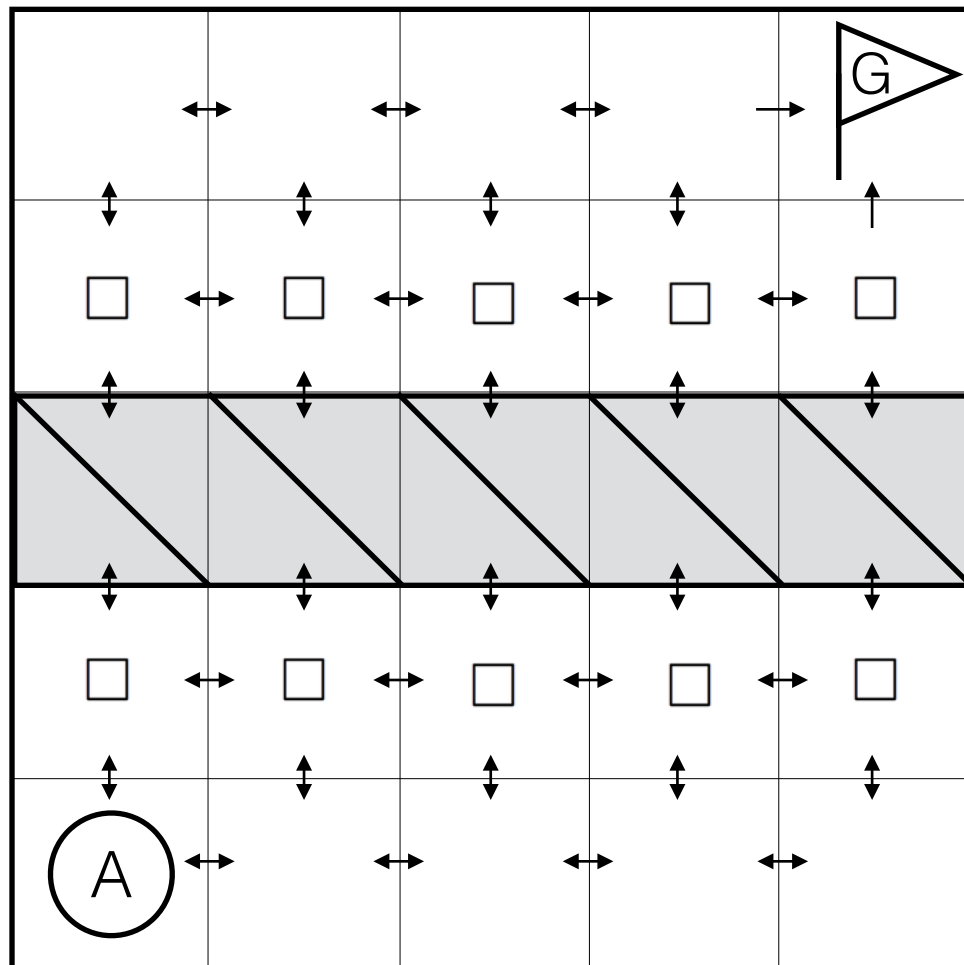


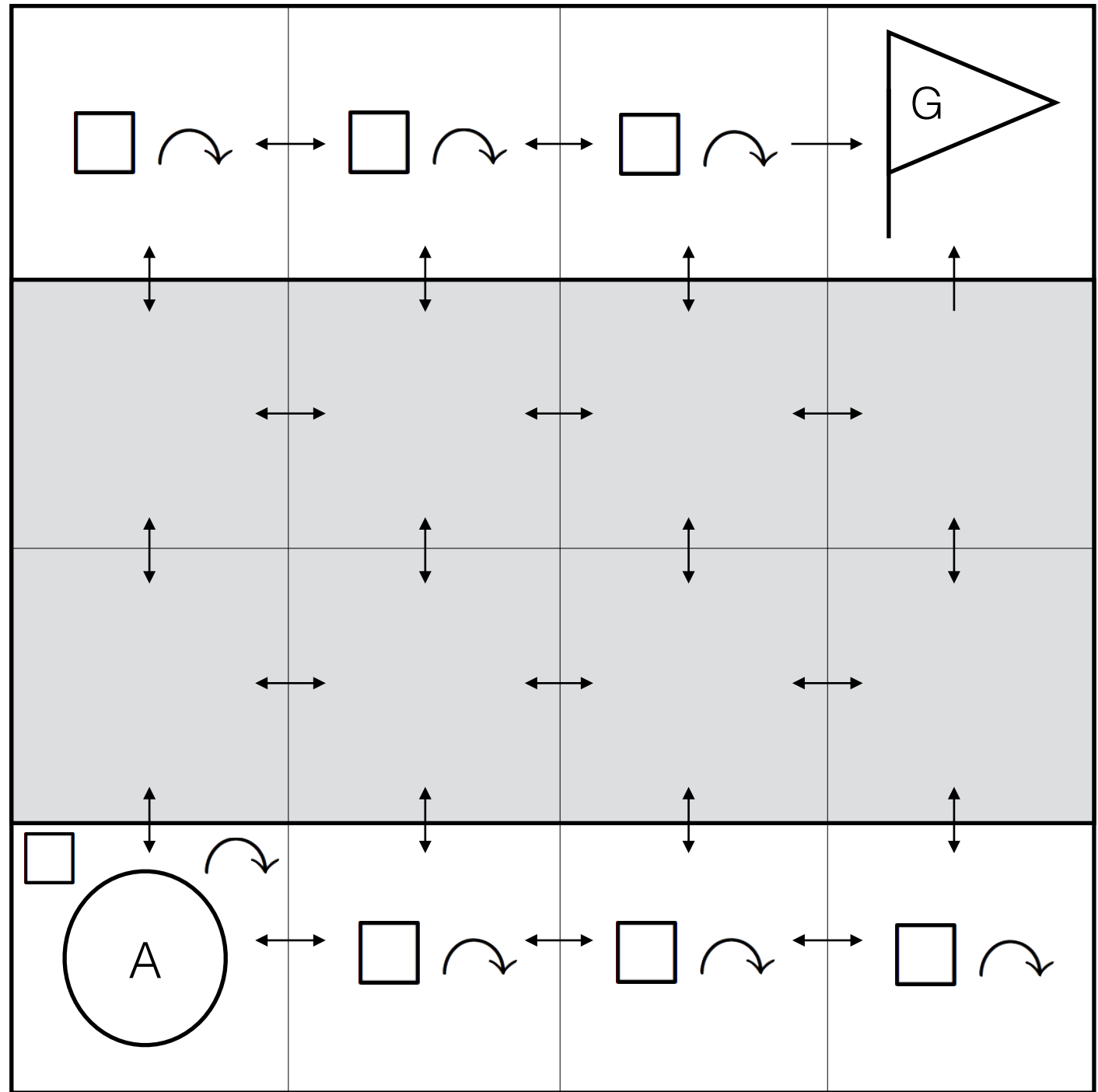
BRIDGEWORLD



$$\Delta_1 := \langle onPlane, reachGoal \rangle \implies \{ \leftrightarrow \}$$

