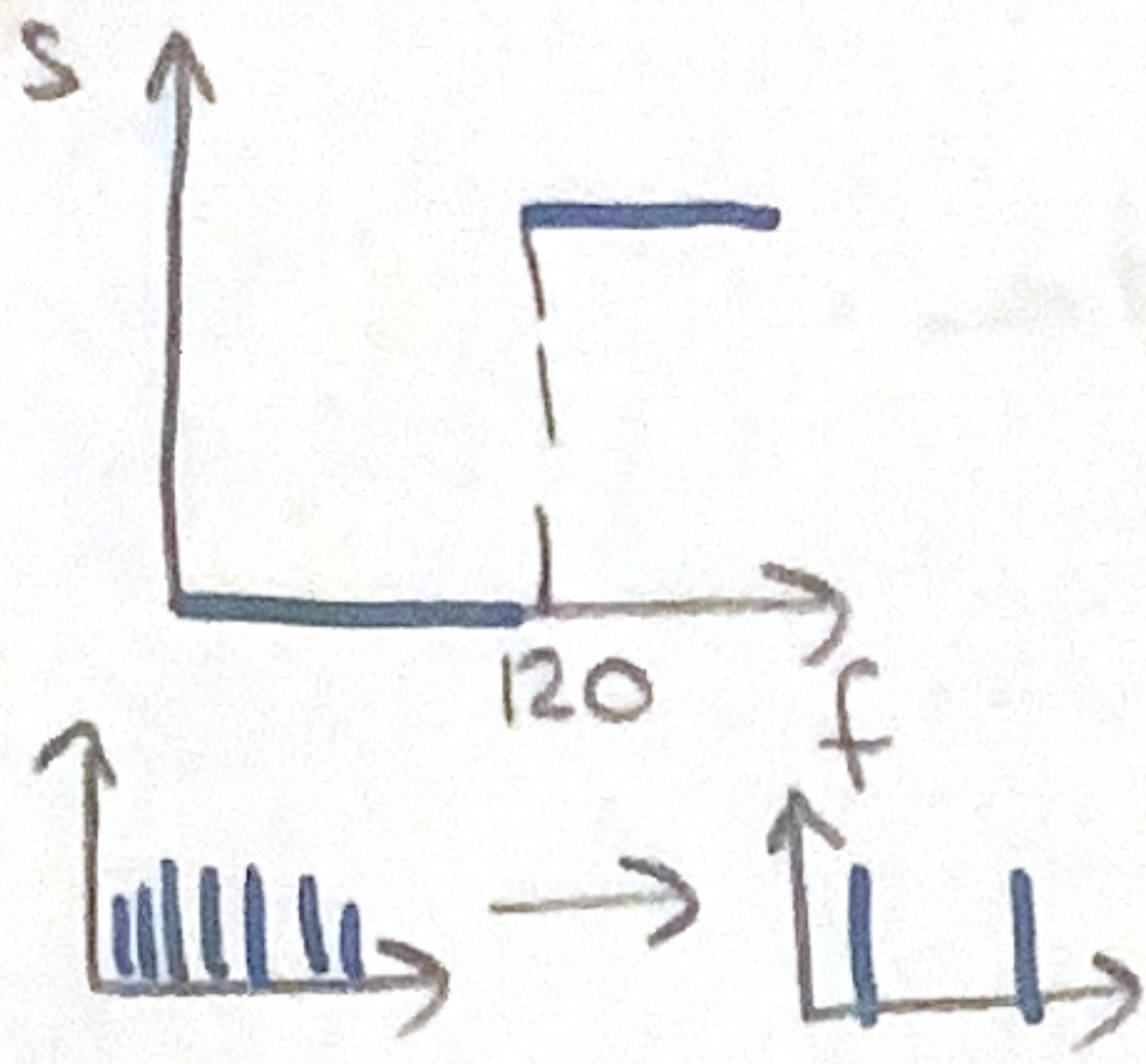


→ Image Binarization

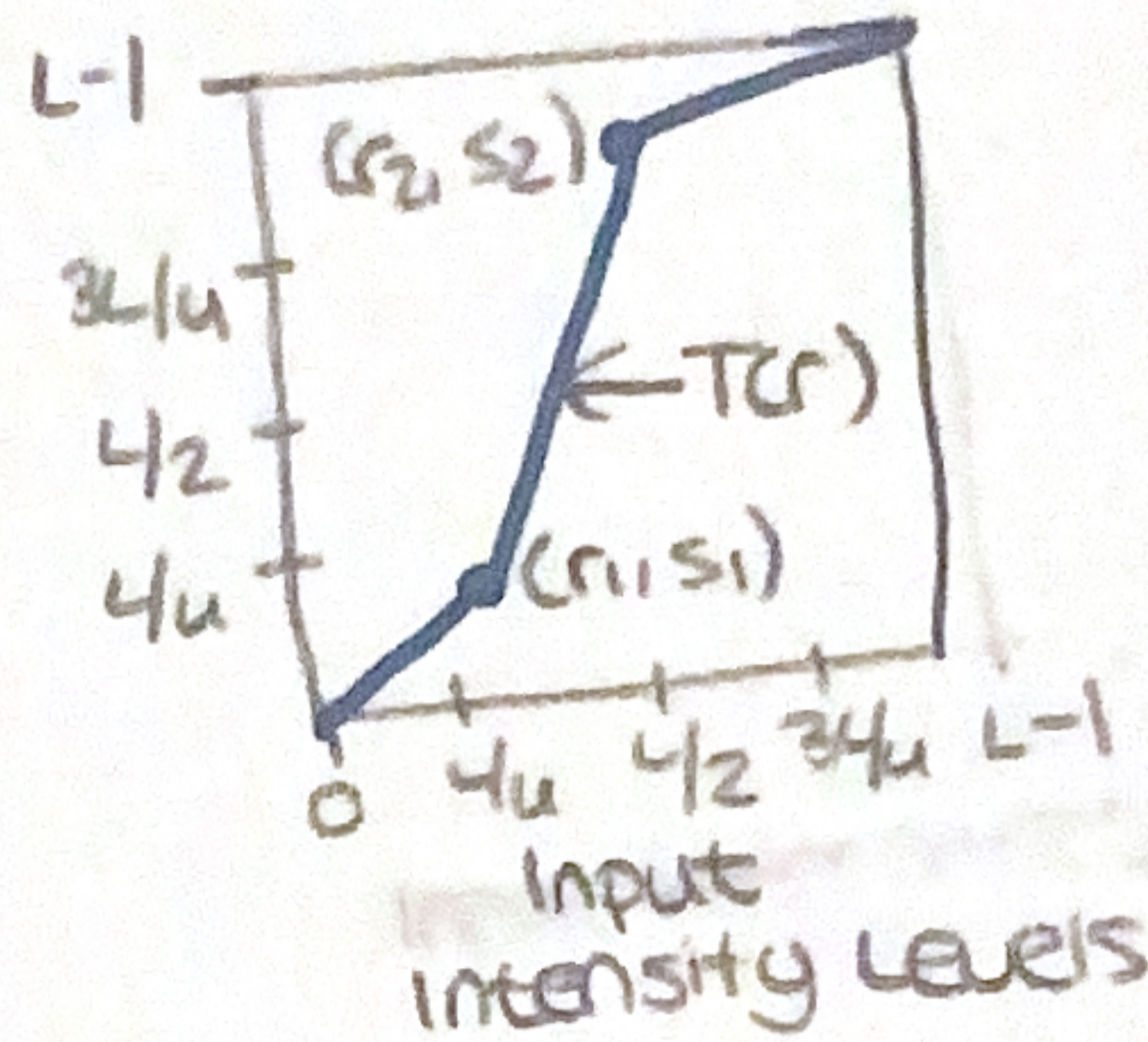
Makes images B & W



Output Intensity Levels

→ Contrast Stretching

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



Histogram Processing

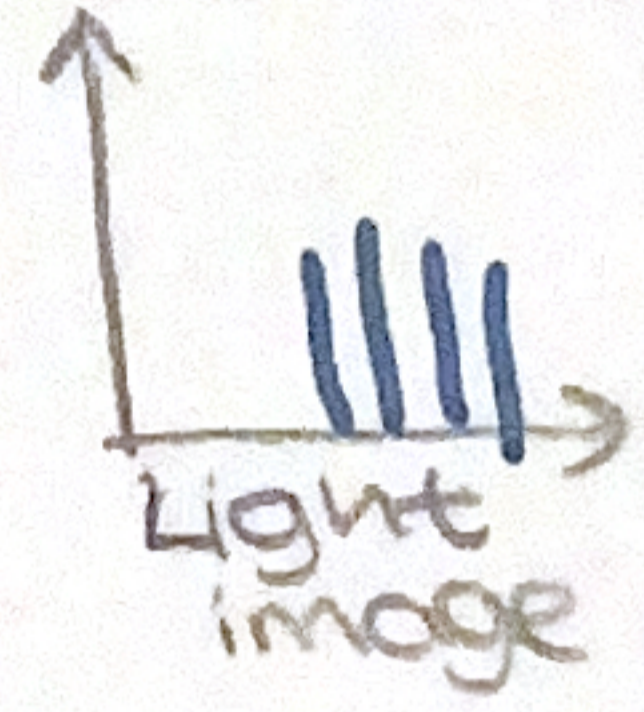
Distribution of intensity values.

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

