

Bonjour je mange des pommes goulument tous les jours avec du basilic et de l'ailoli

Jeu de société




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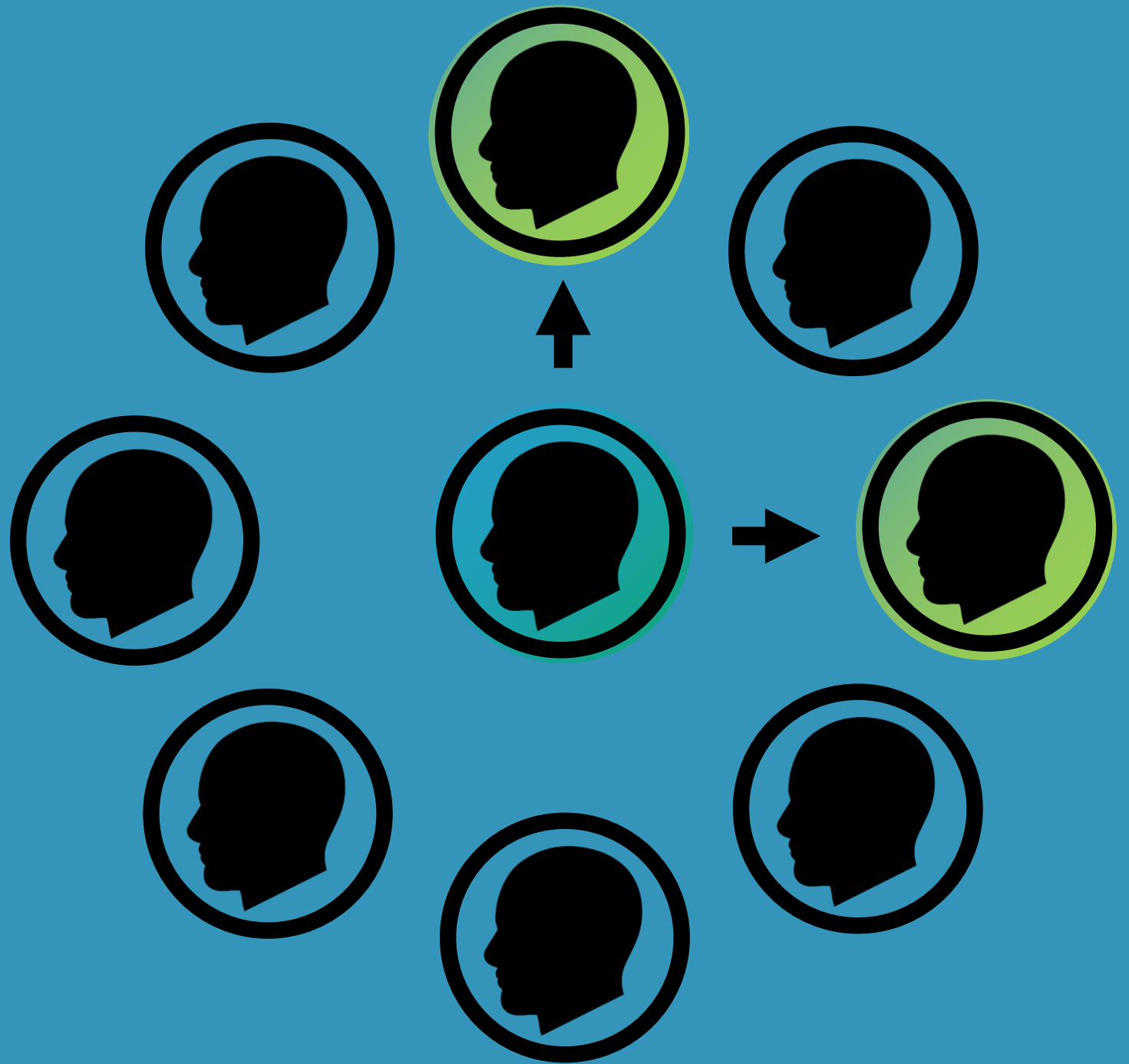


Présentation du *sujet*

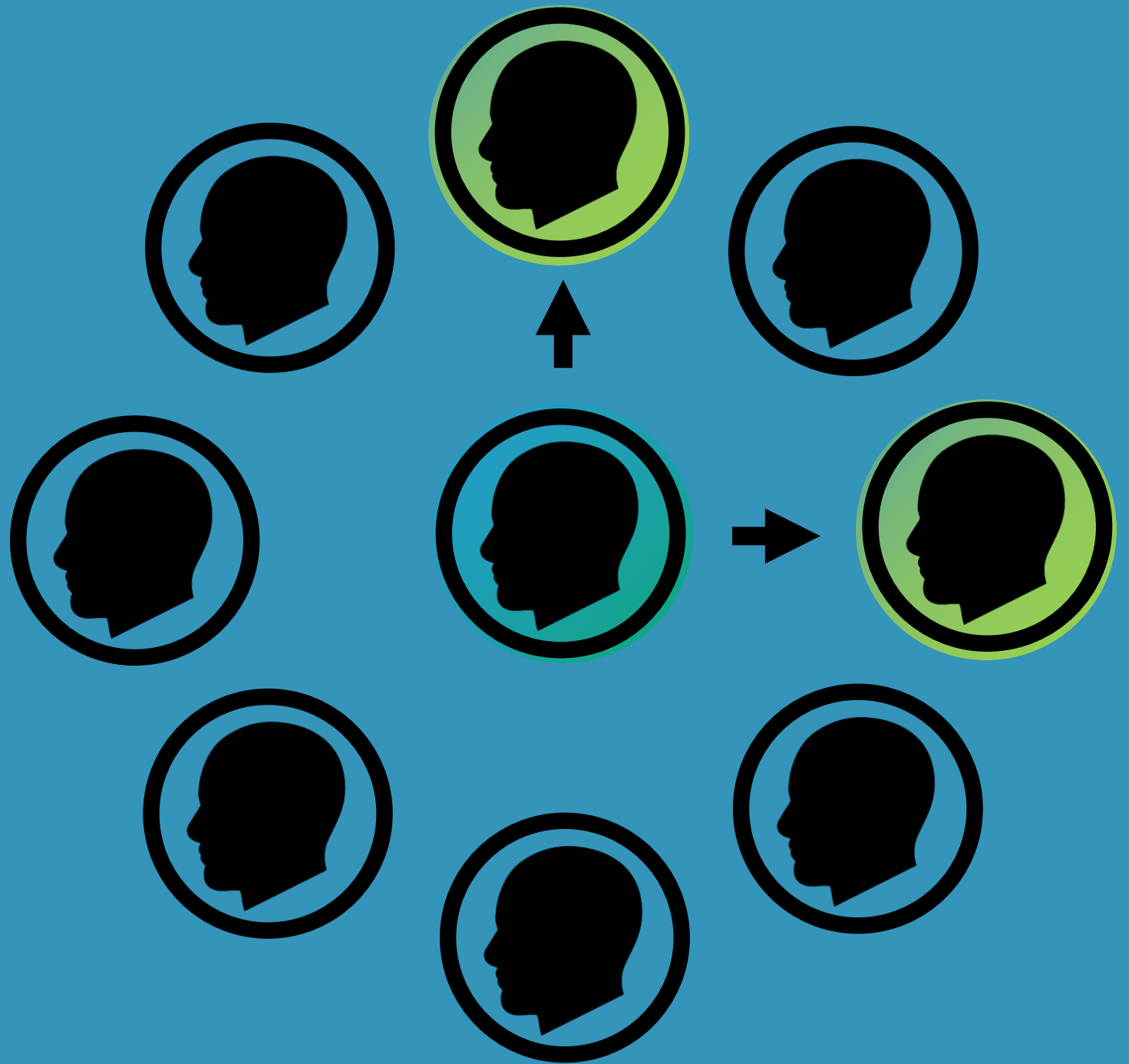
The background features a close-up of a hand holding a clear plastic pill tray. The tray is filled with several white, oval-shaped pills. The image is overlaid with a dark teal gradient that transitions into a lighter teal gradient on the right side. The text 'Premier exemple' is centered in the dark teal area.

