics in the learning environment. Maturana indicates the source of ethical behavior is rooted in the choices we make based on love or as he states it on *“seeing the legitimacy of other.”* He states,

“Why and how is it that we modern human beings care about the consequence of our actions? Biology does not care. The cosmos does not care. We are the present of a cosmic

²¹ Ibid - Page 94

²² Ibid - page 98

and biological history that courses without aim, goal, or project. We have happened and nothing in the history that gave origin to us was necessary. We are a result of an evolutionary drift, not the product of a design or purpose. But as the kind of animals that we are as a result of such a history, we care, we have ethical concerns, we see our doings, and we care for their consequence to others or to the biosphere. According to us, this is so because we are loving animals. Love is not good or bad in itself, it is only the relational domain in which social life, trust, cooperation, and the expansion of intelligent behavior takes place.

Ethical concerns, responsibility, and freedom exist only in the domain of love as we live as languaging animals. Ethical concerns, responsibility, and freedom arise only as one sees the other and oneself, as well as the consequences of one's actions on the other or on oneself and acts accordingly to whether one wants or does not want those consequences. In other words, to have ethical concerns, to be responsible, to be free one must see the other in oneself in his or her legitimacy. That is, one must operate as a languaging being in the biology of seeing the other as legitimate other, which is the biology of love. Ethical concerns appear in the biosphere with human existence in language, and they either take place or not; if ethical concerns take place, ethical behaviors can take place.”²³

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The question that arises here is to what extent are the processes and relationships that we live with our students in the learning environment supportive of the seeing the “*other in oneself in his or her legitimacy.*” What happens to that concern in the competition for grades as we pursue access to the institutions of higher learning that are seen as the doorway to prosperity? The pragmatist may say that this prepares the student for the competitive marketplace or toughens them up for life. But if we take a step back and consider how this kind of conditioning impacts what is conserved as a manner of living in the broad social order, it might explain the accelerating loss of ethical behavior in the “winner take all” attitude in the market place as well as in the social and political sphere. Is it possible that we are re-norming the human ethical response by the conditioning forces of our educational system?

Our basic social cohesion depends on ethical behavior. Maturana writes,

“We are not speaking of an ethical imperative. We are speaking of the biology of ethics, of what in our living as human being makes our ethical concerns possible. We do not have to be ethical, but if we live in the biology of love as human beings, we sooner or later begin to have ethical concerns in relation to those other human beings who's living matters to us. We are not recommending love, nor are we recommending ethical behavior, but only if we live in the biology of love and have ethical concerns can we indeed live as social human

²³ Maturana: Biology of Love - page 80

beings who do not become trapped in the culture of domination and submission or in the culture of indifference.”²⁴

Ethical behavior cannot be taught as a subject while the student lives in a social structure that is based on a culture of dominance and submission where there is disregard for the emotional life of the student and where there is a loss of love, care and self-respect. As Maturana states,

“The biology of love, though, is not something that has to be taught because it is still the innate biological fundament of every newborn human child. Indeed, it cannot be taught explicitly, as if it were some specific behavior or value. Rather, the biology of love can only be cultivated, as its existence can only be realized systemically in the epigenesis of a living human being. Love can only be cultivated or denied, and it can only be cultivated by living it.”²⁵

When we lose sight of the important of emotional life of our students, we encourage them to discount their feelings as unimportant or as impediments to their success in the often harsh climate of achievement. Maturana writes,

“As we lose respect for our emotions, we begin to use rational arguments to hide, deny, or justify them. We do so in a path that progressively leads to the negation of the other through manipulation as we become Homo sapiens-aggressans in the expansion of the patriarchal passion for control. We know all this, but we forget it in the delusion of omnipotence through a misunderstanding of intelligence as we think of it as an instrument of control and manipulation. But now that we are aware that our own behavior determines what we are and what our children become, we can choose: do we prefer to conserve a lineage of Homo sapiens-amans or a lineage of Homo sapiens-aggressans?”²⁶

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How we teach and how we think

There is another important area for consideration in understanding the impact of the traditional ways in which we teach and how that affects the thinking and human relationship in our children. The two predominant factors in this consideration are,

1. The isolation of subject areas without concern for how they interconnect with other subject areas.
2. The pervasive practice of assimilation of content through memorization, and constant competitive testing for a predetermined “right answer” in those isolated disciplines.

²⁴ Maturana: Biology of Love - page 82

²⁵ Maturana: Biology of Love - page 120

²⁶ Maturana: Biology of Love - page 83

In our current practices these two dynamics contribute to a narrower way of seeing the world as isolated fragments and not as an interconnected whole. Maturana calls this “*local linear thinking*” or we could say narrow, exclusive thinking that does not include awareness of how the separate aspects of learning interrelate, or awareness of how actions, choices and outcomes in one area impact other areas or the larger whole. We need to become more aware and have concern for the unintended consequences of the mental conditioning that takes place when we fragment learning in the traditional processes of schooling.

