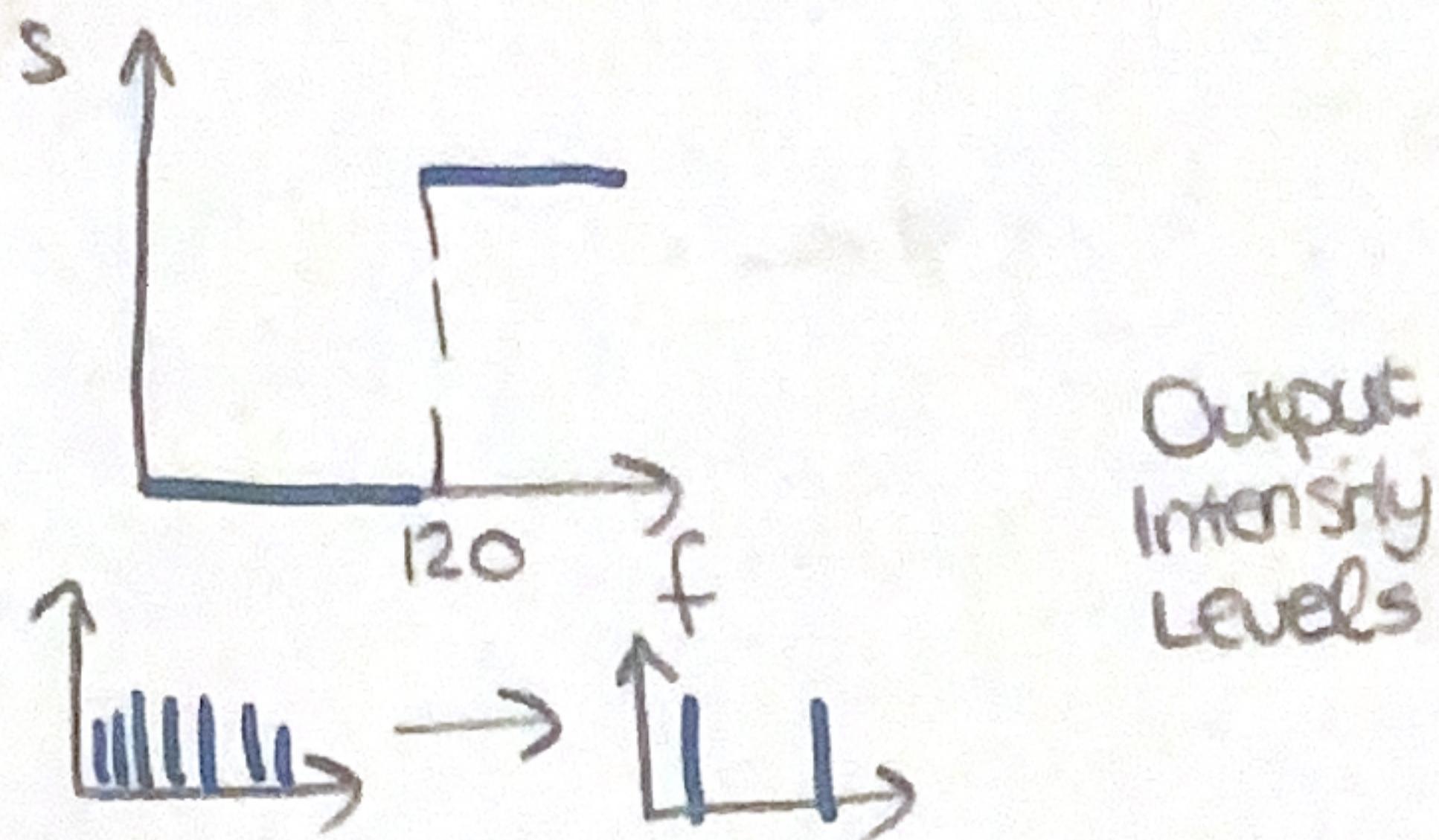


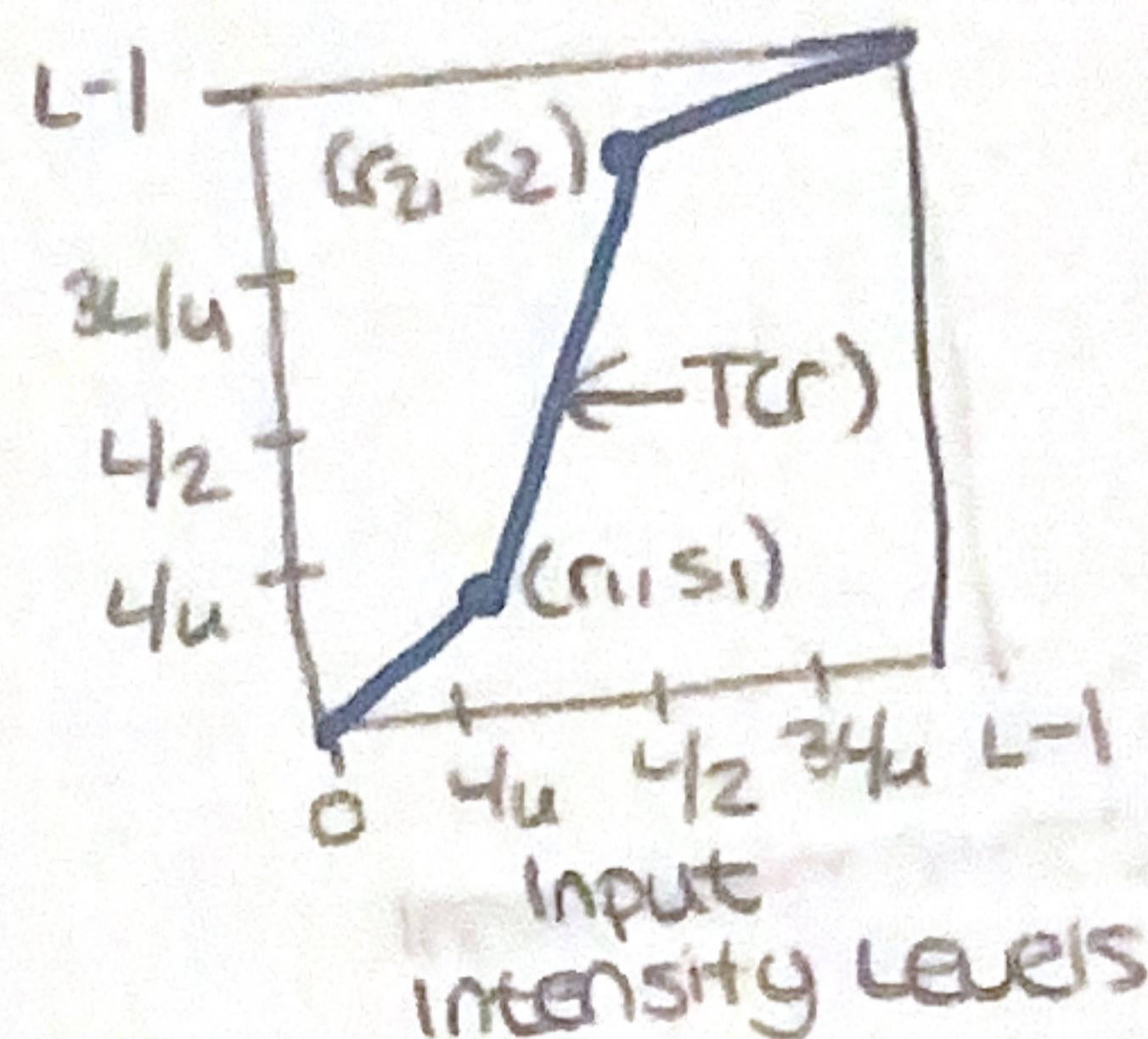
→ Image Binorization

Makes images B&W



→ Contrast Stretching

Expands range of intensity levels so that it comes to an ideal range.