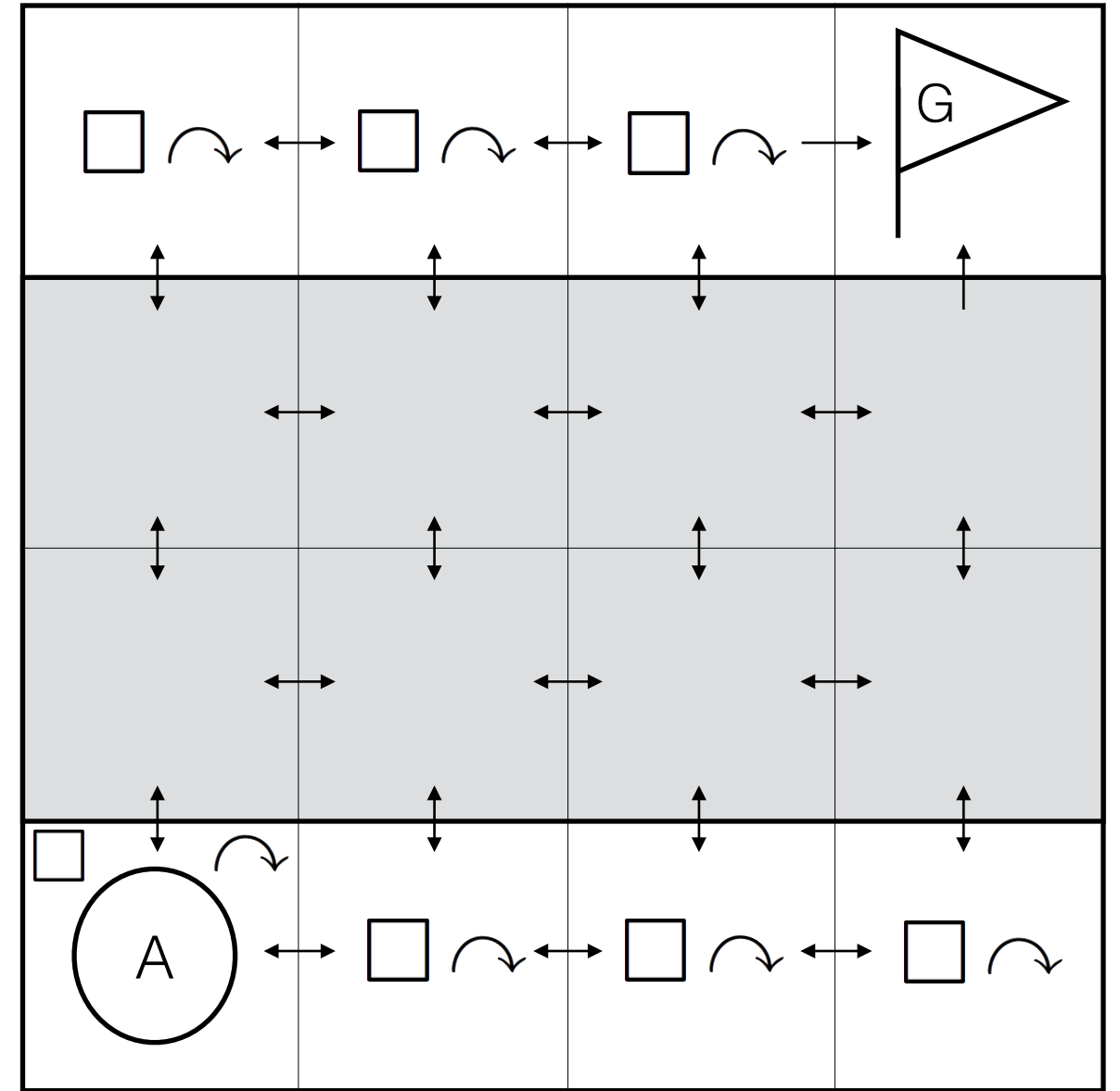
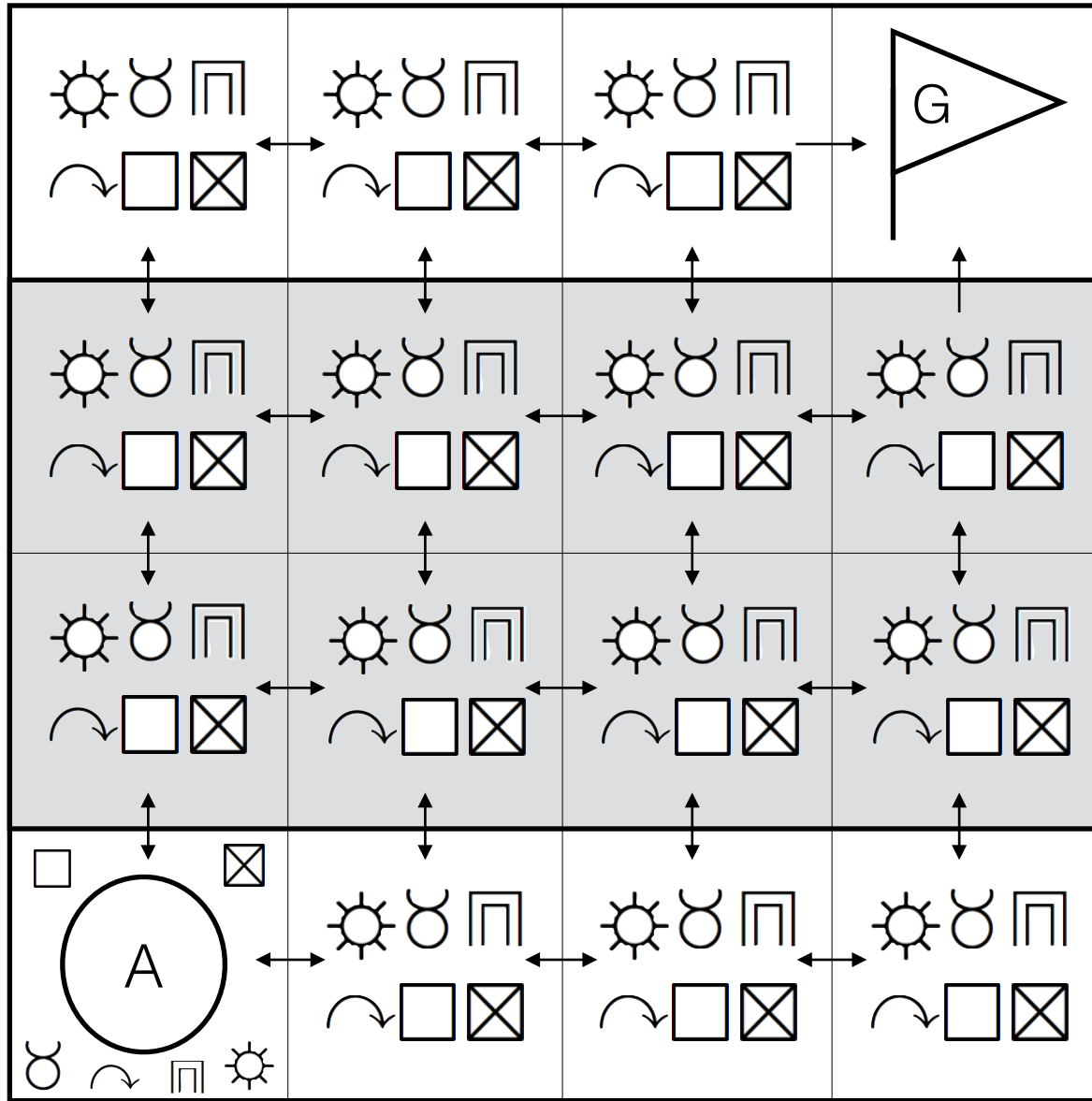
$$\Delta_2 := \langle nearTrench, reachGoal \rangle \implies \{ \leftrightarrow, \square \}$$

