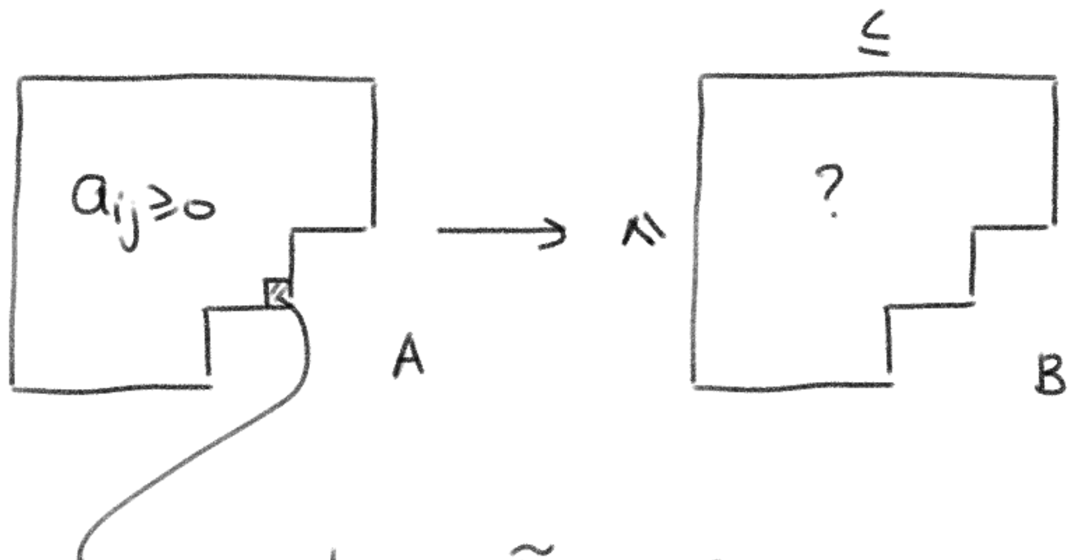
Construction of $\varphi_K = \varphi_K^{RSK}$

Induction on $|K|$

<u>Base</u> $K = \emptyset$ $\quad \varphi_\emptyset : \{\emptyset\} \longrightarrow \{\emptyset\}$

<u>Induction Step</u>:

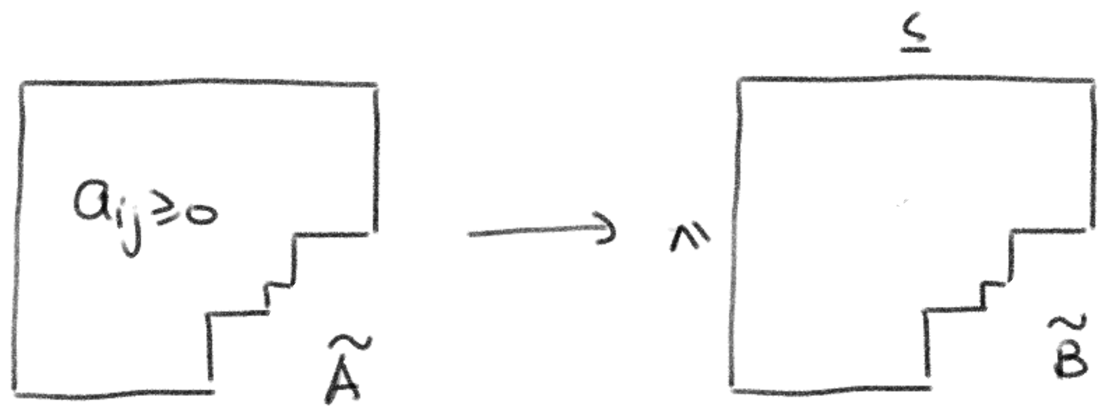
φ_K :



