Somatic Emotional Selection
An Evolutionary Path

Leila Cohn, MA

Abstract

This article presents Stanley Keleman's Formative Psychology, theory and method, as part of the contemporary paradigm of life as an evolving, self-forming, interconnected system. It emphasizes the contribution of Formative Psychology to the understanding of the human process from a bio-psychological and evolutionary perspective and relates Formative theory and its somatic-emotional methodology to neuroscience research findings involving human consciousness and evolution. The article establishes a correlation between Edelman's neural selection and the occurrence of somatic emotional selection within the practice of the Formative method and states that Keleman's somatic emotional methodology stands as an asset to human participation in the process of evolution.

Keywords

Body – Formative Psychology – Human Evolution – Neural Selection – Somatic Psychotherapy.

My first contact with Formative Psychology happened when I read Stanley Keleman's *Emotional Anatomy* in 1986. I first met Stanley in 1988 when I moved to the Bay Area with the specific intention of learning about Formative theory and practice. As a result of this move, I entered a whole new life cycle, personally and professionally, that kept me in California for the next six years until I moved back to Brazil to found the Center of Formative Psychology in Rio de Janeiro in 1995. The Center now stands as a growing community that includes a professional team of nine Formative psychotherapists who continue forming and developing the Center.

The main impact Stanley Keleman´s Formative Psychology had on me was its evolutionary paradigm (Keleman, 1975, 1979, 1985, 1989). Formative Psychology's cosmological vision and biological ground provided me with a fulfilling view of the human being as an ever self-forming living system interacting with itself and with the world around it, moving towards its own growth and maturation. I understood I had encountered a theory and practice grounded on evolution, which could account for human difficulties and diversity outside the scope of psychopathology. This dynamic holographic model based on an embodied reality was a refreshing viewpoint, constituting a sound alternative to the causality model widely present in psychological culture. Furthermore, the understanding of human growth and development from a somatic emotional perspective gave back to the body its humanity and placed the human being in the process of biosocial evolution. From clinical and educational perspectives, this view offers health professionals and educators an alternative to an explanatory approach that looks for the original reasons for problems and ways of repairing the damage. Formative Psychology provides a vision and working model that seek the organizing function of an adaptive shape, and ways to modulate it for the benefit of individual differentiation and growth.

Keleman the Person, the Thinker and the Teacher

Besides the satisfaction of finding a clinical and educational approach with a philosophy that spoke to my heart, I was also impacted by the personal encounter with Stanley Keleman. This article would be crucially incomplete, if it did not mention Keleman´s deep humanity and emotional truth. Stanley Keleman is a man whose powerful presence and keen generosity in sharing himself play an enormous part in the transmission of the teachings. Keleman truly embodies the Formative philosophy he teaches, its pulsing spirit reaching the somatic depths that exist in a place beyond words. I can say that the experience of learning directly from him has had a powerful effect on me, for he models what it means to be Formatively present and to live a Formative life. Those who have been with him personally certainly experienced a living model of Formativeness, which probably acted as a powerful asset for them.

This paper intends to pay homage to Stanley Keleman the creative thinker and the bold pioneer who dared to use his great imagination to formulate a somatic-emotional model for the embodied process called human life. I will also establish a correlation between Keleman's Formative model and Edelman's Neural Darwinism, both perspectives springing from the same evolutionary ground.

Keleman's theoretical and methodological narratives resonate at various levels with our living experience of thinking beings. His embodied phenomenological approach to the human journey and the use of a biological model to describe human experience and development extend boundaries in our understanding of individuality and subjectivity. This model also encompasses a dynamic cooperative relationship between the body and the brain. The body is viewed as the matrix, from which the organism's needs for stabilization and growth are directed at the brain, which in turn will work to attend to the soma's necessities. It not only depicts an original non-hierarchical relationship between body and brain, but it also presents the brain as a major receptive organ. This view reverses the usual order of things according to which the brain is viewed as the commander, and the body, the follower. In Keleman's own words: "The brain is pregnant with the body" (oral presentation, Summer Institute, Berkeley, 2004). This poetic statement also talks about the plastic, malleable and changeable qualities of the brain, described now in neuroscience. The interesting thing is that this model of body-brain relationship was imagined by Keleman before advanced imaging techniques revealed detailed neuroanatomy, as well as the physicality of human consciousness. Stanley Keleman's ingeniousness is delivered by his thinking and by the creative and free nature of his thoughts.

