

Communication Theory

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Introduction

Interactive multimedia is a communication tool. It therefore seems reasonable to begin our quest for theory upon which to base investigations concerning the effectiveness of design and development decisions in the realm of communications theory.

Communication encompasses a great deal of human (and animal) activity. Reading, writing, listening, speaking, viewing images, and creating images are all acts of communication. There are as well many more subtle communication activities that may be conscious or unconscious, such as expression, gesture, "body language" and non-verbal sounds. The process of communication has been the subject of study for thousands of years, during which time the process has come to be appreciated with increasing complexity.

This essay will present a variety of definitions for "communication," and then describe a few communication models that have been proposed over the years. The reader is challenged to examine the various models and determine to what extent each might help explain the special type of communication represented by multimedia titles, and to think about how we might develop a model of multimedia communication.

Definitions

Although communication is ubiquitous, it appears nonetheless difficult to define. We see that different individuals define *communication* in different ways depending upon their interests. Ruben (1984) says that communication is any "information related behavior." Dale (1969) says it is the "sharing of ideas and feelings in a mood of mutuality." Other definitions emphasize the significance of symbols, as in Berelson and Steiner (1964): "The transmission of information, ideas, emotions and skills...by the use of symbols," and Theodorson and Theodorson (1969): "the transmission of information, ideas, attitudes, or emotion from one person or group to another...primarily through symbols."

Taken together, these definitions hint at the general picture. They also illustrate the influence that an individual's perspective may have on the way he or she approaches a problem. The source of the definitions work (variously) in psychology, sociology, philosophy and education. Their definitions are influenced by the aspect of human behavior of greatest interest to them. We will see similar influences in models of communication in the next section.

Models

Models provide a simplified view of something to be studied. We choose those elements of interest and use the model to help us frame questions and predictions. The elements we include (or exclude) and the relationships between them that we represent will by necessity dictate the domain of inquiry. What we don't see (or acknowledge) we cannot study.

Aristotle

One of the earliest recorded models is attributed to the ancient Greek philosopher Aristotle. Aristotle represented communication as might an orator who speaks to large

audiences. His model incorporates few elements.

