

Communication

# Natural Systems Thinking and the Human Family

Daniel Papero <sup>1,\*</sup>, Randall Frost <sup>2</sup>, Laura Havstad <sup>3</sup> and Robert Noone <sup>4</sup> 

<sup>1</sup> The Bowen Center for the Study of the Family, Washington, DC 20007, USA

<sup>2</sup> Living Systems, 209-1500 Marine Drive, North Vancouver, BC V7P 1T7, Canada; randy.frost@shaw.ca

<sup>3</sup> Programs in Bowen Theory, 120 Pleasant Hill Ave N., Sebastopol, CA 95472, USA; lhavstad@sonic.net

<sup>4</sup> Center for Family Consultation, 820 Davis Street, Suite 504, Evanston, IL 60201, USA; bobnoone@comcast.net

\* Correspondence: dvpapero@comcast.net or dvpapero@thebowncenter.org; Tel.: +1-202-965-4400

Received: 2 April 2018; Accepted: 30 May 2018; Published: 1 June 2018



**Abstract:** Broadly speaking, natural systems thinking is defined as a way of thinking that endeavors to conceptualize the functioning of living organisms as dependent on predictable forces at work within and around them. Systems concepts help to bring the function of those variables and life forces into better view. Psychiatrist Murray Bowen over the course of several years and a major research project at the National Institute of Mental Health (NIMH) developed a theory of the family as a system. He considered his theory a natural systems theory, “... designed to fit precisely with the principles of evolution and the human as an evolutionary being” The human family system, a network of relationships, linking each family member to every other, responds dynamically to its environment and the conditions to which all members must adapt. Each family member’s behavior influences that of every other to some degree. Although ideas of a general system theory and cybernetics were developing at the same time, Bowen reported that he knew nothing about those ideas at the time he developed his thinking. He believed that his systems orientation derived from his study of systems in nature and not from the “systems thinking” of the period. An emerging systems paradigm in biology and evolutionary thinking focuses on collective behavior and appears consistent in principle with Bowen’s thinking about the family. The collective behavior of the family unit cannot be understood by looking at the characteristics of the individuals who comprise it. The human family presents a highly integrated, interactive system of adaptation. Its roots extend along the path of hominid evolution and share common elements with other evolved collectivities. The complex development of the human brain appears to have co-evolved with the interactional processes of the family. The Bowen theory provides the potential for an integrative theory of human behavior reaching beyond the focus on the physiology and psychology of the individual to the operation and influence of the family system. Such an integrative theory can offer broader explanatory and investigative pathways for understanding physical, emotional, and social problems as they emerge in human activity.

**Keywords:** family; family system; natural systems thinking; Murray Bowen; integrative theory

## 1. Introduction

Systems thinking represents an emerging paradigm in the life sciences. Rather than focus on the functioning of individual parts that make up a larger whole, systems thinking looks at the way in which the parts interact with one another to create the larger whole, and how the larger whole, in turn, regulates the parts which make it up. The back and forth interaction between the parts and the whole is observable and predictable in living systems. Systems thinking focuses on the facts of how the parts of a network interact and under what conditions the patterns of interaction change. Murray Bowen, a family psychiatrist and researcher, applied systems thinking to the human family when he observed, “The family is a system in that a change in one part of the system is followed by

compensatory change in other parts of the system” [1] (pp. 154–155). Systems thinking in the natural sciences has the potential to lead to the formulation of natural systems theories that can predict the functioning of biological units under specified conditions, including the way the unit is influenced by the larger systems of which it is a part and also by its subsystems.

In this article, several examples of natural systems are described as a context for introducing the family as a natural system. We describe the co-regulation of the individual and the family system as conceptualized by Bowen in his theory of the family as an emotional system [1]. We propose a few ideas about the potential value of this view of the family as a natural system to contribute toward progress in science and in addressing human problems in a changing world.

## 2. Systems Thinking and Natural Systems

The study of all forms of life has inevitably led to the observation of interactive processes at play both within and between them. The conceptualization of such observations requires some form of systems thinking. As molecular biologist James Shapiro writes “The science of the 21st Century deals with the interactions between multiple components of complex systems, ranging from aggregates of elementary particles to the behavior of the largest structures in the cosmos [2] (p. 145)”. The observation of interactive processes occurring from the level of the genome to ecosystems has led to a range of discoveries operating in complex living systems such as those cited below.

