1. Human communication

Human communication, or anthroposemiotics, is the field dedicated to understanding how people communicate:

"The importance of communication in human society has been recognized for thousands of years, far longer than we can demonstrate through recorded history" * (e.g. Stacks & Salwen, 2009, p. 223). As humans, we have the communication abilities that other animals do not, such as being able to communicate aspects like time and place as though they were solid objects.

1.1 Category of human communication

The current study of human communication can be broken down into two major categories; rhetorical and relational. The focus of rhetorical communication is primarily on the study of influence; the art of rhetorical communication is based on the idea of persuasion. The relational approach examines communication from a transnational perspective; two or more people coexist to reach an agreed upon perspective.

In its early stages, rhetoric was developed to help ordinary people prove their claims in court; this shows how persuasion is key in this form of communication. Aristotle exclaimed that, effective rhetoric is based on argumentation. As explained in the text, rhetoric involves a dominant party and a submissive party or a party that succumbs to that of the most dominant party. While the rhetorical approach stems from Western societies, the relational approach stems from Eastern societies. Eastern societies hold higher standards for cooperation which makes sense as to why they would sway more toward a relational approach for that matter. "Maintaining valued relationships is generally seen as more important than exerting influence and control over others" * (e.g. Stacks & Salwen, 2009, p. 227). "The study of human communication today is more diversified than ever before in its history" * (e.g. Stacks & Salwen, 2009, p. 229). Classification of human communication can be found in the workplace, especially for group work. Co-workers need to argue with each other to gain the best solutions for their projects, while they also need to nurture their relationship to maintain their collaboration. For example, “saving face” maybe the communication tactics that they will utilize in their group work.

1.2 Types of human communication

with themselves: intrapersonal communication expression: body language

another person: interpersonal communication

within groups: group dynamics

within organizations: organizational communication

across cultures: cross-cultural communication.

1.3 Communication

Communication (from Latin commūnicāre, meaning "to share") is the activity of conveying information through the exchange of thoughts, messages, or information, as by speech, visuals, signals, written, or behavior. It is the meaningful exchange of information between two or more living creatures.

One definition of communication is “any act by which one person gives to or receives from another person information about that person's needs, desires, perceptions, knowledge, or affective states. Communication may be intentional or unintentional, may involve conventional or unconventional signals, may take linguistic or non-linguistic forms, and may occur through spoken or other modes.”

Communication requires a sender, a message, and a recipient, although the receiver does not have to be present or aware of the sender's intent to communicate at the time of communication; thus communication can occur across vast distances in time and space. Communication requires that the communicating parties share an area of communicative commonality. The communication process is complete once the receiver understands the sender's message.

Communicating with others involves three primary steps:

- Thought: First, information exists in the mind of the sender. This can be a concept, idea, information, or feeling.
- Encoding: Next, a message is sent to a receiver in words or other symbols.
- Decoding: Lastly, the receiver translates the words or symbols into a concept or information that a person can understand.

There are a variety of verbal and non-verbal forms of communication. These include body language, eye contact, sign language, haptic communication, and chronemics. Other examples are media content such as pictures, graphics, sound, and writing. The Convention on the Rights of Persons with Disabilities also defines the

communication to include the display of text, Braille, tactile communication, large print, accessible multimedia, as well as written and plain language, human-reader, augmentative and alternative modes, means and formats of communication, including accessible information and communication technology. Feedback is a critical component of effective communication.

1.3.1 Verbal communication

Human spoken and pictorial languages can be described as a system of symbols (sometimes known as lexemes) and the grammars (rules) by which the symbols are manipulated. The word "language" also refers to common properties of languages. Language learning normally occurs most intensively during human childhood. Most of the thousands of human languages use patterns of sound or gesture for symbols which enable communication with others around them. Languages seem to share certain properties although many of these include exceptions. There is no defined line between a language and a dialect. Constructed languages such as Esperanto, programming languages, and various mathematical formalisms are not necessarily restricted to the properties shared by human languages. Communication is the flow or exchange of information within people or a group of people.

1.3.2 Nonverbal communication

Nonverbal communication describes the process of conveying meaning in the form of non-word messages. Some forms of non verbal communication include chronemics, haptics, gesture, body language or posture, facial expression and eye contact, object communication such as clothing, hairstyles, architecture, symbols, infographics, and tone of voice, as well as through an aggregate of the above. Speech also contains nonverbal elements known as paralanguage. This form of communication is the most known for interacting with people. These include voice lesson quality, emotion and speaking style as well as prosodic features such as rhythm, intonation and stress. Research has shown that up to 55% of human communication may occur through non verbal facial expressions, and a further 38% through paralanguage. Likewise, written texts include nonverbal elements such as handwriting style, spatial arrangement of words and the use of emoticons to convey emotional expressions in pictorial form.

