

Theorie zellulärer semiotischer Automaten zur Grundlegung einer ontischen Nacht

1. In Toth (2019a) hatten wir die „Theorie einer ontischen Nacht“ dargestellt, ein ergänzendes Kapitel zu meinem Buche „The Theory of the Night“ (Toth 2016): Es handelt sich bei allen Teilkapiteln dieser Theorie der Subjektivität um Handlungsanweisungen, die in Form von unterschiedlich reflektierten semiotischen Kreationsschemata (vgl. dazu Bense 1979, S. 87 ff.) dargestellt werden. Die Kreationsschemata sind sozusagen die Regeln einer vereinheitlichten arithmetischen Grammatik, die in verschiedenen mathematischen „Sprachen“ dargestellt wird: bisher in den Sprachen der Peano-, der surrealen, der Eisenstein-, der quadralektischen, der systemischen, der regionalen, der relativen Zahlen und in zwei „Dialekten“ der qualitativen Zahlen.

2. Im folgenden Beitrag, der Toth (2019b) und eine Reihe von weiteren Aufsätzen fortsetzt, wollen wir die kreationstheoretischen Handlungsanweisungen für die „Dialekte“ der qualitativen Zahlen dadurch vereinheitlichen und operationalisieren, daß wir sie in der Form von zellulären Automaten darstellen. Dabei verwenden wir die folgenden Symbole aus dem nachstehenden Isomorphieschema von Zahlen, Zeichen und Objekten

Zahl	$\cong$	Zeichen	$\cong$	Objekt
0		0.	$\cong$	
1	$\cong$	1.	$\cong$	
2	$\cong$	2.	$\cong$	
3	$\cong$	3.	$\cong$	

I. Automaten der 2 · 24 triadischen semiotischen Partialrelationen

1. Präsemiotisches Dualsystem (■ ■ ◇ △) × (△ ◇ ■ ■)

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $O = oO$

2. Präsemiotisches Dualsystem $(\text{shaded} \blacksquare \diamond \sqcup) \times (\sqcup \diamond \blacksquare \text{shaded})$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $M = oS$

Input: $O = oO$

Input: $I = sS$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} \sqcup \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} \sqcup \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \sqcup \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \sqcup \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \sqcup \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} \sqcup \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\blacksquare) \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} \sqcup \\ \lambda \gg (\blacksquare) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: O = oO

3. Präsemiotisches Dualsystem $(\text{shaded} \blacksquare \diamond \diamond) \times (\diamond \diamond \blacksquare \text{shaded})$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare\blacksquare \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ \blacksquare\blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare\blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare\blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\diamond) \\ \blacksquare\blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare\blacksquare \\ \lambda \gg (\diamond) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare\blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare\blacksquare \\ \lambda \gg (\diamond) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare\blacksquare \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ \blacksquare\blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: $O = oO$

4. Präsemiotisches Dualsystem $(\text{shaded} \blacksquare \blacksquare \sqcup) \times (\sqcup \blacksquare \blacksquare \text{shaded})$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $M = oS$

Input: $O = oO$

Input: $I = sS$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\text{shaded}) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\blacksquare) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \text{人} \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{shaded}) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{shaded}) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \text{人} \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{shaded}) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \sqcup \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ \sqcup \end{array} \right) \end{array} \right\}$$

Input: O = oO

5. Präsemiotisches Dualsystem (▨ ■ ■ ◇) × (◇ ■ ■ ▨)

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \text{▨} \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \text{▨} \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \text{▨} \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \text{▨} \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \text{▨} \end{array} \right) \times \left(\begin{array}{c} \text{▨} \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\diamond) \\ \text{▨} \end{array} \right) \times \left(\begin{array}{c} \text{▨} \\ \text{人} \gg (\diamond) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \text{shaded square} \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ \text{shaded square} \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \text{shaded square} \\ \text{人} \gg (\blacksquare) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ \text{shaded square} \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ \text{shaded square} \end{array} \right) \times \left(\begin{array}{c} \text{shaded square} \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ \text{shaded square} \end{array} \right) \times \left(\begin{array}{c} \text{shaded square} \\ \text{人} \gg (\blacksquare) \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \text{shaded square} \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ \text{shaded square} \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: O = oO

6. Präsemiotisches Dualsystem $(\text{hatched} \blacksquare \text{hatched} \diamond) \times (\diamond \text{hatched} \blacksquare \text{hatched})$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\diamond) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \text{人} \gg (\diamond) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \text{▨} \\ \text{人} \gg \text{▨} \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg \text{▨} \\ \text{▨} \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \text{▨} \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ \text{▨} \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg \text{▨} \\ \text{▨} \end{array} \right) \times \left(\begin{array}{c} \text{▨} \\ \text{人} \gg \text{▨} \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \text{人} \gg \text{▨} \\ \text{▨} \end{array} \right) \times \left(\begin{array}{c} \text{▨} \\ \text{人} \gg \text{▨} \\ \blacksquare \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{▨} \\ \text{人} \gg \blacksquare \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg \blacksquare \\ \text{▨} \end{array} \right) \\ \left(\begin{array}{c} \text{▨} \\ \text{人} \gg \blacksquare \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg \blacksquare \\ \text{▨} \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\blacksquare) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\blacksquare) \\ (\text{■}) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\blacksquare) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\blacksquare) \\ (\text{■}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{■}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{■}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{[shaded box]} \\ \lambda \gg \text{[shaded box]} \\ \text{[black box]} \end{array} \right) \times \left(\begin{array}{c} \text{[black box]} \\ \lambda \gg \text{[shaded box]} \\ \text{[shaded box]} \end{array} \right) \\ \left(\begin{array}{c} \text{[white box]} \\ \lambda \gg \text{[shaded box]} \\ \text{[black box]} \end{array} \right) \times \left(\begin{array}{c} \text{[black box]} \\ \lambda \gg \text{[shaded box]} \\ \text{[white box]} \end{array} \right) \end{array} \right\}$$

