Exhibit D

DIGITAL CODING OF WAVEFORMS
Principles and Applications to Speech and Video

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Library of Congress Cataloging in Publication Data

Jayant, Nuggehally S., 1946-
Digital coding of waveforms.

Includes index.
1. Signal processing—Digital techniques. 2. Coding theory. I. Noll, P. (Peter), 1936- II. Title.
TK5102.J39 1984 621.38'043 83-22170
ISBN 0-13-211913-7

Editorial/production supervision: *Shari Ingerman*
Cover design: *Edsal Enterprises*
Manufacturing buyer: *Tony Caruso*
Page layout: *Diane Koromhas*

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN 0-13-211913-7 01

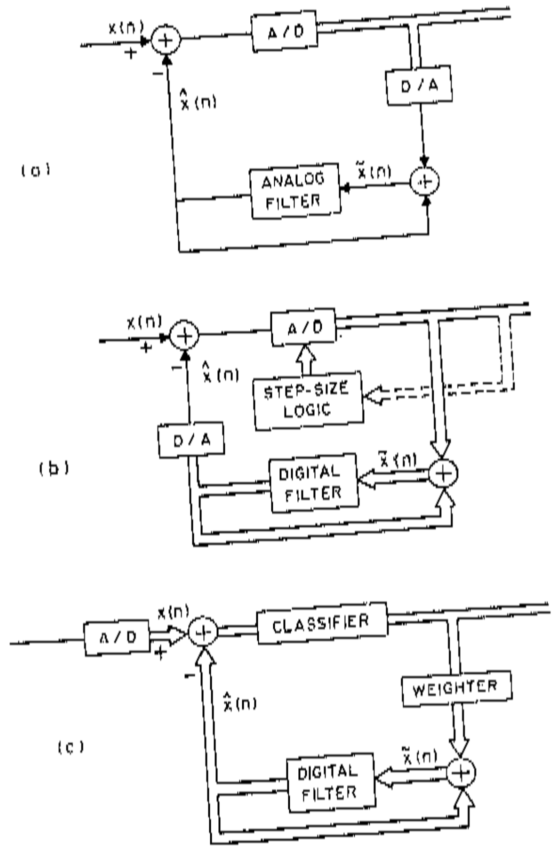

Figure 6.2 Variations of a DPCM coder: (a) an "analog" implementation with a fixed uniform quantizer; (b) a "digital" implementation with an adaptive quantizer; and (c) a "digital" implementation with a fixed nonuniform quantizer.

The fact that $y(n) = \tilde{x}(n)$ is available at the transmitter (as a "locally decoded" value) means that both transmitter and receiver can use the same prediction algorithm:

$$\hat{x}(n) = f[y(n-1), y(n-2), \ldots] \quad (6.9)$$

An alternative algorithm such as

$$\hat{x}(n) = f[x(n-1), x(n-2), \ldots] \quad (6.10)$$

would have the advantage of better predictions at the encoder, based on uncorrupted input samples rather than on quantization-noise-corrupted samples as in (6.9). However, in this case, the receiver would still be forced to employ (6.9), and differing prediction values at the encoder and decoder would result in an overall poorer mse performance. The *open-loop* structure implied in (6.10) can,