

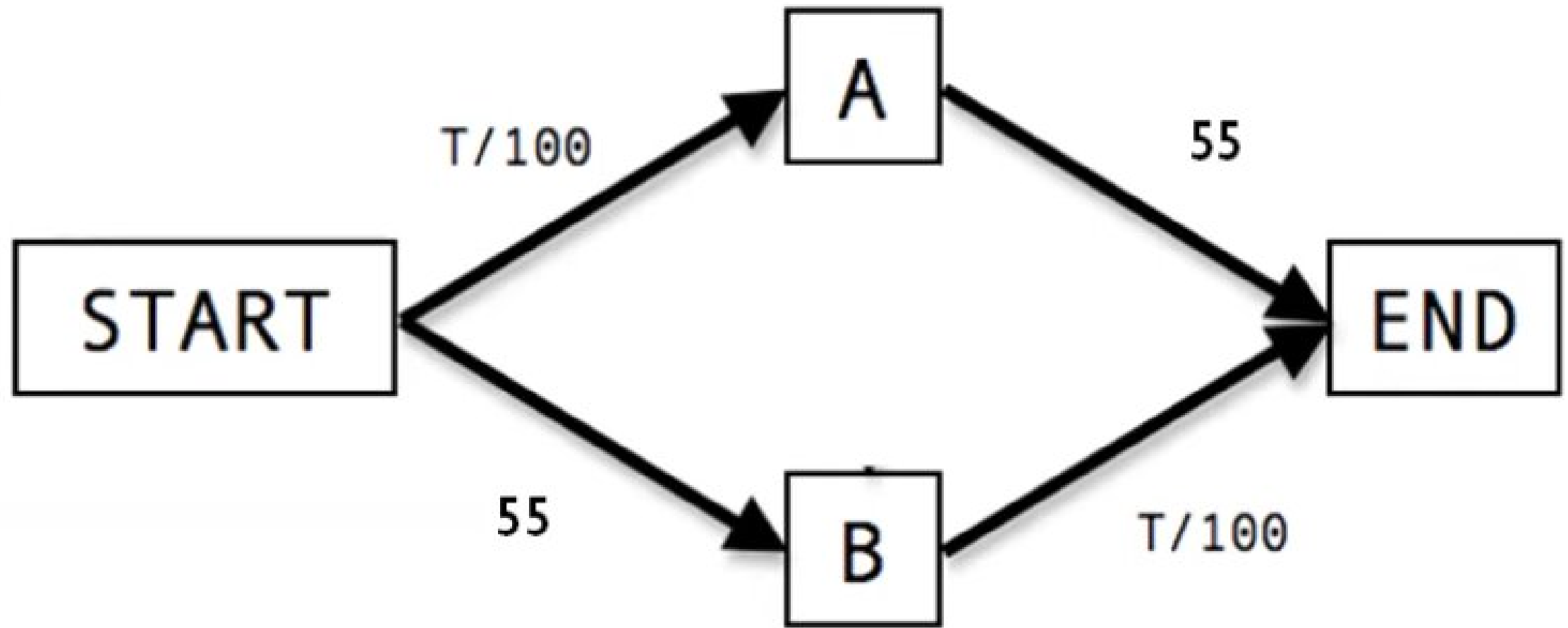
Paradoxe de Braess

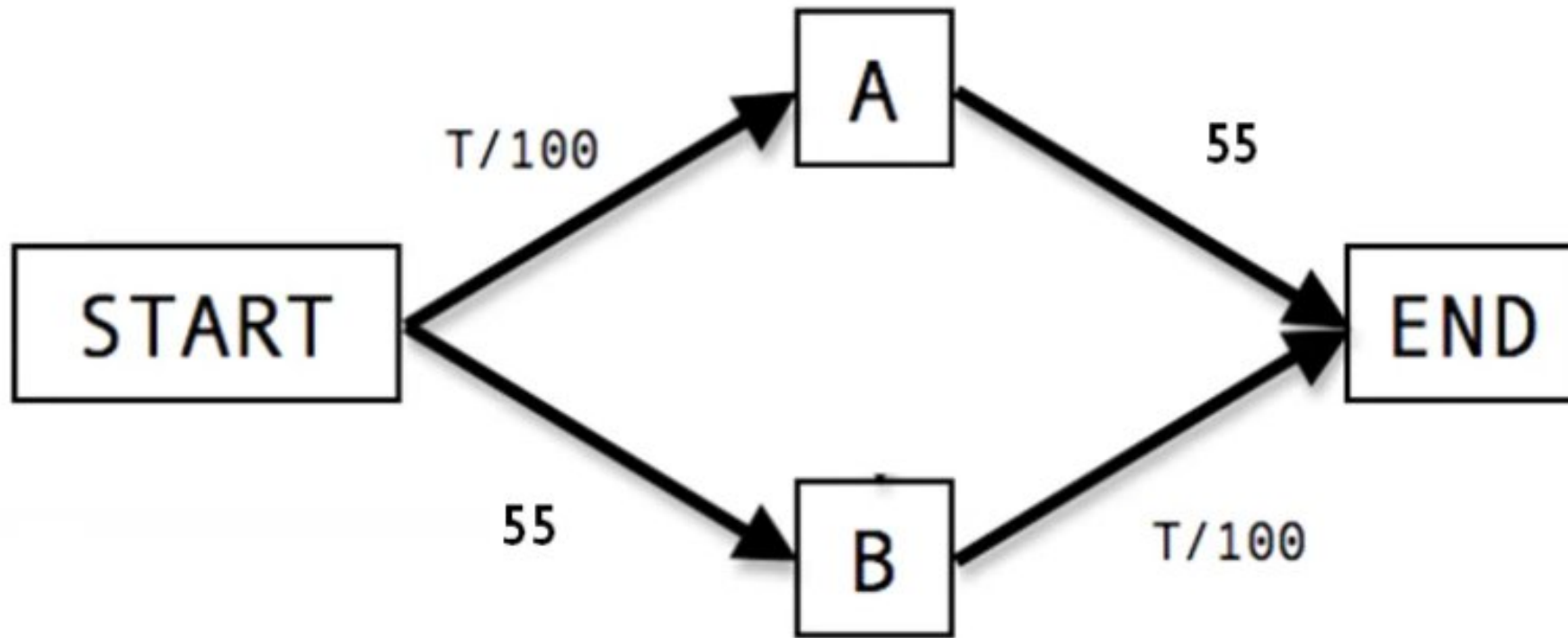


Chaine youtube « Paradoxe » de Léo Gerville-Réache

<https://www.youtube.com/watch?v=4x4VtyjAxXY>