The Body as a Subjective Self–Forming Entity

Beginning in the 90´s—the decade of the brain—neuroscientists have devoted much of their research efforts to linking the so-called mind functions to their physicality. In trying to establish the physical processes of human consciousness, Edelman (2000) wrote that consciousness arises from particular neural processes as well as from the interactions among the brain, the body and the world. Damasio risked a prediction, by 2050 sufficient knowledge of biological phenomena "will have wiped out the traditional dualistic separations of body/brain, body/mind, and brain/mind" (Damasio, 1999, pp. 75). He further stated, "The awe we have for the mind now could then be extended to the amazing micro structure of the organism and to the complex functions that allow such a structure to generate the mind" (Damasio, 1999, pp. 77).

Keleman views the body as an emotional-anatomical continuum of many layers of organization whose architecture and way of functioning compound the human subjective experience. In other words, the body, with its layers of inherited and formed history, stands as the fountain of human subjectivity. The Formative view and language eliminate the mind-body dichotomy and the need for integrating both, once the human organism is seen as an indivisible continuum. Keleman has been stating over the last 40 years that the mind is in the body; it is not that there is no separation between body and mind; it is that there are not two entities. In his language and view, Keleman offers an original narrative for the phenomenon of consciousness as an embodied process: "The whole body is sentient; the cortex, which is part of the body, can localize a general pattern of response; this interaction of the local and general patterns is part of the human experience we call consciousness." [1]

The three authors, Keleman, Damasio and Edelman hold a vision that connects biology to intelligence and links the body to its subjectivity. In this view, the brain is an evolutionary organ with a growing cortical layer as an expression of the body's own process of evolution. It involves the comprehension of the relationship between the soma and the brain as mutually cooperative, and provides a vision of the human body as an intelligent, self-interacting living system (Keleman, 1985; 1987; Edelman, 1992; 2000; Damasio, 1994; 1999).

Formative Psychology:
A Multi-Layered Theory Encompassing Human Complexity

Formative Psychology belongs to our Zeitgeist, and as such, it is part of a larger thinking pattern inside the contemporary paradigm of life as a complex evolving interconnected system. This idea is present in distinct fields in the works of several other authors such as Atlan, Capra, Damasio, Edelman, Kauffman, Maturana, Prigogine and Varela. Keleman's Formative theory (1979, 1985, 1994, 1999) constitutes a complex multi-layered organization, a thinking model that overlaps and interconnects layers of knowledge that include biology, anatomy and physiology, psychology, philosophy, mythology, anthropology and history. Formative Psychology successfully integrates several levels of the human phenomenon—biological, psychological, socio-historical—into a consistent body of theory. Its pulsatory anatomical view links the smallest layers of cellular organization to the large functional shape of the human being as an emotional-thinking-historical organism. This intricate interconnected web of sub-systems accounts for the dynamics of a complex, mutable organization existing in a complex changing world. The Formative model crosses through all layers of human existence and integrates them as a socially viable, coherent and ordered system. The social collective, encompassing human culture and history, is itself a pulsating body constituting another layer of organization in the life net. Keleman's view of subjective experience as a phenomenon that springs from an anatomical reality breaks new ground in the comprehension of human existence.

The Creation of a Somatic Language

Stanley Keleman´s Formative theory offers cohesion, consistency and solidity for the understanding of the human situation, for developing ideas about it, as well as for problem solving within it. Formative Psychology encompasses a body of theory, a working methodology and the development of a somatic language to account for the proposed model. The existence of an appropriate somatic language stands as an essential part of a solid conceptual model. It provides a deeper understanding of the Formative theory and method and widens the possibilities of somatic thinking. The creation of a somatic language also allows for allowing multidisciplinary professionals to function within the framework of a somatic logic. It is through somatic language that professionals can organize a treatment within the grounds of the Formative perspective. This asset has been of utmost importance for clinicians working somatically, for it meant an epistemological cut that put an end for the need of constantly borrowing language and concepts from other theoretical models. In the field of clinical psychology, it made it possible for somatic psychotherapists to remain within the framework of the somatic-emotional view when dealing with clinical situations on a daily basis. The somatically based Formative language is a legacy Keleman has given to people who share the view of the human being as a subjective embodied process deeply rooted in an evolutionary journey.