\downarrow intensity level \rightarrow number of pixels in f with intensity r_k

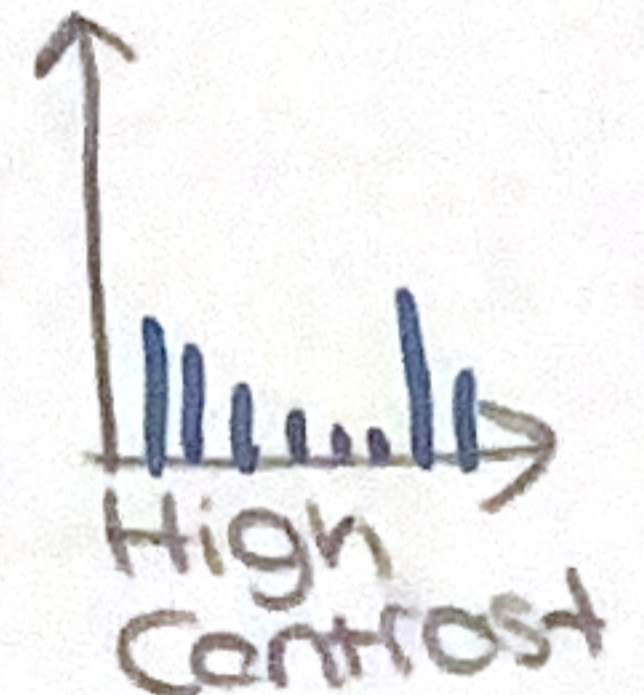
$$\rightarrow p(r_k) = \frac{h(r_k)}{MN} = \frac{n_k}{MN}$$

\downarrow estimates of probs of intensity levels row \leftarrow column



Histogram Equalization

Used to improve contrast.



Cumulative Distr. Func $\rightarrow \sum_0^{255} \frac{n_i}{n}$ $Pr(r_k) = \frac{n_k}{n}$ \rightarrow probability density function

What we do $\rightarrow S_i = cdf_i \cdot (L-1)$

ex

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

$$Pr_1 = 12/16 \quad cdf_1 = 12/16$$

$$S_1 = \frac{12}{16} \cdot 255$$

$$Pr_5 = 2/16 \quad cdf_5 = 14/16$$

$$S_2 = \frac{14}{16} \cdot 255$$

$$Pr_6 = 2/16 \quad cdf_6 = 16/16$$

$$S_3 = \frac{16}{16} \cdot 255$$

PDF \rightarrow CDF \rightarrow Equalization