Premier exemple

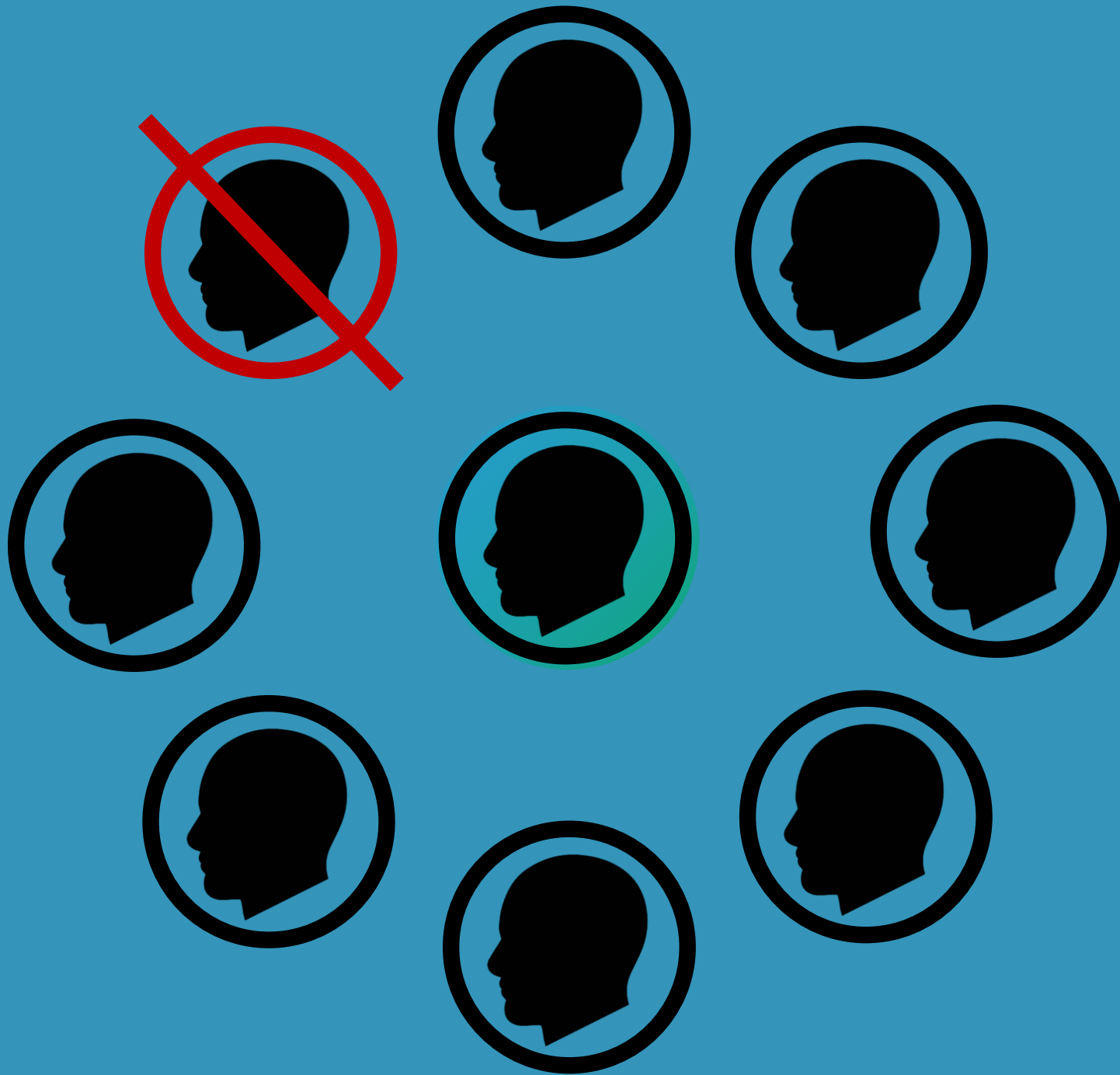
n=0



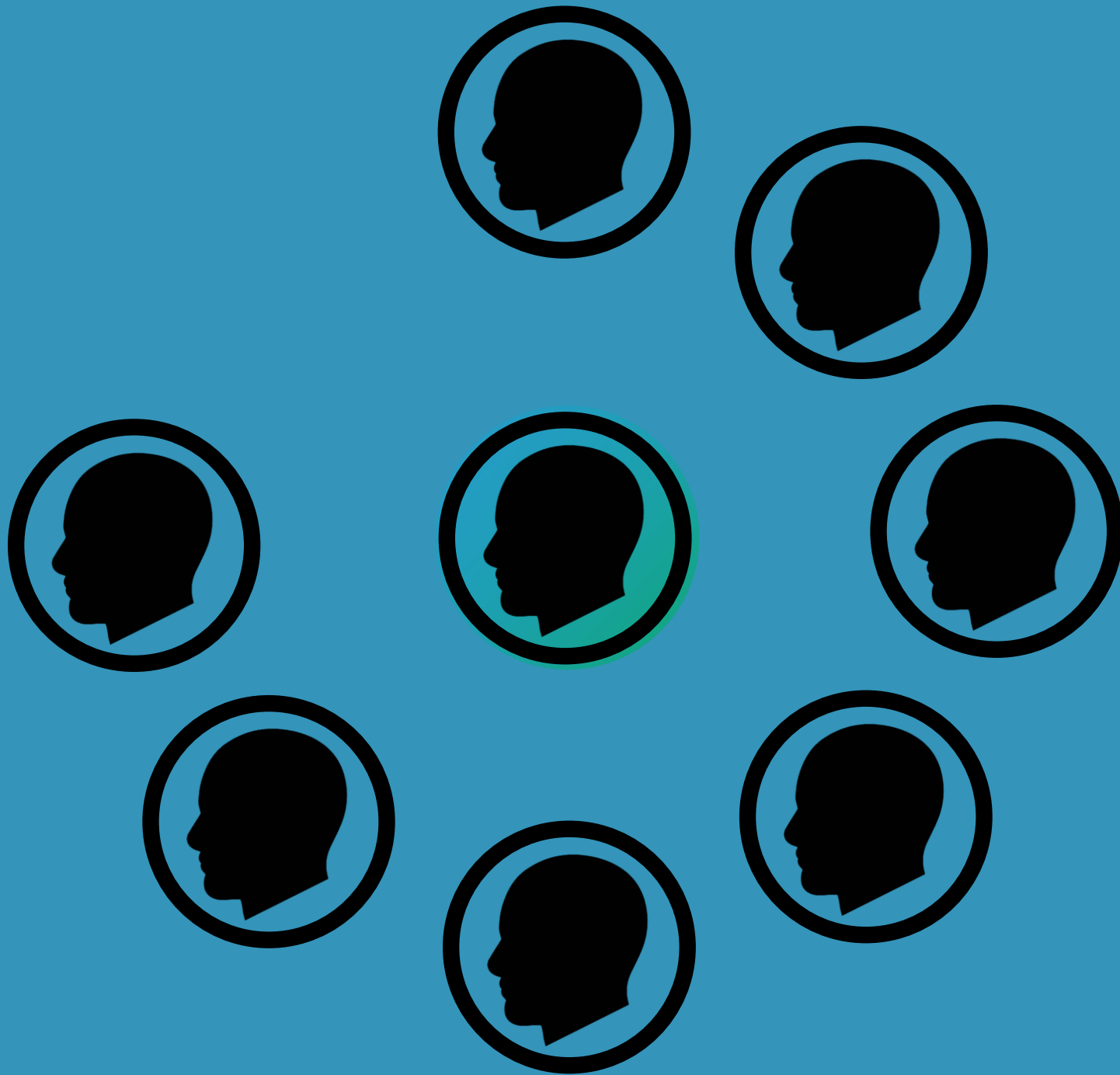
$N_0 = 8$
 $n = 0$



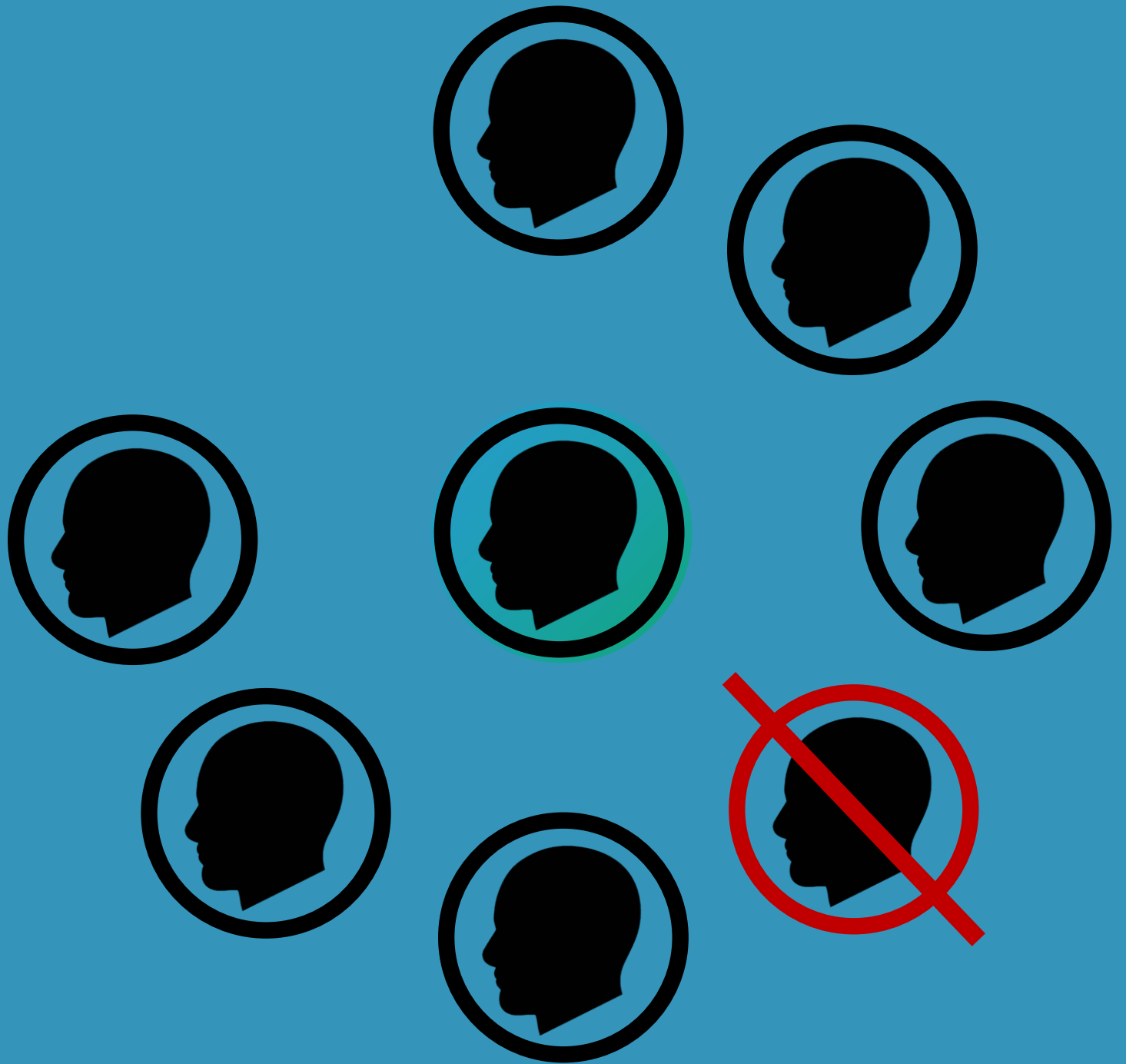
n=1



$N_1=7$
 $n=1$

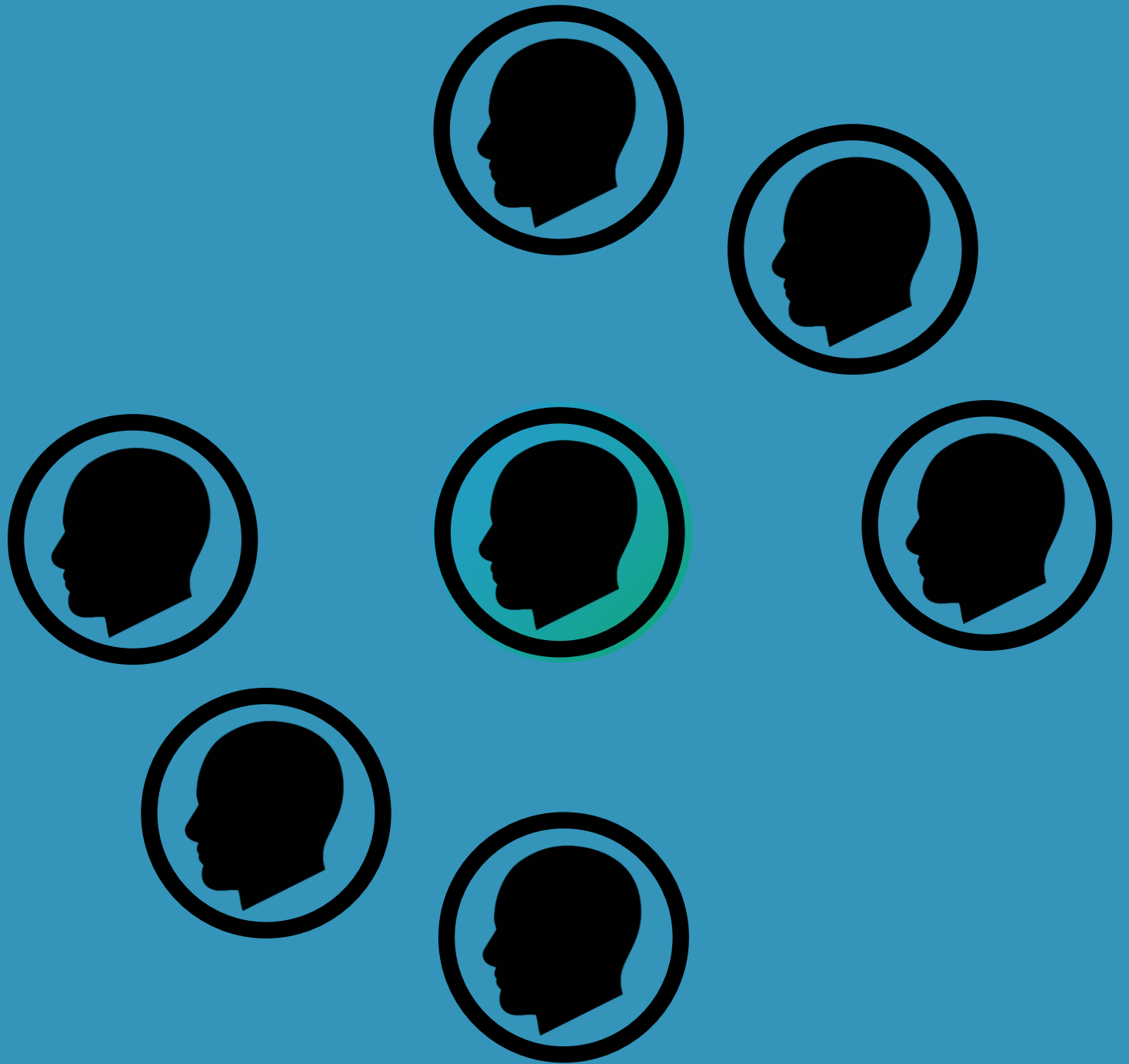


n=2

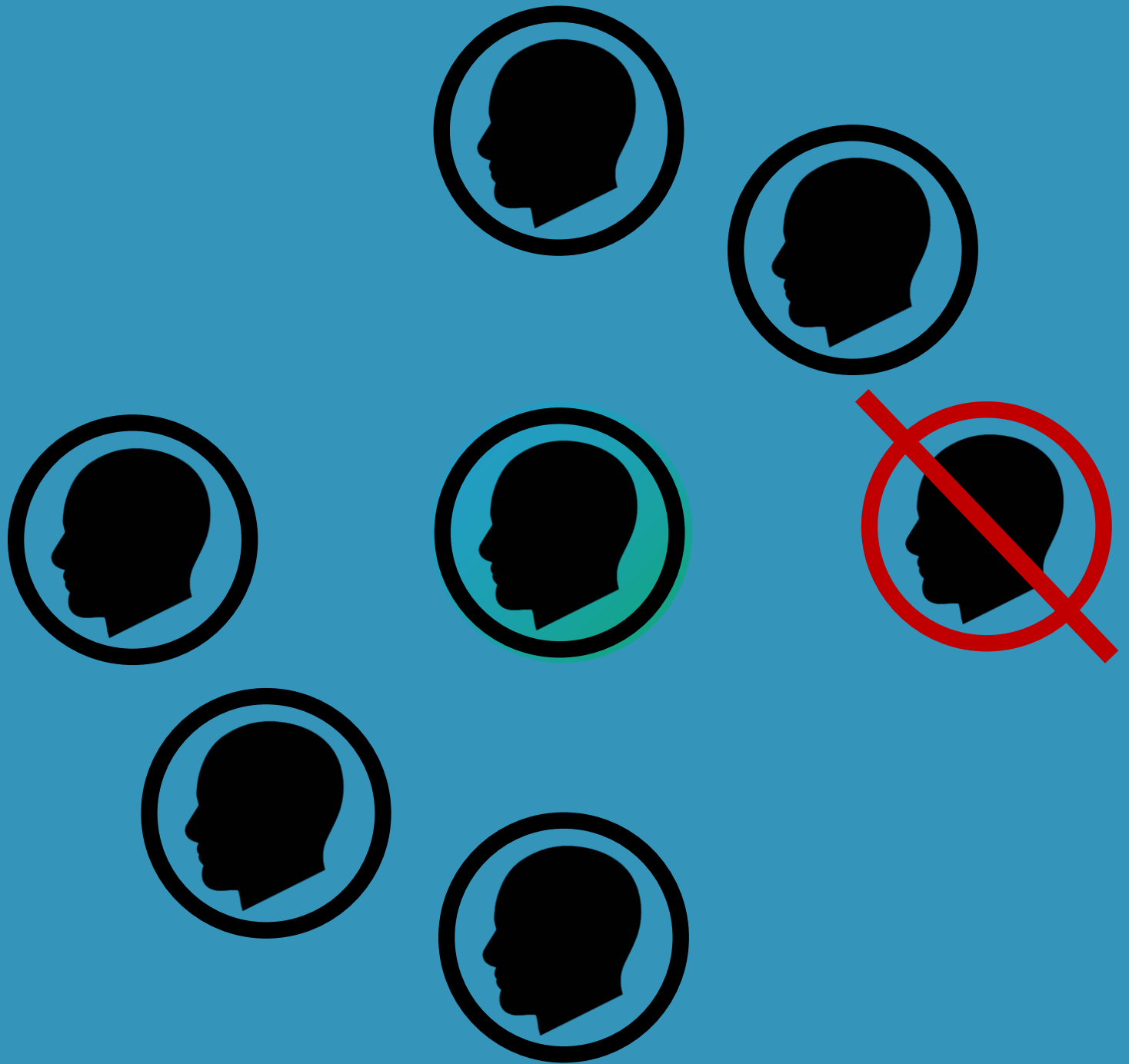