Input: O = oO

7. Präsemiotisches Dualsystem $(\text{[shaded box]} \Delta \text{[black box]} \sqcup) \times (\sqcup \text{[black box]} \Delta \text{[shaded box]})$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{[white box]} \\ \lambda \gg \text{[white box]} \\ \text{[black box]} \end{array} \right) \times \left(\begin{array}{c} \text{[black box]} \\ \lambda \gg \text{[white box]} \\ \text{[white box]} \end{array} \right) \\ \left(\begin{array}{c} \text{[shaded box]} \\ \lambda \gg \text{[white box]} \\ \text{[black box]} \end{array} \right) \times \left(\begin{array}{c} \text{[black box]} \\ \lambda \gg \text{[white box]} \\ \text{[shaded box]} \end{array} \right) \\ \left(\begin{array}{c} \text{[black box]} \\ \lambda \gg \text{[white box]} \\ \text{[white box]} \end{array} \right) \times \left(\begin{array}{c} \text{[white box]} \\ \lambda \gg \text{[white box]} \\ \text{[black box]} \end{array} \right) \\ \left(\begin{array}{c} \text{[shaded box]} \\ \lambda \gg \text{[white box]} \\ \text{[white box]} \end{array} \right) \times \left(\begin{array}{c} \text{[white box]} \\ \lambda \gg \text{[white box]} \\ \text{[shaded box]} \end{array} \right) \\ \left(\begin{array}{c} \text{[black box]} \\ \lambda \gg \text{[white box]} \\ \text{[shaded box]} \end{array} \right) \times \left(\begin{array}{c} \text{[shaded box]} \\ \lambda \gg \text{[white box]} \\ \text{[black box]} \end{array} \right) \\ \left(\begin{array}{c} \text{[white box]} \\ \lambda \gg \text{[white box]} \\ \text{[shaded box]} \end{array} \right) \times \left(\begin{array}{c} \text{[shaded box]} \\ \lambda \gg \text{[white box]} \\ \text{[white box]} \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{hatched}) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\text{hatched}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{hatched}) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{hatched}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{hatched}) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: O = oO

8. Präsemiotisches Dualsystem $(\text{shaded} \Delta \blacksquare \Diamond) \times (\Diamond \blacksquare \Delta \text{shaded})$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \text{人} \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{hatched}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{hatched}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\text{hatched}) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: O = oO

9. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \diamond) \times (\diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\text{shaded}) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\text{shaded}) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\text{shaded}) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\text{shaded}) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\text{shaded}) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\text{shaded}) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\Delta) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\Delta) \\ (\text{shaded}) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \\ \lambda \gg \blacksquare \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg \blacksquare \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Diamond) \\ \lambda \gg \blacksquare \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg \blacksquare \\ (\Diamond) \end{array} \right) \end{array} \right\}$$

Input: $O = oO$

10. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \Diamond) \times (\Diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $M = oS$

Input: $O = oO$

Input: $I = sS$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\text{■}) \end{array} \right) \times \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ (\text{■}) \end{array} \right) \\ \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ (\text{■}) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \end{array} \right\}$$

Input: $O = oO$

11. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \sqcup) \times (\sqcup \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\sqcup) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\sqcup) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $M = oS$

Input: $O = oO$

Input: $I = sS$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{c} \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $O = oO$

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{c} \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \\ \lambda \gg (\Delta) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\sqcup) \\ \wedge \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Delta) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \wedge \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Delta) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \wedge \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \wedge \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \wedge \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \\ \wedge \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\blacksquare) \\ (\sqcup) \end{array} \right) \end{array} \right\}$$

Input: O = oO

12. Präsemitisches Dualsystem $(\blacksquare \Delta \blacksquare \Diamond) \times (\Diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: O = oO

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \wedge \gg (\Diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left. \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left. \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

$$\left. \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left. \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\Delta) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

$$\left\{ \begin{array}{c} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: O = oO

13. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \diamond) \times (\diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[hatched box]} \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[hatched box]} \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[hatched box]} \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[hatched box]} \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[hatched box]} \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[hatched box]} \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[hatched box]} \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[hatched box]} \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[hatched box]} \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[hatched box]} \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[hatched box]} \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[hatched box]} \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{[hatched box]} \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ \text{[hatched box]} \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{hatched square} \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ \text{hatched square} \end{array} \right) \\ \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \end{array} \right\}$$

Input: O = oO

14. Präsemiotisches Dualsystem $(\blacksquare \Delta \text{hatched square} \Diamond) \times (\Diamond \text{hatched square} \Delta \blacksquare)$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \text{hatched square} \end{array} \right) \times \left(\begin{array}{c} \text{hatched square} \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ \text{hatched square} \end{array} \right) \times \left(\begin{array}{c} \text{hatched square} \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} \text{hatched square} \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \text{hatched square} \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} \text{hatched square} \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ \text{hatched square} \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[Pattern]} \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[Pattern]} \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[Pattern]} \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[Pattern]} \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[Pattern]} \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[Pattern]} \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[Pattern]} \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[Pattern]} \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg \text{[Pattern]} \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[Pattern]} \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg \text{[Pattern]} \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg \text{[Pattern]} \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{[Pattern]} \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ \text{[Pattern]} \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{shaded square} \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ \text{shaded square} \end{array} \right) \\ \left(\begin{array}{c} (\Diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\Diamond) \end{array} \right) \end{array} \right\}$$

Input: O = oO

15. Präsemiotisches Dualsystem $(\blacksquare \Delta \text{shaded square} \Diamond) \times (\Diamond \text{shaded square} \Delta \blacksquare)$

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \text{shaded square} \end{array} \right) \times \left(\begin{array}{c} \text{shaded square} \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ \text{shaded square} \end{array} \right) \times \left(\begin{array}{c} \text{shaded square} \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} \text{shaded square} \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ \text{shaded square} \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} \text{shaded square} \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ \text{shaded square} \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\Diamond) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Diamond) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: O = oO

Input: I = sS

Mediale Automaten ($M = oS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\text{■}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{■}) \\ (\Diamond) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \\ \text{人} \gg (\text{■}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\text{■}) \\ (\Delta) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

Input: $O = oO$

Input: $I = sS$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{■}) \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ (\text{■}) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \text{人} \gg (\Delta) \\ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \\ \text{人} \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Input: $Q = sO$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\text{shaded}) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \\ \lambda \gg (\Delta) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: M = oS

Input: I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\text{shaded}) \end{array} \right) \end{array} \right\}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \lambda \gg (\blacksquare) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\blacksquare) \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \lambda \gg (\blacksquare) \\ (\text{shaded}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded}) \\ \lambda \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: Q = sO

Input: M = oS

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{hatched square} \\ \wedge \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\blacksquare) \\ \text{hatched square} \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \wedge \gg (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \wedge \gg (\blacksquare) \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Input: O = oO

II. Automaten der 2 · 24 tetradischen semiotischen Partialrelationen

1. Präsemiotisches Dualsystem (hatched square ■ ◇ Δ) × (Δ ◇ ■ hatched square)

Qualitative Automaten (Q = sO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ \text{hatched square} \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ \text{hatched square} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{hatched square} \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{hatched square} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\}$$

