

## **An Adaptation of Living Systems Theory**

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In 1978, James Miller suggested that the science of living systems might provide opportunities for humans to be freed from emotional disturbances and “ultimately lead to constructive freedom.” (p. 7) At that time, he probably never dreamed that we might use it to constructively change our DNA! The fact that there is not much difference in the *total number* of genes found in humans and those found in primitive organisms alerts us to the complexity of a single gene. Our adaptation of living systems theory allows us to understand that complexity and use that understanding in order to free us not only from emotional disturbances, but also from physical diseases, and help us lead more meaningful lives.

According to Hoffmeyer (1997), the major trend in biological evolution is the increase in horizontal communication among organisms as opposed to the vertical communication which occurs through genetic heredity. Sharov (1998) notes that, as a result, human values are associated with “reproducing life-styles rather than bodies.” Unfortunately, this emphasis on comfort and convenience has been at the expense of the health of the bodies we live in.

Any living system is a system that is capable of increasing its own complexity. For example, a human liver is a complex organism developed from a single cell. This ability really defines life itself. Life adapts itself to its environment by changing its properties. In that adaptation, life can change the complexity that it produces. Essentially, it is like reconstructing a structure that must belong to the system, but be different from the system that constructs it. Initially there is insufficient information to do that, because the outcome (E.g., the liver) is more complex than the origin (the cell). As in all attempts involved in learning, there may be errors made in the first attempts. But errors become learning experiences and shape future efforts. Errors may seem to be random, but actually form patterns that are stored in memory. Memory is an essential part of the process. Genetic codes in the cell not only contain the memory of the patterns of errors but also provide the information to the cell to guide its process.

The human body may be seen as an enormous kaleidoscope with a million pieces (of proteins) with each piece capable of myriad functions. When a single piece of that kaleidoscope changes in one way, everything else changes as well.

### ***Living Systems Theory***

Every living thing we come in contact with in our daily lives is a system. Miller (1978), who categorized the critical subsystems of all living systems, stated that living systems all contain certain aspects in common, whether at the level of the cell, the organ, the organism, the group, the organization, or the society. We have redefined some of Miller’s terms, omitted some, and added others, so that the following definitions apply:

*Input Transducer* – A gate of entry that allows encoding of messages so that they can be transmitted within the subsystem, or simply allows passage into the subsystem.

*Output Transducer* - Puts out energy bearing information from a subsystem, transmuted it so that it can be transmitted to the system's environment or to another subsystem.

*Message Composer* - Groups various inputs together as a single message and assigns a tentative value to the message. (Note: This is not one of Miller's terms.)

*Surface* - Contains and separates a subsystem from the others. Miller referred to this as a Boundary, but we think that term is too restrictive.

*Internal Transducer* - Receives energy from subsystem components and transmutes it for use within that subsystem.

*Evaluator* - Assigns a value to a message. (Note: This is not one of Miller's terms.)

*Decoders* - Alter the code of information and change it to a language that can be used internally.

*Encoders* - Alter the signs that were used internally and changes them to a code.

*Membrane* - An energetic boundary that contains within it the subsystems which store and process energy. (Note: This is not one of Miller's terms.)

*Nets* - Routes over which energy is moved.

*Energy Storage and Processing* - The subsystem which retains energy and performs the functions necessary to process it.

*Producer* - Forms broad associations which endure over time.

*Supporter* - Applies various rules to information. (Note: This is quite different from Miller's definition.)

*Associator* - Makes specific associations.

*Timer* - Transmits information related to time.

*Memory* - Retains information and makes it available as needed.

*Distributor* - Sends information to the Associator in the Receiving System.

*Decision* - The choice that is made based on the processing that has occurred.