[1] Personal email conversation, 2005. The use of this quote was authorized by Stanley Keleman in May, 2006.

The Formative Methodology: An Evolutionary Practice

Being a self-forming system that contains a brain, the body selects behaviors that provide for its permanence and growth in the biosphere. The brain, also a selectionist self-forming system in its own right, interacts with its matrix, the body, and strengthens the kind of neuromotor connections that will support the growth of the body and the corresponding selected behaviors that sustain the necessary diversity and adaptive connectivity (Edelman, 2000). The voluntary capacity of the human cortex allows the organism to influence action and manage behavior. It grants the individual the possibility of voluntary self-regulation, affecting anatomy and behavior, which constitutes an asset to her own shaping and to that of the world around her.

The somatic-emotional methodology developed by Keleman (1987) is based on neurophysiological and anatomic principles. It draws on the body and brain properties of plasticity and variability to reorganize anatomy through the practice of voluntary muscular effort and consequent behavioral selection. The Formative method works with the reciprocal interactions between the body and its brain to ensure the possibility of managing behavior. By behavior, we mean a motile anatomic shape generating emotional, cognitive and imaginative experiences. Formative work consists of using voluntary cortical-muscular effort to modulate the intensity of a muscular act and create distinct sub-organizations in inherited and formed behavioral patterns. These sub-organizations—distinct somatic-emotional shapes, each generating distinct subjective experiences—constitute a variety of adaptive possibilities to choose from, a new repertoire of differentiated behaviors (Keleman, 2000-06). The creation of a variety of non-identical muscular intensities generating distinct but similar behavioral possibilities, enhances the adaptive opportunities of an organism facing unforeseen environments. For example, we can think of a person trying to modulate an impulsive pattern of behavior. When working with the Formative methodology, this person will voluntarily increase and decrease the muscular intensity of the impulsive posture in controlled separate steps. Each step along the continuum elicits a differentiated behavioral (emotional-anatomic) possibility, with a corresponding experience. The repetition of the practice, voluntarily coming and going in steps along the continuum of impulsivity, will provide the person with a range of possible intensities within the impulsive act. The possibility of disorganizing a few degrees of intensity in the impulsive pattern may grant the individual a satisfying alternative to the original act. If the selected behavior holds more adaptive possibilities for the organism in a given environment, it establishes its permanence and transmission throughout the biological network. The previous description is consistent with Edelman's statement that "neuronal group selection in global mappings occurs in a dynamic loop that continually matches gesture and posture to several kinds of sensory signals. In other words, the dynamic structure of a global mapping is maintained, refreshed and altered by continual motor activity and rehearsal" (Edelman 2000, pp. 96).

According to the brain properties of value and degeneracy[2] described in Edelman's Theory of Neuronal Group Selection (TNGS), the selection of a particular behavior that proved to be rewarding in a given situation will activate certain value systems in the brain and lead to the selection of a number of circuits appropriate for performing that action (Edelman, 2000). These different circuits within the degenerate pool will each create a similar result, leading to the repetition or variation of that act. In our example, we can think that the Formative practice will produce a variety of possible alternative behaviors along the impulsive continuum, each of them generating a number of circuits appropriate for its degree of intensity. Therefore, we can say that the creation of distinct sub-organizations within a given pattern of behavior, will significantly multiply the number of corresponding degenerate circuits in the brain, which will in turn lead to the repetition or variation of those acts. In terms of a selectionist system, this means greatly enhancing successful adaptive possibilities. In this sense, we can state that the capability of using voluntary muscular effort towards self-management and regulation constitutes a powerful evolutionary tool.