<https://www.youtube.com/watch?v=u5la3hrfMa8>



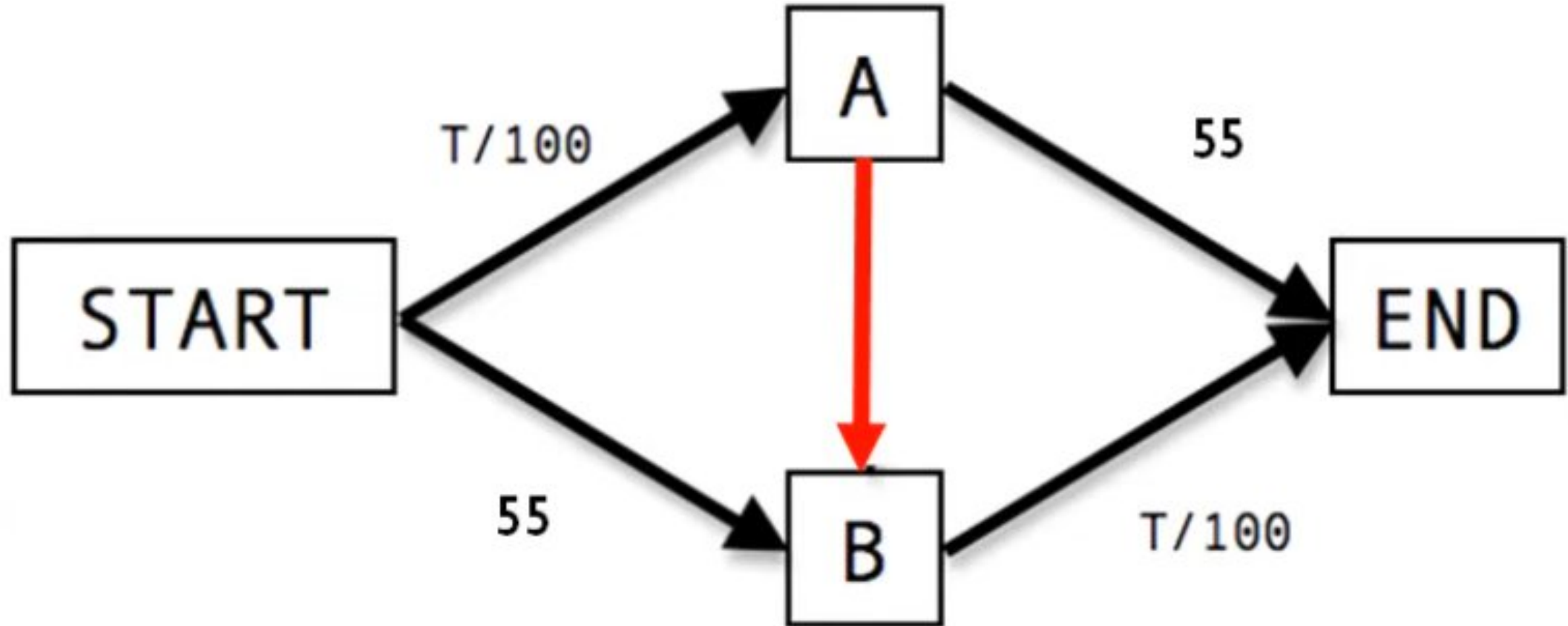


4000 Individus

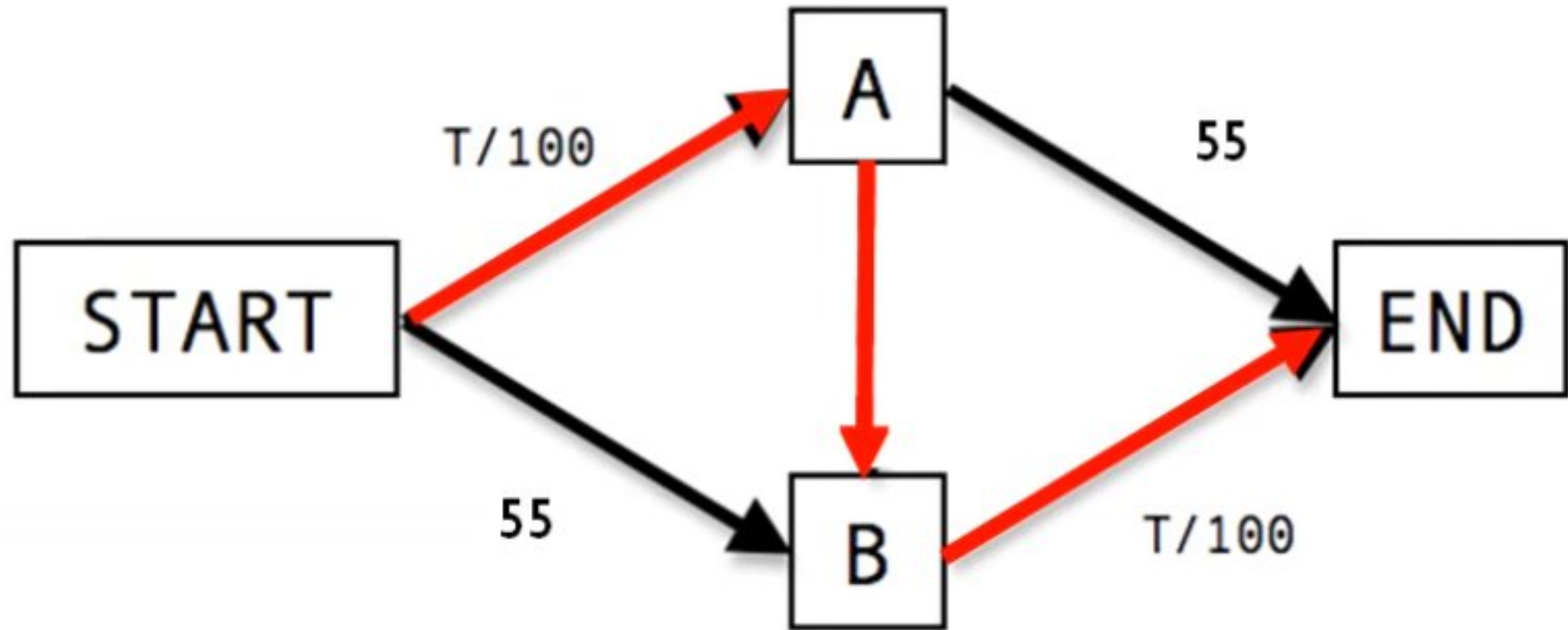
$$\text{Temps} = T/100 + 55$$

$$P(A) = P(B) = 1/2$$

$$\text{Temps} \approx 2000/100 + 55 = 75$$