Regulativ:
M = oS

Regulativ:
O = oO

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \gg (\Delta) \right) \times \left((\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Diamond) \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \gg (\Delta) \right) \times \left((\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten (M = oS)

$$\left\{ \begin{array}{l} \left((\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \right) \times \left((\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \right) \\ \left((\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Diamond) \right) \times \left((\Diamond) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \right) \\ \left((\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Diamond) \right) \times \left((\Diamond) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \right) \\ \left((\blacksquare) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \right) \times \left((\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Regulativ:
I = sS

Objektale Automaten (O = oO)

$$\left\{ \begin{array}{l} \left((\Delta) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \right) \times \left((\blacksquare) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \right) \\ \left((\Delta) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\diamond) \end{array} \right) \times \left((\blacksquare) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \right) \\ \left((\diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\diamond) \end{array} \right) \times \left((\blacksquare) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \right) \\ \left((\diamond) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \right) \times \left((\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \gg (\Delta) \right) \times \left((\blacksquare) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \gg (\diamond) \right) \times \left((\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\diamond) \end{array} \right) \end{array} \right\}$$

Regulativ:
Q = sO

Regulativ:
M = oS

Regulativ:
I = sS

Interpretative Automaten ($I = sS$)

$$\begin{array}{c}
 \left\{ \begin{array}{c} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \\ \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \\ \\ \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}
 \end{array}$$

$$\begin{array}{c}
 \left\{ \begin{array}{c} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \\ \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}
 \end{array}$$

2. Präsemiotisches Dualsystem $(\begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix}) \times (\sqcup \blacklozenge \blacksquare \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix})$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacklozenge) \\ \gg \\ \begin{array}{c} \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \\ \Upsilon \\ \blacksquare \end{array} \\ \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \gg \\ \begin{array}{c} \blacksquare \\ \Upsilon \\ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \\ \succ (\blacklozenge) \end{array} \right) \\ \left(\begin{array}{c} (\blacklozenge) \\ \gg \\ \begin{array}{c} \blacksquare \\ \Upsilon \\ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \\ \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \gg \\ \begin{array}{c} \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \\ \Upsilon \\ \blacksquare \end{array} \\ \succ (\blacklozenge) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \gg \\ \begin{array}{c} \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \\ \Upsilon \\ (\blacklozenge) \end{array} \\ \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \gg \\ \begin{array}{c} (\blacklozenge) \\ \Upsilon \\ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \\ \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \\ \gg \\ \begin{array}{c} (\blacklozenge) \\ \Upsilon \\ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \\ \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \gg \\ \begin{array}{c} \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \\ \Upsilon \\ (\blacklozenge) \end{array} \\ \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \\ \gg \\ \begin{array}{c} (\blacklozenge) \\ \Upsilon \\ \blacksquare \end{array} \\ \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \gg \\ \begin{array}{c} \blacksquare \\ \Upsilon \\ (\blacklozenge) \end{array} \\ \succ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \right) \\ \left(\begin{array}{c} \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \\ \gg \\ \begin{array}{c} \blacksquare \\ \Upsilon \\ (\blacklozenge) \end{array} \\ \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \\ \gg \\ \begin{array}{c} (\blacklozenge) \\ \Upsilon \\ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \\ \succ \begin{smallmatrix} \blacksquare & \blacklozenge & \sqcup \end{smallmatrix} \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten ($M = oS$)

$$\begin{array}{c}
\left\{ \begin{array}{l} \left(\begin{array}{c} \sqcup \\ \gg \\ \Upsilon \\ \succ (\diamond) \end{array} \begin{array}{c} \text{shaded box} \\ \text{black box} \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \gg \\ \Upsilon \\ \succ (\sqcup) \end{array} \begin{array}{c} \text{black box} \\ \text{shaded box} \end{array} \right) \\ \left(\begin{array}{c} \sqcup \\ \gg \\ \Upsilon \\ \succ (\diamond) \end{array} \begin{array}{c} \text{black box} \\ \text{shaded box} \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \gg \\ \Upsilon \\ \succ (\sqcup) \end{array} \begin{array}{c} \text{shaded box} \\ \text{black box} \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = \text{sO} \end{array}
\\
\\
\left\{ \begin{array}{l} \left(\begin{array}{c} \text{black box} \\ \gg \\ \Upsilon \\ \succ (\diamond) \end{array} \begin{array}{c} \sqcup \\ \text{shaded box} \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \gg \\ \Upsilon \\ \succ (\text{black box}) \end{array} \begin{array}{c} \text{shaded box} \\ \sqcup \end{array} \right) \\ \left(\begin{array}{c} \text{black box} \\ \gg \\ \Upsilon \\ \succ (\diamond) \end{array} \begin{array}{c} \text{shaded box} \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \gg \\ \Upsilon \\ \succ (\text{black box}) \end{array} \begin{array}{c} \sqcup \\ \text{shaded box} \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = \text{oO} \end{array}
\\
\\
\left\{ \begin{array}{l} \left(\begin{array}{c} \text{shaded box} \\ \gg \\ \Upsilon \\ \succ (\diamond) \end{array} \begin{array}{c} \sqcup \\ \text{black box} \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \gg \\ \Upsilon \\ \succ (\text{shaded box}) \end{array} \begin{array}{c} \text{black box} \\ \sqcup \end{array} \right) \\ \left(\begin{array}{c} \text{shaded box} \\ \gg \\ \Upsilon \\ \succ (\diamond) \end{array} \begin{array}{c} \text{black box} \\ \sqcup \end{array} \right) \times \left(\begin{array}{c} (\diamond) \\ \gg \\ \Upsilon \\ \succ (\text{shaded box}) \end{array} \begin{array}{c} \sqcup \\ \text{black box} \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = \text{sS} \end{array}
\end{array}$$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \succ (\blacksquare) \\ (\diamond) \end{array} \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \text{Y} \end{array} \succ (\sqcup) \\ \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\diamond) \\ \text{Y} \end{array} \succ (\blacksquare) \\ \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \succ (\sqcup) \\ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\sqcup) \\ \text{Y} \end{array} \succ (\blacksquare) \\ \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \succ (\diamond) \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \succ (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \text{Y} \end{array} \succ (\diamond) \\ \blacksquare \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} (\sqcup) \\ \text{Y} \end{array} \succ (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \text{Y} \end{array} \succ \blacksquare \\ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} (\diamond) \\ \text{Y} \end{array} \succ (\blacksquare) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \text{Y} \end{array} \succ \blacksquare \\ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten ($I = sS$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \text{Y} \end{array} \succ \blacksquare \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} (\diamond) \\ \text{Y} \end{array} \succ (\sqcup) \\ \blacksquare \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\diamond) \\ \text{Y} \end{array} \succ \blacksquare \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} (\blacksquare) \\ \text{Y} \end{array} \succ (\sqcup) \\ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg \\ \Upsilon \\ (\blacksquare) \end{array} \begin{array}{c} (\sqcup) \\ \succ \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \\ \Upsilon \\ (\sqcup) \end{array} \begin{array}{c} (\blacksquare) \\ \succ \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg \\ \Upsilon \\ (\sqcup) \end{array} \begin{array}{c} (\blacksquare) \\ \succ \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \\ \Upsilon \\ (\blacksquare) \end{array} \begin{array}{c} (\sqcup) \\ \succ \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \\ \Upsilon \\ (\diamond) \end{array} \begin{array}{c} (\sqcup) \\ \succ \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \\ \Upsilon \\ (\sqcup) \end{array} \begin{array}{c} (\diamond) \\ \succ \\ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \\ \Upsilon \\ (\sqcup) \end{array} \begin{array}{c} (\diamond) \\ \succ \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \\ \Upsilon \\ (\diamond) \end{array} \begin{array}{c} (\sqcup) \\ \succ \\ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = \text{oS} \\ \\ \\ \text{Regulativ:} \\ O = \text{oO} \end{array}$$