This is not to negate the necessity of local linear thinking in much of what we do. Understanding and being aware of local cause and effect is essential to the creation of working models in all disciplines in order to produce desired outcomes. Naturally, in the complex world in which we live, this kind of specialization or narrow focus is an essential feature when we study and understand cause and effect in various disciplines at increasingly detailed levels. Narrowing the scope of our inquiry produces more and more refined solutions to the problems we wish to solve. However, we also need to cultivate what Maturana calls “*systemic analogical thinking*” in order to understand the wider context in which our solutions occur and impact the larger systems of which they are part. Maturana states,

Understanding occurs as we place our knowledge in a wider context that gives it connectedness to a network of systemic relations

“Systemic analogical and local linear thinking are both required to understand. Understanding occurs as we place our knowledge in a wider context that gives it connectedness to a network of systemic relations. Understanding arises in an operation in the emotional domain that releases our hold on local linear thinking.”²⁷

What is largely missing in our current system of education are the processes and relationships that encourage the “*systemic analogical thinking*” necessary to seeing the wider picture that allows for awareness of the ethical and environmental concerns necessary to conserve loving human relationships and a sustainable world. Maturana writes,

“Moreover, by being deluded and enchanted with the power of local linear thinking because of its expansion of our capabilities for technological design and the promise of control of human relations that it seems to offer, we create around our children a psychic space that continuously negates them in the negation of the biology of love.”²⁸

Since children are inherently imbued from birth with a basic loving nature characterized by intimacy, trust and cooperation, at some level they innately aware, consciously or unconsciously of cognitive, emotional dissonance and will have a variety of reactions or responses. The fragmentation of learning into isolated subject areas encourages a disconnection with the interrelatedness of knowledge. This combined with the competitive nature of massive content retention and measurement through testing divides students from each other. This loss of

²⁷ Maturana: Biology of Love - page 128

²⁸ Maturana: Biology of Love - page 127

relatedness to their peers and to the interrelatedness of human endeavor restrains the natural human impulses toward intimacy, trust and cooperation. As this fundament of human relatedness begins to break down, the tendency for competition and control arises. Students are being unknowingly conditioned to focus on their own welfare and lose the emotional, social connection to the welfare of other. This, Maturana describes is a form of betrayal of their inherent nature and a loss of trust occurs.

Loss of trust, one of the primary aspects of the biology of love creates a sense of disconnection or alienation in a child. They may or may not be aware of this consciously but there is a natural drift away from adults who are seen as the authority in a world that does not respect their emotional being, a world that is trying to fit them into to a structure that is incomprehensible to them at this stage of development.

“Due to their Homo sapiens-amans biology, human children grow, one could say, as experts in detecting emotions and emotional contradictions, so that they discover immediately our emotional lies, and when they do so, trust disappears, social life begins to be eroded and eventually disintegrates. Honesty is necessary for self-respect and mutual trust, and therefore, for social life to occur. Indeed, although the biological fundaments that constitute the possibility for our loving humanness are genetic, our realization as such in our anatomy, our psychology, and our behavior is cultural, and loving humanness must be lived culturally for our Homo sapiens-amans biology (genetics, and anatomy and physiology) to be, in fact, systemically conserved in our biological evolution.”²⁹

As a result, we no longer know what happens with our children as they grow socially disconnected in a meaningless coexistence, or as they become unhappy beings with no sense of participation in the world in which they are supposed to be. Nor do we see that we depersonalize them as we project them to a future that is supposed to fulfill our desires, not theirs.³⁰So (often) our children choose to search for their own presence in the present moment through drugs, gangs, or despair. They have lost innocence because they no longer trust.”³¹

Nor do we see that we depersonalize them as we project them to a future that is supposed to fulfill our desires, not theirs.

Trust is essential to human relationships. What we do not trust we must attempt to control. This becomes one of the attractions of *local causal thinking* as a defense against the unreliable emotional experience engendered by loss of trust.

“We modern human beings are emotional animals alienated by the belief that patriarchal local linear thinking allows us to explain and control everything in a linear causal manner, taking us beyond our unreliable emotional nature while expanding

²⁹ Maturana: Biology of Love - page 133

³⁰ Maturana: Biology of Love - page 127

³¹ Maturana: Biology of Love - page 128

our understanding of ourselves. But linear causal thinking does not by itself lead to the expansion of our understanding in general, nor of the understanding of ourselves in particular. Indeed, the understanding of ourselves as human beings requires both systemic analogical and local linear causal thinking. Understanding occurs as we place our knowledge in a wider context that gives it connectedness to a network of systemic relations. Understanding arises in an operation in emotional domain that releases our hold on local linear thinking.”³²

Maturana states,

“Indeed, we claim that human beings belong to an evolutionary history in which daily life was centered on cooperation, and not on dominance and submission. In other words, we claim that we human beings are not political animals, because we belong to an evolutionary history in which the basic emotion or mood was love and not competition and aggression. This is a biological claim, not a philosophical one.”³³

Conclusion

The conclusion of this essay brings us back to the examination of the three questions posited by Maturana,

1. What kind of human beings do we want leaving our schools one day?
2. What are the processes by which those human beings can emerge?
3. How we can cultivate teachers who can facilitate those processes?³⁴

Do we want, curious, empathetic, creative, resilient, democratically, socially and environmentally conscious human beings leaving our schools? If so, what are processes by which those kinds of human beings can emerge from our schools?