Affordances for BRIDGEWORLD



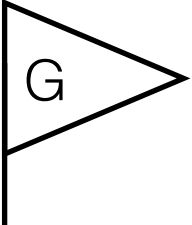
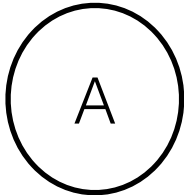
$$\Delta_1 := \langle onPlane, reachGoal \rangle \implies \{ \leftrightarrow \}$$

$$\Delta_2 := \langle nearTreanch, reachGoal \rangle \implies \{ \leftrightarrow, \square, \curvearrowright \}$$

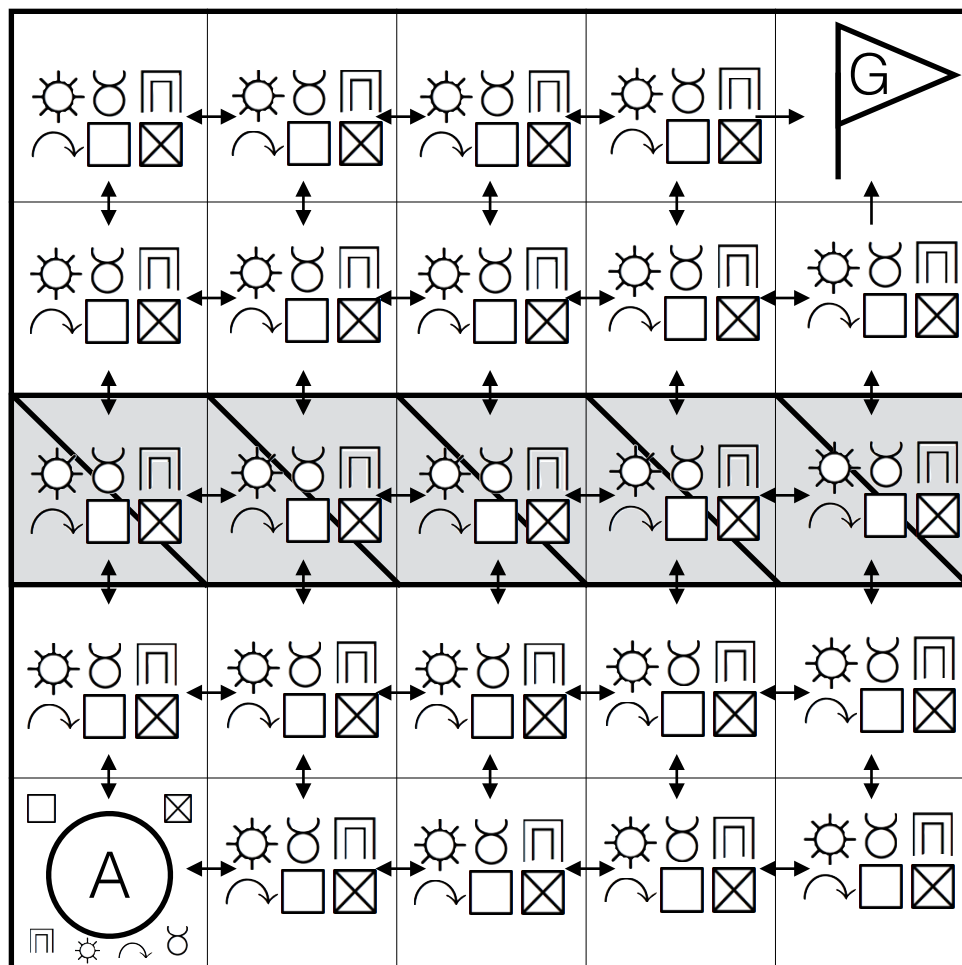


$$\Delta_1 := \langle onPlane, reachGoal \rangle \implies \{\leftrightarrow\}$$

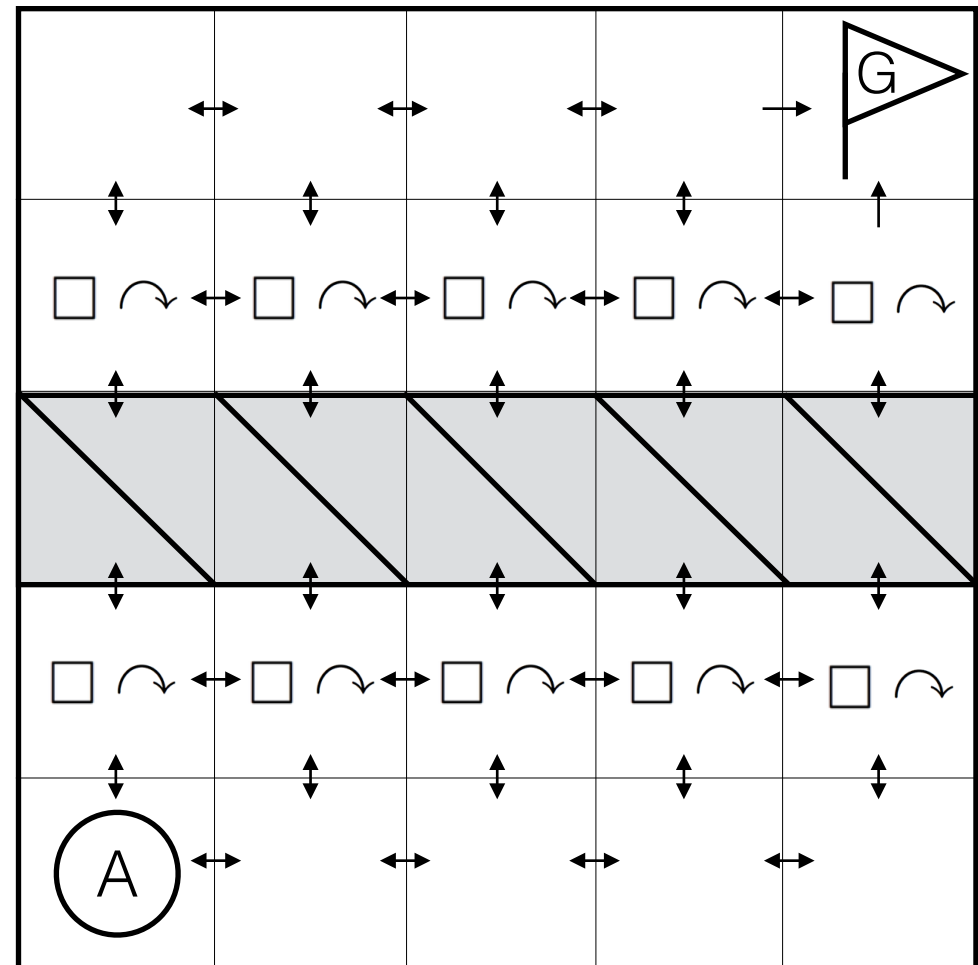
$$\Delta_2 := \langle nearTreanch, reachGoal \rangle \implies \{\leftrightarrow, \square, \curvearrowright\}$$

