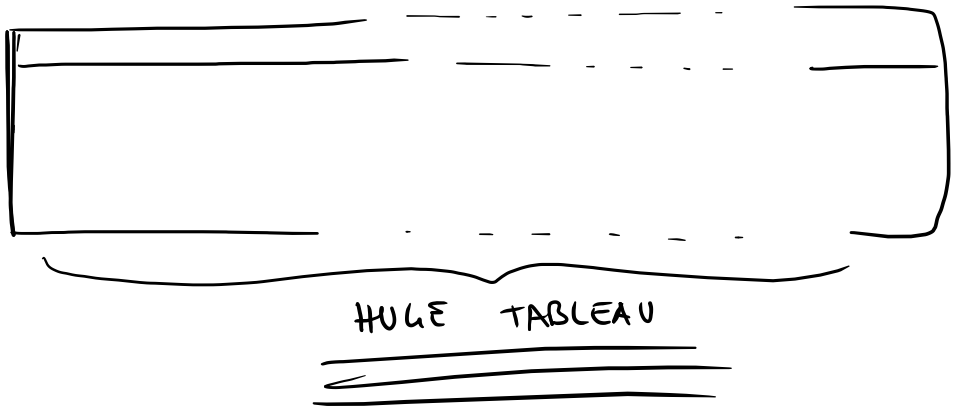
Revised simplex method



Probable constraints : $x_i + x_j \leq 1$ ⇒ Lots of 0s

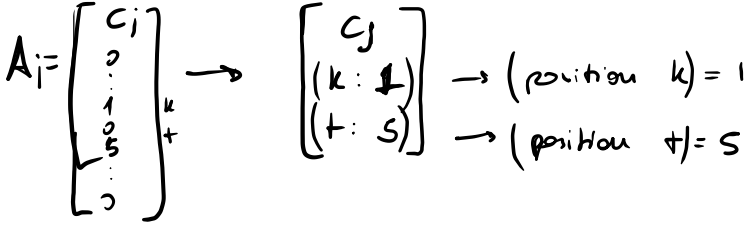
↓

I don't keep the matrix in memory but a sparse version of the tableau

↓

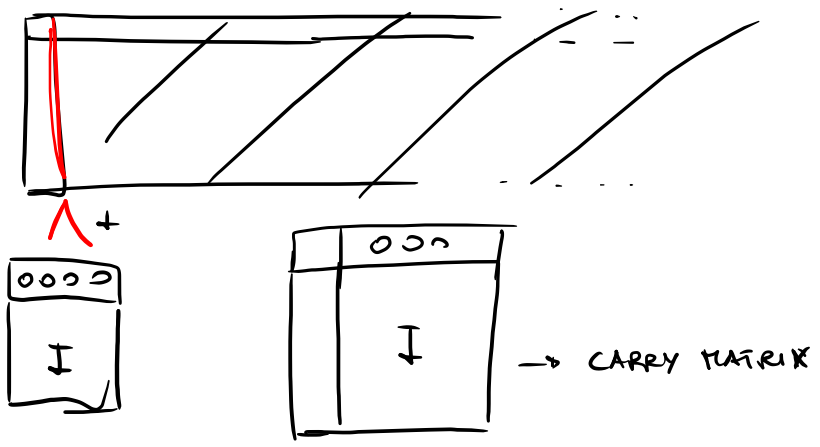
position and value of the non-zero elements

Usually we store columns : the cost and elements $\neq 0$



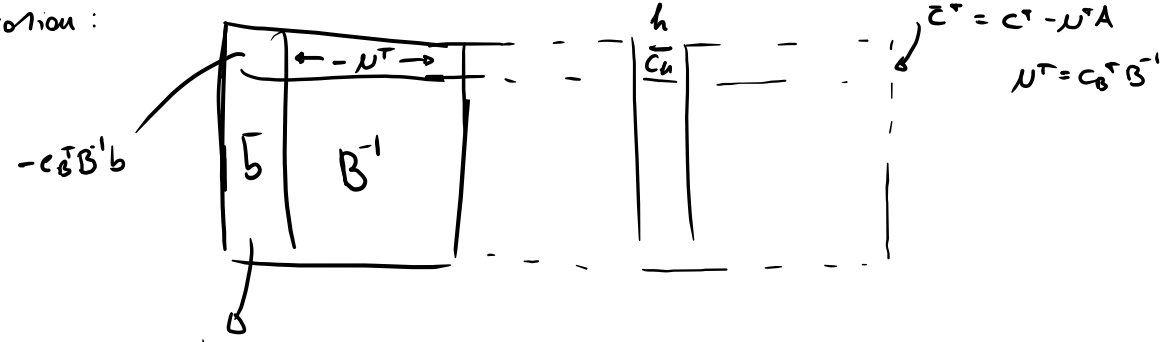
After lots of iterations → lots of non-zero... ⇒ can't keep the sparse format

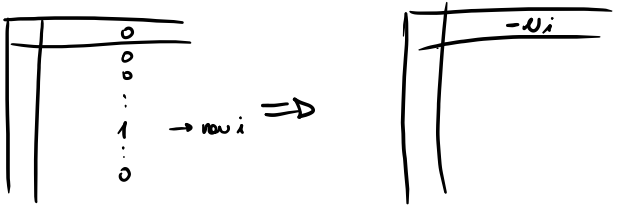
1 cut the tableau and store only the left part



the rest of the tableau can be computed from the carry matrix

First iteration:



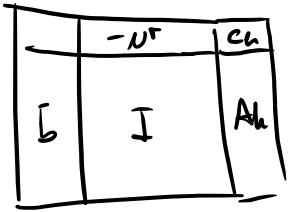


stored at the beginning

$\bar{c}_i = \bar{c}_{ih} - \nu^T \bar{A}_i$

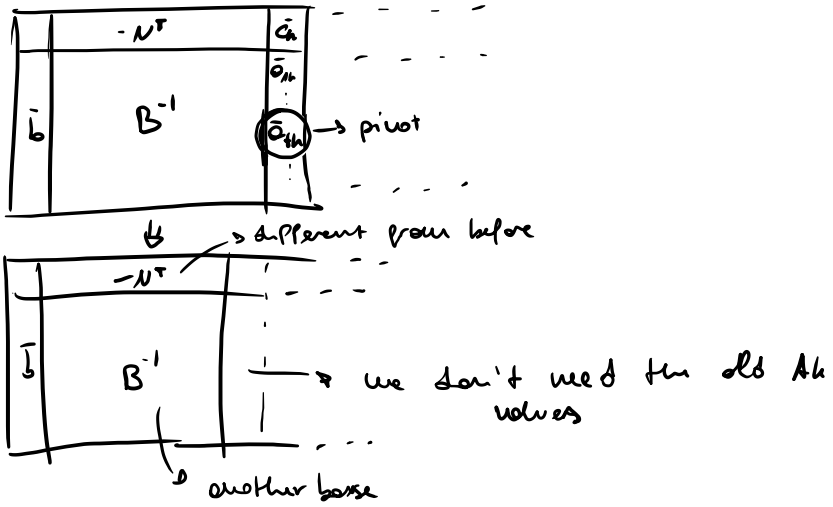
↳ product is fast if the matrix is sparse

I will find $\bar{c}_h < 0$ ⇒ Compute A_h



→ from here I can search and make the pivot operation

I will need to update just the $m \times m$ matrix



Typically : # pivot operations needed $\sim 3m$ $\ll n$

(# iterations)

Most of the variables will probably remain non-basis