This essay calls for a shared reflection to better understand how the processes of schooling are a primary conditioning force in a human life. If dominance and submission are primary features of those processes, we will encourage the flow of our humanness in one direction. If intimacy, trust and cooperation are primary features, we direct the flow of our humanness in another. If we are to affect any change we will first need to examine and understand how the implicit curriculum (the processes and resultant relationships in our classrooms) affect the emotioning/reasoning (the psyche) of our children, and influences how they will live together with each other and with their environment as future citizens. If we fail to reflect on the unintended consequences of our current schooling processes, we will fail to understand how to help our children develop the

This essay calls for a shared reflection to better understand how the processes of schooling are a primary conditioning force in a human life.

³² Ibid

³³ Maturana: Biology of Love - page 50

³⁴ Maturana: From Being to Doing - page 129

loving, relational, systemic awareness of the interconnected, interdependent lives we all live. This will have lasting impact on the flow of our humanness, and consequently our society and the environment upon which we all systemically depend.

In short, “living with teachers” in the processes of learning is an important conditioning force that, for better or worse, helps pattern our childrens’ sense of reality, and shapes their emotional/reasoning behaviors. Maturana writes:

“We become the adults we have been living with. This means: if freedom and self-determined thinking are the goals of educational activity, then we have to live together in a way that is supported by the mutual respect for the autonomy of the other..... The way of life, the manner of living together, shapes and transforms people. If you want to teach autonomy and reflection, you cannot use force as a method but must create an open space for communal reflection in action. There must be no contradiction between goals and means.”³⁵

Can we better understand the connection between our schooling process and how we as human beings relate to each other in the medium of our environment? Are we willing to reflect and consider, if the human beings produced in competitive, dominant/submissive systems are more or less likely to become the citizen that will produce a society that is sustainable? Can we reflect and possibly reconsider the conditioning or context that will allow curious, empathetic and creative citizens to emerge from our schools?

There must be no contradiction between goals and means.

In the current dominant/submissive dynamics of schooling are we unknowingly overwriting the fundamentals of our humanity, which are rooted in intimacy, trust and cooperation? If so, do we understand the impact socially and environmentally of loss of that humanness? Does the kind of conditioning and reward system we offer contribute to a sense of entitlement, mistrust of other, self-protectiveness, loss of curiosity and empathy and desire for control? Does it encourage judgement and dismissal of others who do not measure up?

Can we understand that “not measuring up” in the current educational system may not be a failure of a child’s intelligence as much as the difference in the contexts from which the child arises? Should we not take into account their innate emotional structure, motivational support system, different learning modalities or natural interests? If these are the daily realities they live, a child may not be able relate to our current learning modalities or to the inducements and penalties offered in the traditional classroom.

As has been mentioned, Maturana defines intelligence as “not some specific activity but the general capacity to move in a changing world flexibly and with internal plasticity.”³⁶ In other words, intelligence is defined as a flexible response to context. He states that

³⁵ Maturana: From Being to Doing - page 127

³⁶ Maturana: From Being to Doing - page 137

“What intelligence tests elicit and diagnose is the degree of inclusion in a culture. It is, as I claim, the emotions that determine whether and to what extent we are able to exploit our capabilities and our fundamental intelligence. The dominant emotion modulates intelligent behavior in a decisive manner. Some individuals may be unable to follow because they are scared, and they will behave differently from individuals who are depressed or who are just bored because their interests lie somewhere else. Finally, an enormous spread in the variation in predilections and capabilities arise from the particular situation in which people grow up. Were they loved when they were young? Were they properly looked after? Was there enough food?”³⁷

What intelligence tests elicit and diagnose is the degree of inclusion in a culture

In systems designed to produce conformity from a diverse body of human beings, we often fail to realize the importance of considering the complex nature or how an individual evolves in the medium of their family and cultural upbringing which is deeply coupled with the diversity of their inherent nature.

The third question, “How we can cultivate teachers who can facilitate those processes?” That is now up to us. Can we in our training of teachers develop and nurture the traits that we wish our students to learn as they live with us as teachers? Our awareness, flexibility of mind, caring, patience, love and trust evolve from our own reflections, our practices and our continuous willingness to strive. It is ours to cultivate within ourselves, and hopefully our responsibility to make a significant part of the process in the training of teachers.

This is a call to think more systemically together about the impact of what we conserve in our manner of living with our students, and to reflect deeply on how that will affect the future of the evolution our humanness, the sustainability of our species and the consequences to environment on which we all depend.



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³⁷ Maturana: From Being to Doing - page 136