Figure 1 provides a visual portrayal of the Structurally Intact Human System and its three subsystems in relation to one another. The Transmitting System, the Receiving System, and the Comparator System operate independently, but interrelate through transducers, nets, encoders, and decoders. Miller (1978) did not identify the Receiving and Comparator Systems as distinct groupings of subsystems. This conceptualization is an adaptation and expansion of the work of Bryan S. Coffman (1997), who illustrates how the three systems work together in relation to weak signal research. The numbering is designed to allow one to follow the movement of a message as it is processed. Numbers in parentheses in the text refer to this diagram.

[Insert Figure 1 about here.]

### ***The Transmitting System***

A stimulus (1) occurring in the environment may be noticed by a person through the awareness of one of his or her sense organs. Whether or not the stimulus is noticed depends on gravity. We only think of gravity as a pull downward, but it is also a pull *sideways*. As an example, gravity is what pulls our attention to one stimulus and ignores thousands of others. If you enter a crowded room, it is gravity that pulls your attention to someone you know. It is also gravity that pulls us inward when we go into trance states where our attention is so focused inward that we may forget what is going on in our external environment. The magnetic pull of gravity determines what messages may or may not enter the Transmitting System.

Thus, the Transmitting System is the receiver of the original input through the sense organs and serves the primary function of high-speed scanning and then sending the information out to the other two systems, where the energy will be processed. This is the role of the reptilian brain, or hind brain. The Transmitting System is pre-thinking energy.

The sense organ that receives input from the environment acts as an Input Transducer (2). It brings information into the Transmitting System, changing it to a form which can be transmitted within the system. For example, an apple might be transmitted as red and round, but that is all. The eye “sees” the object as upside down. The Input Transducer of the Transmitting System sends the information taken in from the environment by way of a net (3), or neural pathway, to an Internal Transducer (4), which transforms visual stimuli into a form that the Transmitting System can interpret. For example, the visual image of an apple would be received upside down, but would be turned right side up by the Internal Transducer.

Messages are first noted and then scanned by the Transmitting System. They are not recognized as predator or prey, however, until they are compared with hereditary information and associations stored in energy processing and storage. The dashed line (5) in Figure 1 illustrates the energy moving through the Transmitting System without being recognized as predator/prey, passing through Pre-thinking Memory. This movement of energy is like skipping a stone across a pond, instead of watching a leaf float downstream.

The information stored in Pre-thinking Memory is very primitive and designed to help determine whether there is a potential threat to survival. Not a lot of detail is provided.

On the next loops through the Receiving System, a net or neural pathway (6) goes to the Associator (32AS) of the Receiving System and some primitive associations are made. All of this occurs in microseconds. It happens at an instinctive level before we even understand what is happening or know what we are reacting to. The information provided by Pre-thinking Memory and the Associator is the result of learning over hundreds of generations by the organism and is shared by most members of the species. It is our evolutionary heritage.

As energy returns to the Transmitting System, the Input Transducer (2) transduces it into “language” which the reptilian mind ( $7\mathcal{R}$ ) understands, which we have called *Reptus* and indicated with the symbol,  $\mathcal{R}$ . Then a message is composed at a primitive level by the Message Composer. It is still in the formative stage: there *may be* a danger, rather than there *is* a danger. The information now has a set of “descriptors” (For example, an apple would be “red and round.”) and a tentative valence (neutral, positive, negative). This information is decoded into *Linus*, the name we have given to the language of the conscious mind, which we have indicated with the symbol,  $\approx$ . It is then sent ( $8\approx$ ) to the Output Transducer (9) and then on to the other systems.

At the cellular level, receptor proteins in the cell membrane receive the environmental signals. When a signal compliments the protein, it changes shape. Thus the membrane acts as a switch and controls what is allowed entrance, depending on whether the charge is positive or negative. The function of the cell membrane’s outer layer of proteins is as a Transmitting System.

### ***The Evaluator***

Before information reaches the Receiving and Comparator Systems, it passes along a neural pathway ( $10\approx$ ) and through an Evaluator, which determines the value of the message and whether it is definitely positive, negative, or neutral. In modern times, *most* messages would, at this stage of the process, be coded as neutral. The object is still unidentified and there are no specific associations made to it or memories attached to it. An example of something that would be labeled negative would be a movement that might be a snake in the grass, or the loud roar of a lion in our ear. A genetic imprint would instantaneously take effect in order to help the organism survive. No further processing would be needed to warn the person of possible danger.

