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Relationale Kompositionen III: Die Abbildung von Objektrelationen auf Zeichenrelationen

1. Die Peircesche Zeichenrelation lässt sich wie folgt relational darstellen (Toth 2009a):

$Z = {}^3R({}^1R, {}^2R, {}^3R) = R(M, O, I)$.

Demgegenüber gilt für die semiotische Objektrelation (Toth 2009b)

$\mathcal{M} = {}^3R(\mathcal{M}, \Omega, \mathcal{I})$
$\Omega = {}^3R(\Omega, \mathcal{M}, \mathcal{I})$
$\mathcal{I} = {}^3R(\mathcal{I}, \mathcal{M}, \Omega)$,

d.h. sie ist eine triadische Relation über drei triadischen Partialrelationen

$OR = {}^3R({}^3\mathcal{M}, {}^3\Omega, {}^3\mathcal{I})$.

2. Ein Vergleich der funktionalen (links) mit der entsprechenden relationalen semiotischen Matrix (rechts)

	M	O	I
M	MM	MO	MI
O	OM	OO	OI
I	IM	IO	II

	^1R	^2R	^3R
^1R	$^1R^1R$	$^1R^2R$	$^1R^3R$
^2R	$^2R^1R$	$^2R^2R$	$^2R^3R$
^3R	$^3R^1R$	$^3R^2R$	$^3R^3R$

zeigt, dass die sogenannten „Dyaden“ oder „Subzeichen“ unerlaubte, weil den Partialrelationen zuwiderlaufende Valenzzahlverletzungen darstellen, denn definiert sind per definitionem nur

${}^1R$: ${}^1R$
${}^2R$: ${}^1R{}^1R$, ${}^2R$
${}^3R$: ${}^1R{}^1R{}^1R$, ${}^1R{}^2R$, ${}^2R{}^1R$, ${}^3R$,

d.h. lediglich die eingerahmten „Subzeichen“ der relationalen Matrix

	${}^1R$	${}^2R$	${}^3R$
${}^1R$	$\boxed{{}^1R{}^1R}$	$\boxed{{}^1R{}^2R}$	${}^1R\,{}^3R$
${}^2R$	$\boxed{{}^2R{}^1R}$	${}^2R{}^2R$	${}^2R{}^3R$
${}^3R$	${}^3R{}^1R$	${}^3R{}^2R$	${}^3R{}^3R$.

Die Menge aller valenztreuen Relationskompositionen in ZR = ${}^3R({}^1R, {}^2R, {}^3R)$ ist also lediglich

RK = $\{{}^1R, {}^2R, {}^3R, ({}^1R{}^1R), ({}^1R{}^2R), ({}^2R{}^1R), ({}^1R{}^1R{}^1R)\}$ = {M, O, I, (MM), (MO), (OM), (MMM)}.

Das bedeutet, dass wir – wenn wir alle „Subzeichen“, d.h. kartesischen Produkte der Partialrelationen von ZR in sich selbst haben wollen, auf eine hexadische semiotische Matrix ausweichen müssen, deren triadische Submatrix (Block) dann die gesuchten „Subzeichen“ bilden:

	${}^1R$	${}^2R$	${}^3R$	${}^4R$	${}^5R$	${}^6R$
${}^1R$	$\boxed{{}^1R{}^1R}$	$\boxed{{}^1R{}^2R}$	$\boxed{{}^1R\,{}^3R}$	${}^1R{}^4R$	${}^1R{}^5R$	${}^1R{}^6R$
${}^2R$	$\boxed{{}^2R{}^1R}$	$\boxed{{}^2R{}^2R}$	$\boxed{{}^2R{}^3R}$	${}^2R{}^4R$	${}^2R{}^5R$	${}^2R{}^6R$
${}^3R$	$\boxed{{}^3R{}^1R}$	$\boxed{{}^3R{}^2R}$	$\boxed{{}^3R{}^3R}$	${}^3R{}^4R$	${}^3R{}^5R$	${}^3R{}^6R$
${}^4R$	${}^4R{}^1R$	${}^4R{}^2R$	${}^4R{}^3R$	${}^4R{}^4R$	${}^4R{}^5R$	${}^4R{}^6R$
${}^5R$	${}^5R{}^1R$	${}^5R{}^2R$	${}^5R{}^3R$	${}^5R{}^4R$	${}^5R{}^5R$	${}^5R{}^6R$
${}^6R$	${}^6R{}^1R$	${}^6R{}^2R$	${}^6R{}^3R$	${}^6R{}^4R$	${}^6R{}^5R$	${}^6R{}^6R$