Such interactional processes act reciprocally. Two or more variables influence one another as they interact, mutually influencing and modulating each other. For example, at one time gene expression was viewed as a uni-directional process of DNA → RNA → proteins. It is now known that the genome interacts with and can be modified by the cellular and other environmental systems. Research over the past several decades has established that cells have proofreading and repair systems to correct errors when DNA replicates [2].

The emerging field of social genomics has discovered certain types of genes subject to social regulation [3]. Pathways between these socially sensitive genes and neural and endocrine systems influence adaptiveness. Parental care of offspring during the perinatal period can regulate the expression of genes that influence both parenting and the stress reactivity of the offspring across its lifetime. These effects continue for the next several generations [4,5]. In the human, individual genomes operate differently depending on the presence of other people and how they are perceived [6]. Threat and even the perception of threat can influence the expressions of genes related to health and illness. As a result, reciprocal interaction in a family can affect the expression of genes related to the health and illness of every family member.

For much of the twentieth century, the endocrine and immune systems were believed to function autonomously. The discovery that these systems express similar interactional neuropeptide and hormonal mediators as well as receptors for these ligands and cytokines led to the further discovery that they represent a highly integrated and interactive system. Understanding the ways in which the nervous, endocrine, and immune systems communicate with one another has led to important new knowledge and new hypotheses about the pathways through which stress impacts adaptive behaviors involved in selfregulation [7,8]. Recognition of the mutual interaction of these major physiological regulatory systems has led to increased understanding of the complexity of such systems.

The study of ant behavior by Deborah Gordon led to the observation that the colonies represented complex adaptive systems that could not be explained by the behavior of the individual ants. It is the interactions among individuals which determine the functioning and morphology of the colony’s members. She writes “... over the last 15 years, it has become clear that many biological systems are regulated by networks of interaction among the components, from genes to individuals. It is colonies, not individuals, that behave in a predictable way [9] (p.46)”.

The examples cited above represent only a few of the many discoveries from the observation of interacting entities that had previously been viewed as separate but later determined to be co-regulating components of larger wholes.

### 3. Co-Evolution of the Brain and the Family

The shift from focusing on individual entities such as the gene to observing their functioning as interactive components in more complex systems led to the discovery of regulatory processes that could not be observed with a focus on the entities themselves. Observing the brain and the family as they evolved provides a basis for understanding the family as a natural system that regulates and is regulated by its individual members.

Natural systems thinking considers all living systems products of evolution that continuously adapt to their environment. The need of living systems to maintain a stable internal environment amidst adaptive change has resulted in increasingly complex regulatory systems to insure the integrated stability essential for survival. The evolution of nervous systems and the brain allowed the integration of more complex multicellular creatures into single organisms with an increased capacity to adapt to a wider range of environments. For most of human evolution the family has consisted of large extended families, multiple caretakers of infants, and a wide range of social interactions for the developing child. The rapid expansion of the neocortex in the hominid line during evolution may reflect the selective advantage it provided in adapting to the social complexity of life in large clans [10].

The co-evolution of the family and the brain, building on the maternal/offspring attachments of our mammalian ancestors, involved profound adaptations in the hominid biology [11]. The development of the human brain requires a prolonged period of dependency on parents and family members. The development of the neocortex occurs largely after birth. Doubling in size in the last half million years, the human brain evolved in the context of an evolving family interactional system. The human is the only great ape to exhibit cooperative breeding that involves an increase in the level of social tolerance, greater responsiveness to social signals, and the active parental care of infants by others in the larger group. It is posited that the cooperative care by fathers and other family members, i.e., grandparents, allowed for the prolonged period of development for offspring, as well as a more complex social environment requiring increased intelligence, such as theory of mind, for successful adaptation. As neuroscientist John Allman [12] writes: "... the development of the brain to the level of complexity we enjoy—and that makes our lives so rich—depended on the establishment of the human family as a social and reproductive unit (p. 2)".

