$$\langle \langle \langle a, b \rangle, \langle c, d \rangle \rangle$$

$$\langle (\langle a, b \rangle, c \rangle, d \rangle \qquad ((A \times B) \times C) \times D$$

$$br_{A,B,C} \times Id_{D} \downarrow \qquad \qquad Id_{A} \times br_{B,C,D}$$

$$\langle (A \times B \times C) \times D \qquad \qquad br_{A,B,C} \times D \rangle$$

$$(A \times (B \times C)) \times D \qquad \qquad br_{A,B,C,D} \qquad \qquad A \times ((B \times C) \times D)$$

$$\langle (a, \langle b, c \rangle, d \rangle \qquad \qquad br_{A,B,C,D} \qquad \qquad a, \langle \langle b, c \rangle, d \rangle \rangle$$