3. Diese Probleme stellen sich bei OR dagegen gar nicht, da ja alle Partialrelationen selbst triadisch sind, d.h. wir bekommen sofort durch kartesische Produktbildung

	$^3\mathcal{M}$	$^3\Omega$	$^3\mathcal{I}$
$^3\mathcal{M}$	$^3\mathcal{M}^3\mathcal{M}$	$^3\mathcal{M}^3\Omega$	$^3\mathcal{M}^3\mathcal{I}$
$^3\Omega$	$^3\Omega^3\mathcal{M}$	$^3\Omega^3\Omega$	$^3\Omega^3\mathcal{I}$
$^3\mathcal{I}$	$^3\mathcal{I}^3\mathcal{M}$	$^3\mathcal{I}^3\Omega$	$^3\mathcal{I}^3\mathcal{I}$

als Basis für zu bildende Zeichenklassen (ZR) und Zeichenklassen (OR). Ein Vergleich der beiden Relationstypen ergibt

$\mathrm{Zkl} = {}^3R({}^3R^lS, {}^2R^mS, {}^1R^nS)$,
$\mathrm{Zkl} = {}^3R({}^3R^3S, {}^3R^3S, {}^3R^3S)$,

d.h. es ist

$({}^3R, {}^2R, {}^1R)° = ({}^1R, {}^2R, {}^3R)$,
$({}^3R, {}^3R, {}^3R)° = ({}^3R, {}^3R, {}^3R)$,

d.h. wir haben

$({}^1R\ {}^2R\ {}^3R) = ({}^nS\ {}^mS\ {}^lS)$,
$({}^3R\ {}^3R\ {}^3R) = ({}^3S\ {}^3S\ {}^3S)$,

weil ja

$({}^3R^lS, {}^2R^mS, {}^1R^nS)° = ({}^nS^1R, {}^mS^2R, {}^lS^3R)$.
$({}^3R^3S, {}^3R^3S, {}^3R^3S)° = ({}^3S^3R, {}^3S^3R, {}^3S^3R)$

ist. Damit gilt also die Inklusionsordnung $l \geq m \geq n$, welche für $\mathrm{Zkl} = {}^3R({}^3R^lS, {}^2R^mS, {}^1R^nS)$, gilt, für $\mathrm{Zkl} = {}^3R({}^3R^3S, {}^3R^3S, {}^3R^3S)$ NICHT, d.h. in jeder minimalen Semiotik, worunter jede Struktur verstanden sein soll, welche das geordnete Tripel

$\Sigma = \langle OR, ZR \rangle$

erfüllt, muss jede Zkl auf jede Zkl (und jede Zkl° auf jede Zkl°) abgebildet werden:

$\{OR\} \rightarrow \{ZR\} =$

$\{{}^3R({}^1M, {}^2O, {}^3I)\} \rightarrow \{{}^3R({}^3\mathcal{M}, {}^3\Omega, {}^3\mathcal{I})\}.$

Das relationale Abbildungsschema sieht wie folgt aus

$$\begin{array}{llllllclll}
({}^3R^1S, & {}^2R^1S, & {}^1R^1S) & ({}^3R^1S, & {}^2R^1S, & {}^1R^1S)^\circ & = & ({}^1S^1R, & {}^1S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^1S, & {}^2R^1S, & {}^1R^1S) & ({}^3R^1S, & {}^2R^1S, & {}^1R^1S)^\circ & = & ({}^1S^1R, & {}^1S^2R, & {}^1S^3R)
\end{array}$$

$$\begin{array}{llllllclll}
({}^3R^1S, & {}^2R^1S, & {}^1R^2S) & ({}^3R^1S, & {}^2R^1S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^1S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^1S, & {}^2R^1S, & {}^1R^2S) & ({}^3R^1S, & {}^2R^1S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^1S^2R, & {}^1S^3R)
\end{array}$$

$$\begin{array}{llllllclll}
({}^3R^1S, & {}^2R^1S, & {}^1R^3S) & ({}^3R^1S, & {}^2R^1S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^1S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^1S, & {}^2R^1S, & {}^1R^3S) & ({}^3R^1S, & {}^2R^1S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^1S^2R, & {}^1S^3R)
\end{array}$$