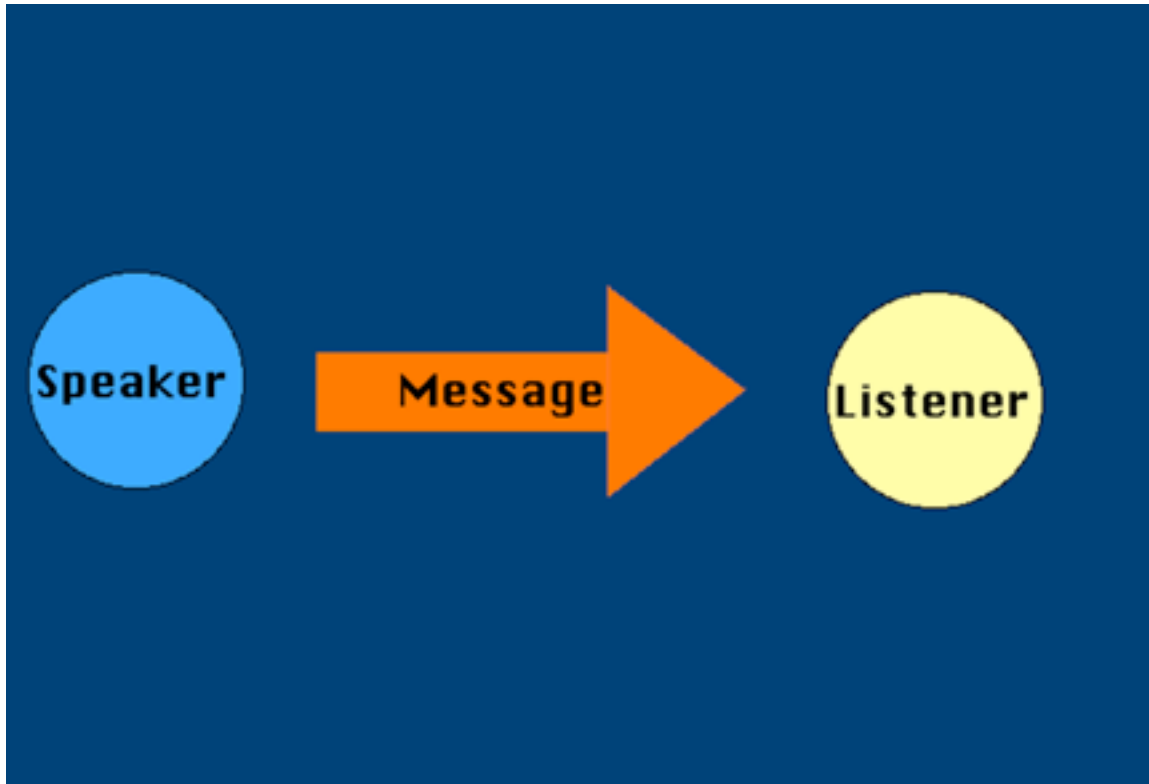


Figure One: Aristotle's Model of Communication

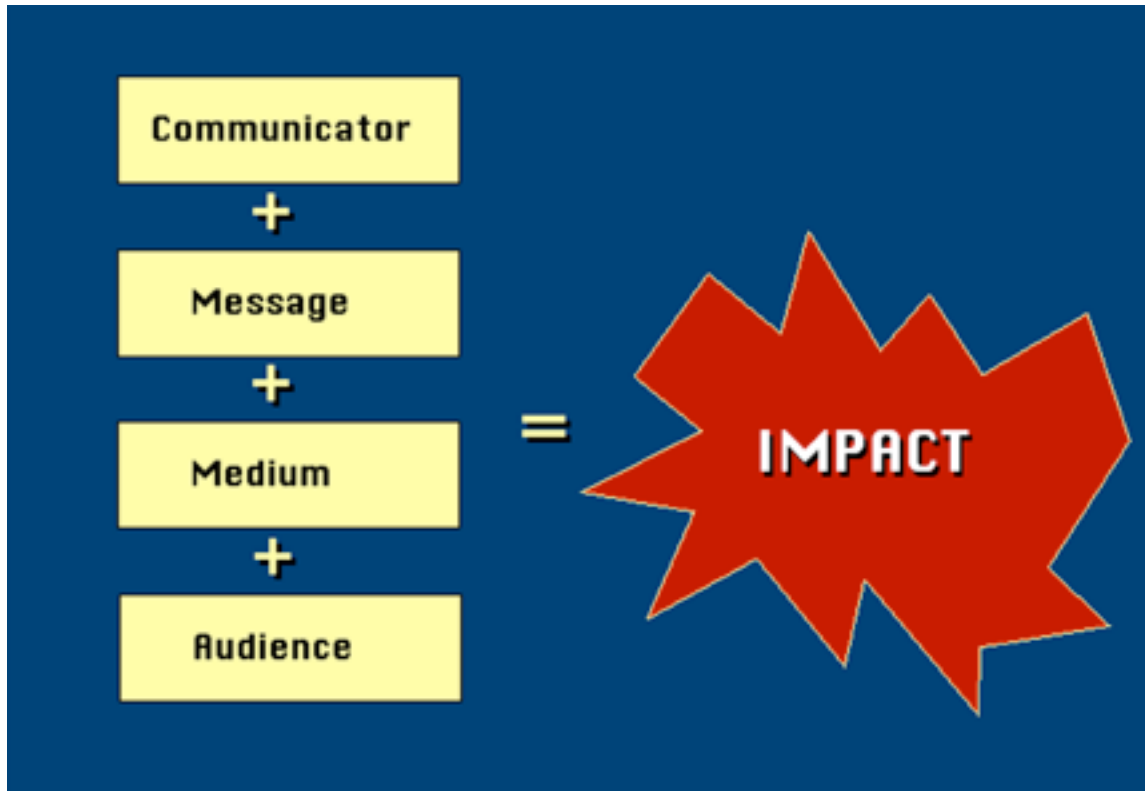


Figure Two: Laswell's (1948) Model of Communication

Laswell

Political scientist Harold Laswell, writing in 1948, posed the question, "Who says what in which channel with what effect?" (p. 117). His model includes considerations of a variety of factors being considered to determine the impact of a communication. Considering that the previous ten years had witnessed such speakers as Adolph Hitler and Winston Churchill communicating both live and over radio, it is not surprising that a more sophisticated model would appear, nor that a political scientist would deliver it. To illustrate the significance of each element of the model, try visualizing what effect some dynamic speaker would have if the medium were print, or what would happen if the audience didn't speak the same language. A visualization of Laswell's model appears in Figure Two.

Shannon and Weaver

Another viewpoint on communication is offered by Shannon and Weaver (1949). This model is focused on information theory, and in particular the transmission and reception of messages. The model introduces three elements not found in Aristotle's model: a transmitter, a receiver, and sources of noise. In telecommunications the transmitter and receiver would be the hardware used by the sender and receiver during the act of communication. Noise may come from static sources (like solar flares), unusual weather conditions, or electron equipment that interferes with the signal. Although at first glance, this model seems to be geared strictly for telecommunications such as radio and television, some of the elements may easily generalize into other fields of interest. Consider that in any face-to-face situation, there may be environmental or other sources of noise that interfere with the communication.