$N_2=6$

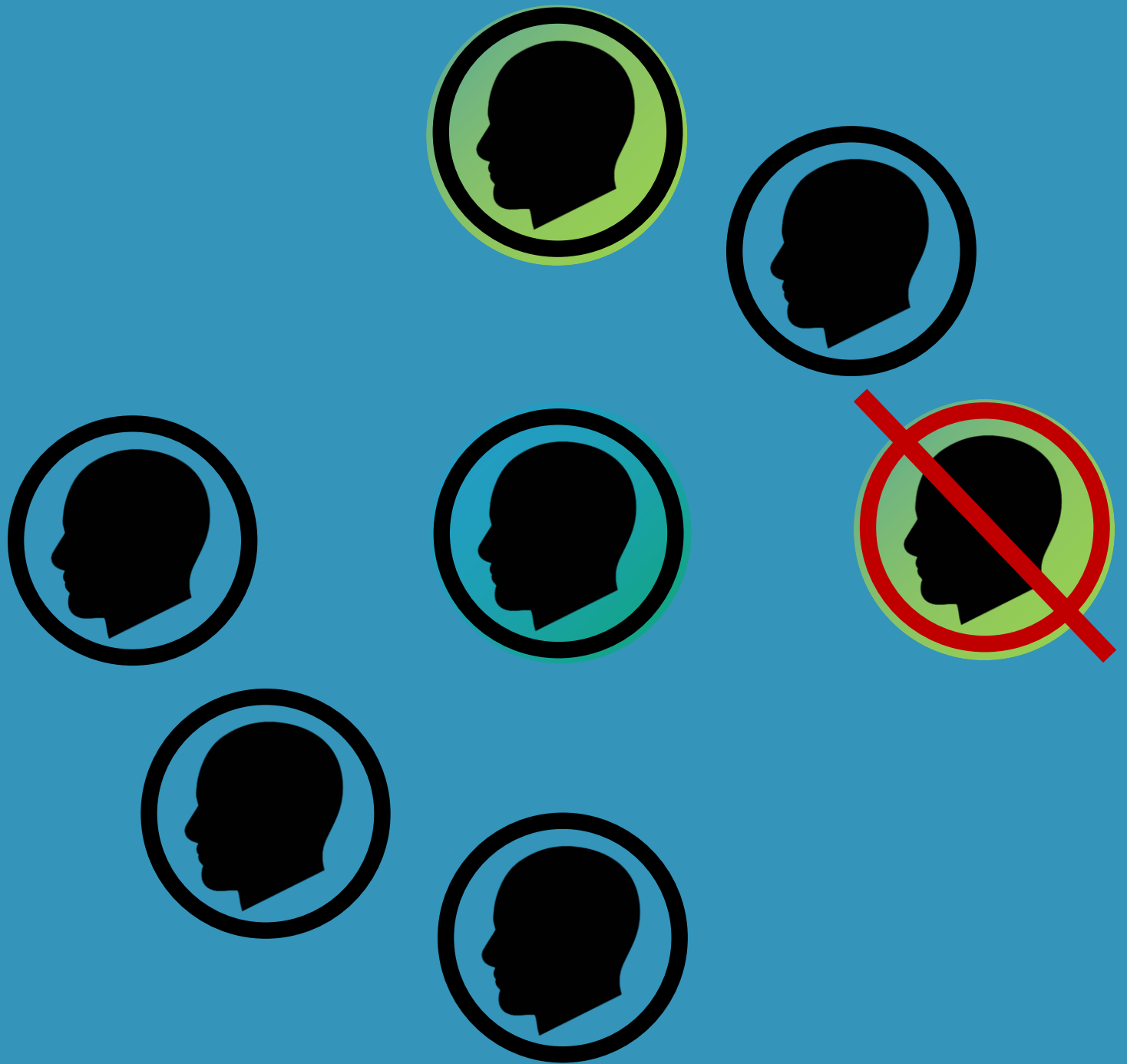
$n=2$



n=3



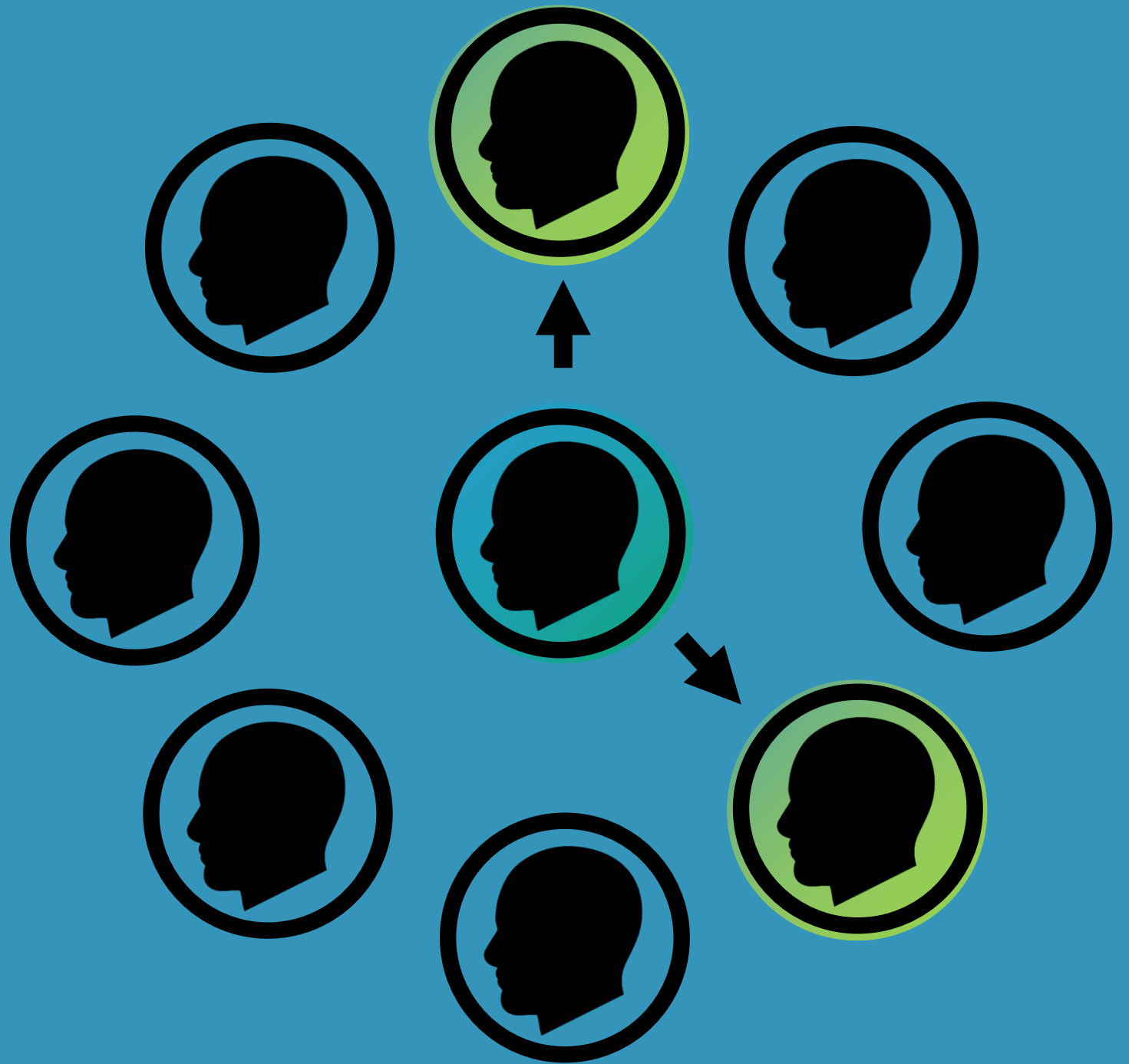
n=3



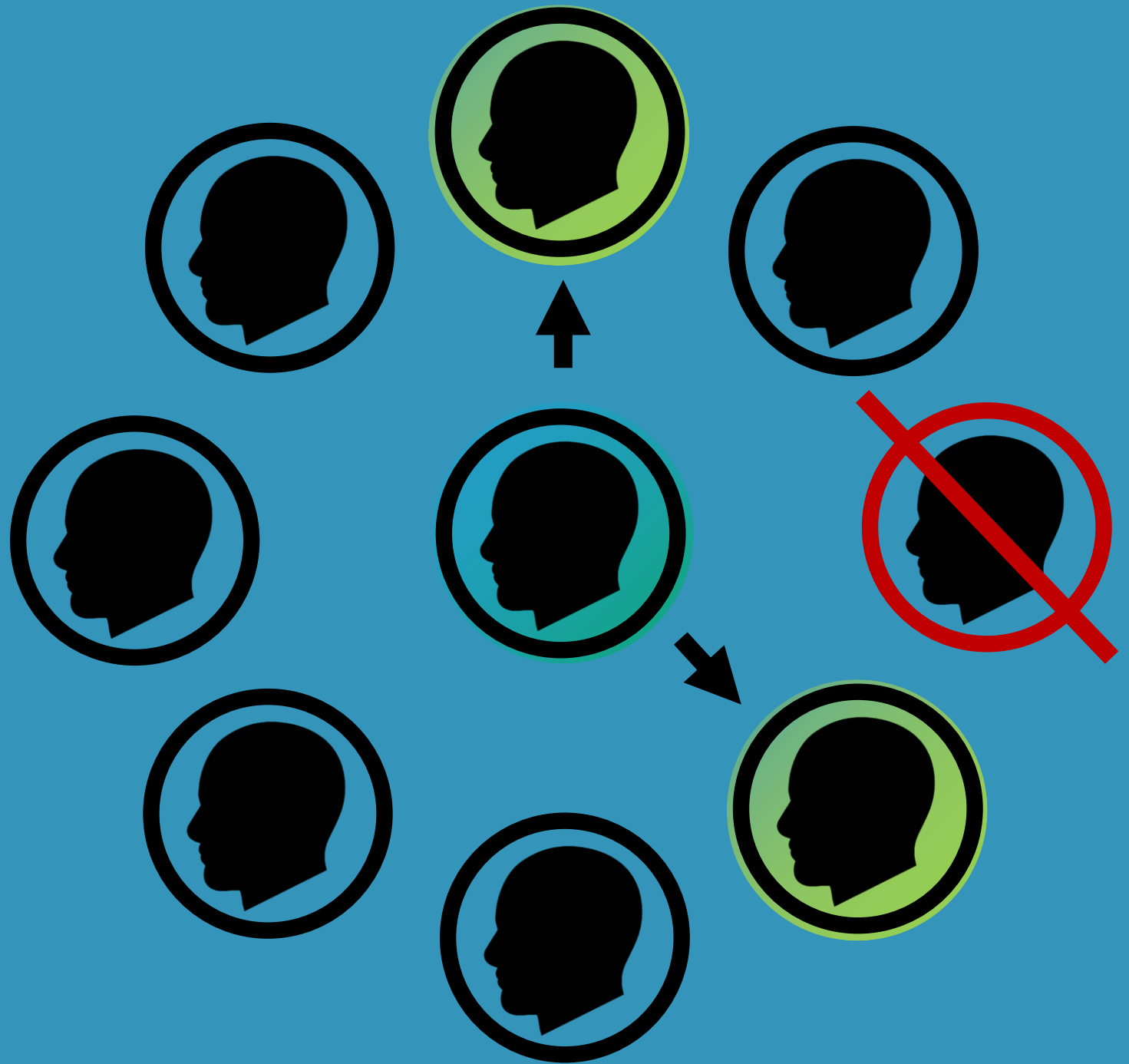


Deuxième exemple

$D_0 = 3$
 $n = 0$



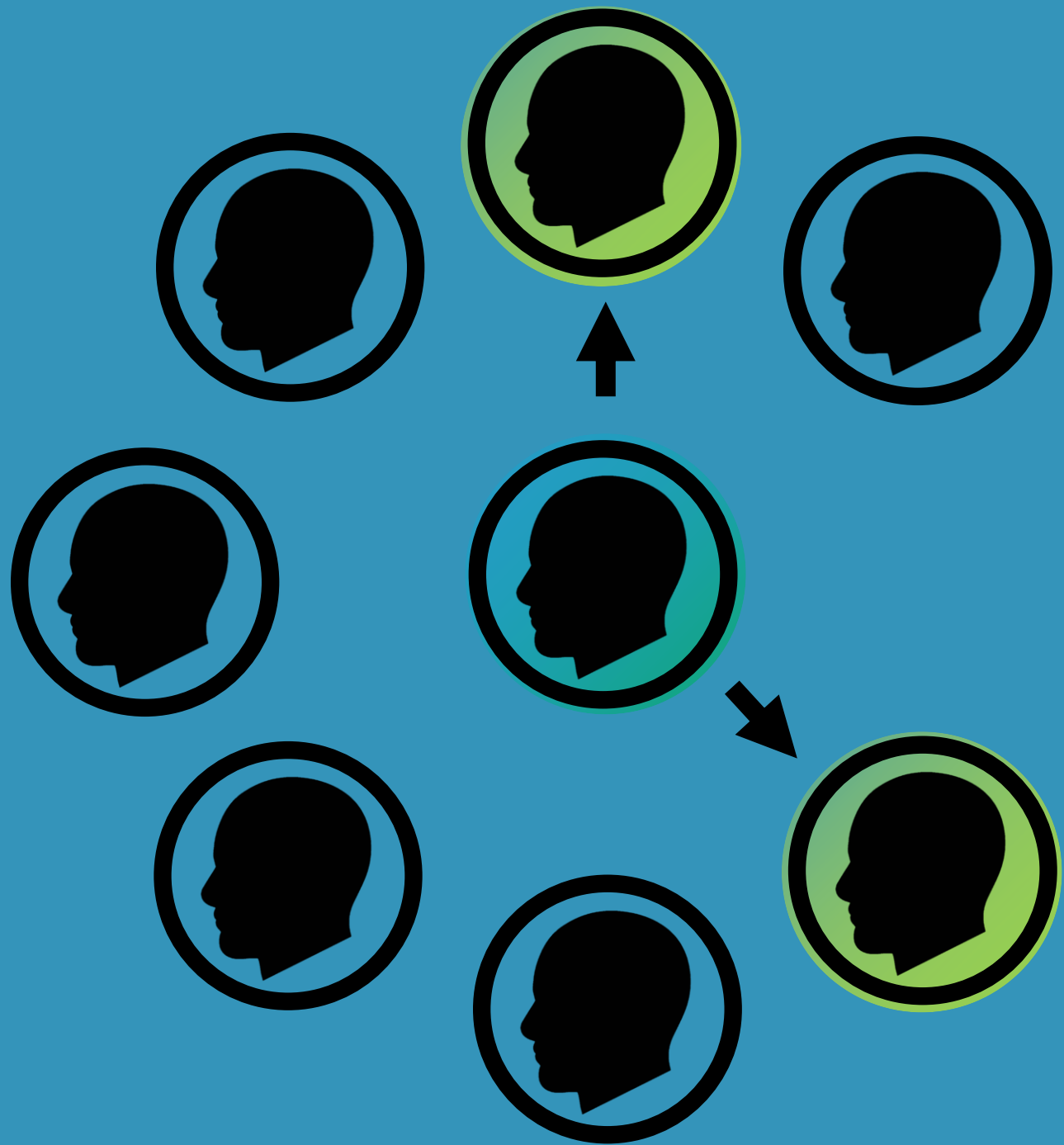
$D_0 = 3$
 $n = 1$



$D_0 = 3$

$D_1 = 2$

$n = 1$



