The diagram represents a communication system. The information source produces a message $x$, which is encoded by the transmitter to create a signal $s = f(x)$. The signal is then transmitted and arrives at the receiver, which demodulates it to recover the received signal $r$. The received signal $r$ is then processed to obtain the received message $y = g(r)$, which is sent to the destination. The channel is subject to noise $\eta$.