### 4. The Bowen Theory

From 1954 to 1959, psychiatrist Murray Bowen led a remarkable research project at the National Institute of Mental Health (NIMH) in Bethesda, Maryland. Entire families with a schizophrenic family member came to live in the Clinical Center for varying periods of time. The researchers observed the families around the clock and kept detailed notes of all interactions. Quickly the field of observation expanded to include the hospital staff as well in their engagements with various family members and with the family as a whole. In a sense Bowen conducted a field study of the human family, recording the ebb and flow of its processes from moment to moment.

#### 4.1. The Family Emotional System

Bowen proceeded inductively, drawing upon his pool of observational data to formulate theoretical propositions. He quickly realized that the behavior of any given family member is linked to the behavior of other family members. The family behaves as a whole, a unit, analogous to an organism. Deep emotional connections link family members to one another. The emotional connection finds expression in sequences of interactional behavior (patterns) that emerge and recede in conjunction with levels of anxiety and stress in family members. For example, when one person moves toward dysfunction, another appears to increase his or her functioning in compensation. When one person becomes upset, another steps in to attempt to calm things down.

Bowen had discovered what he came to call the family emotional system (FES). Family members appear connected and co-regulated. Within the emotional system, family members display an exquisite

sensitivity to one another. They exchange interdependent feeling states and reveal instinctive emotional reactivity to one another. Interconnected cycles of emotional reactivity produce emerging and receding interactional sequences linked to stress and emotional tension in various relationships. As a part of the FES, family members participate in a perceptual framework held in common. The family psychological fusion includes sets of perceptions and interpretations of one another, of the external environment, and notions of what is to be feared and of how to respond when threatened. In the FES emotion provides motivational energy to family members that is expressed in relationship interactions.

#### *4.2. The Balance of Individuality-Togetherness Forces in the Family*

Bowen proposed that individuals in the family continuously respond to two powerful instincts or forces. The first is to be an emotionally autonomous individual, free from the constraints of relationships to pursue one's own goals and plans. The second is to be connected to others and a part of the group. He called these pressures the "togetherness-individuality forces" [1] (p. 277). Each individual attains a balance between these two forces for oneself. Each family also reflects a broader family balance of these forces. When disturbed, re-balancing or re-stabilizing mechanisms can be observed to come into play to support and restore the balance. These compensatory mechanisms can be likened to the allostatic mechanisms of the organism. They appear to redistribute quantities of anxiety and stress within the system.

The constant pressure on the family to adapt to changing conditions affects the togetherness-individuality balance. Bowen observed that as anxiety and stress increase, family members increase the pressure they put upon one another to remain connected, to see and respond to the challenge in the same way, and to put the family well-being ahead of one's own welfare. In the face of increased togetherness pressure, individuals react emotionally without careful thought. Some give up portions of their individuality in order to comply with the demand for connection and unity. Others may rebel. Yet others may withdraw silently. If prolonged, the family readjusts with a ratio of togetherness to individuality that becomes the new norm for the system.

#### *4.3. Stress and the Level of Differentiation of Self*

Bowen observed that individuals vary in their ability to function when stressed. Some are able to maintain careful thinking they use to guide behavior when pressured. They appear able to maintain their cognitive skills when stressed. Others appear to lose their ability to regulate themselves and rely automatically on instinct or emotion for direction. He proposed a theoretical scale of differentiation of self, placing individual variability in self-regulation and ability to maintain cognitive functioning when stressed on a continuum from those with the least to those with the most ability. The balance of individuality and togetherness reflects the level of differentiation of self. Higher levels of differentiation have a more equal balance between the two forces while lower levels are tilted more toward togetherness.

The level of differentiation of self reflects for any given person the integrated developmental trajectories of agency and autonomy, competency, and maturity. It finds expression in the person's development of principles used to guide behavior, in the ability to regulate behavior in the pursuit of goals, in his or her tolerance for and ability to manage anxiety, stress, and fear, and in the ability to maintain contact with important other people who may have different goals and objectives from his or her own.

