

$$(\text{as}_{X,Y,Z} \circ \text{br}_{X,Y \otimes Z} \circ \text{as}_{Y,Z,X})^{\star}(\langle x, y \rangle, z)$$

$$= \bigcup_{\langle \langle y', z' \rangle, x' \rangle \in (\uparrow\{y\} \times \uparrow\{z\}) \times \uparrow\{x\}} \text{as}_{Y,Z,X}^{\star}(\langle y', z' \rangle, x')$$

$$= \bigcup_{\langle \langle y', z' \rangle, x' \rangle \in (\uparrow\{y\} \times \uparrow\{z\}) \times \uparrow\{x\}} \uparrow\{y'\} \times (\uparrow\{z'\} \times \uparrow\{x'\})$$

$$= \uparrow\{y\} \times (\uparrow\{z\} \times \uparrow\{x\}).$$