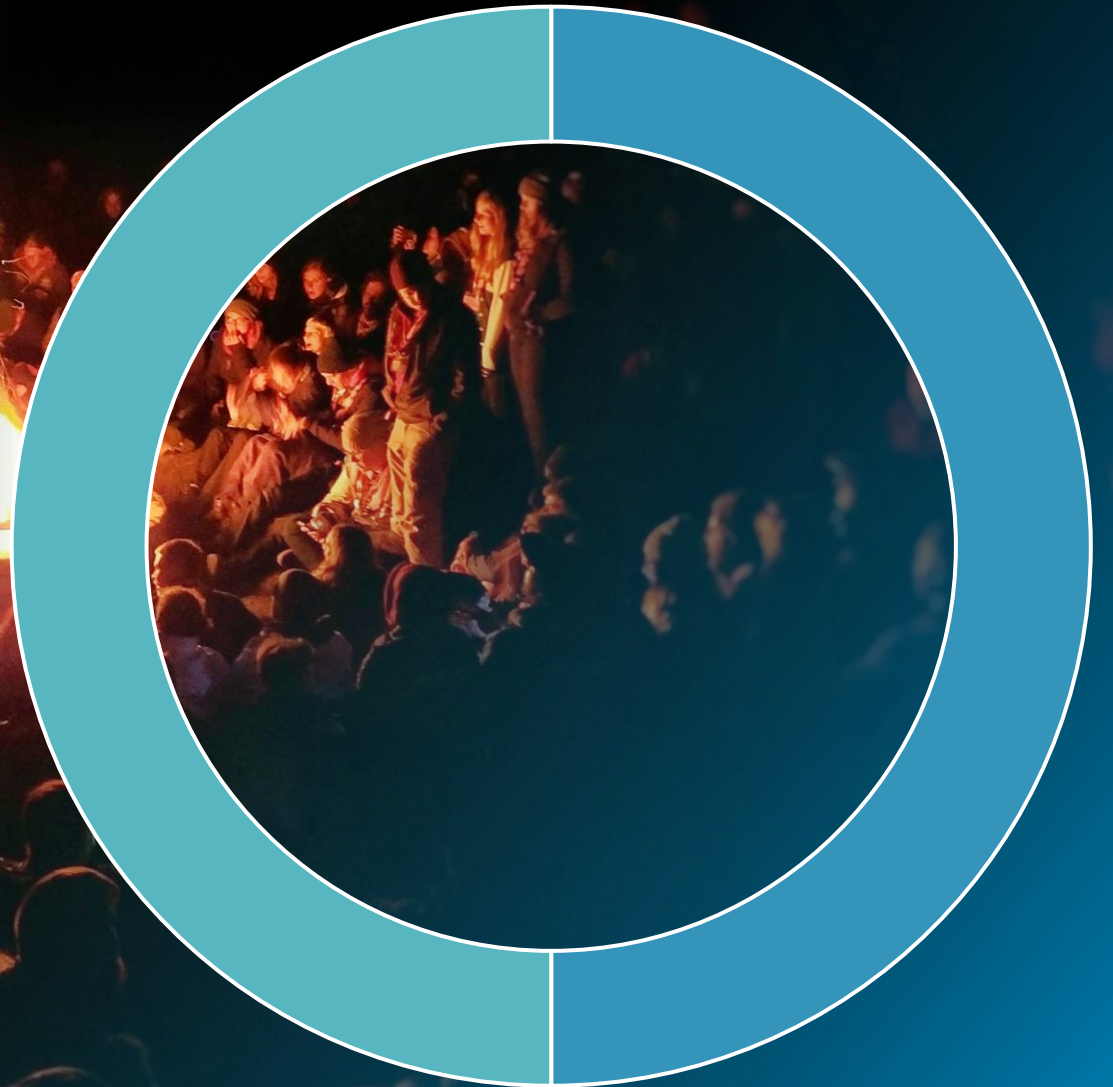


**Qu'est ce qu'une
stratégie optimale ?**

Sans technique

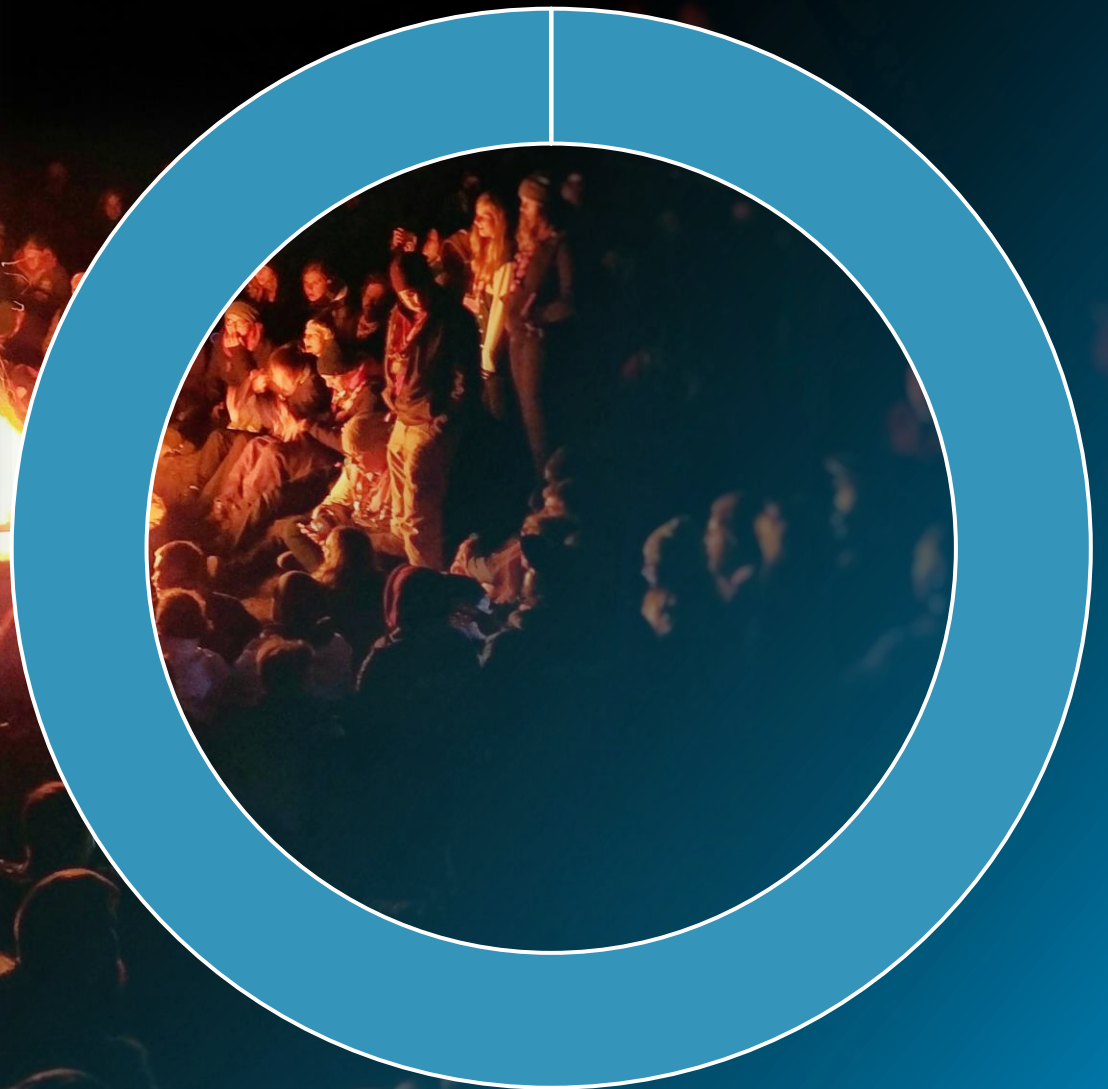
Rapidité : 50%

Chance : 50%



**Avec technique
optimale**

Rapidité : 100%
Chance : 0%





Explication de notre méthode