Figure Three illustrates Shannon and Weaver's model. The gray "lightning bolt" represents noise.

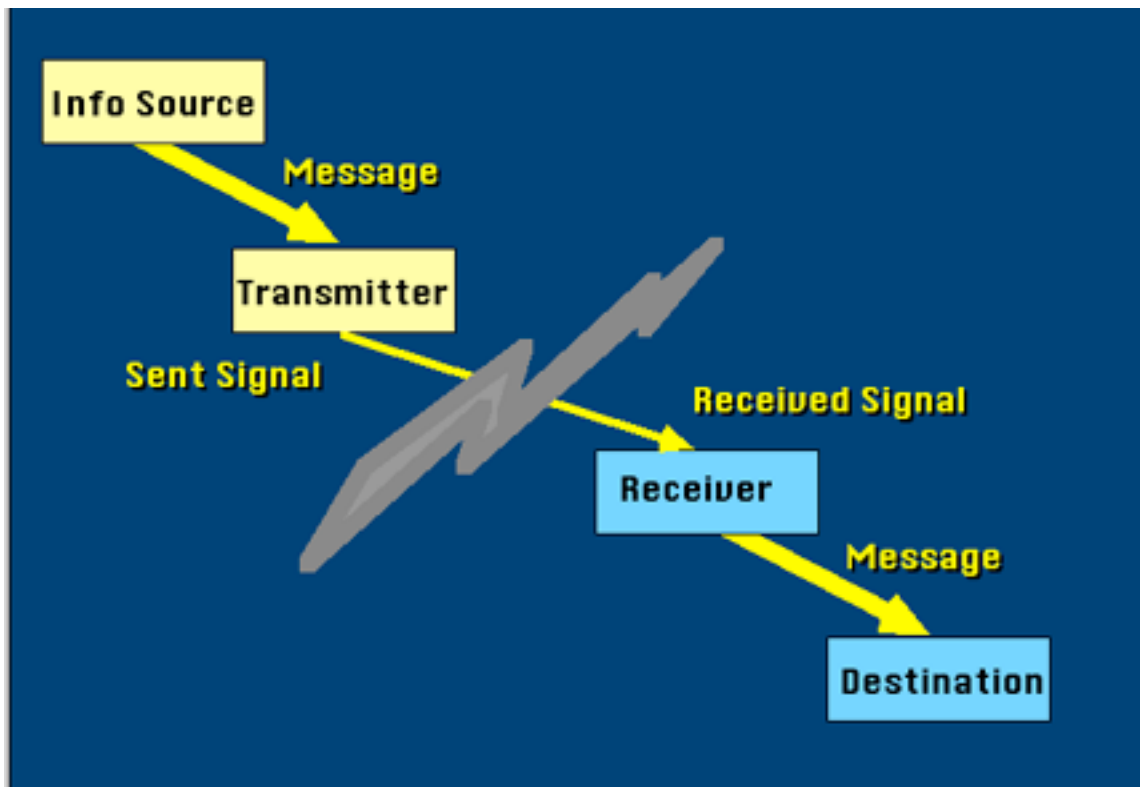


Figure Three: Shannon and Weaver's Model

Schramm's Models

The models previously introduced were all created by individuals interested in communication as an element of some other field of study. Wilbur Schramm (1954) began studying communication as an independent discipline. He developed several models for addressing different questions.

One contribution Schramm made was to consider the *fields of experience* of the sender and receiver. The sender encodes the message, based upon the sender's field of experience. The user's field of experience guides decoding. If there is no commonality in the sender's and receiver's field of experience, then communication does not take place. The extent to which the signal is correctly decoded (that is, decoded so that it is the same as the original message prior to decoding) depends on the extent of the overlap of the two fields of experience.

For instance, a lecture on neurophysiology delivered to an audience of sixth graders may result in little or no communication. The lecturer has background knowledge of chemistry and biology, and beyond that very specialized knowledge of biochemical processes in the nervous system. The audience would lack the vocabulary, if nothing else, to make sense of the information.

There are many ideas in this model that should apply for examination of communication under a wide variety of circumstances. Figure Four illustrates this model—the colored overlapping ovals represent the fields of experience of the sender

and receiver.

