- By Lemma 12.29, U_A for a Type I atom A has the form prescribed by

$$\mathcal{N}_n \backslash U_A = \{l, l+1, \cdots, u\}.$$

- Inspection of the information diagram reveals that for a Type I atom A,

$$
\begin{aligned}
\mu^*(A) &= \mu^*(\tilde{X}_l \cap \tilde{X}_{l+1} \cap \cdots \cap \tilde{X}_u - \tilde{X}_{U_A}) \\
&= I(X_l; X_u | X_{U_A}) \\
&\geq 0.
\end{aligned}
$$