The interplay of levels of stress and differentiation of self produce the dynamism observable in human families. Tension (a product of individual and interpersonal anxiety and stress) can best be understood as a load, drag, or strain upon the capability of the family system to maintain itself and adapt to changing conditions. As tension increases in a particular family, the family system responds with set patterns of individual and interactional behavior that appear and recede with stress conditions. These patterns appear to redistribute quantities of anxiety and stress within the system.

Vulnerable individuals take on or embody greater amounts of anxiety and stress than less susceptible family members. The more vulnerable family members become those most likely to develop a physical, emotional, or social symptom.

Anxiety and stress levels wax and wane both individually and in the family system. As they go up and down, tension levels rise and fall with them. As tension increases in the family system, behavioral patterns noted above emerge that appear to reflect the tension while simultaneously limiting its effects. Families appear to vary in the amount of tension chronically present in the family system. Some families have little, some a great deal. A chronically tense family faces current challenge with less reserve capacity to adapt.

#### *4.4. Relationship Patterns in the Family Emotional System*

##### *4.4.1. Patterns Involving Two People*

Conflict, distance, and a pattern Bowen described as an “over adequate-inadequate reciprocity” [1] (p. 27) wax and wane, generally within the marital pair in a nuclear family unit. For example, in a particular family system, one relationship (a marital pair, a parent-child duo, a sibling pair) appears to be most sensitive to rising tension. As the tension climbs, the sensitive relationship may display more interpersonal friction. Or they may withdraw from one another, avoiding and not speaking to one another. The patterns of conflict and distance may alternate in the pair. Periods of intense conflict may cycle recurrently with periods of withdrawal. The over adequate-inadequate pattern describes the interlinked behaviors of two people. One functions more competently for the dyad, while the other accepts the inadequate position in order to avoid the discomfort of interpersonal conflict. The more adequate appearing individual appears to gain emotional strength from the posture in contrast to the less adequate person who appears to yield strength.

##### *4.4.2. Triangles*

Multi-sided relationships beyond the dyadic take on repetitive patterns of a three-way interaction known as triangling. The dynamical repetitive nature of such recurring patterns serves to create a structure or order for family interaction that operates in a predictable fashion beneath the sometimes turbulent surface of family relationships. Triangling appears in a relationship network as tension develops between two individuals. When that tension exceeds the person’s ability to maintain differentiation of self, he or she predictably moves to involve a third person. Within the family the third person chosen is one who has emotional significance to the tense twosome. For example, as tension mounts between siblings in a family, typically one of the siblings will move toward a parent with a complaint or story about the other child. The movement occurs with a communication to the third about the difficult other person or about the difficult relationship. The communication includes content (the story being conveyed) and emotion (a valence or charge the communicating individual injects into the communication). For example, the child attempting to involve the parent presents his or her tale with a whining, complaining voice tone, stressed countenance, and a quality of demand that the parent finds difficult to ignore.

With the involvement of the third, the anxiety and tension between the original two now can move among three relationships instead of the original single one. The initiator of the triangling move now has an ally in the parent, and the tension shifts to the relationship between the second child and the parent. The pattern can shift again, with the alliance reforming between siblings and the parent again placed in the outside position. It can shift yet again, leading to a closeness between the second child and the parent, leaving the original child who complained to the parent in the outside position. The triangle allows stress and tension to shift among the various relationships, fending off the stress-based impairment of any particular person. When tension decreases overall, the patterns of the triangle recede as if dormant, emerging again when tension inevitably increases.

Predictable movements occur within the triangle. When the tension between two is high, one of the two will attempt to attain the outside position and involve someone else in the tension position of the twosome. For example, when tension develops between a parent and a teenager, the teenager can complain to the other parent about the situation. This complaint can transfer the tension to the relationship between the parents, leaving the teenager in the outside position and relatively free from the tension between the parents. When the relationship system is relatively calm, the outside position is less comfortable, and the outsider will make some effort to draw another out of a perceived closeness with a third and create a new close twosome with him-or herself. For example, a daughter sensing an outside position with her mother can gossip with her mother about the mother's sister, her aunt. Mother and daughter form a close temporary alliance focused on the shared perceptions of the aunt. Tension now shifts to the relationship between the aunt and the mother. There are myriad variations of these basic triangling patterns that can be observed to predictably occur and reoccur in a particular family in conjunction with levels of tension. When the effects of anxiety, stress and ultimately tension cannot be managed within a single triangle, one of the threesome approaches a fourth, creating an exponentially larger set of triangles through which various inside and outside positions allow the effects of the tension to be managed with as little impairment as possible to any given person.