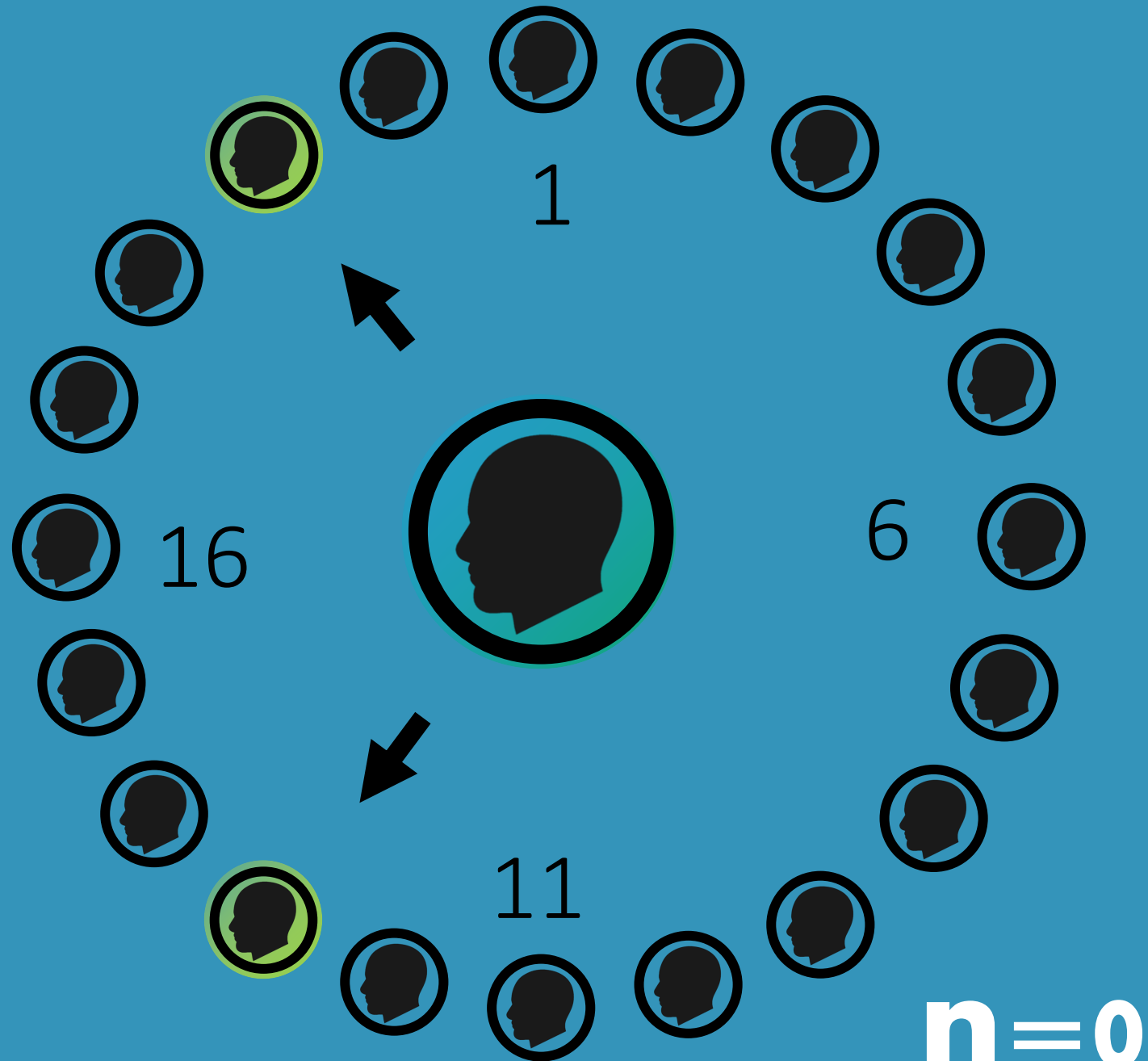
Phase 1

**Rapprocher les
deux joueurs**

$$(D_n < D_{n-1})$$

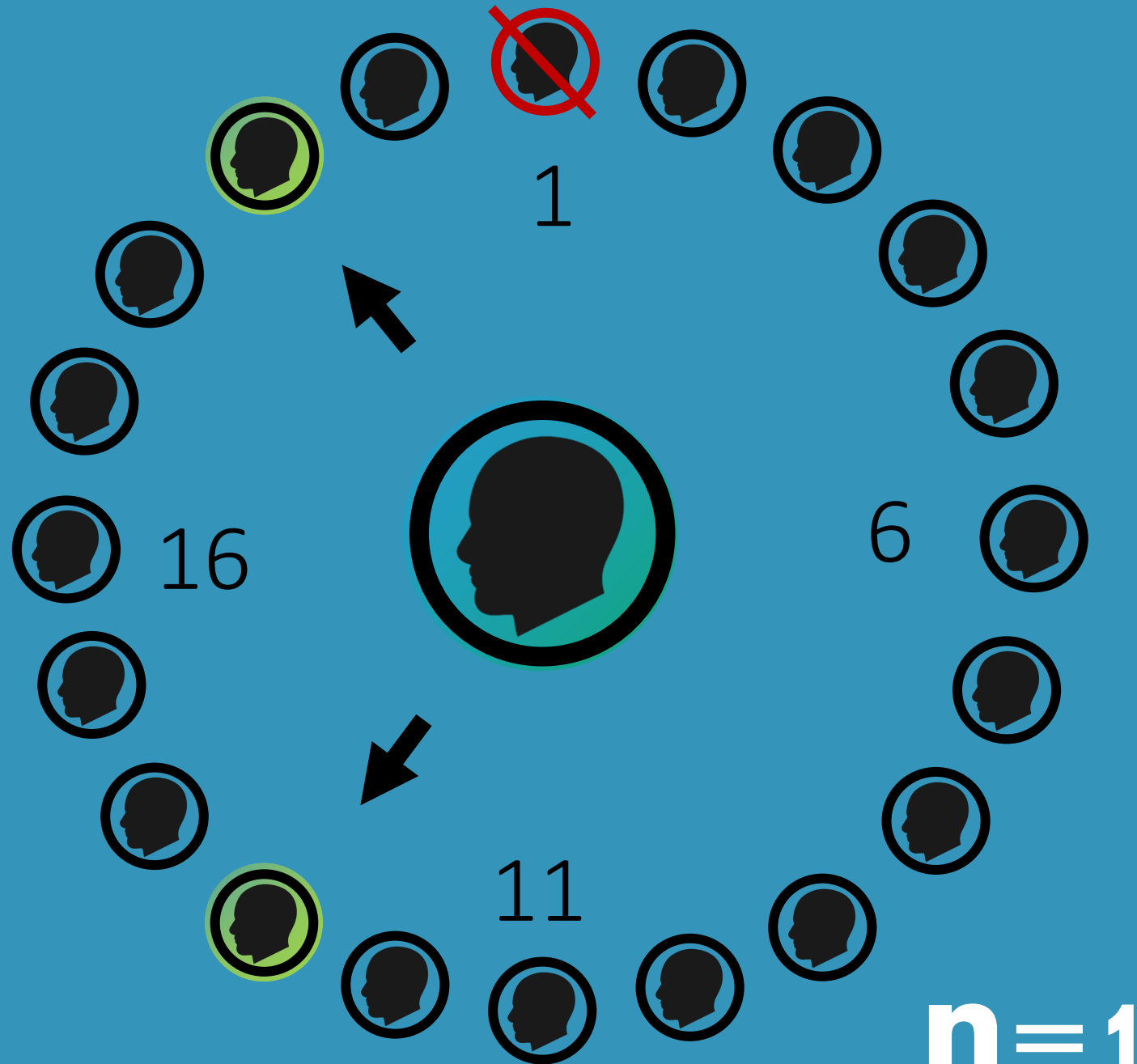
$$N_0 = 20$$

$$D_0 = 6$$



$$N_0 = 20$$

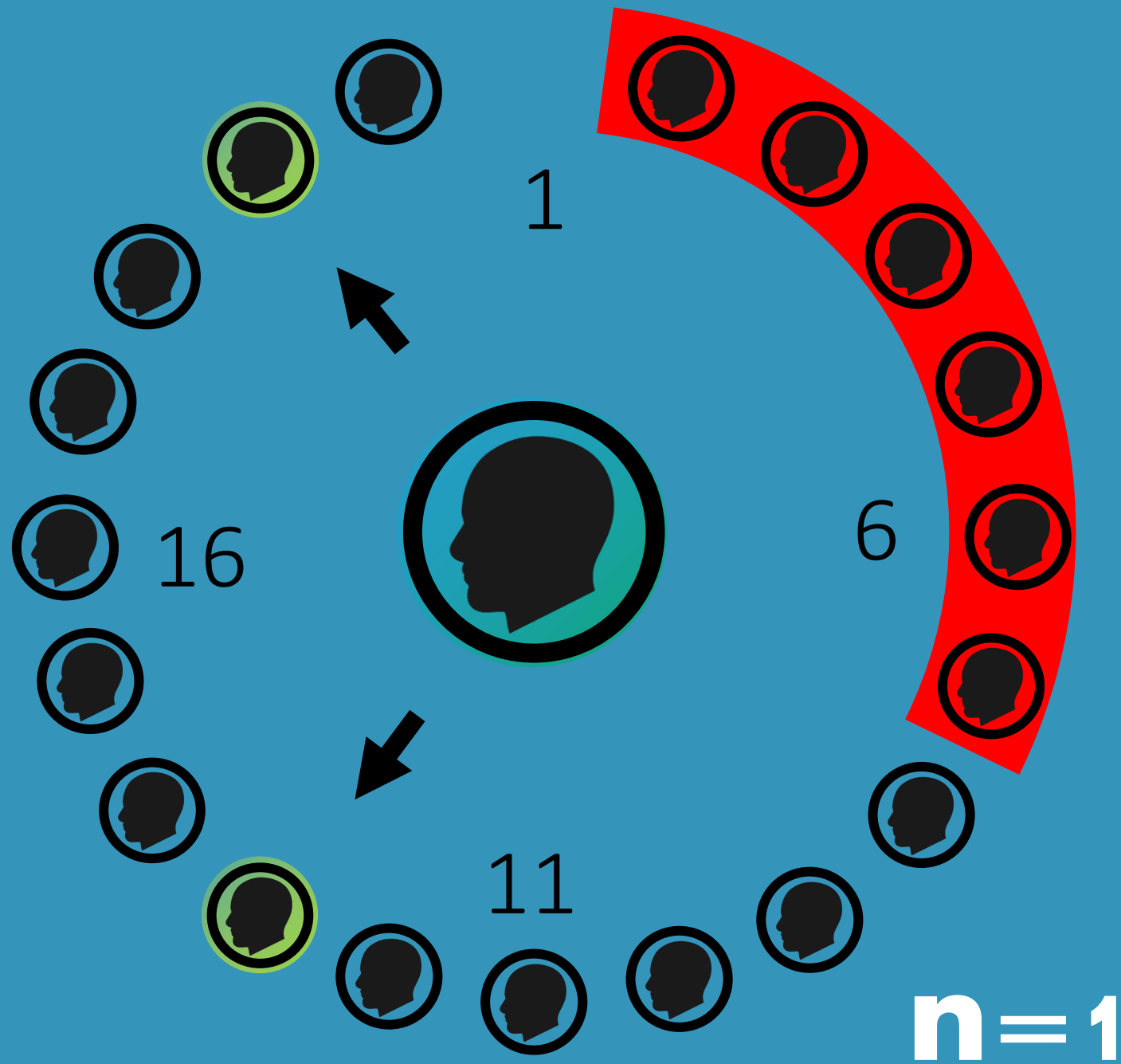
$$D_0 = 6$$



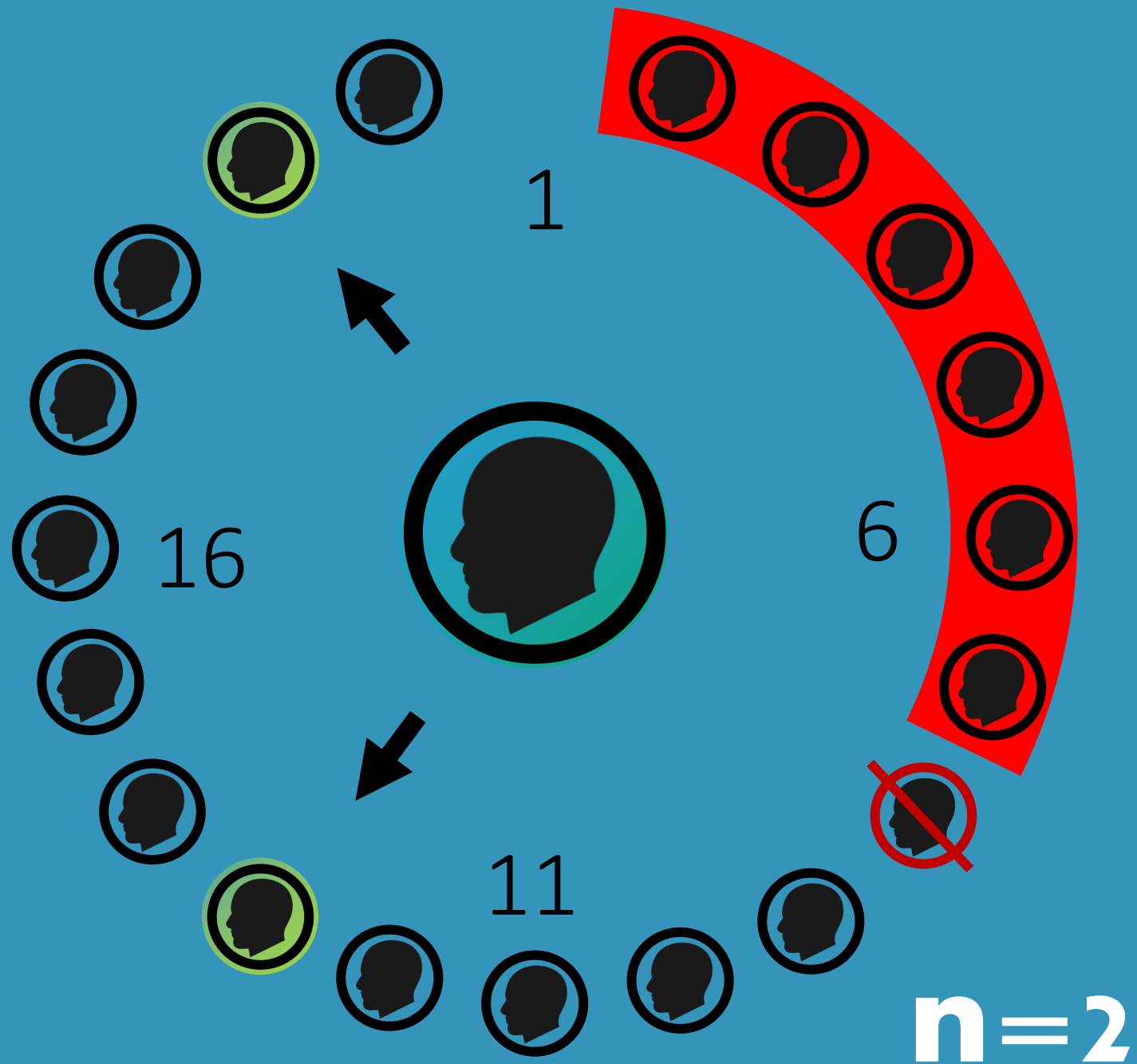
On se décale de :