Histogram Processing

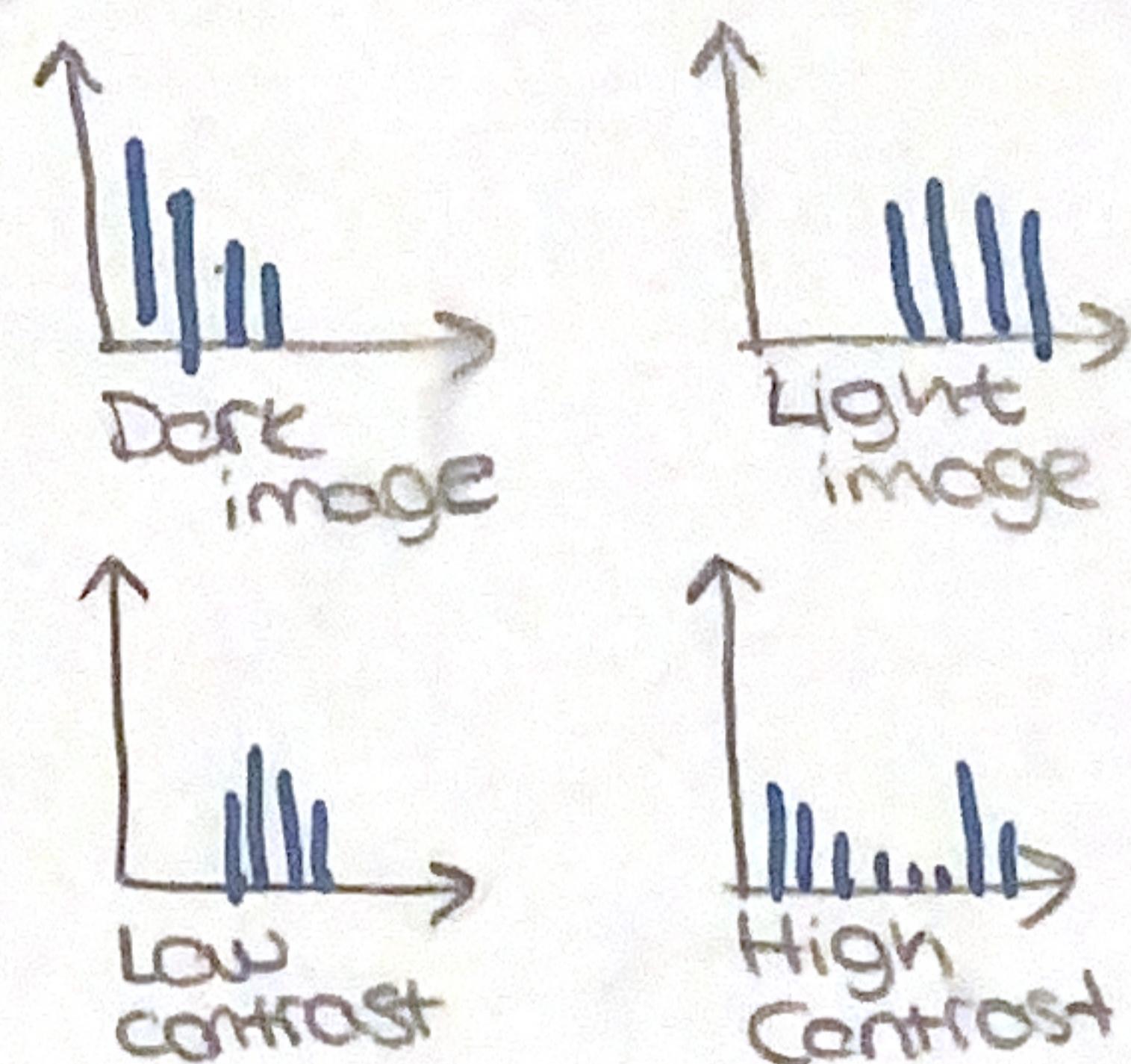
Distribution of intensity values.

$$\rightarrow h(r_k) = n_k \text{ for } k = 0, 1, \dots, L-1$$

↓ ↓
intensity level number of pixels
 in f with intensity r_k

$$\rightarrow P(r_k) = \frac{n(r_k)}{MN} = \frac{n_k}{MN}$$

↓ ↓
estimates raw column
of probs of row column
intensity levels



Histogram Equalization

Used to improve contrast.

Cumulative Distr. Func → $\sum_0^{255} \frac{n_i}{n} \quad Pr(v_k) = \frac{n_k}{n}$

↓
probability density function

What we do → $s_i = cdf_i \cdot (L-1)$

Ex:

1	1	1	1
1	5	6	1
1	6	5	1
1	1	1	1

$$\begin{aligned}
 &Pr_1 = 12/16 \quad cdf_1 = 12/16 \quad s_1 = \frac{12}{16} \cdot 255 \\
 &Pr_5 = 2/16 \quad cdf_5 = 14/16 \quad s_2 = \frac{14}{16} \cdot 255 \\
 &Pr_6 = 2/16 \quad cdf_6 = 16/16 \quad s_3 = \frac{16}{16} \cdot 255
 \end{aligned}$$

PDF → CDF → Equalization