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The theory of information and coding: *A mathematical framework for communication*, by Robert J. McEliece, Addison-Wesley, London, Amsterdam, Don Mills, Ontario, Sydney, Tokyo, 1977, xvi + 302 pp., $21.50.

In the beginning (30 years ago) were Shannon and Hamming, and they took two different approaches to the coding problem. Shannon showed that the presence of random noise on a communications channel did not, by itself, impose any nonzero bound on the reliability with which communications could be transmitted over the channel. Given virtually any statistical description of the channel noise, one could compute a number C, called the channel capacity, which is a limit on the rate at which information can be transmitted across the channel. For any rate $R < C$, and any $\varepsilon > 0$, one could concoct codes of rate R which would allow arbitrarily long blocks of information to be transmitted across the noisy channel in such a way that the entire block could be correctly received with probability greater than $1 - \varepsilon$. Shannon's results were astounding and, at first, counterintuitive. However, they opened an area of study which has continued until this day. Modern practitioners of the "Shannon theory" continue to study questions of what performance is theoretically possible and what is not when one is free to use asymptotically long codes. The major activity in this area in the last few years has been related to questions about networks of channels, and broadcast channels, in which the same transmitted information is corrupted by different types of noise before being received by many different receivers. The main