$$\mathbf{D_0 + 1}$$

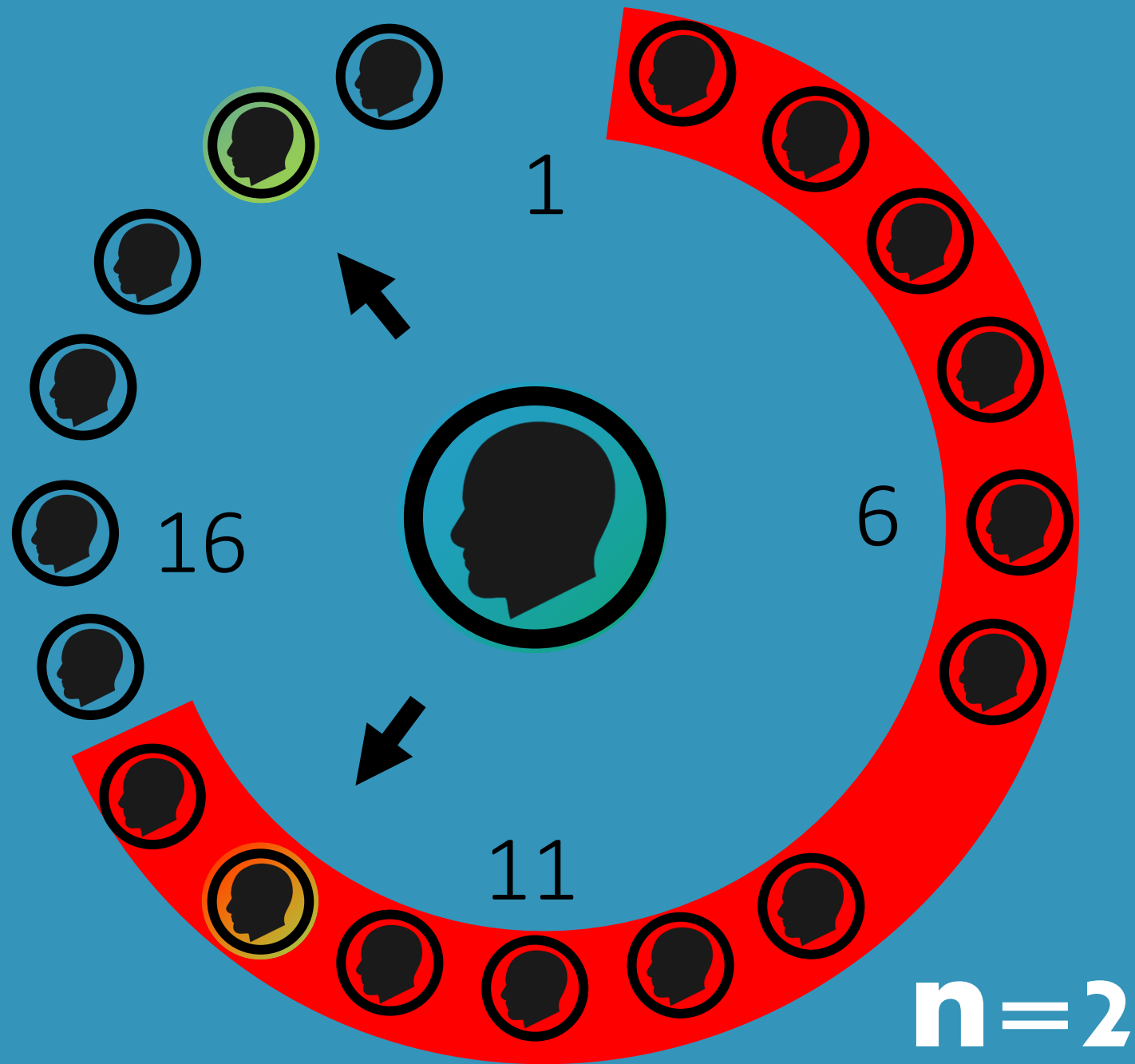
$$\mathbf{J}_1 = 1$$
$$\mathbf{D}_1 = \mathbf{D}_0 = 6$$



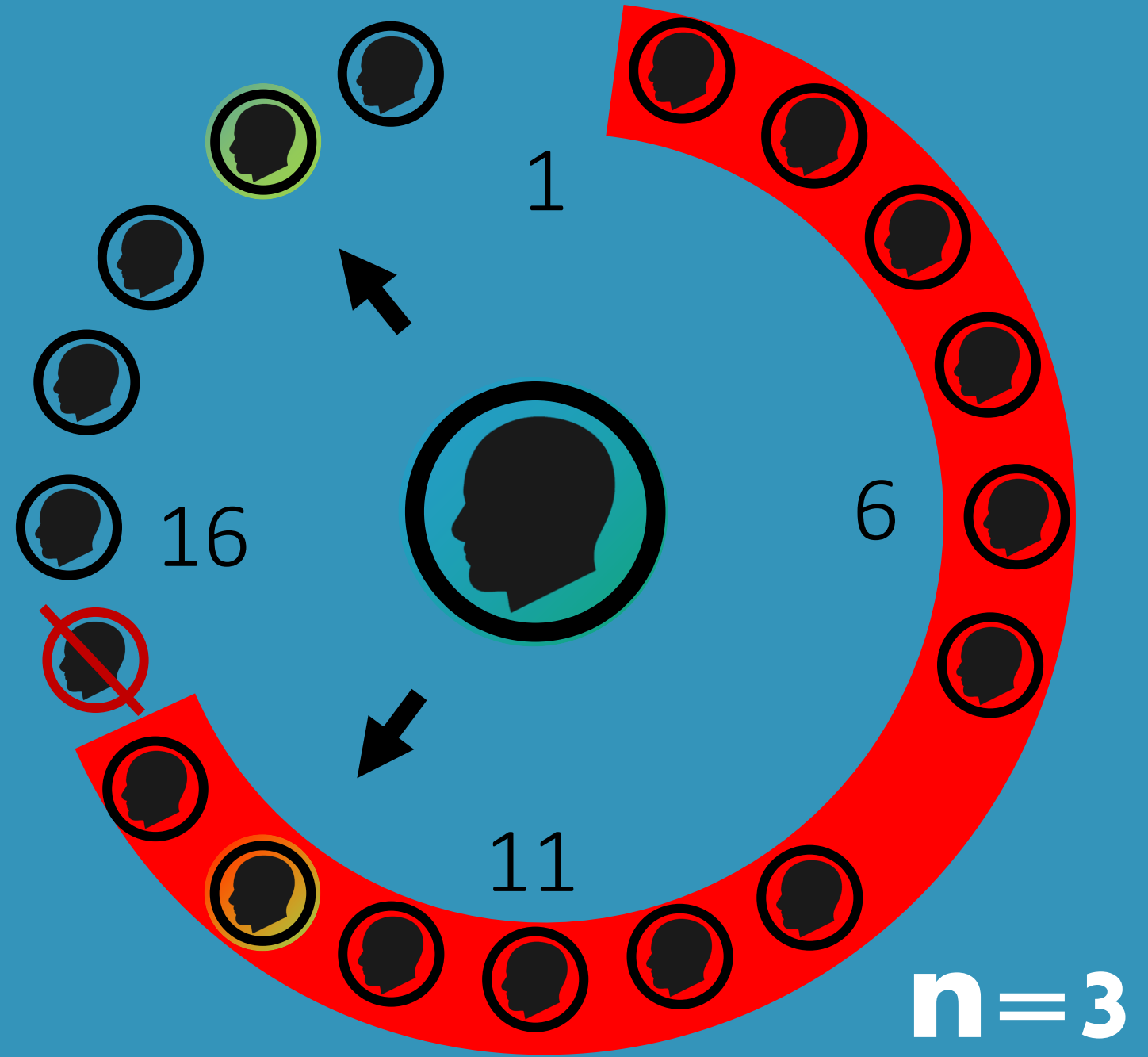
$$\mathbf{J}_2 = 8$$
$$\mathbf{D}_2 = \mathbf{D}_0 = 6$$