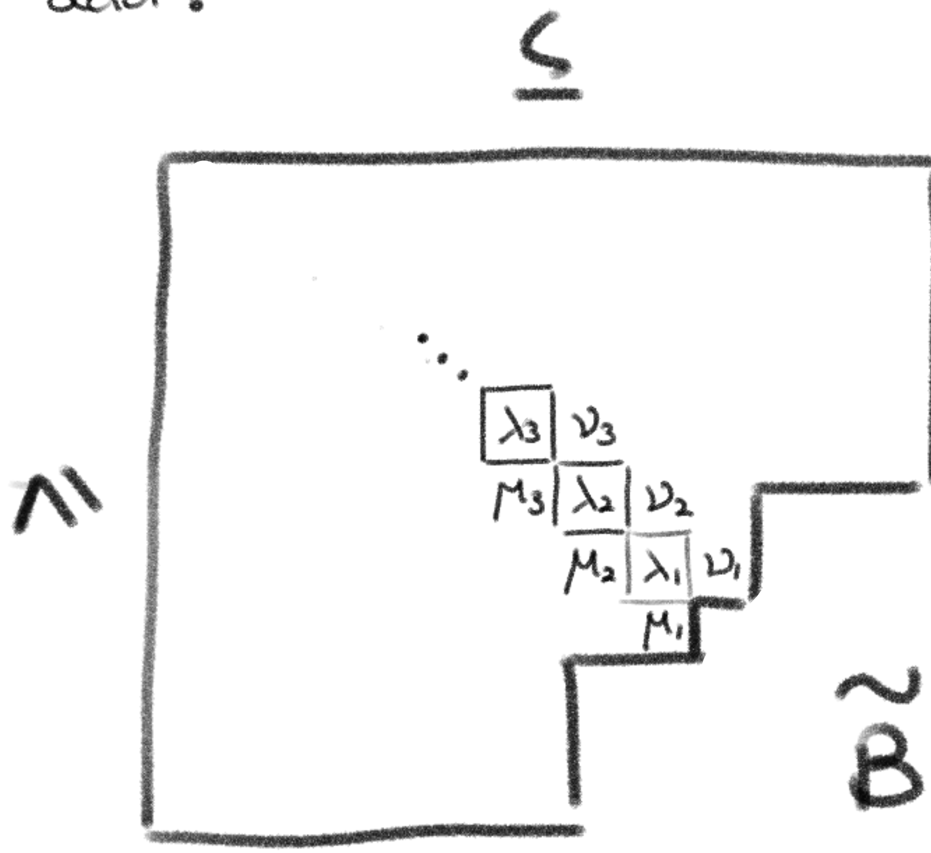
remove corner box. $\tilde{K} = K \setminus \{c\}$

and let $\tilde{A} = A$ without entry in the box c.

$\varphi_{\tilde{K}}$

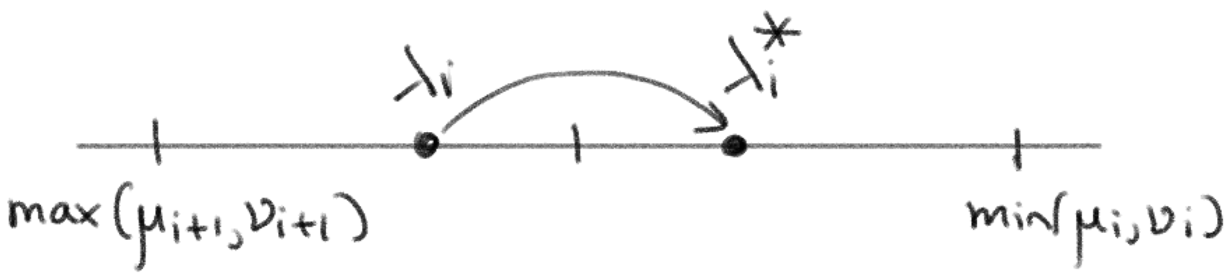


by induction, we have the map, let's explain how to add:



$$
\begin{array}{lccccccc}
(k-1)^{th} \text{ diagonal} & \mu_1 & \mu_2 & \mu_3 & \mu_4 & \ldots & 0 & \ldots \\
k^{th} \text{ diagonal} & \lambda_1 & \lambda_2 & \lambda_3 & & \ldots & 0 & \ldots \\
(k+1)^{th} \text{ diagonal} & \nu_1 & \nu_2 & \nu_3 & \nu_4 & \ldots & 0 & \ldots
\end{array}
$$

we have $\lambda_i \in [\max(\mu_{i+1}, \nu_{i+1}), \min(\mu_i, \nu_i)]$



<u>toggle operation:</u>

$$\lambda_i^* = \min(\mu_i, \nu_i) + \max(\mu_{i+1}, \nu_i) - \lambda_i$$

and $\lambda_0^* = \max(\mu_1, \nu_1) + a$

where a is the entry of A in corner box c.

<u>Step</u> B is obtained from $\tilde{B}$ by replacing the diagonal $\lambda_1, \lambda_2, \dots$ by $\lambda_0^*, \lambda_1^*, \lambda_2^*, \dots$ $\square$.