3. Präsemiotisches Dualsystem $(\text{hatched} \blacksquare \diamond \diamond) \times (\diamond \diamond \blacksquare \text{hatched})$

Qualitative Automaten ($Q = \text{sO}$)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg \\ \Upsilon \\ (\blacksquare) \end{array} \begin{array}{c} (\text{hatched}) \\ \succ \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \\ \Upsilon \\ (\text{hatched}) \end{array} \begin{array}{c} (\blacksquare) \\ \succ \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg \\ \Upsilon \\ (\text{hatched}) \end{array} \begin{array}{c} (\blacksquare) \\ \succ \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \\ \Upsilon \\ (\blacksquare) \end{array} \begin{array}{c} (\text{hatched}) \\ \succ \\ (\diamond) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = \text{oS} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten (M = oS)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} \text{hatched square} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ \text{hatched square} \end{array} \right) \\ \left(\begin{array}{c} \text{hatched square} \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ \text{hatched square} \end{array} \right) \end{array} \right\}$$

Regulativ:
I = sS

Objektale Automaten (O = oO)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{hatched square} \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{hatched square} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{hatched square} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched square} \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{hatched square} \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} \text{hatched square} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ \text{hatched square} \end{array} \right) \\ \left(\begin{array}{c} \text{hatched square} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ \text{hatched square} \end{array} \right) \end{array} \right\}$$

Regulativ:
Q = sO

Regulativ:
M = oS

Regulativ:
I = sS

Interpretative Automaten ($I = sS$)

$$\begin{array}{l}
\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array} \\
\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array} \\
\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}
\end{array}$$

4. Präsemiotisches Dualsystem $(\begin{smallmatrix} \blacksquare & \blacksquare & \blacksquare & \square \end{smallmatrix}) \times (\begin{smallmatrix} \square & \blacksquare & \blacksquare & \blacksquare \end{smallmatrix})$

Qualitative Automaten (Q = sO)

$$\left. \begin{aligned}
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \text{Y} \\ \blacksquare \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \text{Y} \\ \text{shaded square} \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \text{shaded square} \\ \blacksquare \end{array} \succ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{M} = \text{oS} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \text{shaded square} \\ \blacksquare \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \text{shaded square} \\ \blacksquare \end{array} \succ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{O} = \text{oO} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{shaded square} \gg \begin{array}{c} \blacksquare \\ \blacksquare \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\text{shaded square}) \end{array} \right) \\
& \left(\begin{array}{c} \text{shaded square} \gg \begin{array}{c} \blacksquare \\ \blacksquare \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\text{shaded square}) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{I} = \text{sS} \end{array}$$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{aligned} & \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \begin{array}{c} \text{hatched box} \\ \Upsilon \end{array} \succ (\blacksquare) \\ \blacksquare \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \begin{array}{c} \text{hatched box} \\ \Upsilon \end{array} \succ (\sqcup) \\ \text{hatched box} \end{array} \right) \\ & \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \begin{array}{c} \blacksquare \\ \Upsilon \end{array} \succ (\blacksquare) \\ \text{hatched box} \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \begin{array}{c} \text{hatched box} \\ \Upsilon \end{array} \succ (\sqcup) \\ \blacksquare \end{array} \right) \end{aligned} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = \text{sO} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\sqcup) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\sqcup) \end{array} \succ (\text{hatched}) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ O = oO \\ \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\sqcup) \end{array} \right) \\
& \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ M = oS \end{array}$$

5. Präsemiotisches Dualsystem $(\begin{smallmatrix} \blacksquare & \blacksquare & \blacklozenge \end{smallmatrix}) \times (\begin{smallmatrix} \blacklozenge & \blacksquare & \blacksquare \end{smallmatrix})$

Qualitative Automaten (Q = sO)

$$\left. \begin{aligned}
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \text{Y} \\ \blacksquare \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{Y} \\ \text{shaded square} \end{array} \succ \blacksquare \end{array} \right) \\
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{shaded square} \\ \text{Y} \end{array} \succ \blacksquare \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{M} = \text{oS} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \text{shaded square} \\ \blacksquare \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ \blacksquare \end{array} \right) \\
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{shaded square} \\ \text{Y} \end{array} \succ \blacksquare \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{O} = \text{oO} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{shaded square} \gg \begin{array}{c} \blacksquare \\ \blacksquare \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \succ \text{shaded square} \end{array} \right) \\
& \left(\begin{array}{c} \text{shaded square} \gg \begin{array}{c} \blacksquare \\ \text{shaded square} \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \text{Y} \end{array} \succ \text{shaded square} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{I} = \text{sS} \end{array}$$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{aligned} & \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{[hatched box]} \\ \Upsilon \\ \blacksquare \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ \text{[hatched box]} \end{array} \succ (\diamond) \end{array} \right) \\ & \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ \text{[hatched box]} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{[hatched box]} \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \end{aligned} \right\} \quad \text{Regulativ: } Q = sO$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

6. Präsemiotisches Dualsystem $(\begin{smallmatrix} \blacksquare & \blacksquare & \blacksquare & \diamond \end{smallmatrix}) \times (\begin{smallmatrix} \diamond & \blacksquare & \blacksquare & \blacksquare \end{smallmatrix})$

Qualitative Automaten (Q = sO)