Once the message has been given a value, all the processing that follows is predicated on that value. The movement in the grass will trigger our fight or flight response before we even know why we are startled. It may require the person to search through memory for reassurance that he or she can handle the possibility of a poisonous snake. Associations will be made to previous snake experiences, to stored information concerning the difference between poisonous and non-poisonous snakes, or it may be identified as a stick

that moved because it was stepped on. Eventually, the adrenal response will run its course. As another example, a person addicted to nicotine will not be able to make intelligent choices concerning health, because the body has already determined the positive value of the substance as something that is essential in order to stay alive.

An example of how this information is important is that we can ask the Evaluator to treat an addictive substance as neutral rather than as prey, thus helping people with addictions. We can also change the location of the Evaluator so that more information is taken into consideration before a final determination is made.

### ***The Input Transducer (11 and 11E/N)***

Information from the Transmitting System is sent to the Receiving and Comparator Systems, *looping through both systems independently at the same time*. Thus at the same time energy has entered the Input Transducer (11) to the Receiving System, it also enters the same Input Transducer (11/EN) to the Comparator System. We have illustrated that there is only one Input Transducer for these two systems by making it the same shade and number.

Imagine the systems as a sandwich. The Comparator System circle can be flipped on top of the Receiving System circle to have a more accurate portrayal of what is happening. *Two processes are going on at the same time (not simultaneously, however)*. Cellular biologist Bruce Lipton uses the analogy of a bread and butter sandwich, with butter as thick as the bread, to describe the membrane of a cell. Molecules with polar heads and non-polar legs make up the membrane. The polar heads receive information from the environment and would be similar to the Transmitting System. The butter layer and lower layer of bread would be the Comparator System and the Receiving System, respectively. Amino acids in the non-polar layer only allow through it what causes the proteins to change shape. This “butter” layer is like the Comparator System. This system contains the subconscious mind, and it applies rules and makes associations based on what is stored in the genetic blueprint and learned from our parents and early childhood experiences. It is not a conscious process, and memory is not involved.

At the cellular level, receptor proteins have allowed the signal to enter the cell. Processor proteins connect the receptor proteins to effector proteins, which read the blueprint provided in the DNA in the cell and determine what action to take. The cell either moves toward a prey or away from a predator.

The Input Transducer is a gate of entry that allows passage into a system. In the case of the Comparator System, it also allows encoding of messages so that they can be transmitted within this system. The Input Transducer transforms the energy so that it can be understood by each system, each in its own language. The Receiving System is the conscious mind and understands *Linus*; the Comparator System contains the subconscious mind and understands *Circlus*, indicated with the symbol,  $\text{⌘}$ , and *Checkus*, indicated with the symbol,  $\sqrt{\phantom{x}}$ .

### *The Receiving and Comparator Systems*

The Receiving System and the Comparator System work in conjunction with each other. *Both* receive and compare; it's just a matter of emphasis and whether or not the process is conscious. Energy processing occurs in both systems, although in different ways, and they work in conjunction with each other. Although these systems have subsystems that are identified by the same name, such as Producer and Supporter, the functions of those subsystems vary somewhat, depending on which system they are in. These differences are important enough so that the distinction always needs to be made as to which system the particular subsystem is in.

Each of the three systems is separated from the others by their surfaces. At the cellular level, these surfaces determine what passes into the cell. The Comparator System, like the butter in the sandwich, only allows through it what has been "processed" by receptor proteins. The Receiving System has a permeable boundary, like the piece of bread on the bottom of the "membrane sandwich." Whatever is allowed to pass through the Comparator System will automatically be allowed into the Receiving System. Thus, there are two ways messages reach the Receiving System. One is through the Input Transducer, which is the processor proteins that connect the receptor proteins to the effector proteins. The other is directly through the surface itself. Thus the subconscious mind can influence conscious processing without our having any control over it. We experience this in our daily lives when we do things and afterwards don't understand why we did them. This information is valuable because we can make changes in how the living system processes energy and as a result be more in charge of our lives.