Somatic-Emotional Selection and Neural Selection

In his Theory of Neuronal Group Selection, Edelman posits the idea of neural evolution as a part of human somatic evolution resulting in the sophistication of cortical interconnectivity and complexity (Edelman, 2000). As mentioned above, Keleman's Formative methodology elicits the human ability to self-regulate and self-shape through the practice of voluntary cortical-muscular effort (Keleman, 1987, 1989, 2000-2006). The method works with the voluntary cortical ability to enhance behavior differentiation and create new synaptic connections. The exercise of self-influence and self-regulation through voluntary effort is "an organismic force of personal and collective evolution" (Keleman, 2005, p. 3). Both Edelman and Keleman hold the vision of the body as a complex interconnected system evolving towards its own organization and growth.

We can now outline the relationship between the process of neural selection and behavioral (cortical-muscular) selection. Edelman's principle of brain selectionism points to the brain property of selecting certain neural circuits out of billions of possibilities (developmental selection) and strengthening its synapses through experiential selection and reentrant processes. Keleman's Formative methodology points to the organism's property of somatic-emotional selection—that is, behavioral selection, based on the individual's capacity to generate other layers of cortical-muscular organization through the regulation of voluntary effort. The creation of distinct degrees of muscular intensity within a defined organization generates new synaptic connections, allowing for the occurrence of somatic selection, since with the Formative work, the person builds a repertoire of behavioral possibilities to choose from. The repeated practice of the selected sub-organizations containing defined muscular intensities constitutes new emotional-anatomic

[2] Degeneracy is the ability of structurally different neuronal pathways to perform the same function or yield the same behavioral output. Values are systems triggered by salient sensory events that are capable of constraining synaptic plasticity.

realities. These differentiations generate the strengthening of matching synapses, which will consolidate new neural circuitry through reentrant processes.

In his effort to establish the physicality of consciousness, Edelman (2000) states that perceptual categorization usually emerges because of selection during actual behavior in the real world. He points to the fact that neuronal selection and the resulting strengthening of certain synaptic circuits make up a dynamic event based on the interactions between body, brain and the world. He also refers to memory as a procedural constructive re-categorization involving continual motor activity. In this sense, we can affirm that, with the Formative methodology, the possibility of selecting a behavior out of a neuromotor continuum of sub-organizations will influence the selection of neural circuits whose reentrant activity directly affects memory and perception. The repeated practice of the Formative exercises using cortical-muscular effort provides for the creation and selection of new behavioral possibilities; these new pieces of behavior will in turn create and strengthen new circuitry in the brain, which will then influence the consolidation of such newly created behavior (motor activity). Edelman´s model of non-representational memory states that each member belonging to a degenerate set of circuits activated at distinct times is also connected to other networks (Edelman, 2000). These interconnections give rise to the associative properties of memory, since an act can trigger a memory, an image can produce an act, or a word can trigger a narrative. This can be confirmed by empirical observation of somebody working formatively in a clinical or educational situation. The practice of regulated muscular-cortical effort along a behavioral continuum generates emotional experiences and memories during the occurrence of that act. The activation of a memory along with the modulation of the muscular intensity associated with it provides for the reorganization of the emotional experience as well as for its corresponding narrative.

The compatibility of the Formative methodology with Edelman's TNGS makes it stand out not only as a practical educational and therapeutic application of such findings, but also as a palpable way to deepen the use of our evolutionary gift, namely the capacity to exert voluntary muscular effort. Thus, the practice of the Formative methodology amounts to a more active participation in our own evolution, charging us, as ethical beings, with the responsibility for the organization of our lives and the forming of a communal life to which we contribute.

Present and Future Developments

The applicability of the Formative methodology has given rise to a large spectrum of possibilities worldwide, both from clinical and educational perspectives. Here, at the Center of Formative Psychology of Brazil, in Rio de Janeiro, we have been running thematic groups embracing a wide range of life situations and challenges. The themes cover: (i) Compulsion and Containment; (ii) Forming Constructive Relationships; (iii) Women and Sexuality; (iv) Bodying Life After 60; (v) Work and Quality of Life; (vi) Young People Forming an Adult Life; (vii) Adolescence and Transformation; and (viii) Contemporary Womanhood—cycles and rhythms of maturation. We have also established a few working partnerships with hospitals and mental health institutions and hope to develop research partnerships in the near future.