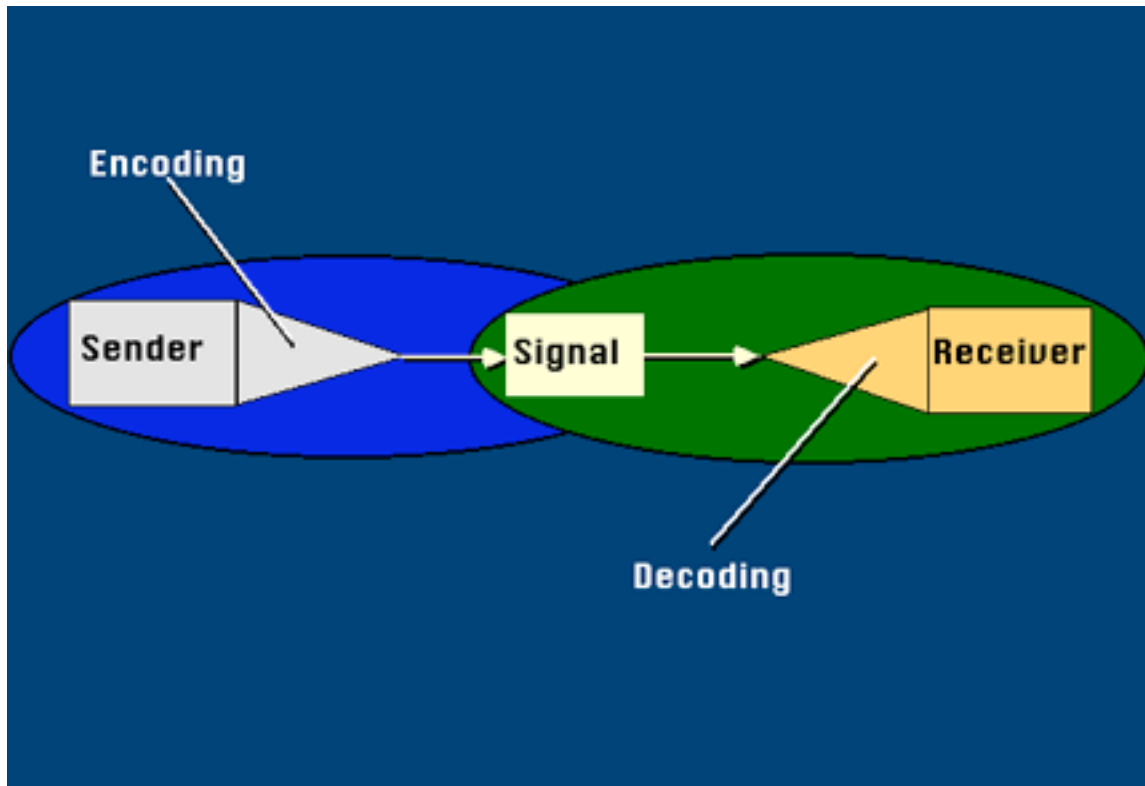


Figure Four: Schramm's Model

Another one of Schramm's models introduced the idea of feedback from the receiver to the sender. In this model, communication becomes a continuous process of messages and feedback. This model allows for interaction. This model appears in Figure Five (This illustration was originally animated to show the messages making the cycle).