1.3.3 Oral communication

Oral communication, while primarily referring to spoken verbal communication, can also employ visual aids and non-verbal elements to support the conveyance of meaning. Oral communication includes speeches, presentations, discussions, and aspects of interpersonal communication. As a type of face-to-face communication, body language and choice tonality play a significant role, and may have a greater impact upon the listener than informational content. This type of communication also garners immediate feedback.

1.3.4 Business communication

A business can flourish only when all objectives of the organization are achieved effectively. For efficiency in an organization, all the people of the organization must be able to convey their message properly.

1.3.5 Written communication and its historical development

Over time the forms of and ideas about communication have evolved through the continuing progression of technology. Advances include communications psychology and media psychology, an emerging field of study.

The progression of written communication can be divided into three "information communication revolutions":

1.Written communication first emerged through the use of pictographs. The pictograms were made in stone, hence written communication was not yet mobile.

2.The next step occurred when writing began to appear on paper, papyrus, clay, wax, etc. with common alphabets. Communication became mobile.

3.The final stage is characterized by the transfer of information through controlled waves of electromagnetic radiation (i.e., radio, microwave, infrared) and other electronic signals.

Communication is thus a process by which meaning is assigned and conveyed in an attempt to create shared understanding. This process, which requires a vast repertoire of skills in interpersonal processing, listening, observing, speaking, questioning, analyzing, gestures, and evaluating enables collaboration and cooperation.

Misunderstandings can be anticipated and solved through formulations, questions and answers, paraphrasing, examples, and stories of strategic talk. Written communication can be clarified by planning follow-up talks on critical written communication as part of the every-day way of doing business. A few minutes spent talking in the present will save valuable time later by avoiding misunderstandings in advance. A frequent method for this purpose is reiterating what one heard in one's own words and asking the other person if that really was what was meant.

1.3.6 Effective communication

Effective communication occurs when a desired effect is the result of intentional or unintentional information sharing, which is interpreted between multiple entities and acted on in a desired way. This effect also ensures that messages are not distorted during the communication process. Effective communication should generate the desired effect and maintain the effect, with the potential to increase the effect of the message. Therefore, effective communication serves the purpose for which it was planned or designed. Possible purposes might be to elicit change, generate action, create understanding, inform or communicate a certain idea or point of view. When the desired effect is not achieved, factors such as barriers to communication are explored, with the intention being to discover how the communication has been ineffective.

1.3.7 Barriers to effective human communication

Barriers to effective communication can retard or distort the message and intention of the message being conveyed which may result in failure of the communication process or an effect that is undesirable. These include filtering, selective perception, information overload, emotions, language, silence, communication apprehension, gender differences and political correctness.

This also includes a lack of expressing "knowledge-appropriate" communication, which occurs when a person uses ambiguous or complex legal words, medical jargon, or descriptions of a situation or environment that is not understood by the recipient.

Physical barriers

Physical barriers are often due to the nature of the environment. An example of this is the natural barrier which exists if staff are located in different buildings or on different sites. Likewise, poor or outdated equipment, particularly the failure of management to introduce new technology, may also cause problems. Staff shortages are another factor which frequently causes communication difficulties for an organization. While distractions like background noise, poor lighting or an environment which is too hot or cold can all affect people's morale and concentration, which in turn interfere with effective communication.

System design

System design faults refer to problems with the structures or systems in place in an organization. Examples might include an organizational structure which is unclear and therefore makes it confusing to know whom to communicate with. Other examples could be inefficient or inappropriate information systems, a lack of supervision or training, and a lack of clarity in roles and responsibilities which can lead to staff being uncertain about what is expected of them.

Attitudinal barriers

Attitudinal barriers come about as a result of problems with staff in an organization. These may be brought about, for example, by such factors as poor management, lack of consultation with employees, personality conflicts which can result in people delaying or refusing to communicate, the personal attitudes of individual employees which may be due to lack of motivation or dissatisfaction at work, brought about by insufficient training to enable them to carry out particular tasks, or just resistance to change due to entrenched attitudes and ideas.

Ambiguity of words/phrases

Words sounding the same but having different meaning can convey a different meaning altogether. Hence the communicator must ensure that the receiver receives the same meaning. It is better if such words are avoided by using alternatives whenever possible.

Individual linguistic ability

The use of jargon, difficult or inappropriate words in communication can prevent the recipients from understanding the message. Poorly explained or misunderstood messages can also result in confusion. However, research in communication has shown that confusion can lend legitimacy to research when persuasion fails.