#### 4.4.3. Family Projection Process

An important triangle involves parents and a child. Among a group of siblings, generally one child appears to be more emotionally involved with the parents than the others. That child monitors tension in the parents, responding to increases in that tension with shifts in behavior that draw the worried attention of the parents. The parents, equally attuned to the child, focus anxiously on the child. In that worried focus, the parental tension decreases as the parents appear to cooperate in order to address the "problem" in the child.

For example, a mother of three worries frequently about her oldest child, a son. She perceives him as less able to look after himself and in need of her guidance. She and the father, who shares the viewpoint, attempt to remove challenges from the son's path, fighting his battles for him, interpreting his actions to others, attempting to prop him up and shield him from distress and from failure. The son reciprocally presents himself as frail and incompetent, reinforcing the parents' perspective. The parents see the other two children as more robust and competent, and they have less worry about their development and life choices.

The relatively fixed nature of this particular triangle constrains a child's separation from the parents. The child in this position emerges from the developmental process with a less well-developed level of differentiation of self than his or her siblings. Bowen singled out this particular triangle as a central mechanism in the transmission of varying levels of differentiation of self from parents to children and called it the family projection process. Said somewhat differently, differential parental involvement with their children transmits varying levels of differentiation of self to the next generation.

#### 4.4.4. Cutoff and Contact in the Multigenerational Family

A broad pattern concerns the connection between generational units in the extended family. The connections between parents, their grown children and their grandchildren reflect the experiences of the family system over time. The degree of connection between a nuclear family and its extended families appears to play an important role in the functioning of a nuclear family [1]. Families vary significantly in the degree of connection maintained with their extended families. Some are in good contact broadly across generations. Others maintain infrequent and limited contact with duty visits occasionally. Yet others display full cutoff with no contact whatsoever. Where families retain good connection and contact between generations, nuclear families appear to develop fewer dysfunctions or symptoms than in families where connection is weaker [13].

#### 4.5. *The Effects of Stress on Relationship Patterns*

Much like the predetermined movement sequences of a dance, these patterns emerge and recede in the family marking surges in stress and anxiety. Some appear and shift rapidly in a dynamical kaleidoscopic fashion. Some patterns become fixed, losing their flexible response capability. As patterns become more fixed, participating family members appear more susceptible to the development of symptoms. With study and experience, an observer can predict the emergence of sets of reciprocal patterns within a specific family. While the issues or challenges (content) of the family shift across time, clinical observations suggest that the response patterns (process) appear to repeat in their linkage with varying degrees of tension in the family.

#### 4.6. *The Clinical Approach*

The clinical efforts derived from family systems theory aim to assist the functioning of the family unit and not simply the behavior of a symptomatic individual. The clinician and the family work to shift focus from the individual family member to the context and processes of family relationships. Families are encouraged to observe first how the family system behaves and the conditions of that behavior. Who is involved, where does the interaction occur, what happens, and when does it happen? Facts become important, and people work to separate factual information from opinion and belief.

Motivated family members begin to identify reciprocal and repetitive patterns of interaction in which a particular symptom or difficulty is embedded. The family member attempts to recognize and slowly modify his or her own automatic participation in that pattern. He or she works to remain present in the tense relationships by managing his or her own emotional reactivity to others. He or she develops plans for the management of self in family process and to follow through on those plans. Small sustainable changes in one's own functioning become the goal. Such small shifts appear to have long range effects on the functioning of the FES.

Family systems therapy, based on this model, brings the potential of natural systems thinking about the family to the domain of psychiatry and the helping professions. The principles and method generalize to other large groups and organizations where consultants and coaches attempt to apply systems thinking to their work.