Value Iteration on BRIDGEWORLD



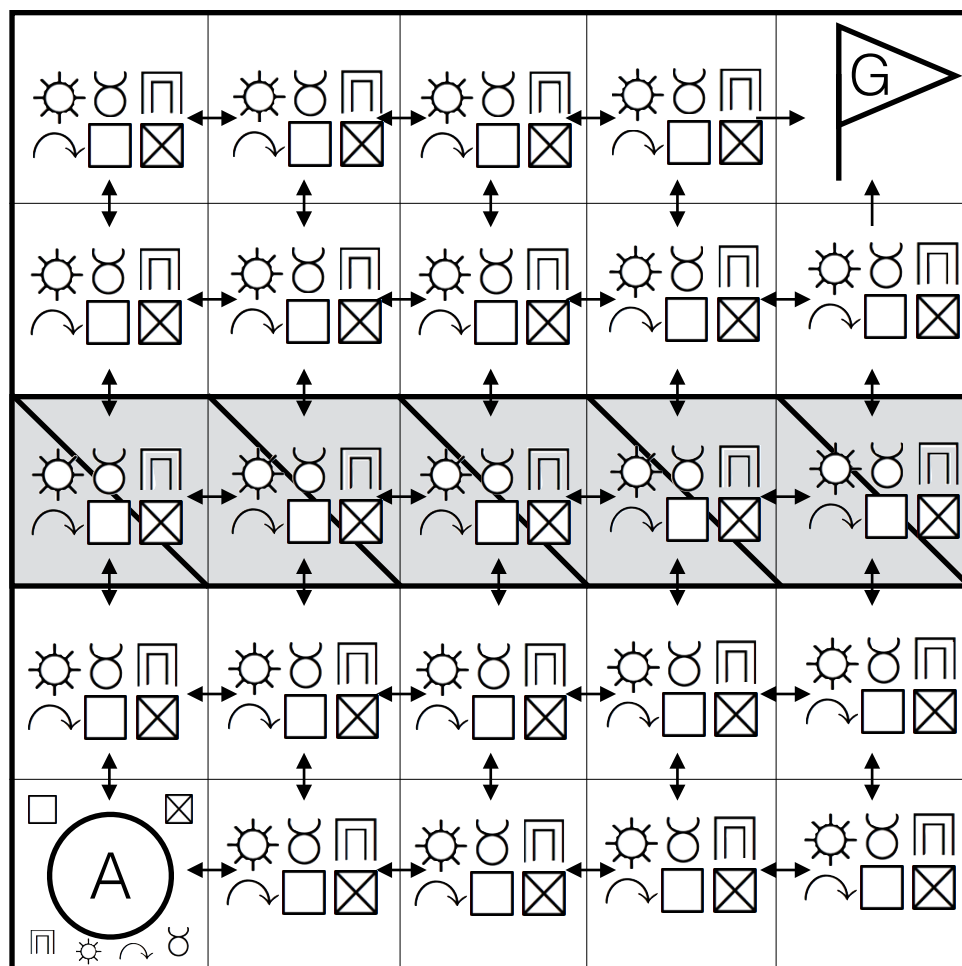
Affordance planner on BRIDGEWORLD



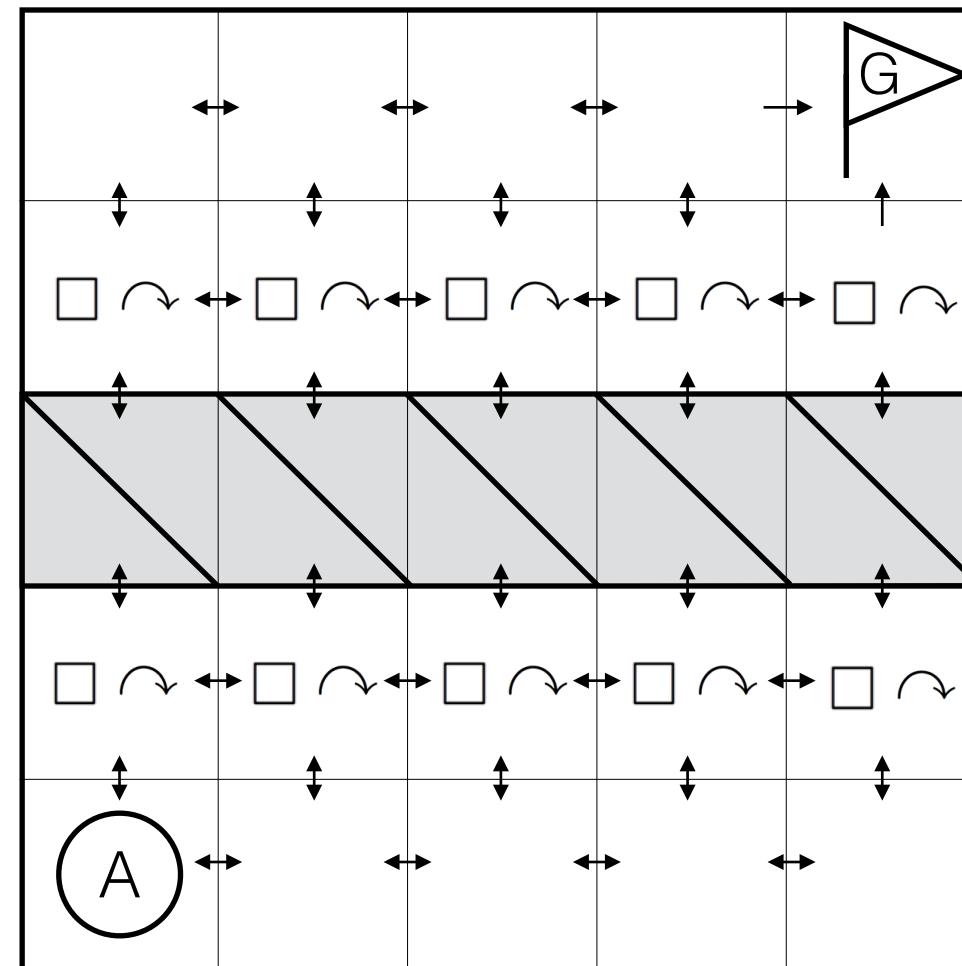
$$\Delta_1 := \langle onPlane, reachGoal \rangle \implies \{\leftarrow \updownarrow \rightarrow\}$$