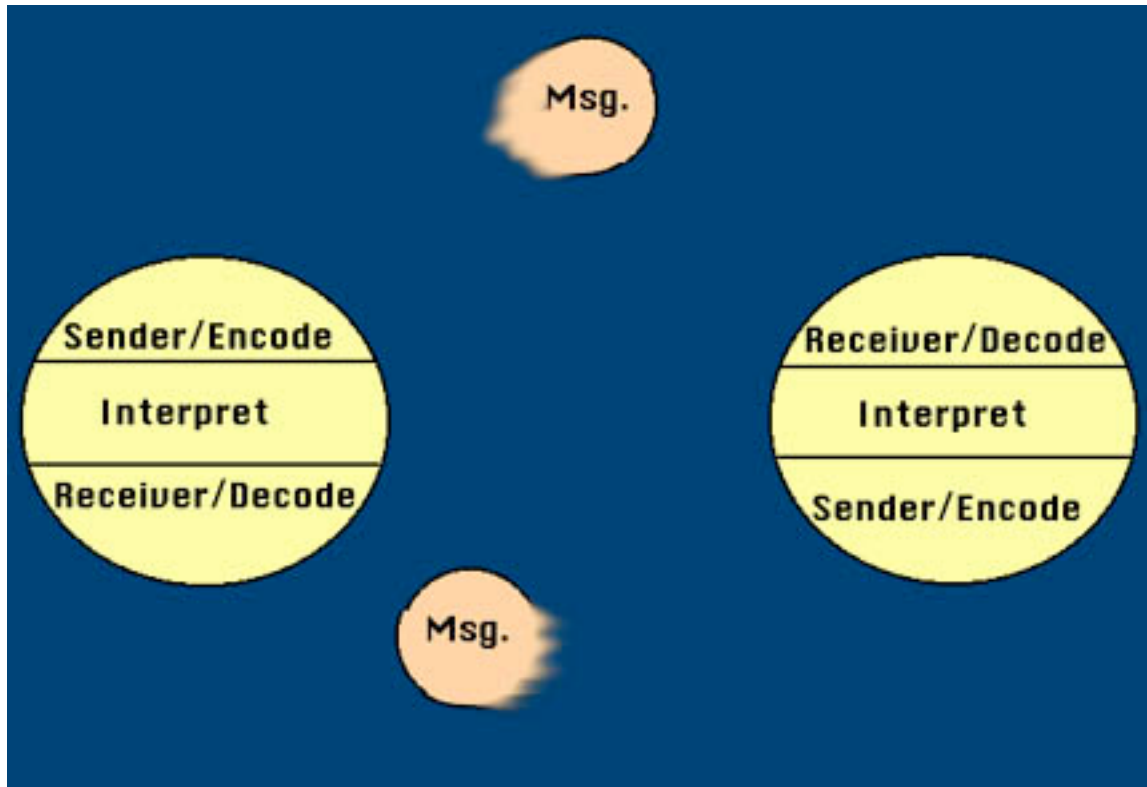


Figure Five: Another Model from Schramm

Berlo's Model

Berlo (1960) took a different approach to constructing a model. Rather than attempting to identify elements of interest, and relationships between those elements, he created what he called "a model of the ingredients of communication" (pp. 23–24). This model identifies controlling factors for four identified elements of communication: Source, Message, Channel, and Receiver. This model promises to be helpful in identifying specific factors to use in experimentation.

Berlo's Model

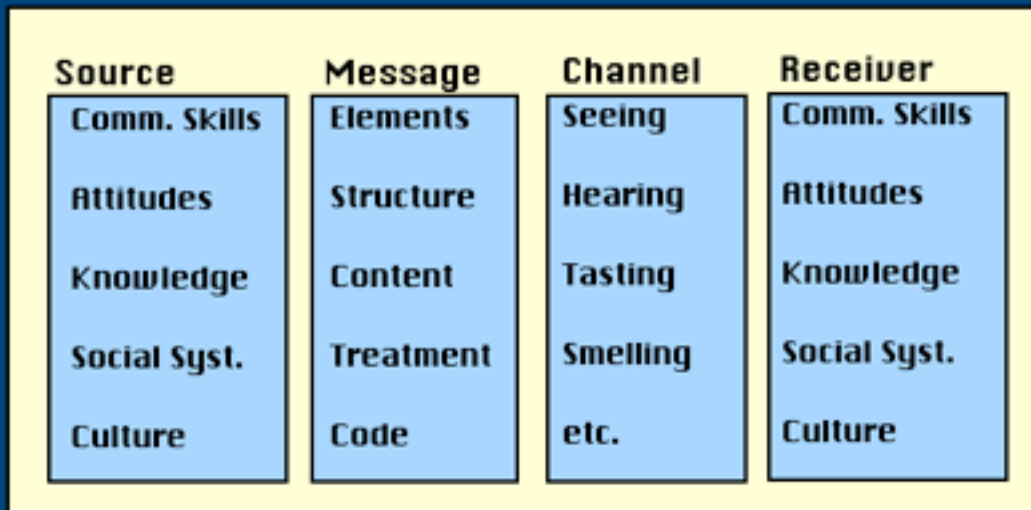


Figure Six: Berlo's "SMCR" Model

Some Questions for Students of Multimedia Theory

The smorgasbord of models provide several ways of examining communication. As multimedia designers, we must consider the function of multimedia as a means of communication. If we can properly represent the important elements and processes of multimedia communication, then we will have a foundation for posing questions and carrying out research.

Here are some questions for students to think about. Your ideas will fuel a discussion in the near future. (For many of these Berlo's model may be a helpful start).

- 1) What communication channels are open to multimedia developers?
- 2) What factors are significant in multimedia communication?
- 3) How much control does the multimedia developer have over the factors?
- 4) What user characteristics are significant?
- 5) Where might noise come into play? How can we minimize it?
- 6) What is the relationship between the content of the message and the channel(s) of communication?
- 7) Is there any potential problem with unintentional messages? How should we deal with them?

In general, start thinking how you would construct a model of communication to serve a guide for studying issues in multimedia.

References

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