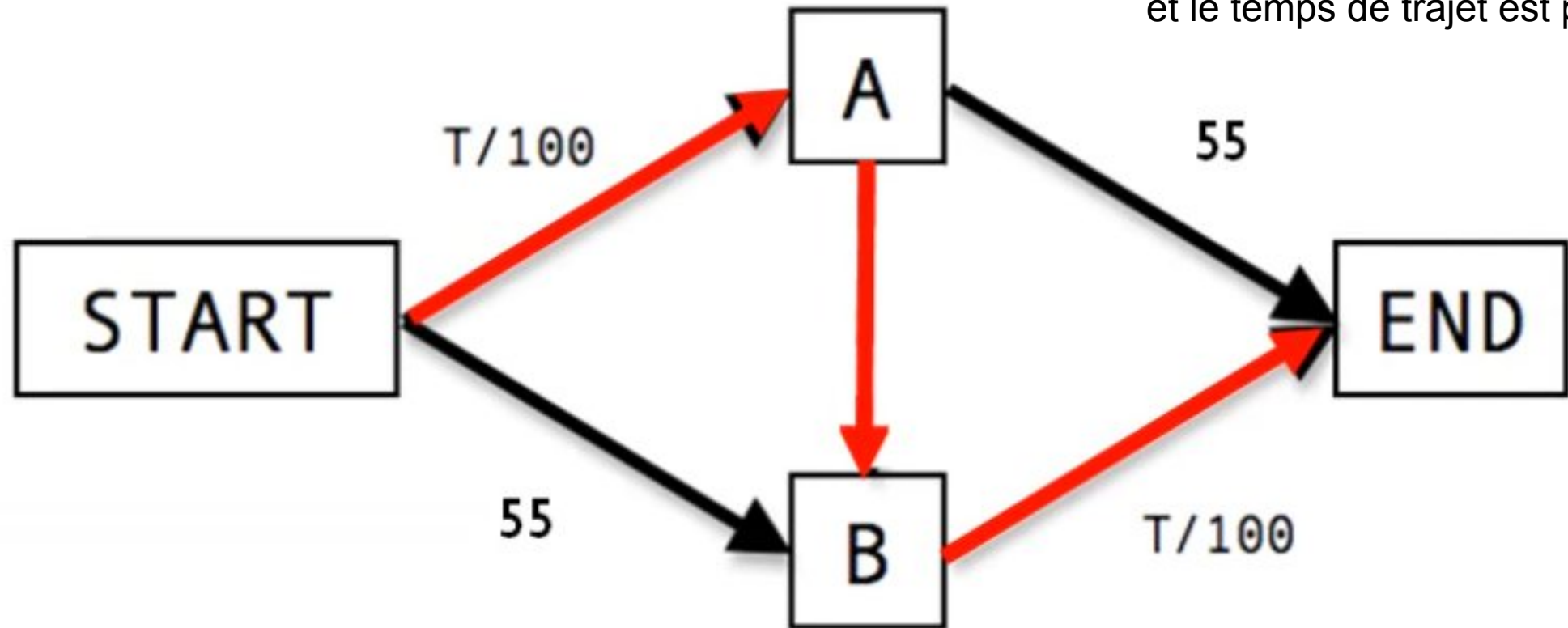
4000 Individus



4000 Individus

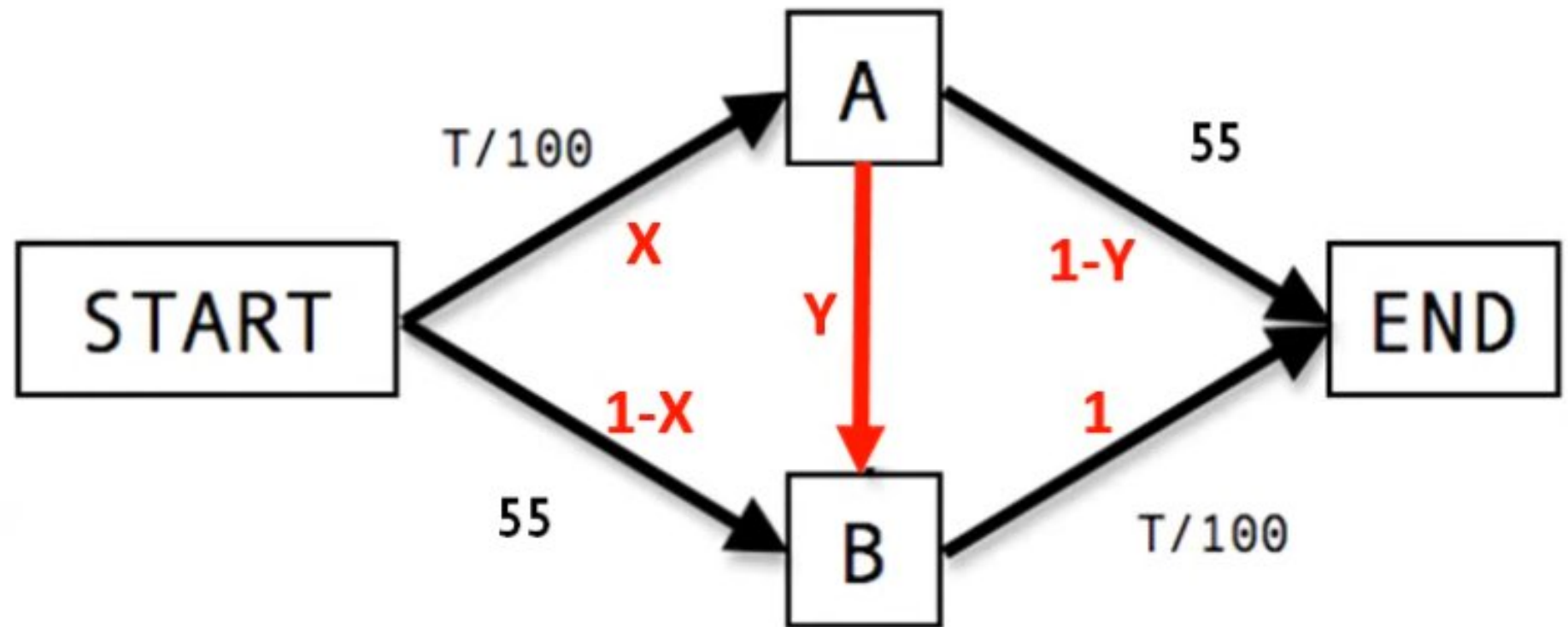
$$\text{Temps} = 4000/100 + 4000/100 = 80$$

On ajoute une route,
et le temps de trajet est plus long !