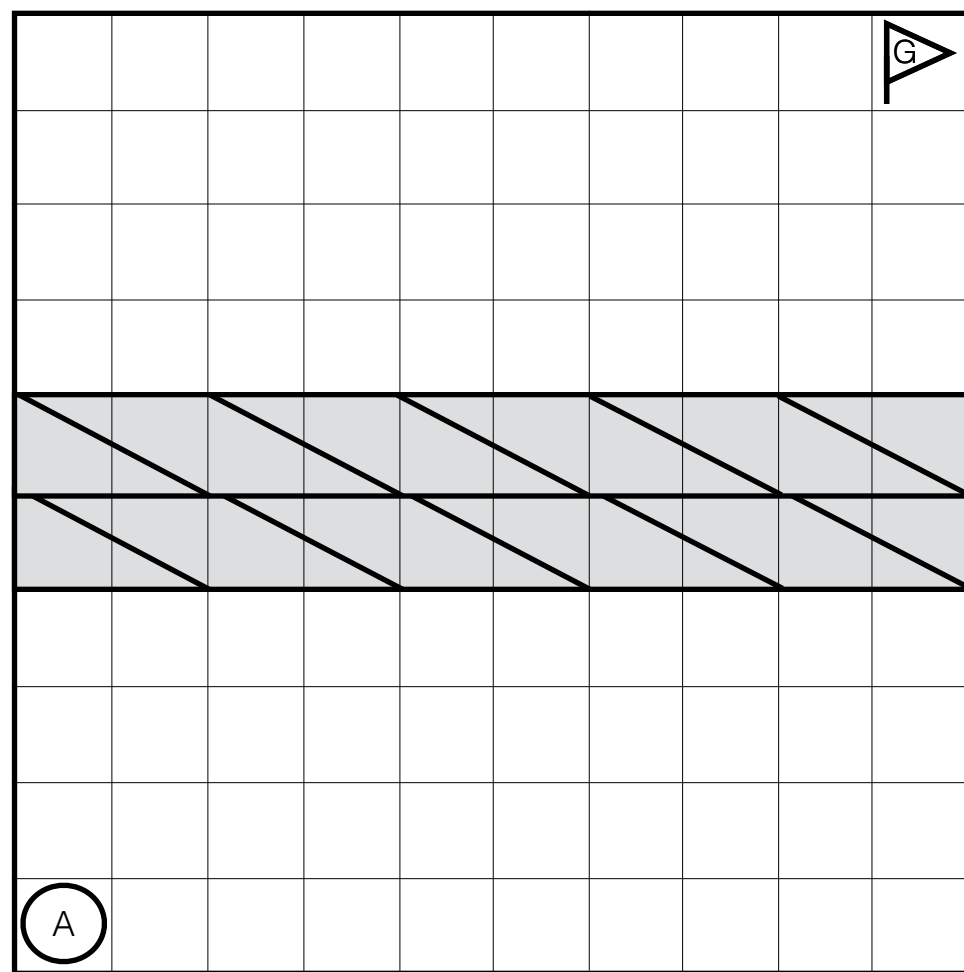
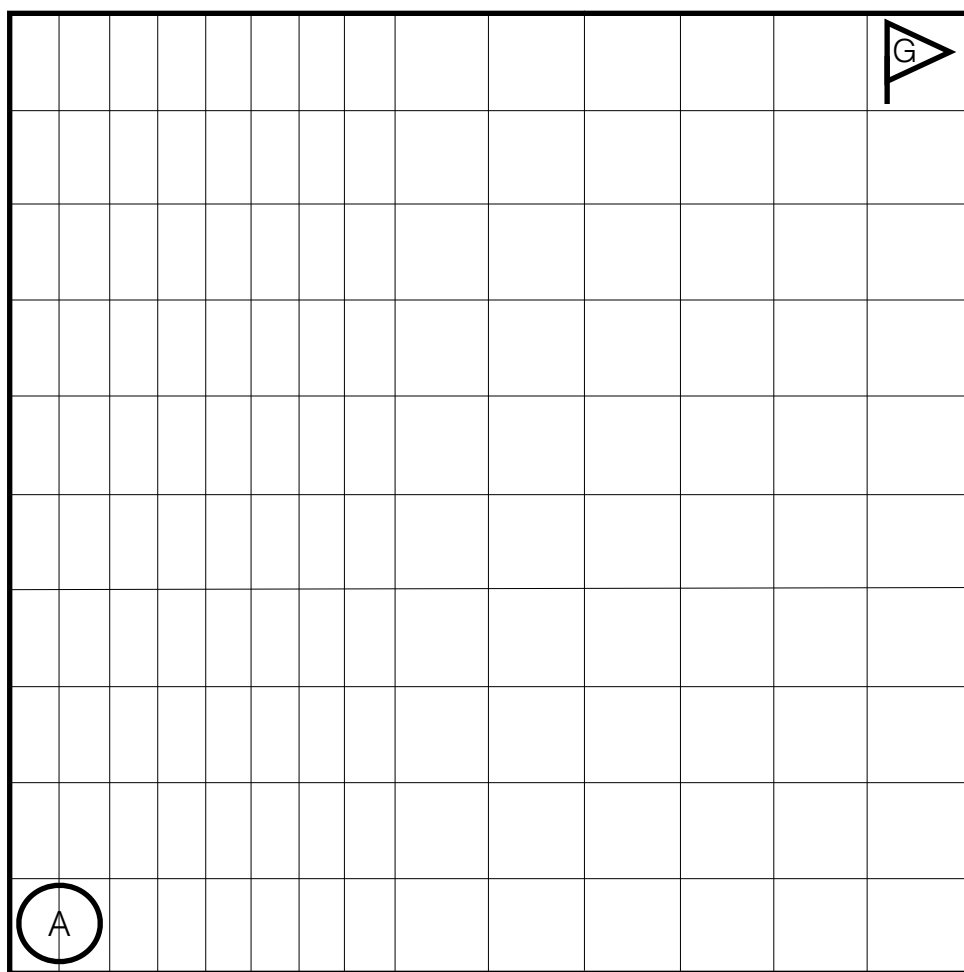
$$\Delta_2 := \langle nearTrench, reachGoal \rangle \implies \{\leftarrow \updownarrow \rightarrow, \square, \curvearrowright\}$$

