

$$\begin{array}{ccc}
S_2 \times (S_2 \times S_1) & \longrightarrow & [A^2, A] \times ([A^2, A], \times [A, A]) \\
\downarrow & & \downarrow \\
S_3 & \longrightarrow & \text{Hom}(A^3, A)
\end{array}
\qquad
\begin{array}{ccc}
(e_2, e_2, e_1) & \longmapsto & (\mu_2, \mu_2, \text{id}_A) \\
\downarrow & & \downarrow \\
e_3 & \longmapsto & \mu_3 = \mu_2(\mu_2, \text{id}_A)
\end{array}$$