$$\begin{array}{llllllclll}
({}^3R^1S, & {}^2R^2S, & {}^1R^1S) & ({}^3R^1S, & {}^2R^2S, & {}^1R^1S)^\circ & = & ({}^1S^1R, & {}^2S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^1S, & {}^2R^2S, & {}^1R^2S) & ({}^3R^1S, & {}^2R^2S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^2S^2R, & {}^1S^3R)
\end{array}$$

$$\begin{array}{llllllclll}
({}^3R^1S, & {}^2R^2S, & {}^1R^2S) & ({}^3R^1S, & {}^2R^2S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^2S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^1S, & {}^2R^2S, & {}^1R^2S) & ({}^3R^1S, & {}^2R^2S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^2S^2R, & {}^1S^3R)
\end{array}$$

$$\begin{array}{llllllclll}
({}^3R^1S, & {}^2R^2S, & {}^1R^3S) & ({}^3R^1S, & {}^2R^2S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^2S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^1S, & {}^2R^2S, & {}^1R^3S) & ({}^3R^1S, & {}^2R^2S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^2S^2R, & {}^1S^3R)
\end{array}$$

$$\begin{array}{ccccccccccc}
({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{1}S) & ({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{1}S)^{\circ} & = & ({}^{1}S^{1}R, & {}^{3}S^{2}R, & {}^{1}S^{3}R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{3}S) & ({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{3}S)^{\circ} & = & ({}^{3}S^{1}R, & {}^{3}S^{2}R, & {}^{1}S^{3}R)
\end{array}$$

$$\begin{array}{ccccccccccc}
({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{2}S) & ({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{2}S)^{\circ} & = & ({}^{2}S^{1}R, & {}^{3}S^{2}R, & {}^{1}S^{3}R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{3}S) & ({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{3}S)^{\circ} & = & ({}^{3}S^{1}R, & {}^{3}S^{2}R, & {}^{1}S^{3}R)
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({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{3}S) & ({}^{3}R^{1}S, & {}^{2}R^{3}S, & {}^{1}R^{3}S)^{\circ} & = & ({}^{3}S^{1}R, & {}^{3}S^{2}R, & {}^{1}S^{3}R)
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$$\begin{array}{ccccccccccc}
({}^{3}R^{2}S, & {}^{2}R^{1}S, & {}^{1}R^{1}S) & ({}^{3}R^{2}S, & {}^{2}R^{1}S, & {}^{1}R^{1}S)^{\circ} & = & ({}^{1}S^{1}R, & {}^{1}S^{2}R, & {}^{1}S^{3}R) \\
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({}^{3}R^{2}S, & {}^{2}R^{2}S, & {}^{1}R^{2}S) & ({}^{3}R^{2}S, & {}^{2}R^{2}S, & {}^{1}R^{2}S)^{\circ} & = & ({}^{2}S^{1}R, & {}^{2}S^{2}R, & {}^{2}S^{3}R)
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$$\begin{array}{ccccccccc} ({}^3R^3S, & {}^2R^1S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^1S, & {}^1R^3S)^\circ = & ({}^3S^1R, & {}^1S^2R, & {}^1S^3R) \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ ({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R) \end{array}$$

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({}^3R^3S, & {}^2R^2S, & {}^1R^1S) & ({}^3R^3S, & {}^2R^2S, & {}^1R^1S)^\circ & = & ({}^1S^1R, & {}^2S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R)
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({}^3R^3S, & {}^2R^2S, & {}^1R^2S) & ({}^3R^3S, & {}^2R^2S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^2S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R)
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({}^3R^3S, & {}^2R^2S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^2S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^2S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R)
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({}^3R^3S, & {}^2R^3S, & {}^1R^1S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^1S)^\circ & = & ({}^1S^1R, & {}^3S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R)
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({}^3R^3S, & {}^2R^3S, & {}^1R^2S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^2S)^\circ & = & ({}^2S^1R, & {}^3S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R)
\end{array}$$

$$\begin{array}{cccccccccc}
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^1S^3R) \\
\downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & \downarrow & \downarrow & \downarrow \\
({}^3R^3S, & {}^2R^3S, & {}^1R^3S) & ({}^3R^3S, & {}^2R^3S, & {}^1R^3S)^\circ & = & ({}^3S^1R, & {}^3S^2R, & {}^3S^1R)
\end{array}$$

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7.10.2009