Definition 8.5 For a distortion measure d, for each $x \in \mathcal{X}$, let $\hat{x}^*(x) \in \hat{\mathcal{X}}$ minimize $d(x, \hat{x})$ over all $\hat{x} \in \hat{\mathcal{X}}$. A distortion measure d is said to be normal if

$$c_x \stackrel{\text{def}}{=} d(x, \hat{x}^*(x)) = 0$$

for all $x \in \mathcal{X}$.

Example 8.6 Let d be a distortion measure defined by

$d(x, \hat{x})$	a	b	c
1	2	7	5
2	4	3	8

Then $\hat{x}^*(1) = a$ and $\hat{x}^*(2) = b$.