The reassuring news is that an international Formative community has been blooming over the last decades, and hopefully we, from Brazil and from many other corners of the world, will be able to strengthen the network through a dynamic reentrant web. Our interconnection will provide new means of exchanging knowledge and developing research that will widen the reach of Formative philosophy and practice.

I take here the opportunity to publicly express my deep gratitude for having received the gift of learning about the Formative theory and methodology, as well as for being able to drink directly from the source.

References

Atlan, H (1992). *Entre o Cristal e a Fumaça.* Rio de Janeiro: Jorge Zahar Editora.
Capra, F. (1975). *The Tao of Physics.* Boston: Shambhala Publications.
Damasio, A. (1994). *Descarte's Error.* New York, NY: Grosset/Putnam.
————. (1999a). *The Feeling of What Happens: Body and Emotion in The Making of Consciousness.* New York: Harcourt Brace.
————. (1999b). How the Brain Creates the Mind. *Scientific American,* December 1999, 281: 74-79.
Edelman, G. (1987). *Neural Darwinism: The Theory of Neuronal Group Selection.* New York: Basic Books.
————. (1989). *The Remembered Present: A Biological Theory of Consciousness.* New York: Basic Books.
————. (1992). *Bright Air, Brilliant Fire: On the Matter of the Mind.* New York: Basic Books.
Edelman, G. and Tononi, G.(2000). *A Universe of Consciousness*. New York: Basic Books.
Kauffman, S. (1995). *At Home in The Universe: The Search for the Laws of Self-Organization and Complexity.* USA: Oxford University Press.
Keleman, S. (1975a). *Your Body Speaks Its Mind.* Berkeley, California: Center Press.
————. (1975b). *The Human Ground.* Berkeley, California: Center Press.
————. (1979). *Somatic Reality.* Berkeley, California: Center Press.
————. (1985). *Emotional Anatomy.* Berkeley, California: Center Press.
————. (1987). *Embodying Experience.* Berkeley, California: Center Press.
————. (1989). *Patterns of Distress.* Berkeley, California: Center Press.
————. (1994). *Love: a Somatic View.* Berkeley, California: Center Press.
————. (1997). Being an Adult: Age and Identity (Unpublished paper, Summer Institute). Berkeley, California.
————. (1998). Dreams and Deepening the Adult. (Unpublished paper, Winter Institute).Berkeley, California.
————. (1999). *Myth and the Body: A Colloquy with Joseph Campbell*. Berkeley, California: Center Press.
————. (2000). Taking Charge of Your Life. (Unpublished paper, Summer Institute).Berkeley, California.
————. (2001). Taking Charge of Your Life. (Unpublished paper, Summer Institute).Berkeley, California.
————. (2002). Taking Charge of Your Life. (Unpublished paper, Summer Institute).Berkeley, California.
————. (2003). More and Less Voluntary Muscular Effort. [Lecture]. Berkeley, California.

————. (2004). Formative Practice. (Unpublished paper). Dominican College, San Rafael, California.
————. (2005). A Frontier of Human Experiencing. (Unpublished paper). Berkeley, California.
————. (2005). Taking Charge of Your Life. (Unpublished paper, Summer Institute).Berkeley, California.
————. (2006). Dreams and Body. (Unpublished paper, Winter Institute). Berkeley, California.
Maturana, H. Varela, F.A. (1984). *Árvore do Conhecimento.* São Paulo: Palas Athena.
Pessis-Pasternak, G. (1992). *Do Caos à Inteligência Artificial.* São Paulo: UNESP.
Prigogine, I. (1984). *Order Out of Chaos*. New York: Bantam Books.

Biography

Leila Cohn, MA, is a licensed psychologist in Brazil, founder and director of the Brazilian Center of Formative Psychology, in Rio de Janeiro, where she teaches Formative Psychology to professionals and holds a private practice. She has worked with Stanley Keleman at the **Center for Energetic Studies (CES)** in Berkeley, California, for six years (1988-1994), and has been a member of CES Professional Group since 1992. Email: lcohn@psicologiaformativa.com.br