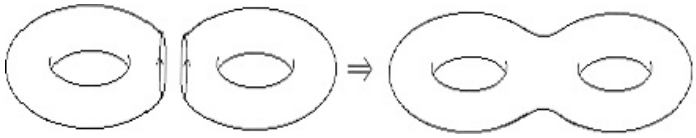


Figure 1: from: www-history.mcs.st-and.ac.uk/∼john/MT4521/Lectures/L23.html

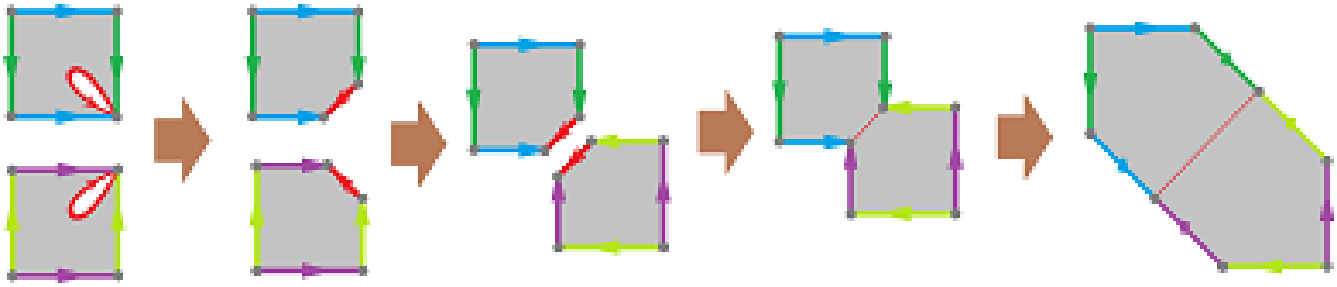
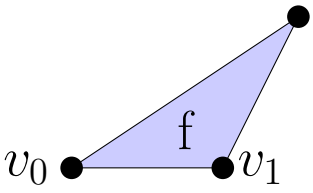
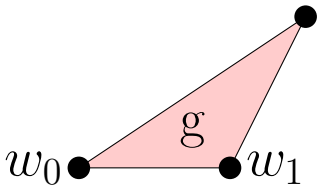


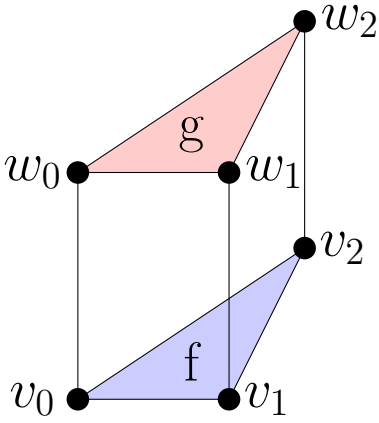
Figure 2: from: http://inperc.com/wiki/index.php?title=Manifolds



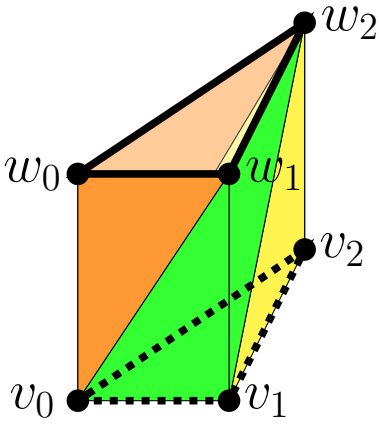
$\xrightarrow{\sigma} X \in C_2(X)$



$\xrightarrow{\sigma} X \in C_2(X)$

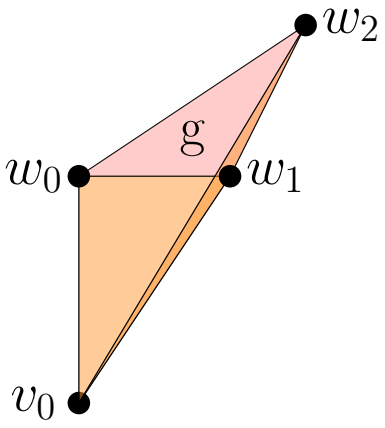


$\xrightarrow{\sigma \times id} X \xrightarrow{F} Y \notin C_3(Y)$



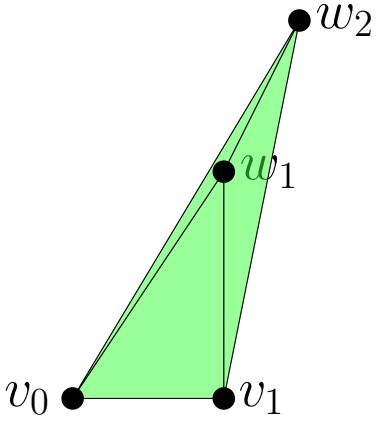
$\xrightarrow{\partial\sigma \times id} X \xrightarrow{F} Y$

$$\sum_{j=0}^{n} (-1)^j (\sigma \times id)|_{[v_0,\ldots,\widehat{v_j},\ldots,v_n]} \in C_2(X)$$



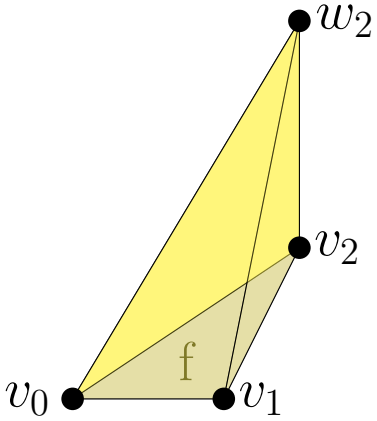
$$\xrightarrow{\sigma\times id} X \xrightarrow{F} Y \ \in \ C_3(Y)$$

$$[v_0, w_0, w_1, w_2] \to Y \ \in \ C_3(Y)$$



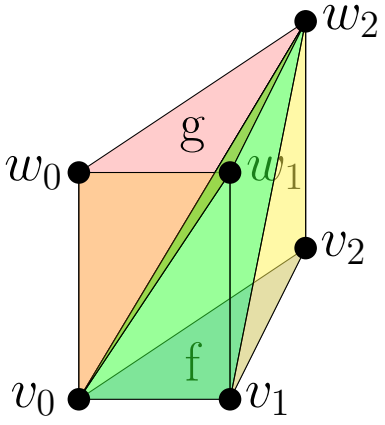
$$\xrightarrow{\sigma\times id} X \xrightarrow{F} Y \ \in \ C_3(Y)$$

$$-[v_0, v_1, w_1, w_2] \to Y \ \in \ C_3(Y)$$



$$\xrightarrow{\sigma\times id} X \xrightarrow{F} Y \ \in \ C_3(Y)$$

$$[v_0, v_1, v_2, w_2] \to Y \ \in \ C_3(Y)$$



$$\xrightarrow{\sigma\times id} X \xrightarrow{F} Y \ \in \ C_3(Y)$$

$$P(\sigma) = \sum_{i=0}^{n} (-1)^i F \circ (\sigma \times id)|_{[v_0,\ldots,v_i,w_i,\ldots w_n]} \in C_{n+1}(Y)$$