

$$\text{Relation } R \subset \mathfrak{H} \times \mathfrak{H}'$$

$$I \underset{\text{diagonal}}{\subset} \mathfrak{H} \times \mathfrak{H}$$

$$\left\{ \begin{array}{l} I \\ \mathfrak{h}:\mathfrak{h}' \in I \end{array} \right. = \frac{\mathfrak{h}:\mathfrak{h} \in \mathfrak{H} \times \mathfrak{H}}{\mathfrak{h} \in \mathfrak{H}}$$

$$\Leftrightarrow \mathfrak{h} = \mathfrak{h}'$$

$$R \subset \mathfrak{H} \times \mathfrak{H}' \Rightarrow \overset{-1}{R} \underset{\text{inverse}}{\subset} \mathfrak{H}' \times \mathfrak{H}$$

$$\left\{ \begin{array}{l} \overset{-1}{R} \\ \mathfrak{h}':\mathfrak{h} \in \overset{-1}{R} \end{array} \right. = \frac{\mathfrak{h}':\mathfrak{h} \in \mathfrak{H}' \times \mathfrak{H}}{\mathfrak{h}:\mathfrak{h}' \in R}$$

$$\Leftrightarrow \mathfrak{h}:\mathfrak{h}' \in R$$

$$\overset{-1}{I} = I$$

$$\overset{-1}{\overset{-1}{R}} = R$$

$$R \subset \mathfrak{H} \times \mathfrak{H}'$$

$$S \subset \mathfrak{H}' \times \mathfrak{H}'' \Rightarrow RS \underset{\text{Verkettung}}{\subset} \mathfrak{H} \times \mathfrak{H}''$$

$$\left\{ \begin{array}{l} RS \\ \mathfrak{h}:\mathfrak{h}'' \notin RS \end{array} \right. = \frac{\mathfrak{h}:\mathfrak{h}'' \in \mathfrak{H} \times \mathfrak{H}''}{\bigvee_{\substack{\mathfrak{h}' \\ \mathfrak{h}:\mathfrak{h}' \in R}} \mathfrak{h}:\mathfrak{h}' \in R \wedge \mathfrak{h}':\mathfrak{h}'' \in S}$$

$$\Leftrightarrow \bigvee_{\substack{\mathfrak{h}' \\ \mathfrak{h}:\mathfrak{h}' \in R}} \mathfrak{h}:\mathfrak{h}' \in R \wedge \mathfrak{h}':\mathfrak{h}'' \in S$$

$$IR = R = R\overset{\cdot}{I}$$

$$\underline{RST} = R\underline{ST}$$

$$\overline{RS}^{-1} = \overline{S}^{-1} \overline{R}^{-1}$$

$$\subset : \quad \mathfrak{h}:\mathfrak{h} \in \overline{RS}^{-1} \Rightarrow \mathfrak{h}:\mathfrak{h} \in RS \Rightarrow \bigvee_{\mathfrak{h}}^{\mathfrak{f}_{\mathfrak{h}}} \mathfrak{h}:\mathfrak{h} \in R \wedge \mathfrak{h}:\mathfrak{h} \in S \Rightarrow \mathfrak{h}:\mathfrak{h} \in \overline{S}^{-1} \wedge \mathfrak{h}:\mathfrak{h} \in \overline{R}^{-1} \Rightarrow \mathfrak{h}:\mathfrak{h} \in \overline{S}^{-1} \overline{R}^{-1}$$

$$\supset : \quad \mathfrak{h}:\mathfrak{h} \in \overline{S}^{-1} \overline{R}^{-1} \Rightarrow \bigvee_{\mathfrak{h}}^{\mathfrak{f}_{\mathfrak{h}}} \mathfrak{h}:\mathfrak{h} \in \overline{S}^{-1} \wedge \mathfrak{h}:\mathfrak{h} \in \overline{R}^{-1} \Rightarrow \mathfrak{h}:\mathfrak{h} \in R \wedge \mathfrak{h}:\mathfrak{h} \in S \Rightarrow \mathfrak{h}:\mathfrak{h} \in RS \Rightarrow \mathfrak{h}:\mathfrak{h} \in \overline{RS}^{-1}$$

$$R \overline{R}^{-1} \supset I \subset \mathfrak{h} \times \mathfrak{h}$$

$$\overline{R}^{-1} R \supset \acute{I} \subset \acute{\mathfrak{h}} \times \acute{\mathfrak{h}}$$