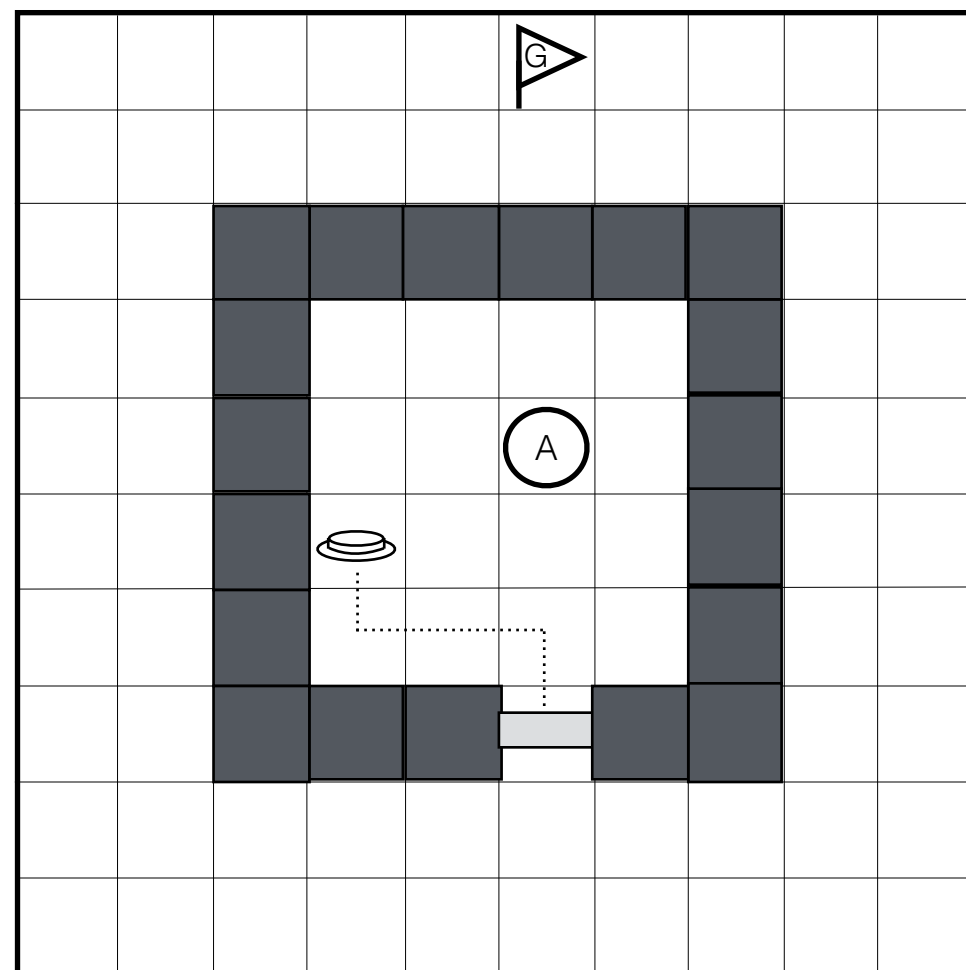
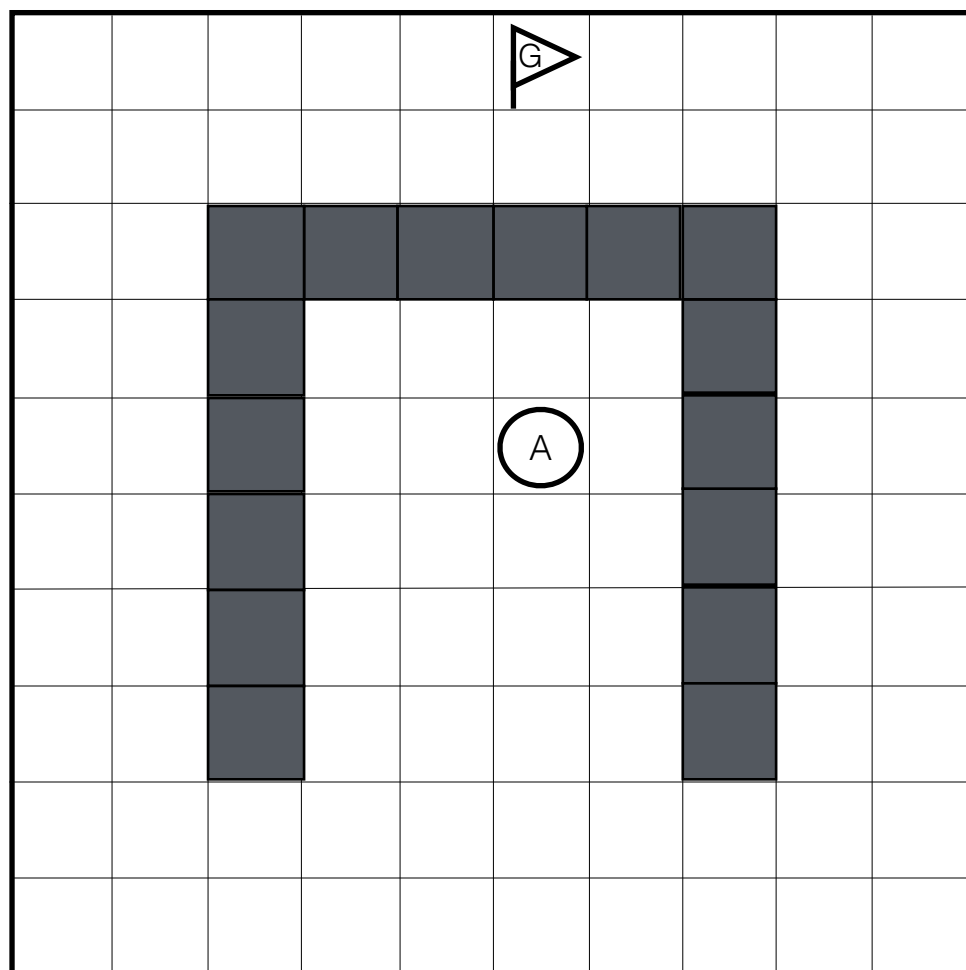
BRIDGEWORLD



BRIDGEWORLD







$$(Move) \quad \leftrightarrow = \{\uparrow, \leftarrow, \downarrow, \rightarrow\}$$

$$(Place) \quad \square = \{\uparrow \square, \leftarrow \square, \downarrow \square, \rightarrow \square\}$$

$$(Destroy) \quad \boxtimes = \{\uparrow \boxtimes, \leftarrow \boxtimes, \downarrow \boxtimes, \rightarrow \boxtimes\}$$

$$(OpenDoor) \quad \sqcap = \{\uparrow \sqcap, \leftarrow \sqcap, \downarrow \sqcap, \rightarrow \sqcap\}$$

$$(Jump) \quad \curvearrowright = \{\uparrow \curvearrowright, \leftarrow \curvearrowright, \downarrow \curvearrowright, \rightarrow \curvearrowright\}$$

$$(UseOven) \quad \odot = \{\uparrow \odot, \leftarrow \odot, \downarrow \odot, \rightarrow \odot\}$$

$$(Pickup) \quad \oslash = \{\cdot \oslash\}$$

$$\mathcal{A} = \{\leftrightarrow, \square, \boxtimes, \sqcap, \curvearrowright, \odot, \oslash\}$$

