$\left(\operatorname{br}_{U,Y} \circ (f \otimes g)\right)^{\star}(x,z) = \langle \uparrow \{z\}, \uparrow \{x\} \rangle \circ (f \otimes g)^{\star}$

 $= \left\langle \bigcup_{z' \in \uparrow \{z\}} g^{\star}(z'), \bigcup_{x' \in \uparrow \{x\}} f^{\star}(x') \right\rangle.$