### **5. The Potential of Natural Systems Thinking for the Human Condition**

#### 5.1. *Principles of Functioning in the Family System and Other Natural Systems*

Natural systems thinking in the Bowen theory has advanced our understanding of the family as an emotional system. It has illuminated how the family emotional system produces problems of health, behavior, and relationships. Principles for guiding behavior have emerged from this systems view to ameliorate the emotional and behavioral processes in the family that produce problems that originate in the family. The principles of how the family emotional system functions also appear in patterns of functioning in other natural systems. It is hypothesized that the family system and how its co-regulation of parts and the whole could serve as a model for scientific theorizing and research into other natural systems beyond the family. Knowledge of human systems could benefit in turn from what is learned about what is the same and different in other natural systems. This is what is referred to as natural systems thinking and it is consistent with Bowen's vision for a vibrant science of human behavior that could guide progress in psychiatry, medicine, and other applied disciplines.

Bowen identified a predictable relationship between how the family unit functions and the adaptiveness or level of functioning of each of its members. When similar processes between the social group and its members are observed in other natural systems it contributes to the progress in science that E.O. Wilson calls consilience. Consilience occurs when observations "jump together" across the boundaries of scientific disciplines and become the basis for a solid theory that integrates existing knowledge to provide a strong foundation for ongoing investigation and discovery [14]. The evolutionary biologist Ernst Mayr wrote that scientific progress is based more on progress in

conceptualization than it is on new facts [15] (p. 23). Along this line, Bowen believed that schizophrenia and severe emotional illness would not be fully understood until the biological and social science disciplines could all be understood within a single frame of reference.

Bowen also believed the study of living systems would lead to an overarching natural systems theory ([1] p. 46, p. 354 and [16]). He went on to bring together two broad classes of behavior recognized in psychology and the behavioral sciences—reflexive and stimulus bound behavior and behavior with greater flexibility that is potentially under the individual's control [17–19]. The scale of differentiation concept reflects people's variation in the mix of these two classes of behavior and the corresponding differences in their levels of adaptive functioning. Questions for research include how the concept of differentiation relates to adaptive behavior in other species and to what extent the concept of differentiation of self in the emotional system can serve as an integrative framework for the study of interactions between the functioning of the individual and the group across the range of adaptive behaviors in the behavioral sciences.

Principles regulating interaction of individuals in social units of other species appear to be based on processes related to the individuality and togetherness processes observed in the human family system [1]. In the human family, behavior driven by emotional reactivity in relationships reflects family togetherness pressures that erode the emotional autonomy, self-regulatory capability, and thoughtfully guided behavior of family members. If that erosive process goes too far, the viability and stability of the entire family becomes compromised. Evolutionary biologist John Bonner surveyed species from amoebae to humans looking at the integration and isolation of organisms from the larger groups of which they are a part. He observed across all the levels of life he studied, that the viability of individuals depends on their functional integration as part of the larger system and that the viability of the group depends on the functional integrity of its individual constituents in the larger system [20] (pp. 229–246). Both the loss of connectedness and too much of it undermine the functioning of the whole and its parts.

The attrition of individual fitness of some that benefits the functioning of others and the group as a whole appears to operate in other social species as well, especially when stress increases the intensities of relationship patterns. In the human, some family members absorb the family tensions and are more vulnerable to breakdowns and clinical symptoms. This leaves others in the family freer of the tensions and able to function at a higher level, which benefits the group. This channeling of tension in the system towards some more than others is common in both human societies and other primate social groups that transfer anxiety, often to reactive or isolated individuals who are lower in a stable social hierarchy [21]. This process of channelizing stress reactivity is found in natural systems far removed in evolution from the human. The process can be found in principles that regulate the functioning of slime mold amoebae. When the individual slime mold amoebae congregate, those that are more reactive to adaptive stresses as they increase become non-reproductive individuals. These individuals die as they form a stalk that supports the fruiting body of the collective where other individuals survive and reproduce [22,23]. Many relationship processes in other species seem closely related to principles of functioning that underlie the human family and also lead to variation in levels of adaptive functioning within and between functional units of social systems in nature [24].

