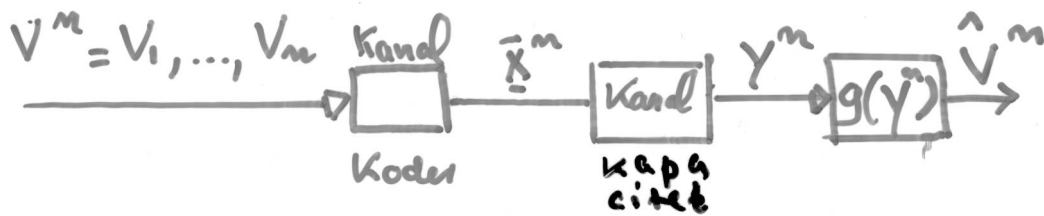


Co&Th Theorem 7.13.1 Negativ del.

$V_1, V_2, \dots, V_n, \dots$ hukommelsesfri kilde

dvs. V_1, V_2, \dots i.i.d med $V_i \in \mathcal{V}$

og entropi $H = H(V_1) = H(V_2) = \dots$



$$P_e = \Pr(\hat{V}^m \neq V^m)$$

7.13.1 Negativ: Hvis $P_e \xrightarrow{0}$ for $n \rightarrow \infty$, så $H \leq C$

Af Fanó's ulighed fås

$$H(P_e) + P_e \log_2 |\mathcal{V}^m| \geq H(V^m | \hat{V}^m),$$

og dermed

$$1 + n P_e \log_2 |\mathcal{V}| \geq H(V^m | \hat{V}^m)$$

$$\geq H(V^m) - I(V^m; \hat{V}^m)$$

$$= nH - I(V^m; \hat{V}^m) \quad (V_1, \dots \text{ hukommelsesfri})$$

$$\geq nH - I(\bar{X}^m; Y^m) \quad (\text{Dataprocessing...})$$

$$\geq nH - nC \quad (\text{Lemma 7.9.2}),$$

hvoraf $P_e \log_2 |\mathcal{V}| \geq H - C - \frac{1}{n}$ o.s.v.