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{hatched} \gg \begin{array}{c} \gamma \\ \blacksquare \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \gamma \\ \text{hatched} \end{array} \succ \text{hatched} \end{array} \right) \\
& \left(\begin{array}{c} \text{hatched} \gg \begin{array}{c} \blacksquare \\ \gamma \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ \text{hatched} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{M} = \text{oS} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ \blacksquare \end{array} \right) \\
& \left(\begin{array}{c} \blacksquare \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ \blacksquare \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{O} = \text{oO} \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{hatched} \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \gamma \end{array} \succ \text{hatched} \end{array} \right) \\
& \left(\begin{array}{c} \text{hatched} \gg \begin{array}{c} \blacksquare \\ \gamma \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{hatched} \\ \gamma \end{array} \succ \blacksquare \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ \text{I} = \text{sS} \end{array}$$

Mediale Automaten ($M = oS$)

$$\left\{ \begin{aligned} & \left(\begin{array}{ccc} (\diamond) & \gg & \begin{array}{c} \text{[hatched box]} \\ \vee \\ \blacksquare \end{array} \end{array} \right) \times \left(\begin{array}{ccc} \begin{array}{c} \text{[hatched box]} \\ \vee \\ \text{[hatched box]} \end{array} & \gg & \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \end{array} \right) \\ & \left(\begin{array}{ccc} (\diamond) & \gg & \begin{array}{c} (\blacksquare) \\ \vee \\ \text{[hatched box]} \end{array} \end{array} \right) \times \left(\begin{array}{ccc} \begin{array}{c} \text{[hatched box]} \\ \vee \\ \text{[hatched box]} \end{array} & \gg & \begin{array}{c} \text{[hatched box]} \\ \vee \\ (\diamond) \end{array} \end{array} \right) \end{aligned} \right\} \quad \text{Regulativ: } Q = \text{sO}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ O = oO \\ \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\text{hatched}) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (sS) \\ \vee \\ (oO) \end{array} \succ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\text{hatched}) \end{array} \right) \end{array} \right\}$$

Regulativ:
I = sS

Interpretative Automaten (I = sS)

$$\left\{ \begin{array}{l} \left((\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\text{hatched}) \end{array} \succ (\text{hatched}) \right) \times \left((\text{hatched}) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \right) \\ \left((\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \right) \times \left((\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\text{hatched}) \end{array} \succ (\diamond) \right) \\ \left((\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \right) \times \left((\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \right) \\ \left((\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \right) \times \left((\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\text{hatched}) \right) \end{array} \right\}$$

Regulativ:
Q = sO

$$\left\{ \begin{array}{l} \left((\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\text{hatched}) \right) \times \left((\text{hatched}) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \right) \\ \left((\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \vee \\ (\diamond) \end{array} \succ (\text{hatched}) \right) \times \left((\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\text{hatched}) \end{array} \succ (\blacksquare) \right) \end{array} \right\}$$

Regulativ:
O = oO

7. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \sqcup) \times (\sqcup \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left. \begin{aligned}
 & \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\
 & \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \\
 & \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\
 & \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\
 & \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\
 & \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right)
 \end{aligned} \right\}
 \begin{array}{l}
 \text{Regulativ:} \\
 M = oS \\
 \\
 \text{Regulativ:} \\
 O = oO \\
 \\
 \text{Regulativ:} \\
 I = sS
 \end{array}$$

Mediale Automaten ($M = oS$)

$$\begin{aligned}
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ \text{■} \end{array} \succ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\Delta) \\ \gamma \\ \text{■} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\Delta) \end{array} \succ (\sqcup) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array} \\
 \\
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ \text{■} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\sqcup) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ \text{■} \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array} \\
 \\
 & \left\{ \begin{array}{l} \left(\begin{array}{c} \text{■} \gg \begin{array}{c} (\sqcup) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\sqcup) \end{array} \succ \text{■} \end{array} \right) \\ \left(\begin{array}{c} \text{■} \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ (\Delta) \end{array} \succ \text{■} \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}
 \end{aligned}$$

Objektale Automaten ($O = oO$)

$$\begin{aligned}
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} \text{■} \\ \gamma \\ \text{■} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ \text{■} \end{array} \succ (\sqcup) \end{array} \right) \\ \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ \text{■} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}
 \end{aligned}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg (\sqcup) \\ \gamma \succ (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\text{hatched}) \\ \gamma \succ (\blacksquare) \\ (\sqcup) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\text{hatched}) \\ \gamma \succ (\Delta) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\sqcup) \\ \gamma \succ (\blacksquare) \\ (\text{hatched}) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg (\sqcup) \\ \gamma \succ (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\blacksquare) \\ \gamma \succ (\text{hatched}) \\ (\sqcup) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg (\blacksquare) \\ \gamma \succ (\Delta) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\sqcup) \\ \gamma \succ (\text{hatched}) \\ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \\ \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\sqcup) \gg (\Delta) \\ \gamma \succ (\text{hatched}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg (\blacksquare) \\ \gamma \succ (\sqcup) \\ (\Delta) \end{array} \right) \\
& \left(\begin{array}{c} (\sqcup) \gg (\blacksquare) \\ \gamma \succ (\text{hatched}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg (\Delta) \\ \gamma \succ (\sqcup) \\ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\sqcup) \\ \gamma \succ (\text{hatched}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg (\Delta) \\ \gamma \succ (\blacksquare) \\ (\sqcup) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \gamma \succ (\text{hatched}) \\ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg (\sqcup) \\ \gamma \succ (\blacksquare) \\ (\Delta) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{shaded square}) \end{array} \right) \times \left(\begin{array}{c} (\text{oS}) \gg \begin{array}{c} (\text{oO}) \\ \gamma \\ (\text{sS}) \end{array} \succ (\text{sO}) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\sqcup) \end{array} \succ (\text{shaded square}) \end{array} \right) \times \left(\begin{array}{c} (\text{shaded square}) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ \text{O} = \text{oO} \end{array}$$

8. Präsemiotisches Dualsystem $(\text{shaded square} \Delta \blacksquare \diamond) \times (\diamond \blacksquare \Delta \text{shaded square})$

Qualitative Automaten ($Q = \text{sO}$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{shaded square}) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\text{shaded square}) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\text{shaded square}) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{shaded square}) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ \text{M} = \text{oS} \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{shaded square}) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\text{shaded square}) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\text{shaded square}) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{shaded square}) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ \text{O} = \text{oO} \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{shaded square}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{shaded square}) \end{array} \right) \\ \left(\begin{array}{c} (\text{shaded square}) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\text{shaded square}) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ \text{I} = \text{sS} \end{array}$$