Physiological barriers

These may result from individuals' personal discomfort, caused—for example—by ill health, poor eyesight or hearing difficulties.

1.3.8 Nonhuman communication

Every information exchange between living organisms — i.e. transmission of signals that involve a living sender and receiver can be considered a form of communication; and even primitive creatures such as corals are competent to communicate. Nonhuman communication also include cell signaling, cellular communication, and chemical transmissions between primitive organisms like bacteria and within the plant and fungal kingdoms.

Animal communication

The broad field of animal communication encompasses most of the issues in ethology. Animal communication can be defined as any behavior of one animal that affects the current or future behavior of another animal. The study of animal communication, called zoo semiotics (distinguishable from anthroposemiotics, the study of human communication) has played an important part in the development of ethology, sociobiology, and the study of animal cognition. Animal communication, and indeed the understanding of the animal world in general, is a rapidly growing field, and even in the 21st century so far, a great share of prior understanding related to diverse fields such as personal symbolic name use, animal emotions, animal culture and learning, and even sexual conduct, long thought to be well understood, has been revolutionized.

Plants and fungi

Communication is observed within the plant organism, i.e. within plant cells and between plant cells, between plants of the same or related species, and between plants and non-plant organisms, especially in the root zone. Plant roots communicate in parallel with rhizome bacteria, with fungi and with insects in the soil. These parallel sign-mediated interactions are governed by syntactic, pragmatic, and

semantic rules, and are possible because of the decentralized "nervous system" of plants. The original meaning of the word "neuron" in Greek is "vegetable fiber" and recent research has shown that most of the microorganism plant communication processes are neuronal-like. Plants also communicate via volatiles when exposed to herbivory attack behavior, thus warning neighboring plants. In parallel they produce other volatiles to attract parasites which attack these herbivores. In stress situations plants can overwrite the genomes they inherited from their parents and revert to that of their grand- or great-grandparents.

Fungi communicate to coordinate and organize their growth and development such as the formation of Marcelia and fruiting bodies. Fungi communicate with their own and related species as well as with non fungal organisms in a great variety of symbiotic interactions, especially with bacteria, unicellular eukaryote, plants and insects through biochemicals of biotic origin. The biochemicals trigger the fungal organism to react in a specific manner, while if the same chemical molecules are not part of biotic messages, they do not trigger the fungal organism to react. This implies that fungal organisms can differentiate between molecules taking part in biotic messages and similar molecules being irrelevant in the situation. So far five different primary signalling molecules are known to coordinate different behavioral patterns such as filamentation, mating, growth, and pathogenicity. Behavioral coordination and production of signaling substances is achieved through interpretation processes that enables the organism to differ between self or non-self, a biotic indicator, biotic message from similar, related, or non-related species, and even filter out "noise", i.e. similar molecules without biotic content.

Bacteria quorum sensing

Communication is not a tool used only by humans, plants and animals, but it is also used by microorganisms like bacteria. The process is called quorum sensing. Through quorum sensing, bacteria are able to sense the density of cells, and regulate gene expression accordingly. This can be seen in both gram positive and gram negative bacteria. This was first observed by Fuqua et al. in marine microorganisms like V. harveyi and V. fischeri.

1.3.9 Communication cycle

The first major model for communication was introduced by Claude Shannon and Warren Weaver for Bell Laboratories in 1949The original model was designed to mirror the functioning of radio and telephone technologies. Their initial model consisted of three primary parts: sender, channel, and receiver. The sender was the part of a telephone a person spoke into, the channel was the telephone itself, and the receiver was the part of the phone where one could hear the other person. Shannon and Weaver also recognized that often there is static that interferes with one listening to a telephone conversation, which they deemed noise.

In a simple model, often referred to as the transmission model or standard view of communication, information or content (e.g. a message in natural language) is sent in some form (as spoken language) from an emisor/ sender/ encoder to a destination/ receiver/ decoder. This common conception of communication simply views communication as a means of sending and receiving information. The strengths of this model are simplicity, generality, and quantifiability. Social scientists Claude Shannon and Warren Weaver structured this model based on the following elements:

1.An information source, which produces a message.

2.A transmitter, which encodes the message into signals

3.A channel, to which signals are adapted for transmission

4.A receiver, which 'decodes' (reconstructs) the message from the signal.

5.A destination, where the message arrives.

Shannon and Weaver argued that there were three levels of problems for communication within this theory.

The technical problem: how accurately can the message be transmitted? The semantic problem: how precisely is the meaning 'conveyed'? The effectiveness problem: how effectively does the received meaning affect behavior?

