$$S_{2} \times (S_{1} \times S_{2}) \longrightarrow [A^{2}, A] \times ([A, A], \times [A^{2}, A]) \qquad (e_{2}, e_{1}, e_{2}) \longmapsto (\mu_{2}, \mathrm{id}_{A}, \mu_{2})$$

$$\downarrow \qquad \qquad \qquad \downarrow \qquad \qquad \downarrow$$

$$S_{3} \longrightarrow \mathrm{Hom}(A^{3}, A) \qquad e_{3} \longmapsto \mu_{3} = \mu_{2}(\mathrm{id}_{A}, \mu_{2})$$