Mediale Automaten ($M = oS$)

$$\left. \begin{aligned}
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ \blacksquare \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ \blacksquare \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \blacksquare \\ \Upsilon \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ \blacksquare \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \blacksquare \\ \Upsilon \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right] \\
 & \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} \blacksquare \\ \Upsilon \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ \blacksquare \end{array} \succ (\Delta) \end{array} \right] \\
 & \left[\begin{array}{c} \blacksquare \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\diamond) \end{array} \succ \blacksquare \end{array} \right] \\
 & \left[\begin{array}{c} \blacksquare \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ \blacksquare \end{array} \right]
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ O = oO \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left. \begin{aligned}
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} \blacksquare \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ \blacksquare \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ \blacksquare \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} \blacksquare \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right]
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\Delta) \\ (\text{hatched square}) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\text{hatched square}) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\text{hatched square}) \\ \Upsilon \succ (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\text{hatched square}) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } M = oS$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\text{hatched square}) \gg (\diamond) \\ \Upsilon \succ (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\blacksquare) \\ \Upsilon \succ (\text{hatched square}) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched square}) \gg (\blacksquare) \\ \Upsilon \succ (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\diamond) \\ \Upsilon \succ (\text{hatched square}) \\ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } I = sS$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg (\Delta) \\ \Upsilon \succ (\text{hatched square}) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched square}) \gg (\blacksquare) \\ \Upsilon \succ (\diamond) \\ (\Delta) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg (\blacksquare) \\ \Upsilon \succ (\text{hatched square}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched square}) \gg (\Delta) \\ \Upsilon \succ (\diamond) \\ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } Q = sO$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\text{hatched square}) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched square}) \gg (\Delta) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \Upsilon \succ (\text{hatched square}) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched square}) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\Delta) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } M = oS$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

9. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \Diamond) \times (\Diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten (M = oS)

$$\left. \begin{aligned}
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\Delta) \end{array} \succ \text{■} \end{array} \right] \times \left[\begin{array}{c} \text{■} \gg \begin{array}{c} (\Delta) \\ \gamma \\ \text{■} \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ \text{■} \end{array} \succ \text{■} \end{array} \right] \times \left[\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \gamma \\ \text{■} \end{array} \succ \text{■} \end{array} \right] \times \left[\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \gamma \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right] \\
 & \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{■} \\ \gamma \\ (\diamond) \end{array} \succ \text{■} \end{array} \right] \times \left[\begin{array}{c} \text{■} \gg \begin{array}{c} (\diamond) \\ \gamma \\ \text{■} \end{array} \succ (\Delta) \end{array} \right] \\
 & \left[\begin{array}{c} \text{■} \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ \text{■} \end{array} \right] \times \left[\begin{array}{c} \text{■} \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ \text{■} \end{array} \right] \\
 & \left[\begin{array}{c} \text{■} \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ \text{■} \end{array} \right] \times \left[\begin{array}{c} \text{■} \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ \text{■} \end{array} \right]
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ O = oO \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten (O = oO)

$$\left. \begin{aligned}
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{■} \\ \gamma \\ \text{■} \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{■} \\ \gamma \\ \text{■} \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{■} \\ \gamma \\ \text{■} \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{■} \\ \gamma \\ \text{■} \end{array} \succ (\diamond) \end{array} \right]
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \gamma \\ \text{[shaded box]} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{[shaded box]} \\ \gamma \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \\
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} \text{[shaded box]} \\ \gamma \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \gamma \\ \text{[shaded box]} \end{array} \succ \text{[shaded box]} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \gamma \\ \text{[shaded box]} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{[shaded box]} \\ \gamma \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \\
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} \text{[shaded box]} \\ \gamma \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \gamma \\ \text{[shaded box]} \end{array} \succ \text{[shaded box]} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left((\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ \text{[shaded box]} \end{array} \succ \text{[shaded box]} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} \text{[shaded box]} \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \\
& \left((\diamond) \gg \begin{array}{c} \text{[shaded box]} \\ \gamma \\ (\Delta) \end{array} \succ \text{[shaded box]} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\Delta) \\ \gamma \\ \text{[shaded box]} \end{array} \succ (\diamond) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ \text{[shaded box]} \end{array} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \\
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ \text{[shaded box]} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Box) \end{array} \succ (\Box) \end{array} \right) \times \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Box) \end{array} \right) \times \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Box) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

10. Präsemiotisches Dualsystem $(\Box \Delta \Box \Diamond) \times (\Diamond \Box \Delta \Box)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Box) \end{array} \succ (\Box) \end{array} \right) \\ \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Box) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Box) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Box) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Box) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Box) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Box) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Box) \end{array} \succ (\Box) \end{array} \right) \\ \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\Box) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Box) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten ($M = oS$)

$$\left. \begin{aligned}
 & \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{■} \\ \Upsilon \\ (\Delta) \end{array} \succ \text{■} \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \Upsilon \\ \text{■} \end{array} \succ (\diamond) \end{array} \right) \\
 & \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ \text{■} \end{array} \succ \text{■} \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \Upsilon \\ \text{■} \end{array} \succ (\diamond) \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
 & \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ \text{■} \end{array} \succ \text{■} \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \Upsilon \\ (\diamond) \end{array} \succ \text{■} \end{array} \right) \\
 & \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{■} \\ \Upsilon \\ (\diamond) \end{array} \succ \text{■} \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ \text{■} \end{array} \succ \text{■} \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left. \begin{aligned}
 & \left(\begin{array}{c} \text{■} \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ (\Delta) \end{array} \succ \text{■} \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \Upsilon \\ (\diamond) \end{array} \succ \text{■} \end{array} \right) \\
 & \left(\begin{array}{c} \text{■} \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\diamond) \end{array} \succ \text{■} \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} (\diamond) \\ \Upsilon \\ \text{■} \end{array} \succ \text{■} \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left. \begin{aligned}
 & \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{■} \\ \Upsilon \\ \text{■} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \Upsilon \\ \text{■} \end{array} \succ (\diamond) \end{array} \right) \\
 & \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{■} \\ \Upsilon \\ \text{■} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} \text{■} \gg \begin{array}{c} \text{■} \\ \Upsilon \\ \text{■} \end{array} \succ (\diamond) \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{[shaded box]} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{[shaded box]} \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \\
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} \text{[shaded box]} \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{[shaded box]} \end{array} \succ \text{[shaded box]} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{[shaded box]} \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{[shaded box]} \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \\
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} \text{[shaded box]} \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{[shaded box]} \end{array} \succ \text{[shaded box]} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left((\diamond) \gg \begin{array}{c} (\Delta) \\ \vee \\ \text{[shaded box]} \end{array} \succ \text{[shaded box]} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} \text{[shaded box]} \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\
& \left((\diamond) \gg \begin{array}{c} \text{[shaded box]} \\ (\Delta) \end{array} \succ \text{[shaded box]} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\blacksquare) \\ \vee \\ \text{[shaded box]} \end{array} \succ (\diamond) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ \text{[shaded box]} \end{array} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \\
& \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ \text{[shaded box]} \end{array} \right) \times \left(\begin{array}{c} \text{[shaded box]} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ \text{[shaded box]} \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Box) \end{array} \right) \times \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Box) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Box) \end{array} \right) \times \left(\begin{array}{c} (\Box) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\Box) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

11. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \sqcup) \times (\sqcup \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\sqcup) \end{array} \right) \times \left(\begin{array}{c} (\sqcup) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten ($M = oS$)

$$\left. \begin{aligned}
 & \left(\begin{array}{ccc} & (\blacksquare) & \\ (\sqcup) & \gg & \gamma > (\blacksquare) \\ & (\Delta) & \end{array} \right) \times \left(\begin{array}{ccc} & (\Delta) & \\ (\blacksquare) & \gg & \gamma > (\sqcup) \\ & (\blacksquare) & \end{array} \right) \\
 & \left(\begin{array}{ccc} & (\Delta) & \\ (\sqcup) & \gg & \gamma > (\blacksquare) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\blacksquare) & \gg & \gamma > (\sqcup) \\ & (\Delta) & \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
 & \left(\begin{array}{ccc} & (\sqcup) & \\ (\Delta) & \gg & \gamma > (\blacksquare) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\blacksquare) & \gg & \gamma > (\Delta) \\ & (\sqcup) & \end{array} \right) \\
 & \left(\begin{array}{ccc} & (\blacksquare) & \\ (\Delta) & \gg & \gamma > (\blacksquare) \\ & (\sqcup) & \end{array} \right) \times \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\Delta) \\ & (\blacksquare) & \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = oO \end{array}$$

$$\left. \begin{aligned}
 & \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\Delta) & \end{array} \right) \times \left(\begin{array}{ccc} & (\Delta) & \\ (\blacksquare) & \gg & \gamma > \blacksquare \\ & (\sqcup) & \end{array} \right) \\
 & \left(\begin{array}{ccc} & (\Delta) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\sqcup) & \end{array} \right) \times \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\Delta) & \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left. \begin{aligned}
 & \left(\begin{array}{ccc} & (\blacksquare) & \\ (\sqcup) & \gg & \gamma > (\Delta) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\Delta) & \gg & \gamma > (\sqcup) \\ & (\blacksquare) & \end{array} \right) \\
 & \left(\begin{array}{ccc} & (\blacksquare) & \\ (\sqcup) & \gg & \gamma > (\Delta) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\Delta) & \gg & \gamma > (\sqcup) \\ & (\blacksquare) & \end{array} \right)
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\Delta) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\Delta) & \gg & \gamma > (\blacksquare) \\ & (\sqcup) & \end{array} \right) \\
& \left(\begin{array}{ccc} & (\blacksquare) & \\ (\blacksquare) & \gg & \gamma > (\Delta) \\ & (\sqcup) & \end{array} \right) \times \left(\begin{array}{ccc} & (\sqcup) & \\ (\Delta) & \gg & \gamma > (\blacksquare) \\ & (\blacksquare) & \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\Delta) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\Delta) & \gg & \gamma > (\blacksquare) \\ & (\sqcup) & \end{array} \right) \\
& \left(\begin{array}{ccc} & (\blacksquare) & \\ (\blacksquare) & \gg & \gamma > (\Delta) \\ & (\sqcup) & \end{array} \right) \times \left(\begin{array}{ccc} & (\sqcup) & \\ (\Delta) & \gg & \gamma > (\blacksquare) \\ & (\blacksquare) & \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left(\begin{array}{ccc} & (\Delta) & \\ (\sqcup) & \gg & \gamma > (\blacksquare) \\ & (\blacksquare) & \end{array} \right) \times \left(\begin{array}{ccc} & (\blacksquare) & \\ (\blacksquare) & \gg & \gamma > (\sqcup) \\ & (\Delta) & \end{array} \right) \\
& \left(\begin{array}{ccc} & (\blacksquare) & \\ (\sqcup) & \gg & \gamma > (\blacksquare) \\ & (\Delta) & \end{array} \right) \times \left(\begin{array}{ccc} & (\Delta) & \\ (\blacksquare) & \gg & \gamma > (\sqcup) \\ & (\blacksquare) & \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\Delta) & \end{array} \right) \times \left(\begin{array}{ccc} & (\Delta) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\sqcup) & \end{array} \right) \\
& \left(\begin{array}{ccc} & (\Delta) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\sqcup) & \end{array} \right) \times \left(\begin{array}{ccc} & (\sqcup) & \\ (\blacksquare) & \gg & \gamma > (\blacksquare) \\ & (\Delta) & \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\sqcup) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\sqcup) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\sqcup) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

12. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \diamond) \times (\diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten (M = oS)

$$\begin{aligned}
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\triangle) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\triangle) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array} \\
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\triangle) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\triangle) \end{array} \right) \\ \left(\begin{array}{c} (\triangle) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\triangle) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array} \\
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\triangle) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\triangle) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}
 \end{aligned}$$

Objektale Automaten (O = oO)

$$\begin{aligned}
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\triangle) \end{array} \right) \times \left(\begin{array}{c} (\triangle) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\triangle) \end{array} \right) \times \left(\begin{array}{c} (\triangle) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}
 \end{aligned}$$

$$\left. \begin{aligned}
& \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \\
& \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right]
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left. \begin{aligned}
& \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \\
& \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right] \times \left[\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right]
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \vee \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right] \\
& \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \vee \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \vee \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right]
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \\
& \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \times \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right]
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