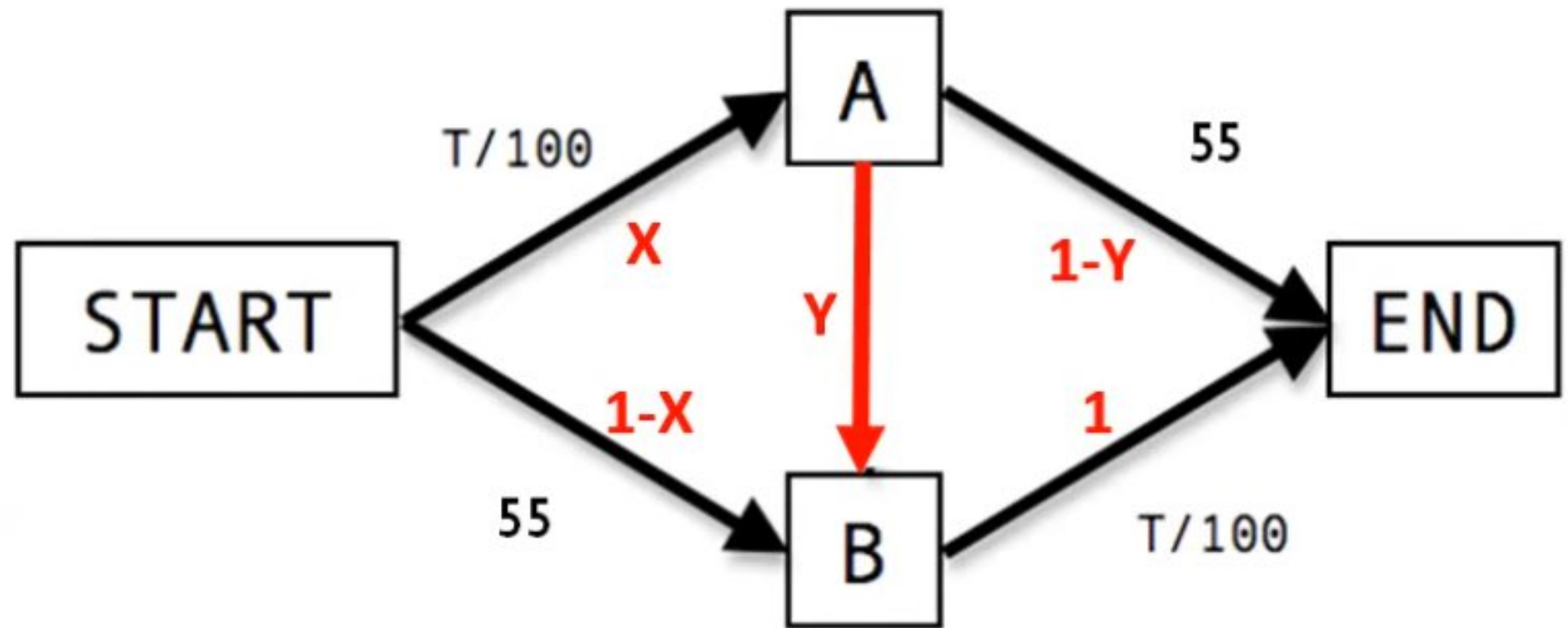


4000 Individus

$$\text{Temps} = 4000/100 + 4000/100 = 80$$

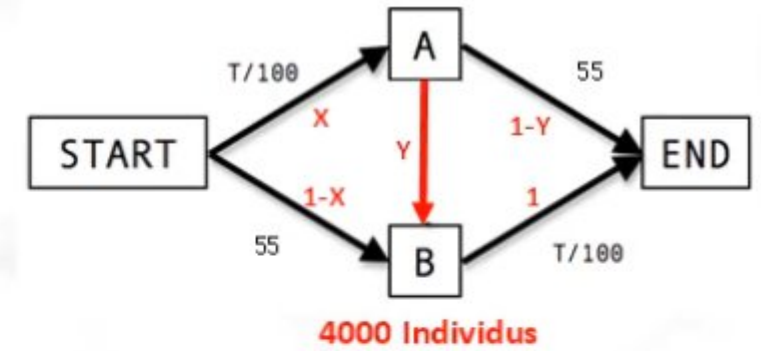