## 5.2. Principles of Functioning in The Family System and Society

Natural systems thinking about the family has produced a way of understanding the conditions under which successful relationships and high levels of functioning are sustained for more family members. Viable relationships with the larger extended family can help the family to manage anxiety. The larger the whole network of interlocking triangles, the greater number of pathways for the transfer of anxiety to move in the system without fixing upon and impairing any one family member or relationship. This is one way that the intactness of the whole extended system impacts the individual. Additionally, the automatic tendencies to polarize and cutoff can be moderated and the advantages of connectedness sustained when the relationships are based on differentiation of self. With increased

levels of differentiation, relationships are more likely to be maintained even when stress strains relationships and anxiety is heightened. With the broader view characteristic of higher levels of differentiation, thinking predominates over emotional reaction. Relationship tensions are taken less personally, blame is assigned less freely, and tolerance of difference is achieved more readily. Clinical experience has provided persuasive evidence, in addition to Bowen's original observations, that individual efforts toward increasing one's level differentiation in the family contributes to the moderation of relationship reactivity and improves the chances for stability and flexibility of the family system as a whole [1].

Bowen theorized that the same emotional forces that operate in the family operate in larger society in his concept of societal emotional process. The balance of individuality and togetherness forces that constitute the level of functioning or level of differentiation in the family also constitutes the level of functioning of society. It is proposed in the theory that the way society has been interacting with nature has resulted in the degradation of the natural environment upon which we depend. As a result, chronic anxiety in society has been increasing. In society as in the family, increasing levels of emotionally reactive patterns of functioning and decreasing functional levels of differentiation produce social regressions, all of which occurs under conditions of sustained chronic anxiety. As societal levels of chronic anxiety increase family levels of anxiety also increase. The projection process is further activated in the family and negatively impacts the adaptive maturation of the younger generation. Evidence that these negative impacts are occurring is found in the rather astounding report that 75 percent of Americans aged 17 to 24 did not meet the requirements to join the United States military in 2009. That is, 26 million young Americans, because of inadequate education, criminality, overweight, obesity and physical and mental health problems did not qualify for military service [25].

Knowledge of the principles of functioning of the family emotional system contributes options for the human to chart a course through increasing chronic anxiety arising from increasingly threatened and threatening natural systems. It provides principles of functioning directed toward management of self in relationship to others and using knowledge of emotional systems to guide behavior for the common good. These are the principles of functioning towards differentiation of self in the emotional system that are well known to clinical practitioners of Bowen theory. They aim to increase the functioning levels of individuals and the larger systems of which they are part and to counter the emotionally regressive impact of chronic anxiety on relationships and individual functioning in the family and society.

Understanding individuals and their groups as emotional systems in which the constant reiteration of individual emotional functioning impacting the group which impacts the individual back in return, provides a basis for the human to change the future. Larger scale societal change is theorized to be possible if enough key leaders will take on working on their own differentiation of self as a way to influence the larger systems of which they are a part. The challenge is to shift out of automatic emotionally reactive behavior patterns in spite of the chronic anxiety fueling them, towards thinking and actions based on responsible principles for the long term. This is also what we mean by systems thinking and what we believe is the potential of systems thinking for the human condition.

**Author Contributions:** All four authors contributed to the conceptualization and editing of this article. Each were responsible for particular sections, which were then integrated within the article.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. Bowen, M. *Family Therapy in Clinical Practice*; Jason Aronson: New York, NY, USA, 1979; ISBN 0-87668-761-3.
2. Shapiro, J.A. *Evolution: A View from the 21st Century*; FT Press Science: Upper Saddle River, NJ, USA, 2011; ISBN 978-0-13-278093-3.
3. Cole, S.W. Social regulation of human gene expression: Mechanisms and implications for public health. *Am. J. Public Health* **2013**, *103*, S84–S92. [[CrossRef](#)] [[PubMed](#)]