13. Präsemiotisches Dualsystem $(\blacksquare \Delta \blacksquare \Diamond) \times (\Diamond \blacksquare \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \gg (\blacksquare) \succ (\Diamond) \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten ($M = oS$)

$$\left. \begin{aligned}
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\triangle) \end{array} \succ (\text{hatched}) \end{array} \right] \times \left[\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right] \times \left[\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\triangle) \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\triangle) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right] \times \left[\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\triangle) \end{array} \right] \\
 & \left[\begin{array}{c} (\triangle) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right] \times \left[\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\triangle) \end{array} \right] \\
 & \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\triangle) \end{array} \succ (\text{hatched}) \end{array} \right] \times \left[\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right] \\
 & \left[\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\triangle) \\ \gamma \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right] \times \left[\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\triangle) \end{array} \succ (\blacksquare) \end{array} \right]
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ O = oO \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Objektale Automaten ($O = oO$)

$$\left. \begin{aligned}
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\text{hatched}) \end{array} \succ (\triangle) \end{array} \right] \times \left[\begin{array}{c} (\triangle) \gg \begin{array}{c} (\text{hatched}) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right] \\
 & \left[\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \gamma \\ (\blacksquare) \end{array} \succ (\triangle) \end{array} \right] \times \left[\begin{array}{c} (\triangle) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right]
 \end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\blacksquare) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\blacksquare) \\ \Upsilon \succ (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\blacksquare) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\blacksquare) \\ \Upsilon \succ (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ M = oS \\ \\ \\ \text{Regulativ:} \\ I = sS \end{array}$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg (\Delta) \\ \Upsilon \succ (\blacksquare) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\blacksquare) \\ \Upsilon \succ (\diamond) \\ (\Delta) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg (\blacksquare) \\ \Upsilon \succ (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \Upsilon \succ (\diamond) \\ (\blacksquare) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\Delta) \end{array} \right)
\end{aligned} \right\} \begin{array}{l} \text{Regulativ:} \\ Q = sO \\ \\ \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

14. Präsemiotisches Dualsystem $(\blacksquare \Delta \text{hatched} \Diamond) \times (\Diamond \text{hatched} \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten ($M = oS$)

$$\begin{array}{c}
 \left\{ \begin{array}{l}
 \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\
 \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \\
 \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \\
 \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \\
 \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\
 \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right)
 \end{array} \right\}
 \end{array}$$

Regulativ:
 $Q = sO$

Regulativ:
 $O = oO$

Regulativ:
 $I = sS$

Objektale Automaten ($O = oO$)

$$\begin{array}{c}
 \left\{ \begin{array}{l}
 \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \\
 \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right)
 \end{array} \right\}
 \end{array}$$

Regulativ:
 $Q = sO$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{shaded box} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ \text{shaded box} \end{array} \right) \\
& \left(\begin{array}{c} \text{shaded box} \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ \text{shaded box} \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } M = oS$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{shaded box} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{shaded box} \\ \vee \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \\
& \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} \text{shaded box} \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ \text{shaded box} \end{array} \succ (\Delta) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } I = sS$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \vee \\ \text{shaded box} \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} \text{shaded box} \\ \vee \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} \text{shaded box} \\ \vee \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \vee \\ \text{shaded box} \end{array} \succ (\diamond) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } Q = sO$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} \text{shaded box} \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ \text{shaded box} \end{array} \right) \\
& \left(\begin{array}{c} \text{shaded box} \gg \begin{array}{c} (\Delta) \\ \vee \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \vee \\ (\Delta) \end{array} \succ (oS) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } M = oS$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Diamond) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

15. Präsemiotisches Dualsystem $(\blacksquare \Delta \text{hatched} \Diamond) \times (\Diamond \text{hatched} \Delta \blacksquare)$

Qualitative Automaten ($Q = sO$)

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \\ \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ M = oS \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\blacksquare) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\blacksquare) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Delta) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \Upsilon \\ (\text{hatched}) \end{array} \succ (\Diamond) \end{array} \right) \times \left(\begin{array}{c} (\Diamond) \gg \begin{array}{c} (\text{hatched}) \\ \Upsilon \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}$$

Mediale Automaten ($M = oS$)

$$\begin{aligned}
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\Delta) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array} \\
 \\
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array} \\
 \\
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \\ \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\Delta) \\ \gamma \\ (\diamond) \end{array} \succ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\text{hatched}) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\Delta) \end{array} \succ (\blacksquare) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ I = sS \end{array}
 \end{aligned}$$

Objektale Automaten ($O = oO$)

$$\begin{aligned}
 & \left\{ \begin{array}{l} \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\text{hatched}) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{hatched}) \\ \gamma \\ (\blacksquare) \end{array} \succ (\diamond) \end{array} \right) \\ \left(\begin{array}{c} (\diamond) \gg \begin{array}{c} (\text{hatched}) \\ \gamma \\ (\blacksquare) \end{array} \succ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\blacksquare) \\ \gamma \\ (\text{hatched}) \end{array} \succ (\diamond) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ Q = sO \end{array}
 \end{aligned}$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\text{hatched}) \gg (\diamond) \\ \Upsilon \succ (\Delta) \\ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\blacksquare) \\ \Upsilon \succ (\text{hatched}) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg (\blacksquare) \\ \Upsilon \succ (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\diamond) \\ \Upsilon \succ (\text{hatched}) \\ (\blacksquare) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } M = oS$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\Delta) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\text{hatched}) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\blacksquare) \gg (\text{hatched}) \\ \Upsilon \succ (\Delta) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\Delta) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\text{hatched}) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } I = sS$$

Interpretative Automaten (I = sS)

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\diamond) \gg (\Delta) \\ \Upsilon \succ (\blacksquare) \\ (\text{hatched}) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\text{hatched}) \\ \Upsilon \succ (\diamond) \\ (\Delta) \end{array} \right) \\
& \left(\begin{array}{c} (\diamond) \gg (\text{hatched}) \\ \Upsilon \succ (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \Upsilon \succ (\diamond) \\ (\text{hatched}) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } Q = sO$$

$$\left. \begin{aligned}
& \left(\begin{array}{c} (\text{hatched}) \gg (\diamond) \\ \Upsilon \succ (\blacksquare) \\ (\Delta) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\Delta) \\ \Upsilon \succ (\text{hatched}) \\ (\diamond) \end{array} \right) \\
& \left(\begin{array}{c} (\text{hatched}) \gg (\Delta) \\ \Upsilon \succ (\blacksquare) \\ (\diamond) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg (\diamond) \\ \Upsilon \succ (\text{hatched}) \\ (\Delta) \end{array} \right)
\end{aligned} \right\} \text{Regulativ: } M = oS$$

$$\left\{ \begin{array}{l} \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\text{hatched circle}) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\text{hatched circle}) \\ \gamma \\ (\diamond) \end{array} \succ (\Delta) \end{array} \right) \\ \left(\begin{array}{c} (\Delta) \gg \begin{array}{c} (\text{hatched circle}) \\ \gamma \\ (\diamond) \end{array} \succ (\blacksquare) \end{array} \right) \times \left(\begin{array}{c} (\blacksquare) \gg \begin{array}{c} (\diamond) \\ \gamma \\ (\text{hatched circle}) \end{array} \succ (\Delta) \end{array} \right) \end{array} \right\} \quad \begin{array}{l} \text{Regulativ:} \\ O = oO \end{array}$$

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