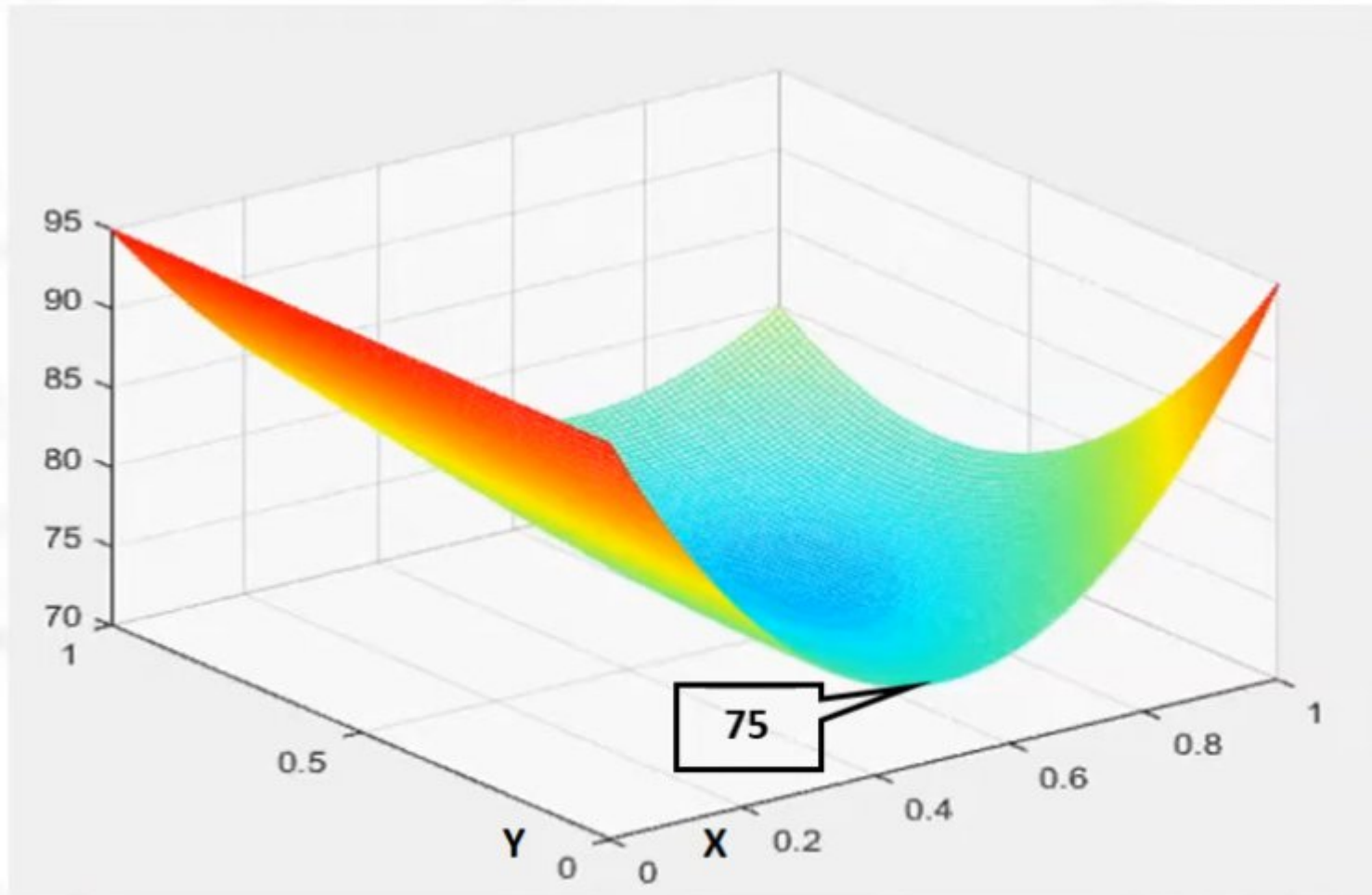


4000 Individus

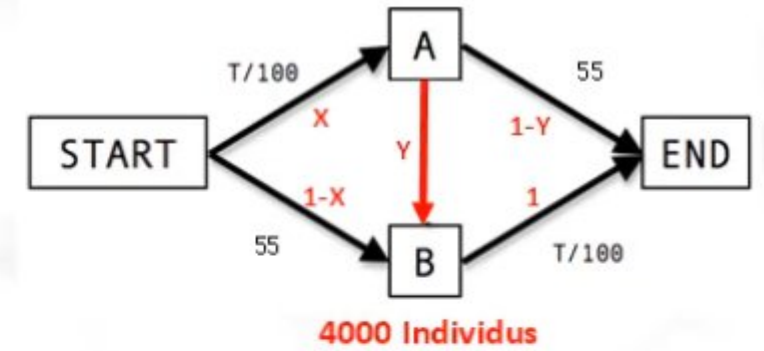
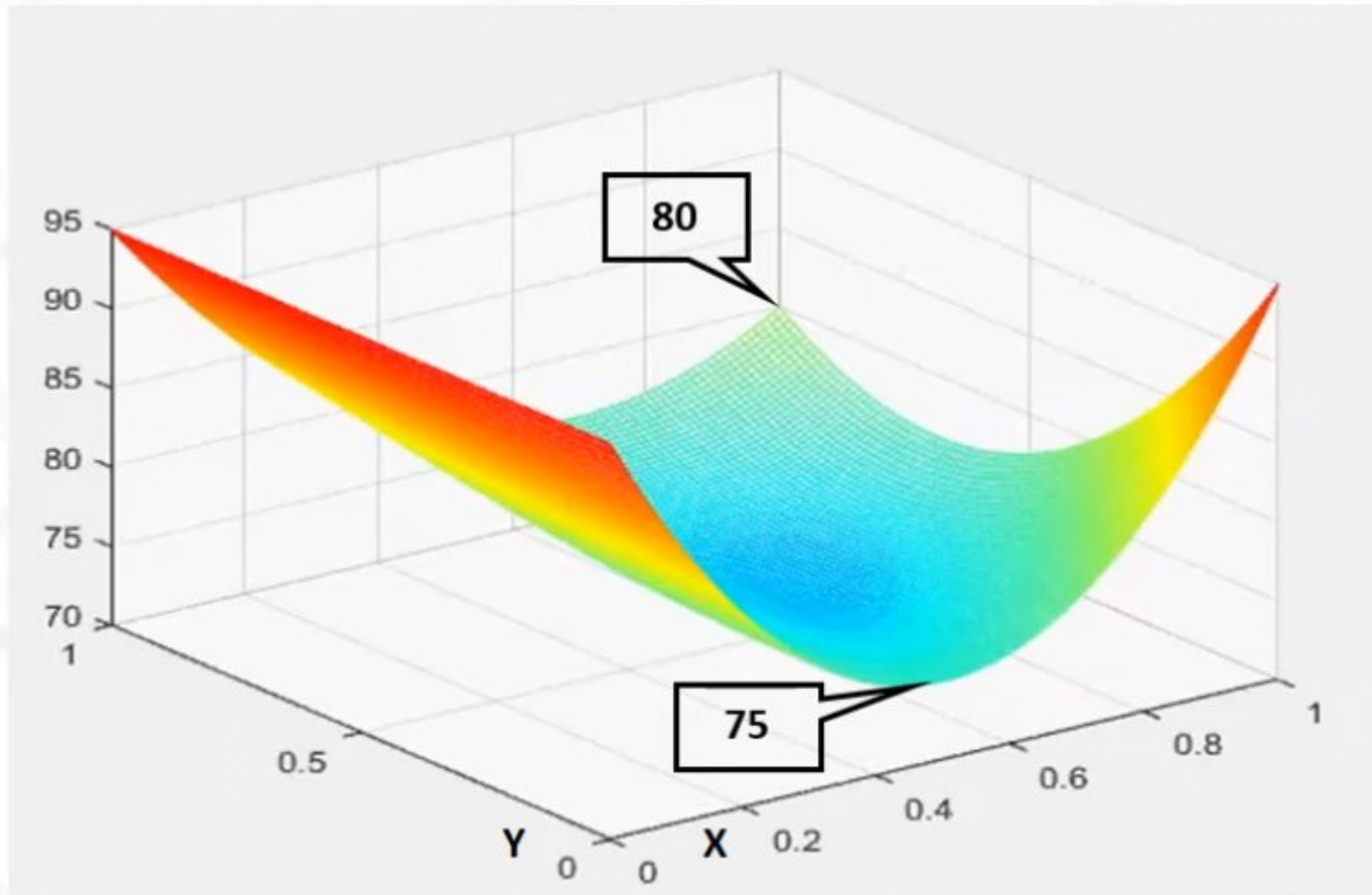