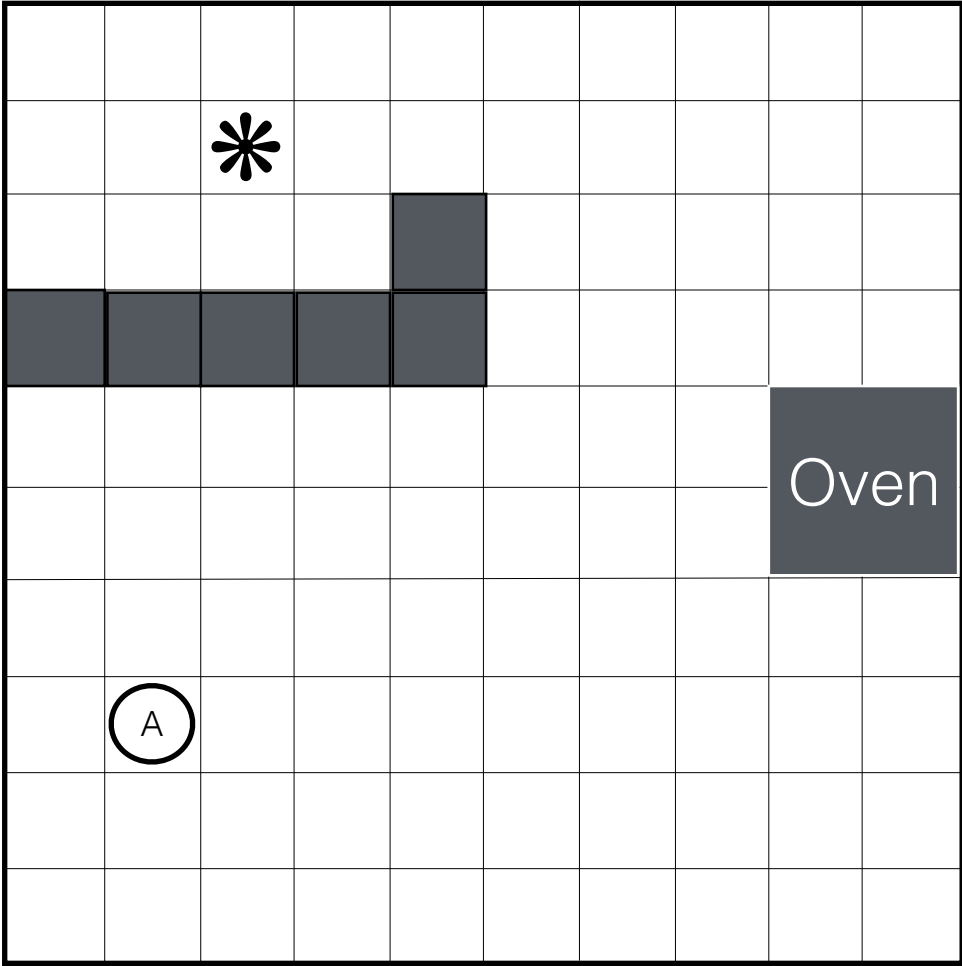
$$(Move) \quad \leftrightarrow = \{\uparrow, \leftarrow, \downarrow, \rightarrow\}$$

$$(OpenDoor) \quad \sqcup = \{\uparrow \sqcup, \leftarrow \sqcup, \downarrow \sqcup, \rightarrow \sqcup\}$$

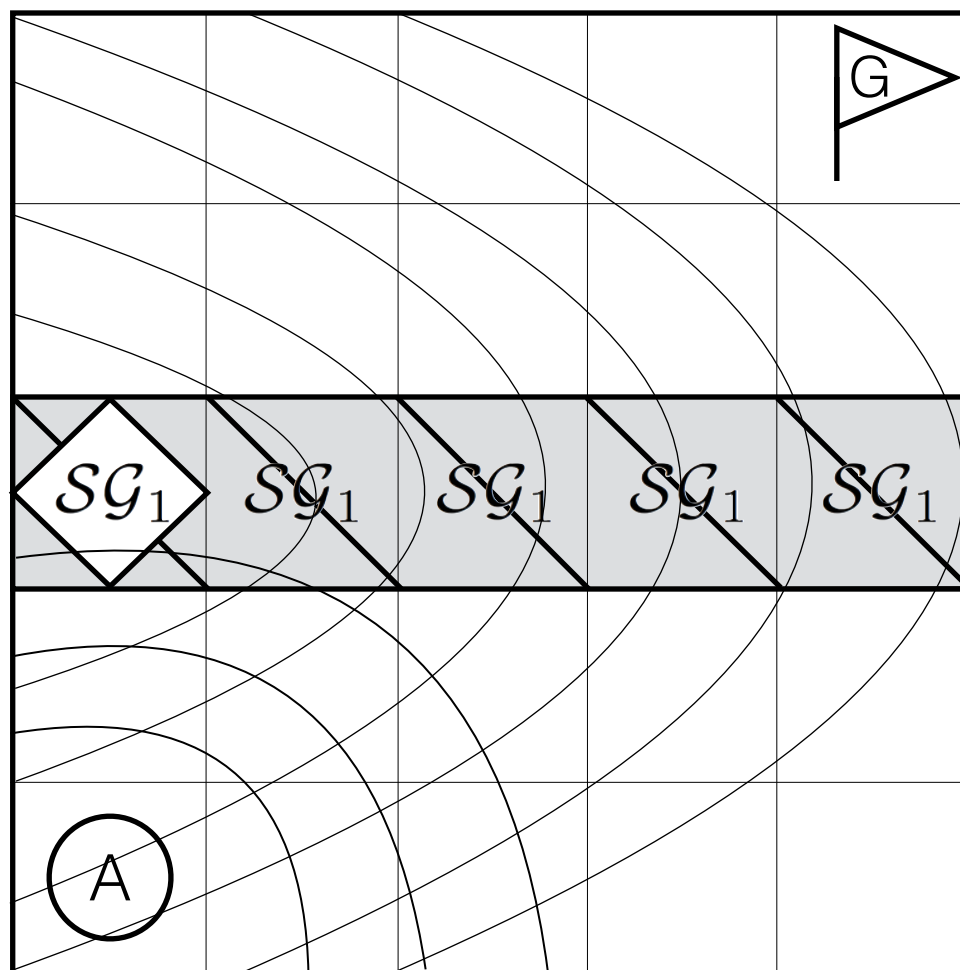
$$\mathcal{A} = \{\leftrightarrow, \sqcup\}$$

$$(Jump) \quad \curvearrowright = \{\uparrow\curvearrowright, \leftarrow\curvearrowright, \downarrow\curvearrowright, \rightarrow\curvearrowright\}$$