$$\mathbf{J}_2 = 8$$
$$\mathbf{D}_2 = \mathbf{D}_0 = 6$$



$$J_3 = 15$$
$$D_3 < D_0$$



Phase 2

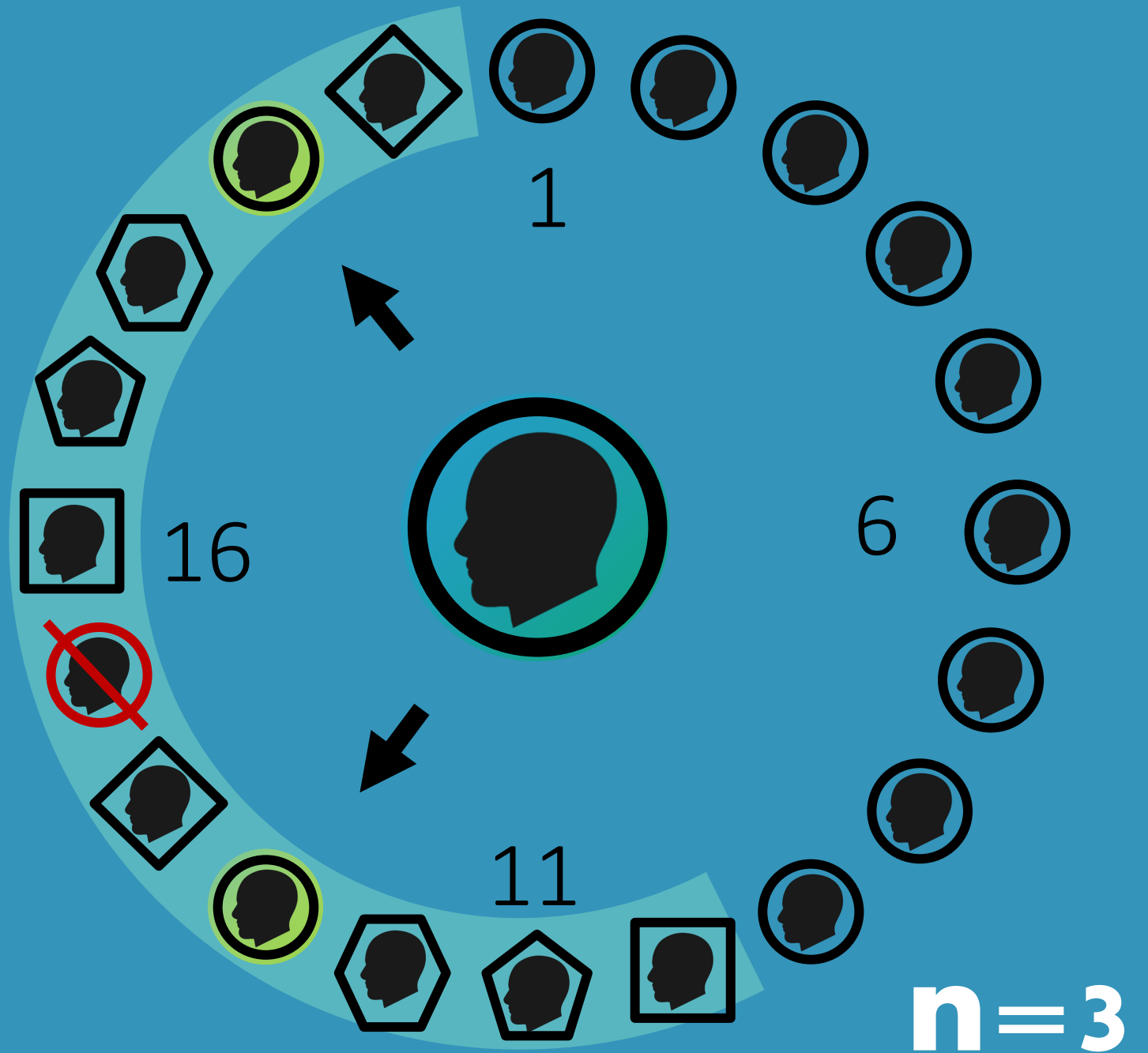
**Trouver les
joueurs par
dichotomie**

$$\mathbf{J}_3 = 15$$

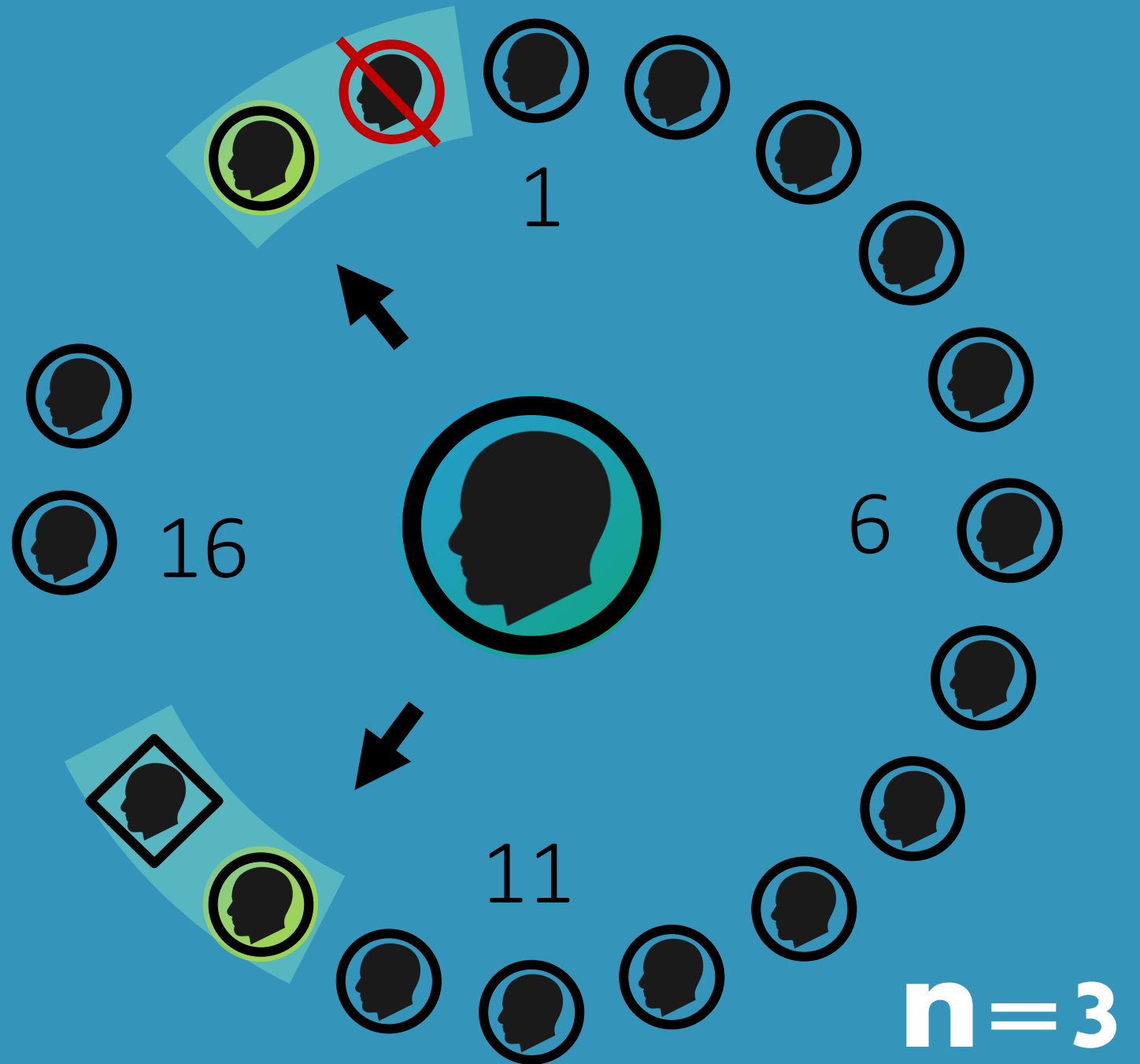
$$\mathbf{D}_3 < \mathbf{D}_0$$

$$\mathbf{Y} =$$

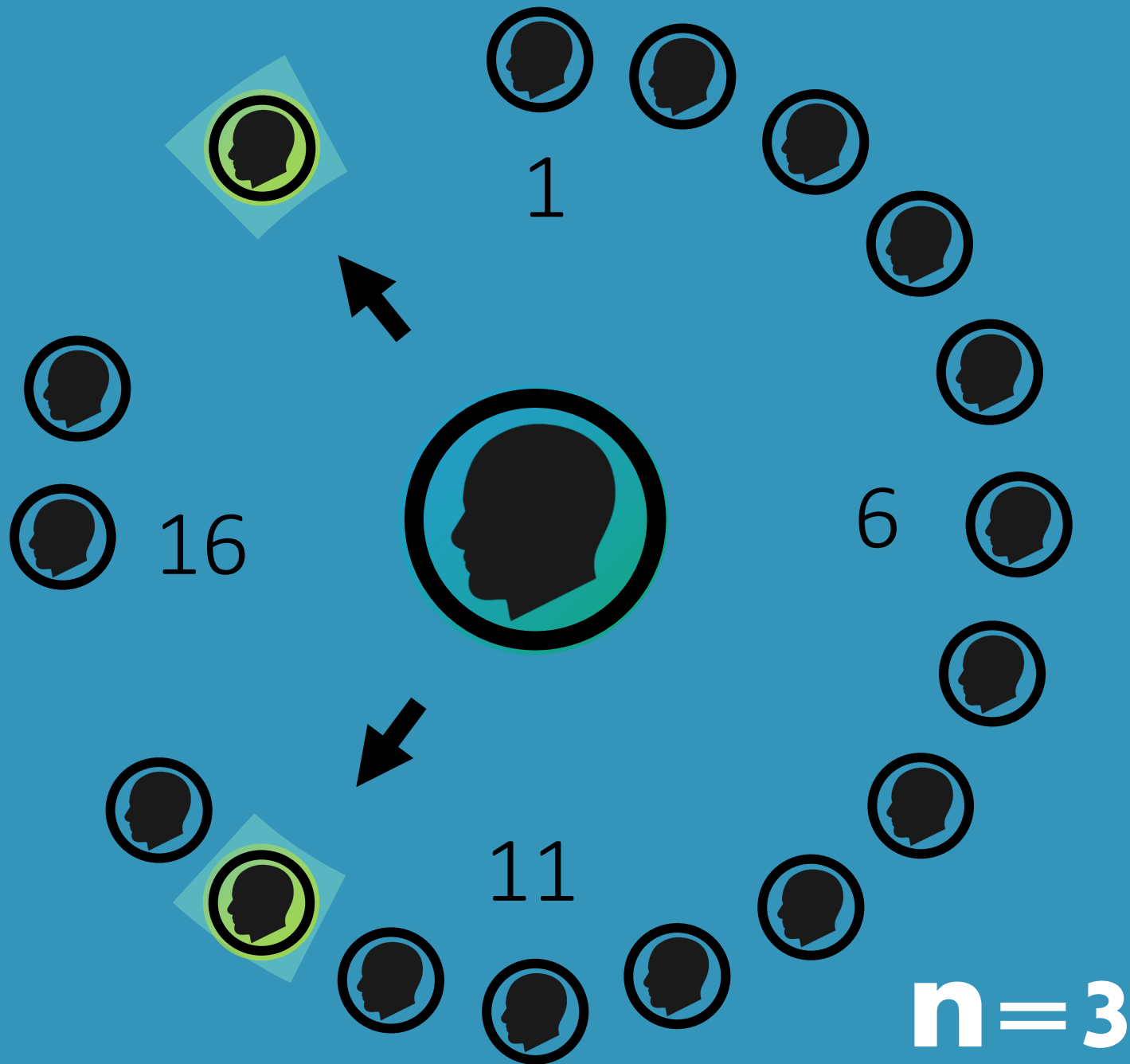
$$\llbracket 10; 20 \rrbracket \setminus \{15\}$$




$$\mathbf{J}_3 = 15$$
$$\mathbf{D}_3 < \mathbf{D}_0$$
$$\mathbf{Y} = \llbracket 16; 20 \rrbracket$$



$$\mathbf{J}_3 = 15$$
$$\mathbf{D}_3 < \mathbf{D}_0$$
$$\mathbf{Y} = \llbracket 16; 20 \rrbracket$$



Formules & Démonstrations

A large group of people is gathered around a campfire at night. The fire is the central light source, casting a warm glow on the surrounding individuals. The background is dark, with a blue gradient overlay on the right side of the image. The text 'Formules & Démonstrations' is overlaid on the left side in a bold, white, sans-serif font.

