

$$\begin{array}{ccc}
 \coprod_{g \in \ker_n} |\partial \Delta^{n+1}| & \xrightarrow{\coprod_{g \in \ker_n} |i^{n+1}|} & \coprod_{g \in \ker_n} |\Delta^{n+1}| \\
 (a_g)_{g \in \ker_n} \downarrow & \text{PO} & \downarrow \\
 K_n & \xrightarrow{\iota_n} & K'_n \\
 & \searrow f_n & \swarrow f'_{n+1} \\
 & & X
 \end{array}$$

A commutative diagram illustrating a relationship between spaces and maps. At the top, a map  $\coprod_{g \in \ker_n} |\partial \Delta^{n+1}| \xrightarrow{\coprod_{g \in \ker_n} |i^{n+1}|} \coprod_{g \in \ker_n} |\Delta^{n+1}|$  is shown. Below this, a vertical arrow labeled  $(a_g)_{g \in \ker_n}$  points from the left domain to  $K_n$ , and another vertical arrow points from the right domain to  $K'_n$ . A horizontal arrow labeled  $\iota_n$  connects  $K_n$  to  $K'_n$ . A curved arrow labeled  $f_n$  points from  $K_n$  to  $X$ , and a dashed curved arrow labeled  $f'_{n+1}$  points from  $K'_n$  to  $X$ . A diagonal arrow points from the right domain  $\coprod_{g \in \ker_n} |\Delta^{n+1}|$  to  $X$ . The label "PO" is positioned above the horizontal arrow  $\iota_n$ .