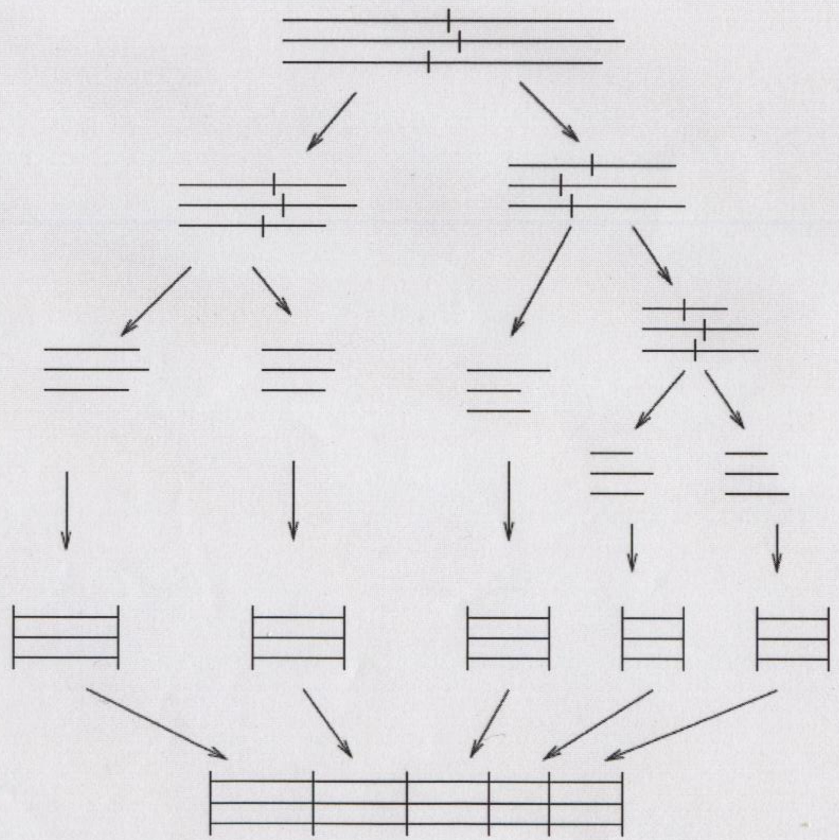
Divide and Conquer Alignment (DCA)



$$D_{SP}(A^c) = \sum_{i<j} D_2(\pi_{ij}(A^c))$$ Def. Sum-of-Pairs

$$= \frac{1}{2} \sum_{i,j} D_2(\pi_{ij}(A^c))$$ Symmetrie

$D_2(\pi_{ii}(A^c)) = 0$

$$\leq \frac{1}{2} \sum_{i,j} \left\{ D_2(\pi_{ic}(A^c)) + D_2(\pi_{cj}(A^c)) \right\}$$

Dreiecksungleichung

$$= \frac{1}{2} \sum_{i,j} \left\{ D(s_i, s_c) + D(s_c, s_j) \right\}$$

Definition von A^c

$$= \frac{1}{2} k \cdot \sum_{i} D(s_i, s_c) + \frac{1}{2} k \cdot \sum_{j} D(s_c, s_j)$$

Summe auseinanderziehen

$$= k \cdot \sum_{j} D(s_c, s_j)$$ Symmetrie

$$\leq \sum_{j} \sum_{i} D(s_i, s_j)$$ $D(s_c, s_j)$ ist minimal

$$= \sum_{i,j} D(s_i, s_j)$$

$$\leq \sum_{i,j} D_2(\pi_{ij}(A^{opt}))$$ $D(s_i, s_j)$ optimal

$$= 2 \cdot \sum_{i<j} D_2(\pi_{ij}(A^{opt})) = 2 D_{SP}(A^{opt})$$