4000 Individus

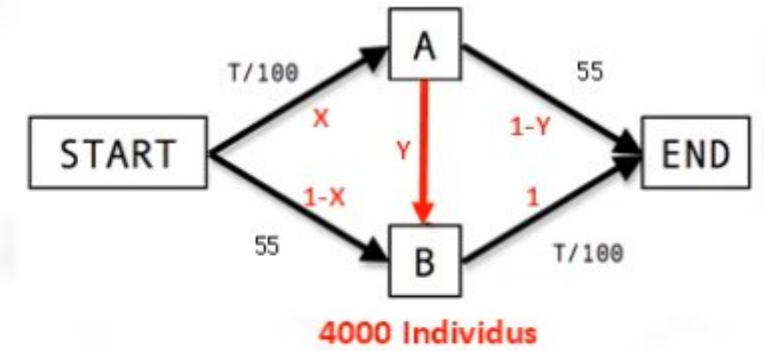
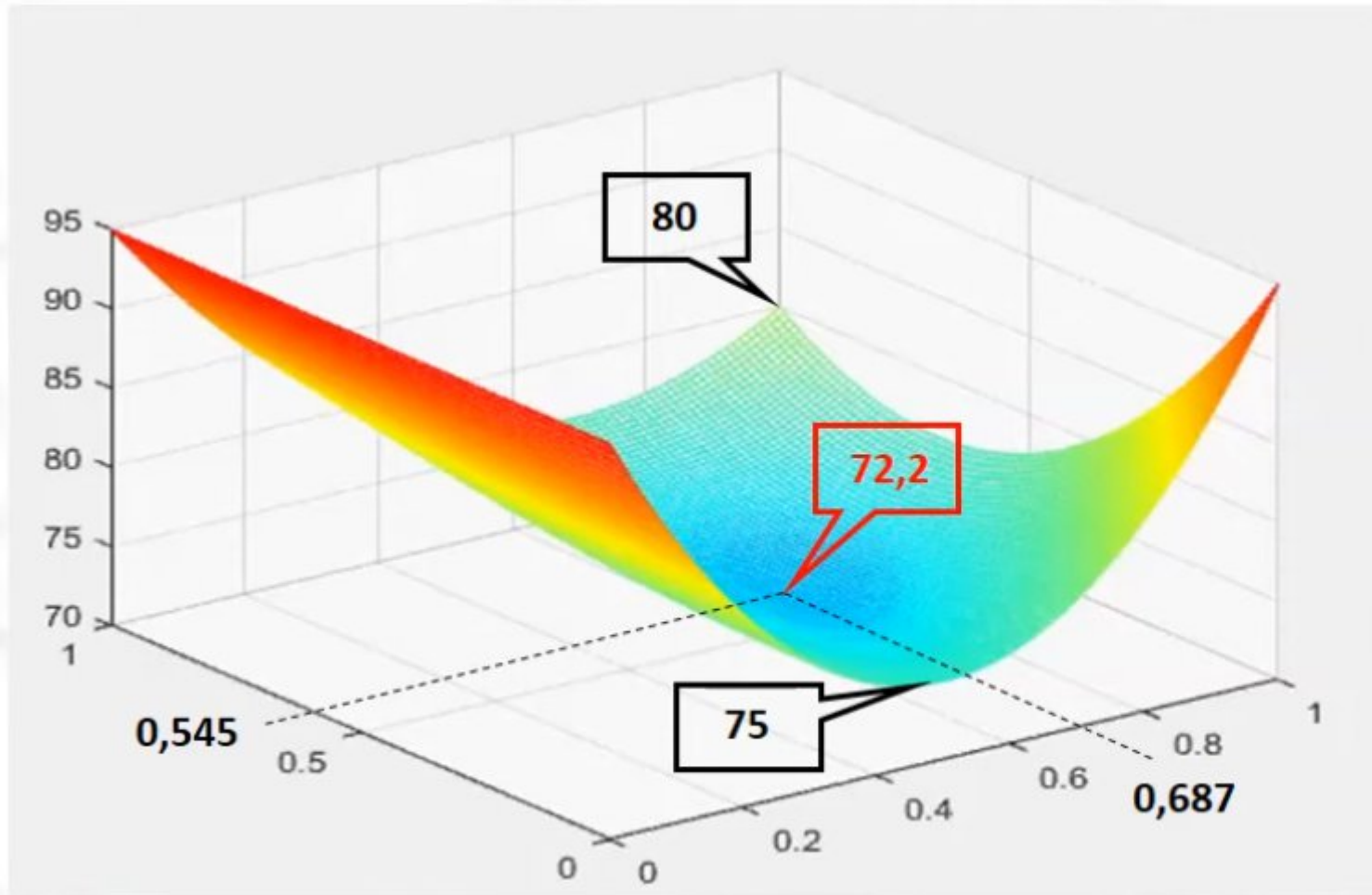
$$E = X * (X * 40 + (1 - Y) * 55 + Y * 40 * (X * Y + 1 - X)) + (1 - X) * (55 + 40 * (X * Y + 1 - X))$$