Energy will pass through the Receiving and Comparator Systems many times, and we have represented many neural pathways with a single net. *Also*, the two systems (layers) are working together, which is reflected in the numbering system. Thus, the Producer in Receiving System (13P) and the Supporter in Comparator System (13S) work in conjunction with each other; the Supporter in Receiving System (18S) and Associator in Comparator System (18A) work in conjunction with each other, etc. This is an important conceptualization to keep in mind.

The Producer of the Receiving System (13P) performs its task during the energy's first pass through Energy Processing. The Producer produces the broad framework of meaning attached to the stimulus, such as "something to eat." Meanwhile, energy also enters the Comparator System from the Transmitting System, goes through the Input Transducer, is translated into Circlus, and then passes along a net (12<sup>α</sup>) to the Supporter (13S). The Supporter applies various rules to the information coming in, some of them learned, some inherited, such as, "Apples relieve hunger." This information is still in our subconscious minds. Note that the Receiving System is always in the language of the conscious mind, Linus, whereas the Comparator System works in the languages of the subconscious mind, Circlus and Checkus. Checkus is a more advanced language than Circlus.

The message goes through the Output Transducer and Encoder (15a) of the Comparator System, but is still in the language of the subconscious mind, Circlus (16 $\alpha$ ) and has to be decoded in the Receiving System into Linus (17 $\alpha$  becomes 17 $\approx$ ) so that it can be processed by the Supporter (18S) of the Receiving System. At the same time, the message leaves the Receiving System through its output Transducer (15b) and passes along a net (16 $\approx$ ) to the Comparator System, where it is encoded from Linus (17 $\approx$ ) into Circlus (17 $\alpha$ ), so that the Associator (18A) function can be performed in the Comparator System (which is still functioning at a subconscious level). The Supporter in the Receiving System now makes somewhat more advanced application of rules, such as “Apples taste good.” The Associator in the Comparator System makes associations such as apples being “something good to eat”. At this stage of the process, the foundation is being laid for decision making. The processes that are occurring are creating the data required by higher-level processes, and they need to be continually upgraded.

On the next pass through the Receiving and Comparator Systems, the Associator (23AS) function occurs again in the Comparator System, at somewhat more advanced levels. The Associator (23AS) makes subconscious associations to information derived from our sense organs which is descriptive in nature, such as the sweet or tart taste of an apple. This information helps determine the importance of input from our sense organs.

In the Receiving System, the Timer (23T) transmits information related to time, such as what time it is; in the broadest sense of month, season, or year, as well as the time of day. The Timer also tells whether to start, stop, or alter the rate of one or more of the systems' processes, thus coordinating them in time. In our example, the Timer might provide the information that it is “almost dinner time.”

As the energy passes through the Receiving System the next time, Memory (27M) plays its role of retaining information and making it available to the organism as it is needed. For example, childhood memories of picking apples or making applesauce with mother would be available. Memory in the Receiving System works in conjunction with the Producer (27P) in the Comparator System. The Producer (27P) would be making more advanced associations that endure over time, such as apples being nutritious. The Producer also acts like the virus protection on our computer. This information is useful, because we can remind the Producer to reject unwanted viruses and to perform its tasks periodically.

The next step involves the Distributor (32D) of the Comparator System collecting all the input from the other subsystems and sending the information to the Associator (32AS) in the Receiving System. At this stage, specific associations are made which take into account all the processing that has occurred so far. The apple might be associated with something that would relieve the person's hunger in a healthy and enjoyable manner. The Decision is the choice that is made to eat (or not eat) the apple.

### *References*

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