$$((f \otimes g) \mathbin{\raise.1ex\hbox{$\scriptstyle\circ$}\kern-.35em\raise-.4ex\hbox{$\scriptstyle\circ$}} \mathrm{br}_{Y,U})^{\star}(x,z) = \langle f^{\star}(x), g^{\star}(z) \rangle \mathbin{\raise.1ex\hbox{$\scriptstyle\circ$}\kern-.35em\raise-.4ex\hbox{$\scriptstyle\circ$}} \mathrm{br}_{Y,U}$$

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