

$$\begin{array}{ccccc}
& & d_1^n & & \\
& \nearrow & & \searrow & \\
h_1^n(X^{(n)}/X^{(n-1)}) & \xrightarrow[\cong]{\Sigma} & h_1^{n+1}(\Sigma(X^{(n)}/X^{(n-1)})) & \xrightarrow{\varphi_n^*} & h_1^{n+1}(X^{(n+1)}/X^{(n)}) \\
\downarrow f_n^* \cong & & \downarrow \cong (\Sigma f_n)^* & & \downarrow \cong f_{n+1}^* \\
h_1^n(\bigvee_{i \in I_n} S^n) & \xrightarrow[\cong]{\Sigma} & h_1^{n+1}(\Sigma \bigvee_{i \in I_n} S^n) & \xrightarrow{((\Sigma f_n)^{-1} \varphi_n f_{n+1})^*} & h_1^{n+1}(\bigvee_{i \in I_{n+1}} S^n) \\
\downarrow T_{\bigvee_{i \in I_n} S^n} \cong & & \downarrow T_{\Sigma \bigvee_{i \in I_n} S^n} \cong & & \downarrow \cong T_{\bigvee_{i \in I_{n+1}} S^{n+1}} \\
h_2^n(\bigvee_{i \in I_n} S^n) & \xrightarrow[\cong]{\Sigma} & h_2^{n+1}(\Sigma \bigvee_{i \in I_n} S^n) & \xrightarrow{((\Sigma f_n)^{-1} \varphi_n f_{n+1})^*} & h_2^{n+1}(\bigvee_{i \in I_{n+1}} S^n) \\
\uparrow f_n^* \cong & & \uparrow \cong (\Sigma f_n)^* & & \uparrow \cong f_{n+1}^* \\
h_2^n(X^{(n)}/X^{(n-1)}) & \xrightarrow[\cong]{\Sigma} & h_2^{n+1}(\Sigma(X^{(n)}/X^{(n-1)})) & \xrightarrow{\varphi_n^*} & h_2^{n+1}(X^{(n+1)}/X^{(n)}) \\
& \searrow & d_2^n & \nearrow & 
\end{array}$$

$T_{X,n}$  (left curved arrow from  $h_1^n(X^{(n)}/X^{(n-1)})$  to  $h_2^n(X^{(n)}/X^{(n-1)})$ )  
 $T_{X,n+1}$  (right curved arrow from  $h_1^{n+1}(X^{(n+1)}/X^{(n)})$  to  $h_2^{n+1}(X^{(n+1)}/X^{(n)})$ )