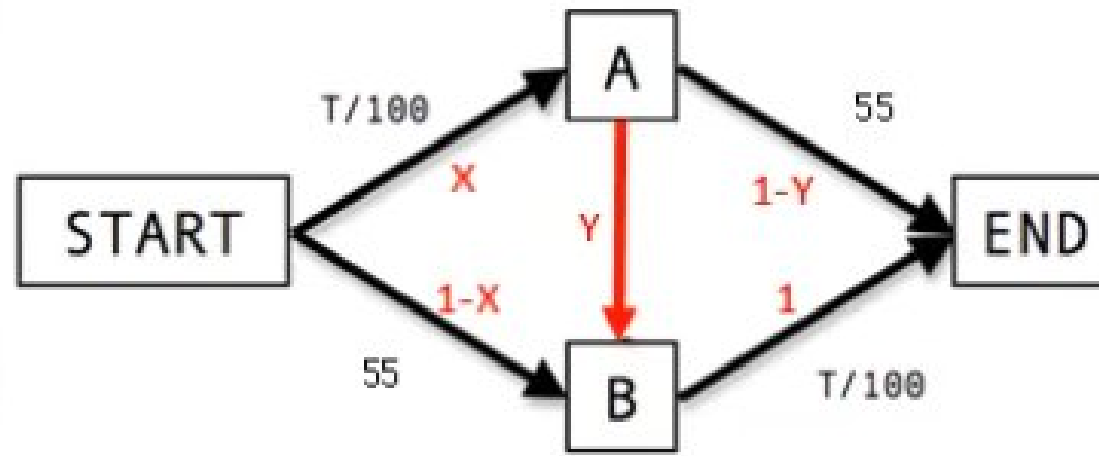
$$E = X*(X*40+(1-Y)*55+Y*40*(X*Y+1-X)) + (1-X)*(55+40*(X*Y+1-X))$$



$$E = X*(X*40+(1-Y)*55+Y*40*(X*Y+1-X)) + (1-X)*(55+40*(X*Y+1-X))$$

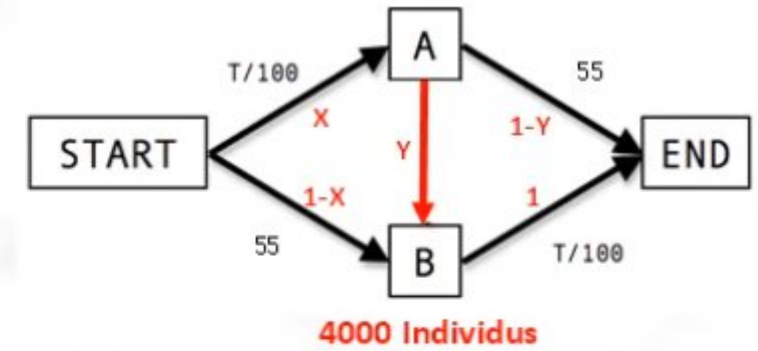
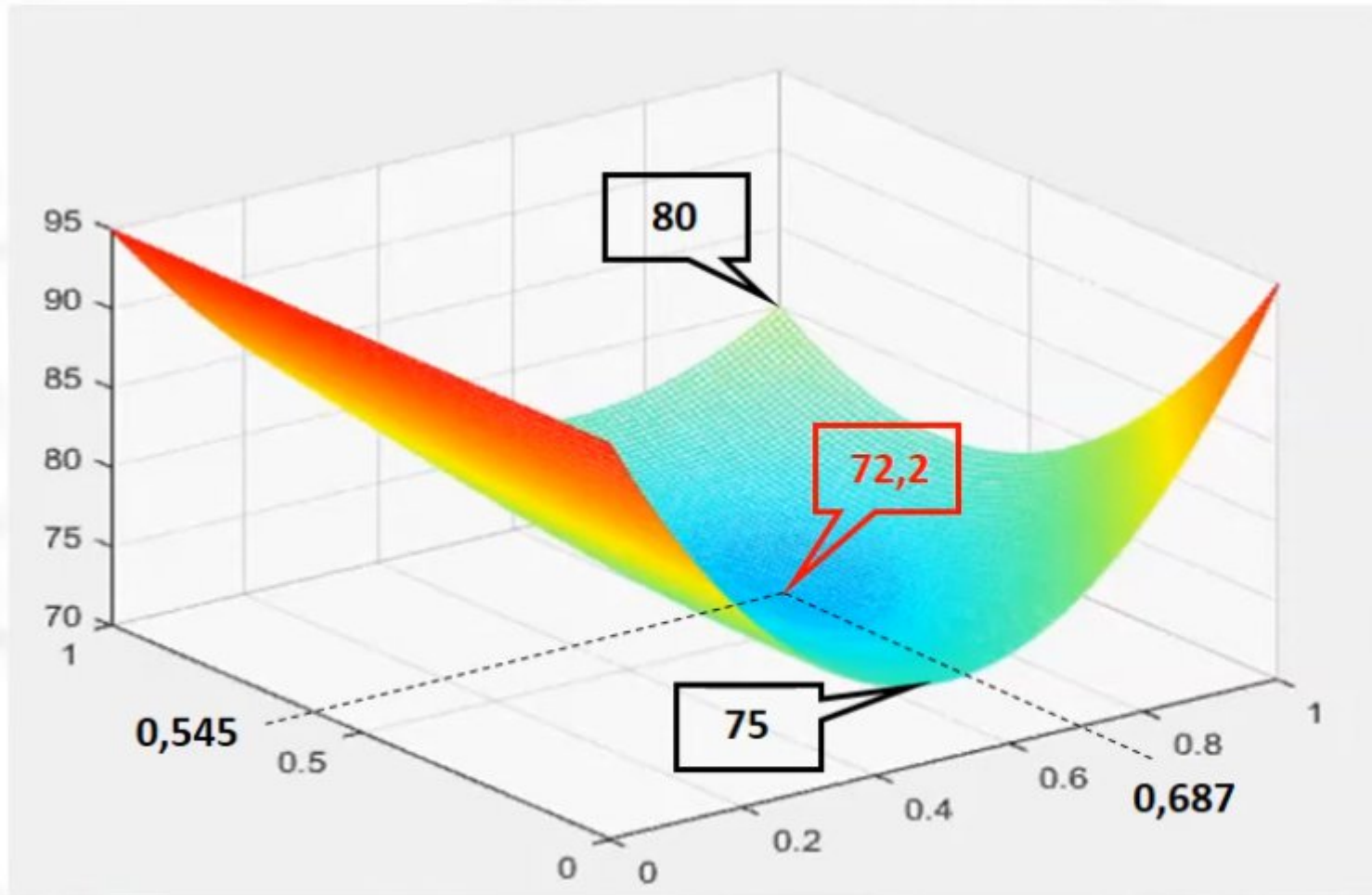


