$$\cdots \qquad Q_{a_{\sigma'(j)}} \qquad \cdots \qquad P_{b'_j} \qquad \cdots$$

$$(a_{\sigma'(j)}, b'_j)$$

$$\cdots \qquad \otimes \operatorname{Hom}_{\mathcal{V}}(a_{\sigma'(j)}, b'_j) \otimes \qquad \cdots$$

$$\beta \circ (-)$$

$$\cdots \qquad \otimes \operatorname{Hom}_{\mathcal{V}}(a_{\sigma'(j)}, b_j) \otimes \qquad \cdots$$