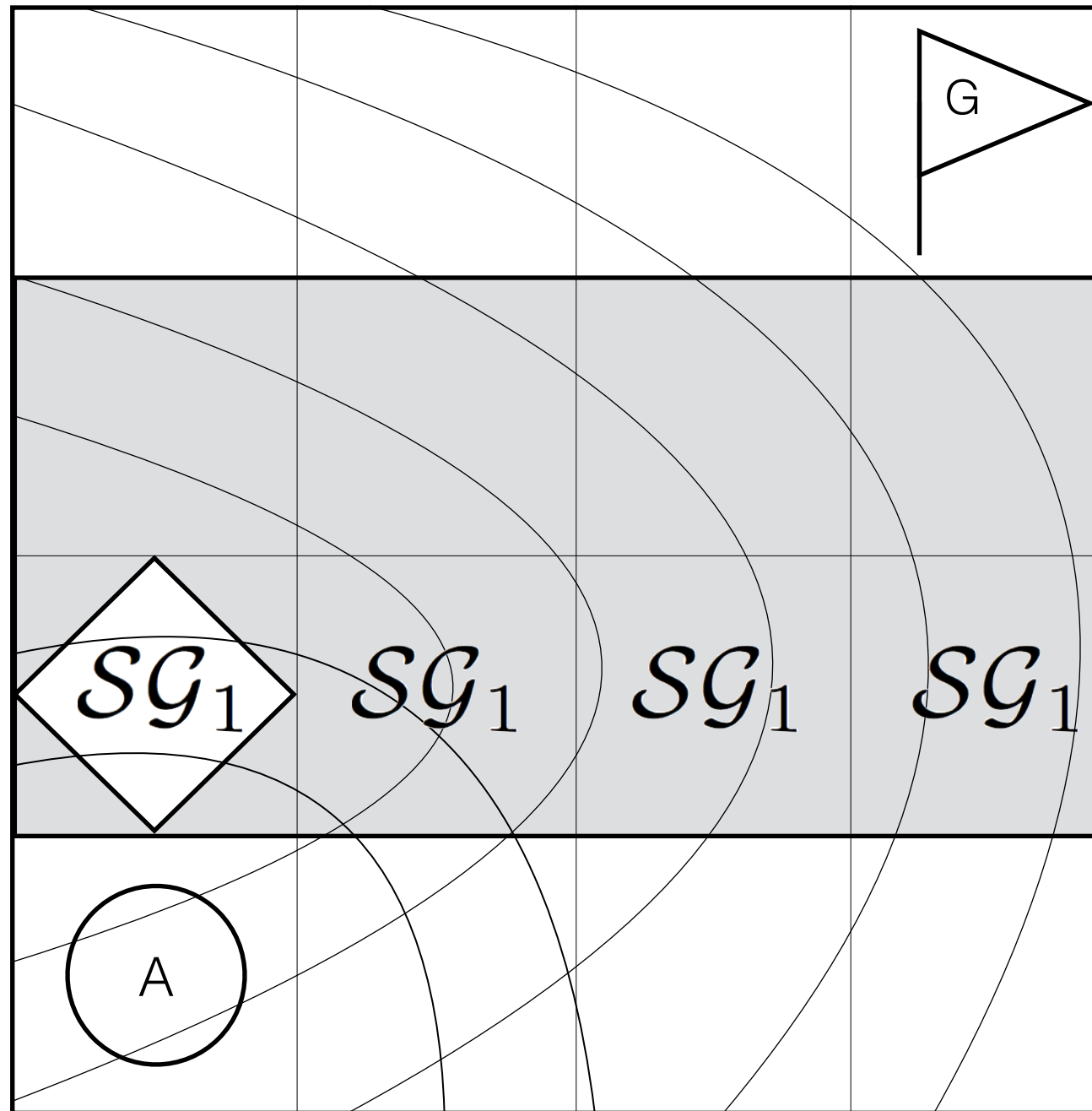
Minecraft Task Group	General Task Group
M1: FLATWORLD M2: BRIDGEWORLD M3: TUNNELWORLD	G1: FEXISTBRIDGEWOR G2: WALLWORLD G3: JUMPWORLD G4: DOOR WORLD G5: LIGHTWORLD G6: BIGWORLD



Subgoal planner on BRIDGEWORLD

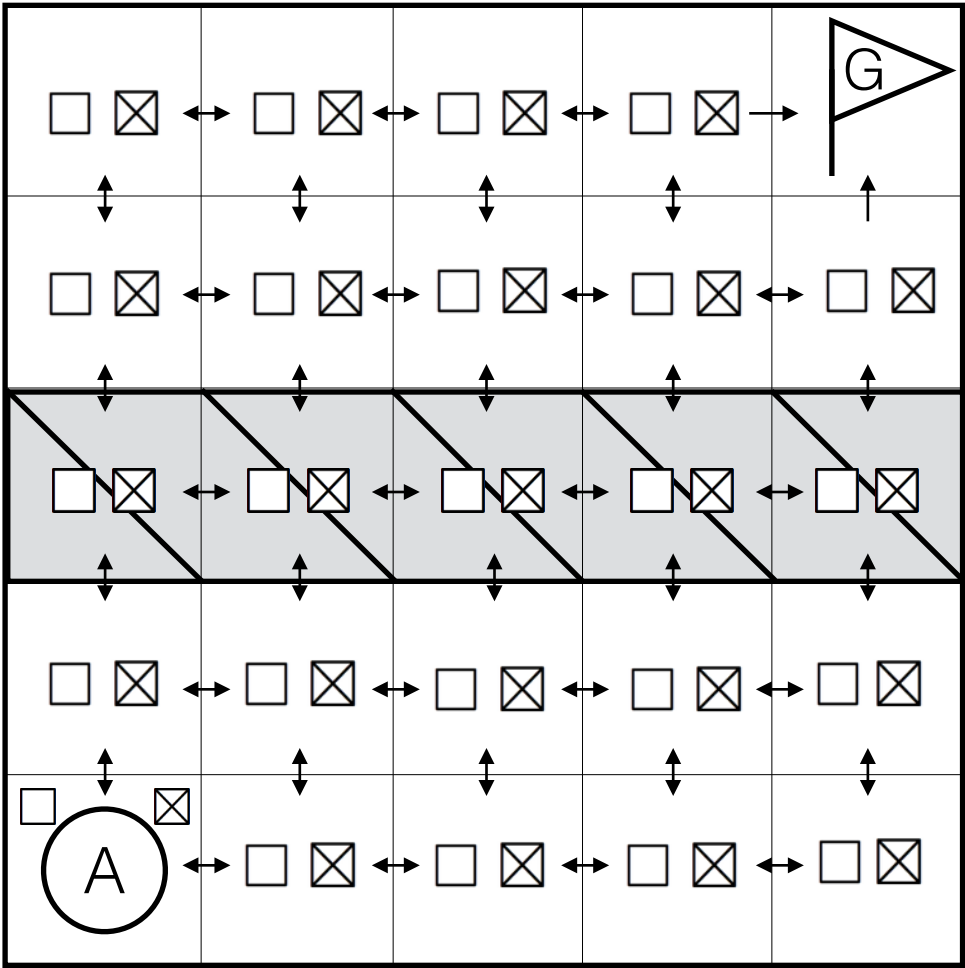


$SG_1 := \langle blockInTrench, reachGoal \rangle$



$SG_1 := \langle blockInTrench, reachGoal \rangle$

BRIDGEWORLD



$$\begin{array}{ll}
& \begin{array}{c} \leftrightarrow \\ \leftrightarrow \end{array} \\
\Delta_1 := \langle onPlane, reachGoal \rangle \implies \{ \leftrightarrow \} & \begin{array}{c} \leftrightarrow \\ \leftrightarrow \end{array} \\
\Delta_2 := \langle nearTrench, reachGoal \rangle \implies \{ \leftrightarrow, \square \} & \begin{array}{c} \leftrightarrow \\ \leftrightarrow \end{array} \\
\Delta_3 := \langle nearWall, reachGoal \rangle \implies \{ \leftrightarrow, \boxtimes \} & \\
\end{array}$$