$$E = X*(X*40+(1-Y)*55+Y*40*(X*Y+1-X)) + (1-X)*(55+40*(X*Y+1-X))$$



4000 Individus

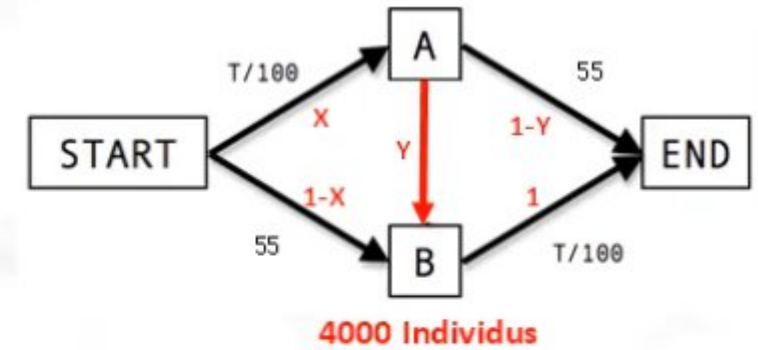
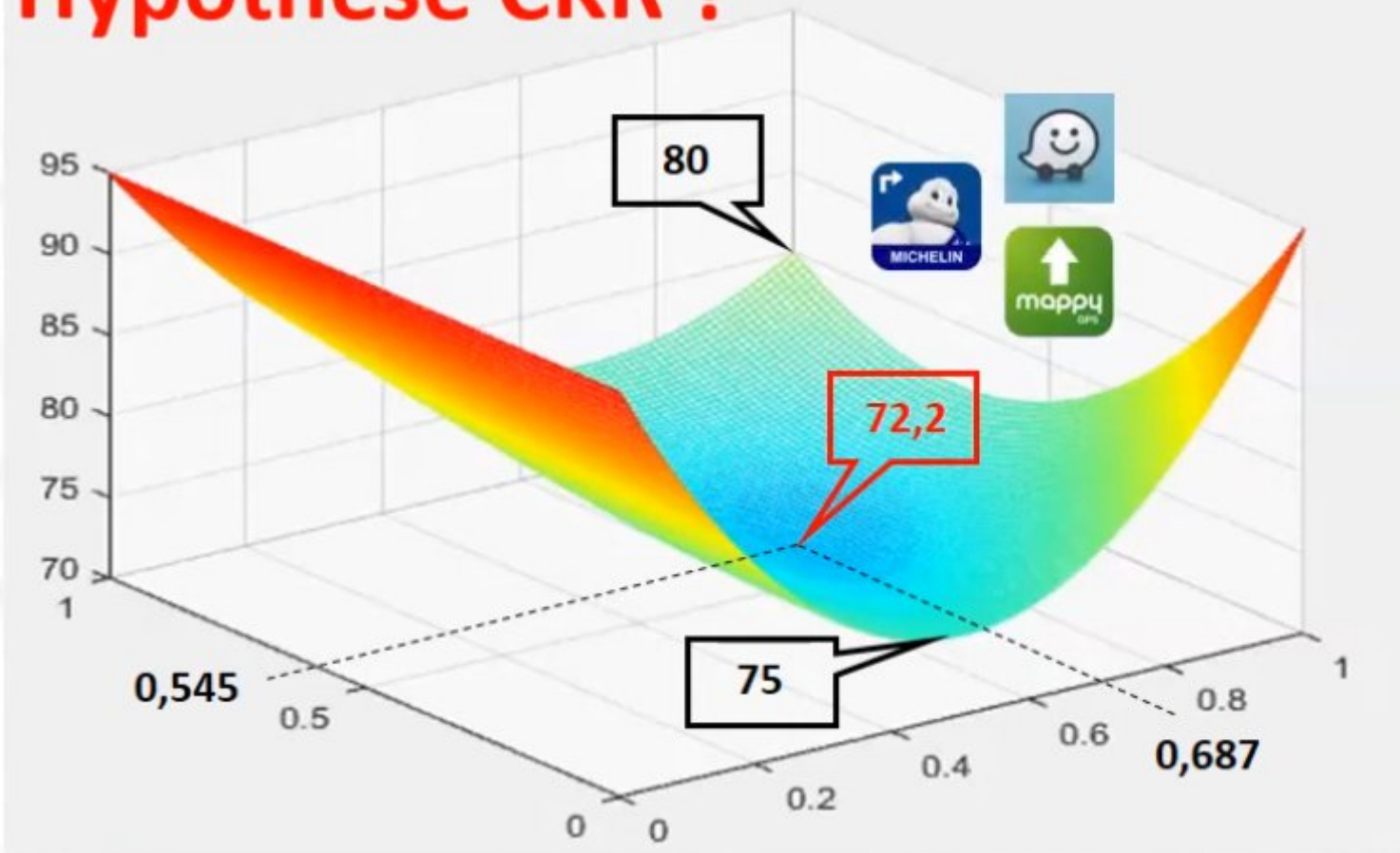
SAE	SABE	SBE
82,50	55,00	82,50
31,3%	37,5%	31,3%



SAE	SABE	SBE
82,50	55,00	82,50
31,3%	37,5%	31,3%

$$E = X*(X*40+(1-Y)*55+Y*40*(X*Y+1-X)) + (1-X)*(55+40*(X*Y+1-X))$$

Hypothèse CKR ?



SAE	SABE	SBE
82,50	55,00	82,50
31,3%	37,5%	31,3%

$$E = X*(X*40+(1-Y)*55+Y*40*(X*Y+1-X)) + (1-X)*(55+40*(X*Y+1-X))$$

Paradoxe de Braess



Merci !

Chaine youtube « Paradoxe » de Léo Gerville-Réache

<https://www.youtube.com/watch?v=4x4VtyjAxXY>

<https://www.youtube.com/watch?v=u5la3hrfMa8>