**Nombre
de tours,
phase 1**

$$\left[\frac{N}{D_0 + 1} \right]$$

**Nombre
de tours,
phase 2**

On pose

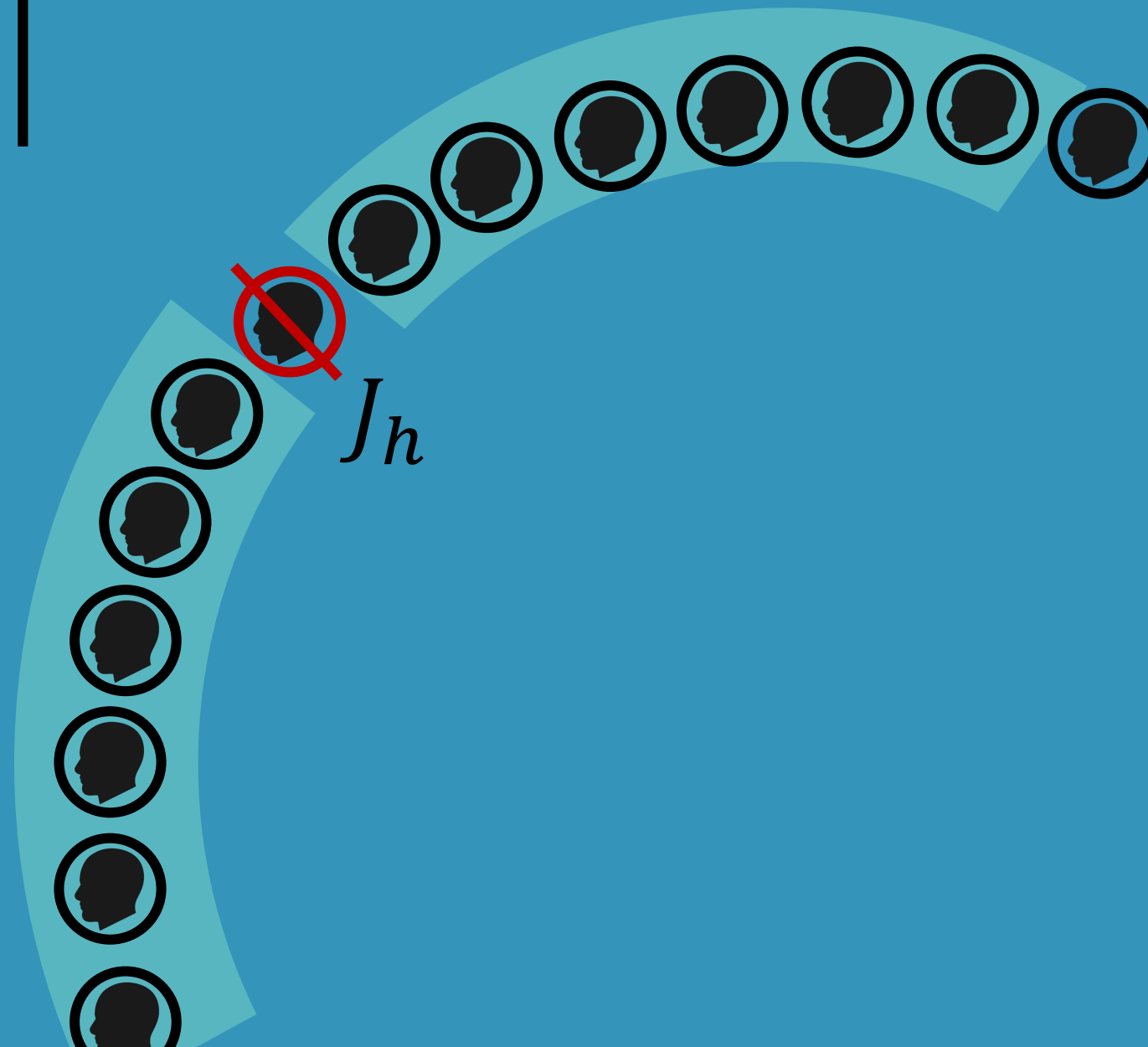
$$h = \left[\frac{N}{D_0 + 1} \right]$$

On a donc

$$D_h = D_0 - 1$$

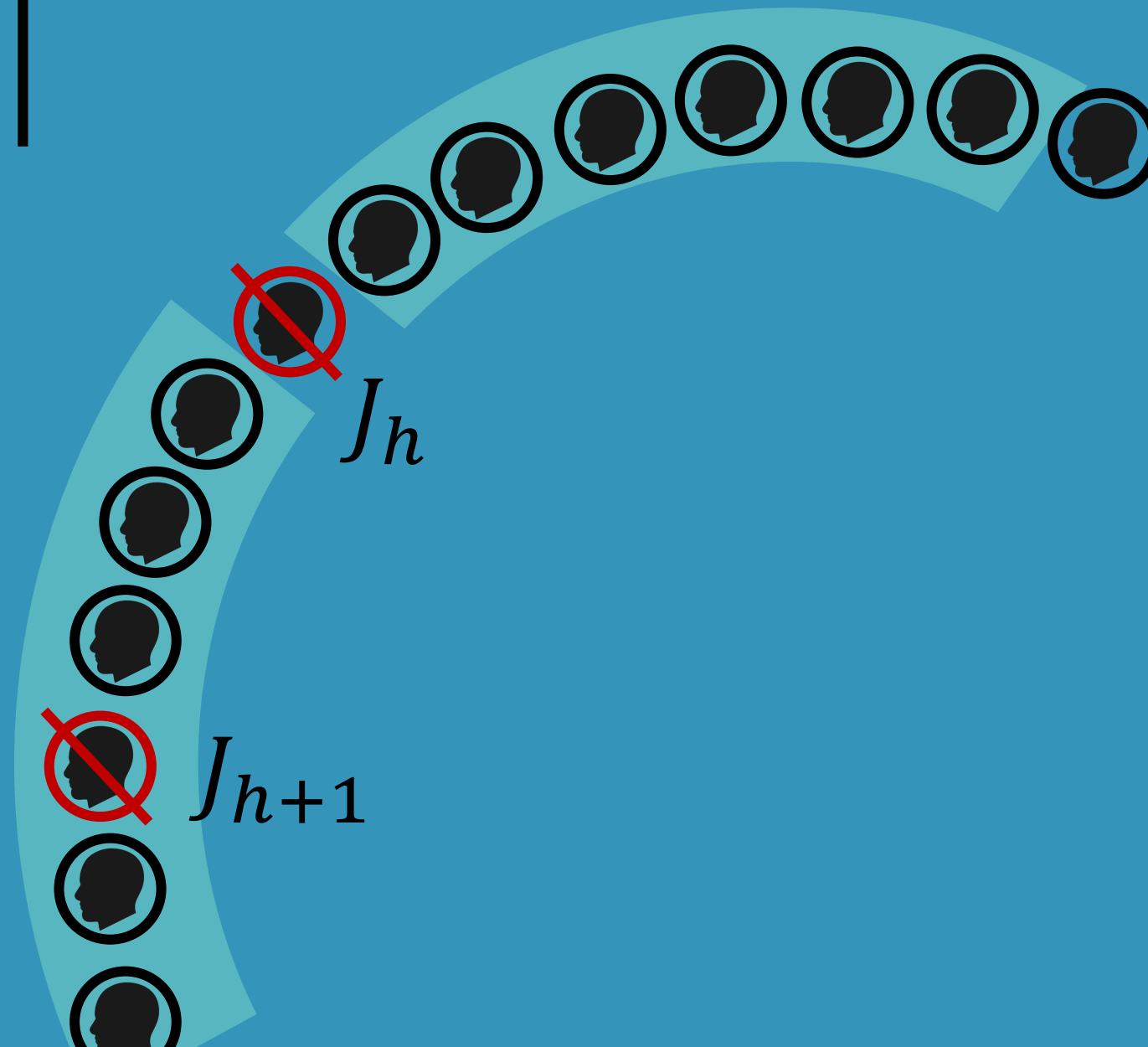
$D_h \neq 0$ *et* $D_h \neq 1$

$$J_{h+1} = J_h \pm \left\lfloor \frac{D_h}{2} \right\rfloor$$



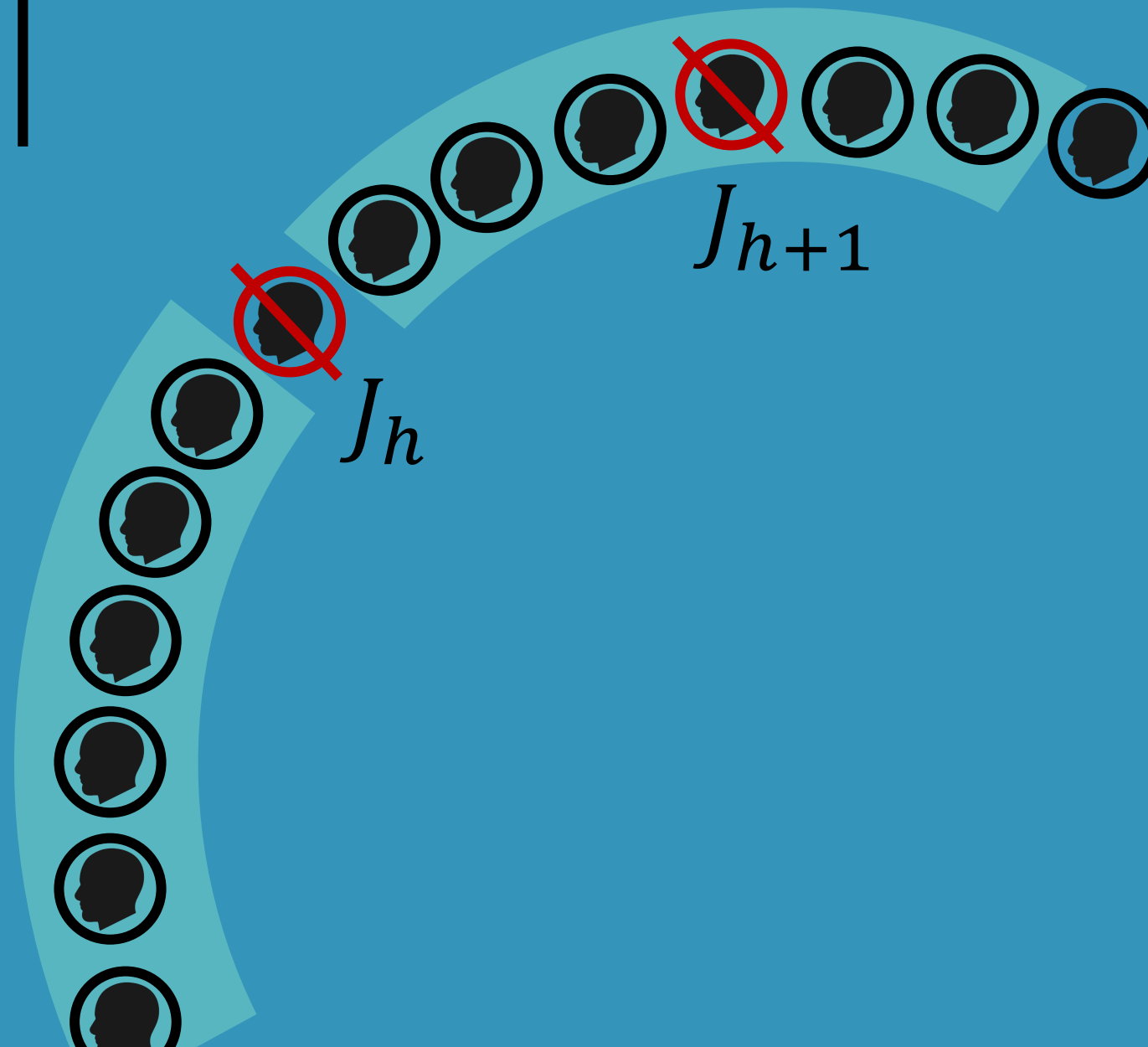
$$D_h = D_0 - 1 = 7$$

$$J_{h+1} = J_h \pm \left\lfloor \frac{D_h}{2} \right\rfloor$$



$$D_h = D_0 - 1 = 7$$

$$J_{h+1} = J_h \pm \left\lfloor \frac{D_h}{2} \right\rfloor$$



$$D_h = D_0 - 1 = 7$$

Dans le pire des cas $D_{h+1} = D_h$

Donc dans le pire des cas :

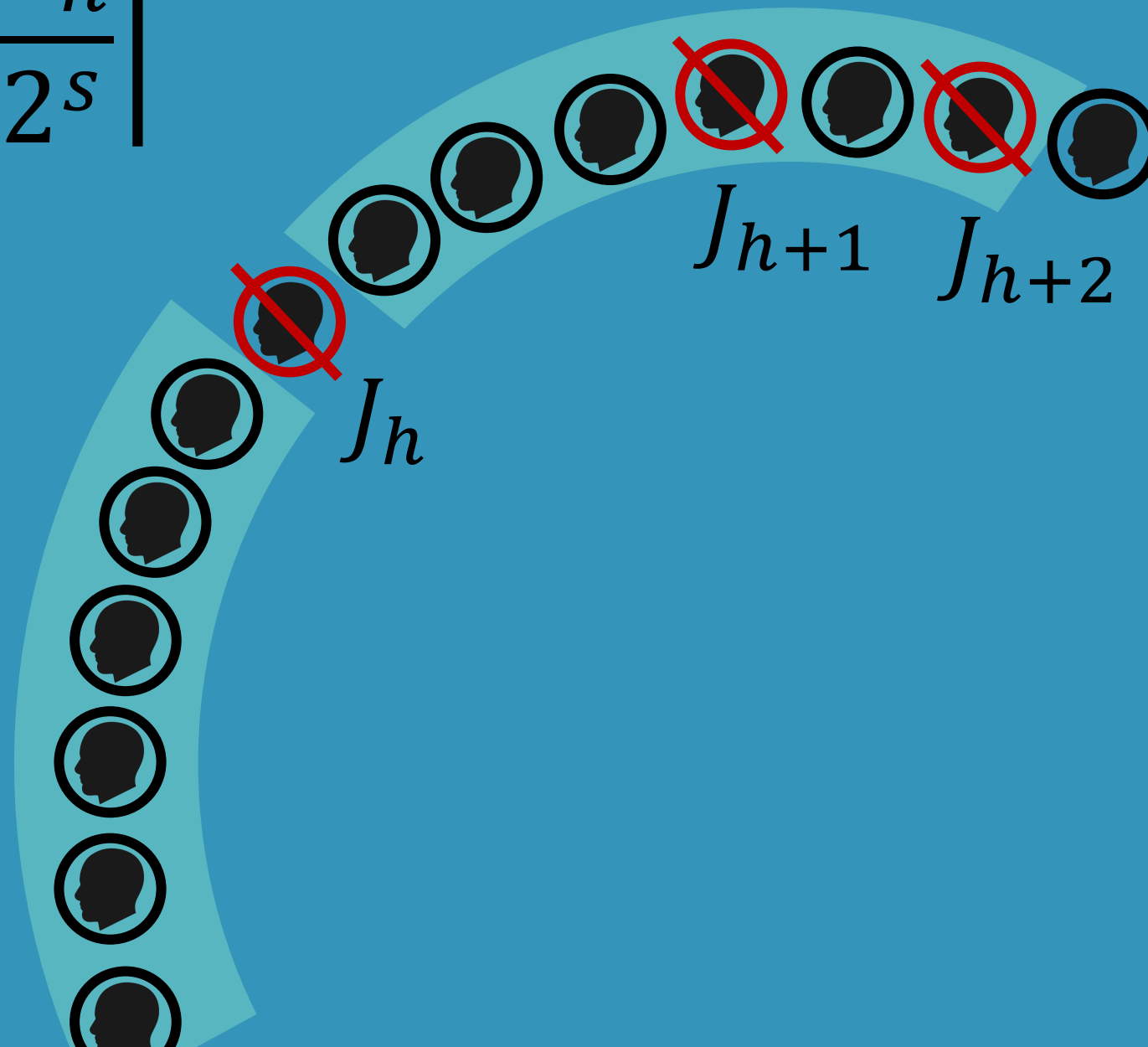
$$D_{h+s} = D_h$$

Ainsi $J_{h+2} = J_{h+1} + \left[\frac{D_h}{2} \right]$

De manière générale :

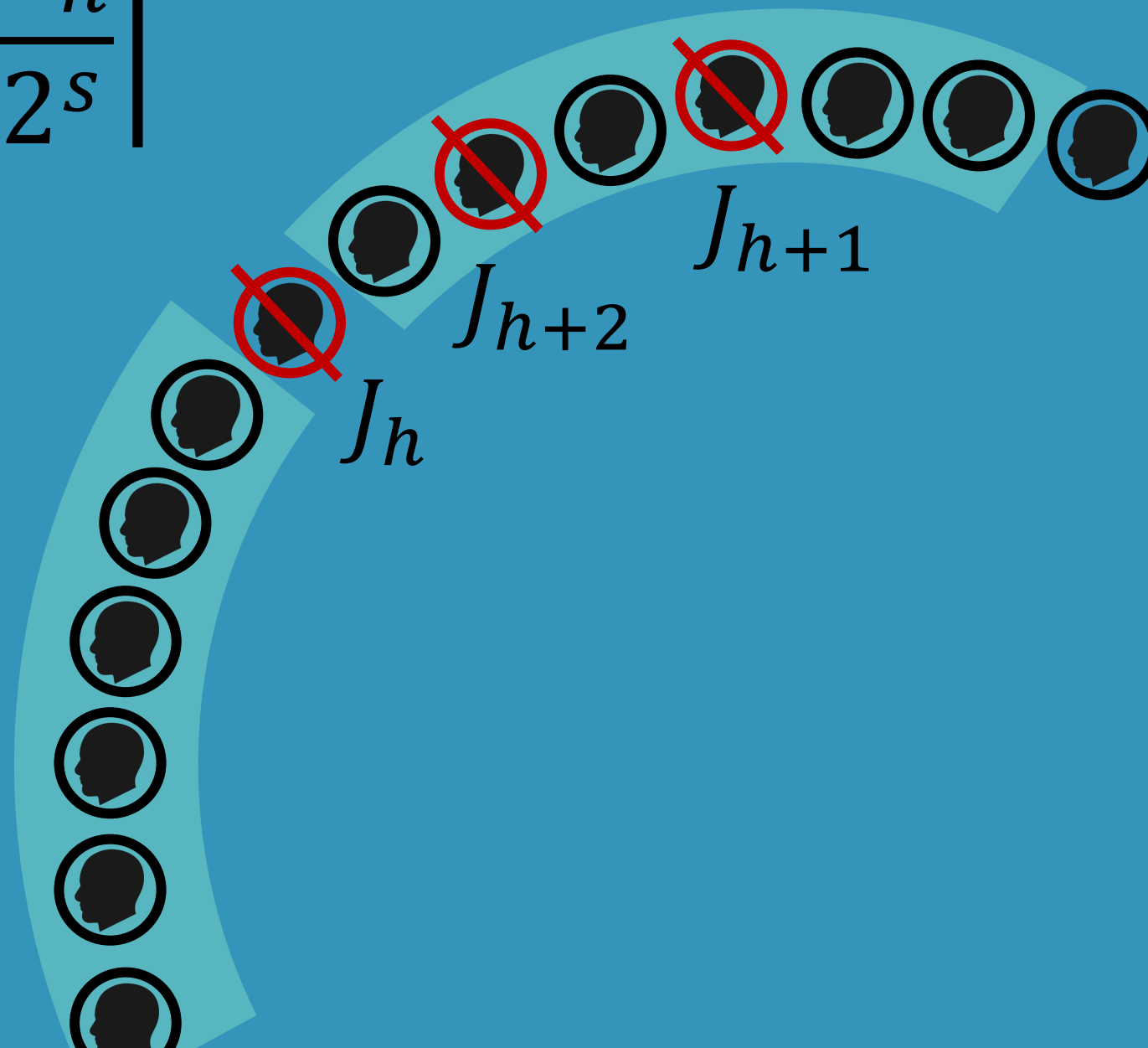
$$J_{h+s} = J_{h+s-1} + \left[\frac{D_h}{2^s} \right]$$

$$J_{h+s} = J_{h+s-1} + \left\lfloor \frac{D_h}{2^s} \right\rfloor$$



$$D_h = D_0 - 1 = 7$$

$$J_{h+s} = J_{h+s-1} + \left\lfloor \frac{D_h}{2^s} \right\rfloor$$



$$D_h = D_0 - 1 = 7$$

*Il ne restera qu'un seul joueur
à éliminer lorsque:*

$$\left\lfloor \frac{D_h}{2^s} \right\rfloor = 1$$

$$\Leftrightarrow \lceil D_h \rceil = 2^s$$

$$\Leftrightarrow s = \log_2(D_h)$$

On aura donc gagné au tour :

$$s + h$$

$$\Leftrightarrow \log_2 (D_h) + \left[\frac{N}{D_0 + 1} \right]$$