

## Balancierte und unbalancierte semiotische Systeme

Wie in Toth (2008a-j) gezeigt, gibt es zwischen der minimalen, vollständig transzendenten repräsentativen Zeichenrelation  $ZR_{3,3}$  und der minimalen, vollständig nicht-transzendenten präsidentativen Zeichenrelation  $ZR_{6,6}$ , in der alle drei Peirceschen Fundamentalkategorien durch ihre korrespondierenden ontologischen Konstanten aufgehoben sind, genau die folgenden 16 Zeichenrelationen, die zwei erwähnten eingeschlossen:

$$\begin{array}{cccc} ZR_{3,3} & ZR_{4,3} & ZR_{5,3} & ZR_{6,3} \\ ZR_{3,4} & ZR_{4,4} & ZR_{5,4} & ZR_{6,4} \\ ZR_{3,5} & ZR_{4,5} & ZR_{5,5} & ZR_{6,5} \\ ZR_{3,6} & ZR_{4,6} & ZR_{5,6} & ZR_{6,6} \end{array}$$

Um den Zusammenhang dieser 16 Zeichenrelationen mit den in früheren Arbeiten eingeführten semiotischen (quantitativen, quanti-qualitativen, quali-quantitativen und qualitativen) Zahlbereichen herauszuarbeiten, ist es nötig, mittels erheblichem technischem Aufwand alle Zeichenklassen aufzuzeigen, welche über diesen Zeichenrelationen konstruiert werden können. Im folgenden wird vorausgesetzt, dass die Reihenfolge der qualitativen semiotischen Zahlen  $\mathbf{O}$ ,  $\odot$ ,  $\odot$  ist. Es handelt sich hier um drei qualitative semiotische Zahlbereiche vor der Folge der quantitativen semiotischen Zahlbereiche 1, 2, 3 oder Erstheit, Zweitheit, rittheit. Dadurch werden zahlreiche Varianten in den Definitionen der 16 Zeichenrelationen zum vornherein ausgeschieden.

1.  $ZR_{3,3} = (3.a \ 2.b \ 1.c)$  mit  $a, b, c \in \{.1, .2, .3\}$

- 1 (3.1 2.1 1.1)  $\times$  (1.1 1.2 1.3)
- 2 (3.1 2.1 1.2)  $\times$  (2.1 1.2 1.3)
- 3 (3.1 2.1 1.3)  $\times$  (3.1 1.2 1.3)
- 4 (3.1 2.2 1.2)  $\times$  (2.1 2.2 1.3)
- 5 (3.1 2.2 1.3)  $\times$  (3.1 2.2 1.3)
- 6 (3.1 2.3 1.3)  $\times$  (3.1 3.2 1.3)
- 7 (3.2 2.2 1.2)  $\times$  (2.1 2.2 2.3)
- 8 (3.2 2.2 1.3)  $\times$  (3.1 2.2 2.3)
- 9 (3.2 2.3 1.3)  $\times$  (3.1 3.2 2.3)
- 10 (3.3 2.3 1.3)  $\times$  (3.1 3.2 3.3)

2.  $ZR_{3,4} = (3.a\ 2.b\ 1.c)$  mit  $a, b, c, d \in \{.1, .2, .3, .O\}$

- 1 (3.0 2.0 1.0)  $\times$  (0.1 0.2 0.3)
- 2 (3.0 2.0 1.1)  $\times$  (1.1 0.2 0.3)
- 3 (3.0 2.0 1.2)  $\times$  (2.1 0.2 0.3)
- 4 (3.0 2.0 1.3)  $\times$  (3.1 0.2 0.3)
- 5 (3.0 2.1 1.1)  $\times$  (1.1 1.2 0.3)
- 6 (3.0 2.1 1.2)  $\times$  (2.1 1.2 0.3)
- 7 (3.0 2.1 1.3)  $\times$  (3.1 1.2 0.3)
- 8 (3.0 2.2 1.2)  $\times$  (2.1 2.2 0.3)
- 9 (3.0 2.2 1.3)  $\times$  (3.1 2.2 0.3)
- 10 (3.0 2.3 1.3)  $\times$  (3.1 3.2 0.3)
- 11 (3.1 2.1 1.1)  $\times$  (1.1 1.2 1.3)
- 12 (3.1 2.1 1.2)  $\times$  (2.1 1.2 1.3)
- 13 (3.1 2.1 1.3)  $\times$  (3.1 1.2 1.3)
- 14 (3.1 2.2 1.2)  $\times$  (2.1 2.2 1.3)
- 15 (3.1 2.2 1.3)  $\times$  (3.1 2.2 1.3)
- 16 (3.1 2.3 1.3)  $\times$  (3.1 3.2 1.3)
- 17 (3.2 2.2 1.2)  $\times$  (2.1 2.2 2.3)
- 18 (3.2 2.2 1.3)  $\times$  (3.1 2.2 2.3)
- 19 (3.2 2.3 1.3)  $\times$  (3.1 3.2 2.3)
- 20 (3.3 2.3 1.3)  $\times$  (3.1 3.2 3.3)

3.  $ZR_{3,5} = (3.a\ 2.b\ 1.c)$  mit  $a, b, c, d, e \in \{.1, .2, .3, .O, .\odot\}$

