**History**

During the Second World War, Claude E. Shannon, a research mathematician and electrical engineer at Bell Telephone Laboratories developed a mathematical theory of communication providing the first systematic framework to improve the design of telephone systems. Shannon’s aim was to identify the quickest and most efficient way (channel) to get a message from one point to another. This was motivated by the goal to discover how communication messages could be converted into electronic signals most efficiently, and how those signals could be transmitted with a minimum of error. The theory gives an approach of how to maximise the amount of information in a given channel and how to measure the channel’s capacity. He presented his theory in an article “A Mathematical Theory of Communication” published in two parts in the July and October issues of the Bell System Technical Journey in 1948. [[4]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1948-3) After this article was published, Warren Weaver recognised that Shannon’s information theory and model has a wider potential for the general communication theory. In 1964, “The Mathematical Theory of Communication” was published by the University of Illinois Press, Urbana consisting of two papers. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4), In the first part, W. Weaver gives an introduction and explanation of Shannon’s theory, accessible for non-scientist and more related to the human communication since the original work was designed under a technical aspect and was formulated as a binary mathematical model. Part two is a reprint of the article published in the Bell System Technical Journal in 1948 with some minor corrections. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)
Eventually, it became the basic model for communication, known as the Shannon and Weaver Model for Communication. In John Fiske’s words, this model is ' *widely accepted as one of the main seeds out of which communication Studies has grown. It is a clear example of the process school, seeing communication as the transmission of messages.* ' [[6]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Fiske-5)

**Basic Elements**

The Shannon and Weaver Model represents the communication process in a linear form which involves a one-way communication from a sender transmitting a message to a receiver. The basic model contains six basic elements which form the general communication system according to Shannon and Weaver. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)





Figure 1: General Communication System. Inspired by *Schematic diagram of general communication system.*[[4]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1948-3).

A desired message or a sequence of messages out of a set of possible messages is selected by the *information Source*, also called Sender. In order to send to message over the *communication channel*, a *transmitter* changes the messages into a signal. The *receiver* can be seen as an inverse transmitter which changes the signal back to a message and hands this message over to the destination. The noise, created by a *noise source* refers to any distortions or errors in the communication process which can occur during the transmission or at one of the terminals. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)

**Example of Oral Communication**





Figure 2: Illustrated Example of Oral Communication [Created by author]

W. Weaver gives a simple example of human communication in order to understand the elements of the Communication Model. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)

In this particular case of oral communication, Person A wants to share an idea with Person B. The brain (information source) of person A selects the desired idea (message) to transfer to person B. The voice mechanism (transmitter) of Person A transforms the thought into sound which is transferred through the air (channel). When the oral message arrives in the ear and its associated nerves of Person B, the sound can be reconstructed into the idea, so Person B received the idea. As Person A speaks to Person B in a loud surrounding (noise source), it might be that Person B can not fully receive the sound. Or, Person B got distracted by the loud background and thus, does not listen to the incoming sound of Person A. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)

**The Levels of Communication Problems**

Shannon and Weaver identified and suggested three levels of problems in the area of communication. These levels show no clear boundaries, but rather an overlapping and interrelation with each other. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)

**Level A**
The *technical problem*: How accurately can the symbol of communication be transmitted?

**Level B**
The *semantic problem*: How precisely do the transmitted symbols convey the desired meaning?

**Level C**
The *effectiveness problem*: How effectively does the received meaning affect conduct in the desired way?

The technical problem in Level A represents the main question for that the model was originally developed for. [[6]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Fiske-5) It focusses on the correct transference of sets of symbols, signals or pattern from the sender to the receiver. The accuracy depends on the technical efficacy of the medium or the channel.
Semantic problems compare the coverage of the intended meaning transmitted from the sender with the meaning interpreted by the receiver. The effectiveness problem deals with the extent to which the meaning expressed by the sender and transmitted affect the conduct of the receiver in the desired way. [[5]](http://apppm.man.dtu.dk/index.php/Shannon_%26_Weaver_Model_for_Communication#cite_note-Shannon1964-4)