4. Meaney, M.J. Epigenetics and the biological definition of gene  $\times$  environment interactions. *Child Dev.* **2010**, *81*, 41–79. [[CrossRef](#)] [[PubMed](#)]
5. Champagne, F.A. Epigenetic mechanisms and the transgenerational effects of maternal care. *Front. Neuroendocrinol.* **2008**, *29*, 386–397. [[CrossRef](#)] [[PubMed](#)]
6. Slavich, G.M.; Cole, S.W. The emerging field of human social genomics. *Clin. Psychol. Sci.* **2013**, *1*, 331–348. [[CrossRef](#)] [[PubMed](#)]
7. Taub, D.D. Neuroendocrine interactions in the immune system. *Cell. Immunol.* **2008**, *252*. [[CrossRef](#)] [[PubMed](#)]
8. Shields, G.S.; Moons, W.G.; Slavich, G.M. Inflammation, self-regulation, and health: An immunologic model of self-regulatory failure. *Perspect. Psychol. Sci.* **2017**, *12*, 588–612. [[CrossRef](#)] [[PubMed](#)]
9. Gordon, D.M. *Ant Encounters: Interaction Networks and Colony Behavior*; Princeton University Press: Princeton, NJ, USA, 2010; ISBN 978-691-13879-4.
10. Dunbar, R.I. The social brain hypothesis. *Evol. Anthropol.* **1998**, *6*, 178–190. [[CrossRef](#)]
11. Flinn, M.V.; Ward, C.V.; Noone, R.J. Hormones and the human family. In *The Handbook of Evolutionary Psychology*; Buss, D.M., Ed.; John Wiley & Sons, Inc.: Hoboken, NJ, USA, 2005; ISBN 13978-0-471-26403-3.
12. Allman, J.M. *Evolving Brains*; Scientific American Library, No. 68; Scientific American Library: New York, NY, USA, 1999; ISBN 0-7167-5076-7.
13. Klever, P. Multigenerational relationships and nuclear family functioning. *Am. J. Fam. Ther.* **2015**, *43*, 339–351. [[CrossRef](#)]
14. Wilson, E.O. *Consilience: The Unity of Knowledge*; Vintage Books: New York, NY, USA, 1998; ISBN 13 978-0679450771.
15. Mayr, E. *The Growth of Biological Thought: Diversity, Evolution, and Inheritance*; Harvard University Press: Cambridge, MA, USA, 1982; p. 23, ISBN 10 0674364457.
16. Bowen, M.; Kerr, M.E. The Changing World and Family Therapy. In *Kerr-Bowen Interview Video Series*; The Bowen Center: Washington, DC, USA, 2004.
17. Hebb, D.O.; Donderi, D.C. *A Textbook of Psychology*, 4th ed.; Lawrence Earlbaum: Hillsdale, NJ, USA, 1987.
18. Kahneman, D. *Thinking Fast and Slow*; Farrar, Straus and Giroux: New York, NY, USA, 2011; ISBN 978-0-374-27563-1.
19. Mischel, W. *The Marshmallow Test: Mastering Self-Control*; Littlebrown and Company: New York, NY, USA, 2014; ISBN 978-0-316-23087-2.
20. Bonner, J.T. *The Evolution of Complexity: By Means of Natural Selection*; Princeton University Press: Princeton, NJ, USA, 1988; ASIN: B01K2EKMVA.
21. Sapolsky, R.M. *Behave: The Biology of Humans at Our Best and Worst*; Penguin Press: New York, NY, USA, 2017; ISBN 9781594205071.
22. Bonner, J.T. A way of following individual cells in the migrating slugs of *Dictyostelium discoideum*. *Proc. Natl. Acad. Sci. USA* **1998**, *95*, 9355–9359. [[CrossRef](#)] [[PubMed](#)]
23. Lassiter, L.; Asikainen, C.A.; Krumbein, W.E. Others. In *Chimeras and Consciousness. Evolution of the Sensory Self*; Margulis, L., Asikainen, C.A., Krumbein, W.E., Eds.; The MIT Press: Cambridge, MA, USA, 2011; ISBN 10 0262515830.
24. Noone, R.J.; Papero, D.V. *The Family Emotional System*; Lexington Books: Lanham, MD, USA, 2015; ISBN 10 0262515830.
25. Gilroy, C. “Recruiting, retention, and end strength overview.” Prepared Statement of Dr. Curtis Gilroy, Director for Accessions Policy, Office of the Undersecretary of Defense for Personnel and Readiness before the House Armed Services Subcommittee. 3 March 2009. Available online: [http://armedservices.house.gov/pdfs/MP030309/Gilroy\\_Testimony030309.pdf](http://armedservices.house.gov/pdfs/MP030309/Gilroy_Testimony030309.pdf) (accessed on 27 May 2009).

