

chain of H

$$= R_j R_i^{-1} R_i R_i^{-1}$$

$$= R_j R_i^{-1}$$

$$1 \rightarrow 2 \rightarrow 3 \rightarrow 4$$

$$\textcircled{1} \text{ If } P_3 := H_{2 \rightarrow 3} R_2$$

$$R_4 := H_{3 \rightarrow 4} R_3$$

$$\textcircled{2} \text{ If } R_3 := R_2 H_{2 \rightarrow 3}$$

$$R_4 := R_3 H_{3 \rightarrow 4}$$

$$\therefore H_{2 \rightarrow 3} = R_2^{-1} R_3$$

$$H_{3 \rightarrow 4} = R_3^{-1} R_4$$

$$\therefore H_{2 \rightarrow 4} = H_{3 \rightarrow 4} H_{2 \rightarrow 3}$$

$$= R_3^{-1} R_4 R_2^{-1} R_3$$

$$\neq R_2^{-1} R_4$$

$$\Rightarrow H_{2 \rightarrow 3} = R_3 R_2^{-1}$$

$$H_{3 \rightarrow 4} = R_4 R_3^{-1}$$

$$H_{2 \rightarrow 4} = H_{3 \rightarrow 4} H_{2 \rightarrow 3}$$

$$= R_4 R_2^{-1}$$

$$\therefore R_i = H_{i-1 \rightarrow i} R_{i-1}$$

$$= H_{i-2 \rightarrow i} R_{i-2}$$

$$= H_{1 \rightarrow i} R_1$$

$$R_j = H_{1 \rightarrow j} R_1$$

$$\therefore H_{i \rightarrow j} = H_{1 \rightarrow j} H_{1 \rightarrow i}^{-1}$$