

$$\begin{array}{ccccc}
A & \xrightarrow{\{\langle A, N_a \rangle\}_{\text{pk}(C)}^a} & C & & \\
& & \downarrow & & \\
& & C(A) & \xrightarrow{\{\langle A, N_a \rangle\}_{\text{pk}(B)}^a} & B \\
& & & \xleftarrow{\{\langle N_a, N_b \rangle\}_{\text{pk}(A)}^a} & \\
& & C(A) & & B \\
& & \downarrow & & \\
A & \xleftarrow{\{\langle N_a, N_b \rangle\}_{\text{pk}(A)}^a} & C & & \\
& & & & \\
A & \xrightarrow{\{N_b\}_{\text{pk}(C)}^a} & C & & \\
& & \downarrow & & \\
& & C(A) & \xrightarrow{\{N_b\}_{\text{pk}(B)}^a} & B
\end{array}$$