

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