Daniel Chandler critiques the transmission model by stating:

It assumes communicators are isolated individuals. No allowance for differing purposes. No allowance for differing interpretations. No allowance for unequal power relations. No allowance for situational contexts.

In 1960, David Berlo expanded on Shannon and Weaver's (1949) linear model of communication and created the SMCR Model of Communication. The Sender-Message-Channel-Receiver Model of communication separated the model into clear parts and has been expanded upon by other scholars.

Communication is usually described along a few major dimensions: Message (what type of things are communicated), source / emisor / sender / encoder (by whom), form (in which form), channel (through which medium), destination / receiver / target / decoder (to whom), and Receiver. Wilbur Schram (1954) also indicated that we should also examine the impact that a message has (both desired and undesired) on the target of the message. Between parties, communication includes acts that confer knowledge and experiences, give advice and commands, and ask questions. These acts may take many forms, in one of the various manners of communication. The form depends on the abilities of the group communicating. Together, communication content and form make messages that are sent towards a destination. The target can be oneself, another person or being, another entity (such as a corporation or group of beings).

Communication can be seen as processes of information transmission governed by three levels of semiotic rules:

1.Pragmatic (concerned with the relations between signs/expressions and their users)

2.Semantic (study of relationships between signs and symbols and what they represent) and

3.Syntactic (formal properties of signs and symbols).

Therefore, communication is social interaction where at least two interacting agents share a common set of signs and a common set of semiotic rules. This commonly held rule in some sense ignores autocommunication, including intrapersonal communication via diaries or self-talk, both secondary phenomena that followed the primary acquisition of communicative competences within social interactions.

In light of these weaknesses, Barnlund (2008) proposed a transactional model of communication. The basic premise of the transactional model of communication is that individuals are simultaneously engaging in the sending and receiving of messages.

In a slightly more complex form a sender and a receiver are linked reciprocally. This second attitude of communication, referred to as the constitutive model or constructionist view, focuses on how an individual communicates as the determining factor of the way the message will be interpreted. Communication is viewed as a conduit; a passage in which information travels from one individual to another and this information becomes separate from the communication itself. A particular instance of communication is called a speech act. The sender's personal filters and the receiver's personal filters may vary depending upon different regional traditions, cultures, or gender; which may alter the intended meaning of message contents. In the presence of "communication noise" on the transmission channel (air, in this case), reception and decoding of content may be faulty, and thus the speech act may not achieve the desired effect. One problem with this encode-transmit-receive-decode model is that the processes of encoding and decoding imply that the sender and receiver each possess something that functions as a codebook, and that these two code books are, at the very least, similar if not identical. Although something like code books is implied by the model, they are nowhere represented in the model, which creates many conceptual difficulties.

Theories of coregulation describe communication as a creative and dynamic continuous process, rather than a discrete exchange of information. Canadian media scholar Harold Innis had the theory that people use different types of media to communicate and which one they choose to use will offer different possibilities for the shape and durability of society (Wark, McKenzie 1997). His famous example of this is using ancient Egypt and looking at the ways they built themselves out of media with very different properties stone and papyrus. Papyrus is what he called 'Space Binding'. it made possible the transmission of written orders across space, empires and enables the waging of distant military campaigns and colonial administration. The other is stone and 'Time Binding', through the construction of temples and the pyramids can sustain their authority generation to generation, through this media they can change and shape communication in their society (Wark, McKenzie 1997).

1.3.10 Communication noise

In any communication model, noise is interference with the decoding of messages sent over a channel by an encoder. There are many examples of noise:

Environmental noise

Noise that physically disrupts communication, such as standing next to loud speakers at a party, or the noise from a construction site next to a classroom making it difficult to hear the professor.

Physiological-impairment noise

Physical maladies that prevent effective communication, such as actual deafness or blindness preventing messages from being received as they were intended.

Semantic noise

Different interpretations of the meanings of certain words. For example, the word "weed" can be interpreted as an undesirable plant in a yard, or as a euphemism for marijuana.

Syntactical noise

Mistakes in grammar can disrupt communication, such as abrupt changes in verb tense during a sentence.

Organizational noise

Poorly structured communication can prevent the receiver from accurate interpretation. For example, unclear and badly stated directions can make the receiver even more lost.

Cultural noise

Stereotypical assumptions can cause misunderstandings, such as unintentionally offending a non-Christian person by wishing them a "Merry Christmas".

Psychological noise

Certain attitudes can also make communication difficult. For instance, great anger or sadness may cause someone to lose focus on the present moment. Disorders such as Autism may also severely hamper effective communication