Thus $a, b \in A_i$ satisfy the conditions in step 2 for construction B. This contradicts our assumption that we used construction A, so there is an arrow formed by x_i and another vertex of D_{i+1}.

In construction B we have $b_i y_i \in A(D_i)$ so $b_i z \notin T_i$ for all $z \in V(D_i) \setminus \{x_i\}$. This gives $b_i x_i \in \sigma_i$ and $b_i x_i \in A(D_{i+1})$ so there is an arrow formed by x_i with another vertex of D_{i+1}.

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