- 1 (3.0 2.0 1.0)
- 2 (3.0 2.0 1. $\odot$ )
- 3 (3.0 2.0 1.1)
- 4 (3.0 2.0 1.2)
- 5 (3.0 2.0 1.3)
- 6 (3.0 2. $\odot$  1. $\odot$ )
- 7 (3.0 2. $\odot$  1.1)
- 8 (3.0 2. $\odot$  1.2)
- 9 (3.0 2. $\odot$  1.3)
- 10 (3.0 2.1 1.1)
- 11 (3.0 2.1 1.2)
- 12 (3.0 2.1 1.3)
- 13 (3.0 2.2 1.2)
- 14 (3.0 2.2 1.3)
- 15 (3.0 2.3 1.3)
- 16 (3. $\odot$  2. $\odot$  1. $\odot$ )
- 17 (3. $\odot$  2. $\odot$  1.1)

- 18 (3.⊙ 2.1 1.1)
- 19 (3.⊙ 2.⊙ 1.2)
- 20 (3.⊙ 2.⊙ 1.3)
- 21 (3.⊙ 2.1 1.2)
- 22 (3.⊙ 2.1 1.3)
- 23 (3.⊙ 2.2 1.2)
- 24 (3.⊙ 2.2 1.3)
- 25 (3.⊙ 2.3 1.3)
- 26 (3.1 2.1 1.1)
- 27 (3.1 2.1 1.2)
- 28 (3.1 2.1 1.3)
- 29 (3.1 2.2 1.2)
- 30 (3.1 2.2 1.3)
- 31 (3.1 2.3 1.3)
- 32 (3.2 2.2 1.2)
- 33 (3.2 2.2 1.3)
- 34 (3.2 2.3 1.3)
- 35 (3.3 2.3 1.3)

4.  $ZR_{3,6} = (3.a\ 2.b\ 1.c)$  mit  $a, b, c \in \{.1, .2, .3, .O, \odot, \ominus\}$

- 1 (3.0 2.0 1.0)
- 2 (3.0 2.0 1.⊙)
- 3 (3.0 2.0 1.⊙)
- 4 (3.0 2.0 1.1)
- 5 (3.0 2.0 1.2)
- 6 (3.0 2.0 1.3)
- 7 (3.0 2.⊙ 1.⊙)
- 8 (3.0 2.⊙ 1.⊙)
- 9 (3.0 2.⊙ 1.1)
- 10 (3.0 2.⊙ 1.2)
- 11 (3.0 2.⊙ 1.3)
- 12 (3.0 2.⊙ 1.⊙)
- 13 (3.0 2.⊙ 1.1)
- 14 (3.0 2.⊙ 1.2)
- 15 (3.0 2.⊙ 1.3)
- 16 (3.0 2.1 1.1)
- 17 (3.0 2.1 1.2)
- 18 (3.0 2.1 1.3)
- 19 (3.0 2.2 1.2)

- 20 (3.0 2.2 1.3)
- 21 (3.0 2.3 1.3)
- 22 (3.⊙ 2.⊙ 1.⊙)
- 23 (3.⊙ 2.⊙ 1.⊙)
- 24 (3.⊙ 2.⊙ 1.1)
- 25 (3.⊙ 2.⊙ 1.2)
- 26 (3.⊙ 2.⊙ 1.3)
- 27 (3.⊙ 2.⊙ 1.⊙)
- 28 (3.⊙ 2.⊙ 1.1)
- 29 (3.⊙ 2.1 1.1)
- 30 (3.⊙ 2.⊙ 1.2)
- 31 (3.⊙ 2.⊙ 1.3)
- 32 (3.⊙ 2.1 1.2)
- 33 (3.⊙ 2.2 1.2)
- 34 (3.⊙ 2.1 1.3)
- 35 (3.⊙ 2.2 1.3)
- 36 (3.⊙ 2.3 1.3)
- 37 (3.⊙ 2.⊙ 1.⊙)
- 38 (3.⊙ 2.⊙ 1.1)
- 39 (3.⊙ 2.⊙ 1.2)
- 40 (3.⊙ 2.⊙ 1.3)
- 41 (3.⊙ 2.1 1.1)
- 42 (3.⊙ 2.1 1.2)
- 43 (3.⊙ 2.2 1.2)
- 44 (3.⊙ 2.1 1.3)
- 45 (3.⊙ 2.2 1.3)
- 46 (3.⊙ 2.3 1.3)
- 47 (3.1 2.1 1.1)
- 48 (3.1 2.1 1.2)
- 49 (3.1 2.1 1.3)
- 50 (3.1 2.2 1.2)
- 51 (3.1 2.2 1.3)
- 52 (3.1 2.3 1.3)
- 53 (3.2 2.2 1.2)
- 54 (3.2 2.2 1.3)
- 55 (3.2 2.3 1.3)
- 56 (3.3 2.3 1.3)

5.  $ZR_{4,3} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d)$  mit  $a, b, c \in \{.1, .2, .3\}$

- 1  $(3.1\ 2.1\ 1.1\ 0.1) \times (1.0\ 1.1\ 1.2\ 1.3)$
- 2  $(3.1\ 2.1\ 1.1\ 0.2) \times (2.0\ 1.1\ 1.2\ 1.3)$
- 3  $(3.1\ 2.1\ 1.1\ 0.3) \times (3.0\ 1.1\ 1.2\ 1.3)$
- 4  $(3.1\ 2.1\ 1.2\ 0.2) \times (2.0\ 2.1\ 1.2\ 1.3)$
- 5  $(3.1\ 2.1\ 1.2\ 0.3) \times (3.0\ 2.1\ 1.2\ 1.3)$
- 6  $(3.1\ 2.1\ 1.3\ 0.3) \times (3.0\ 3.1\ 1.2\ 1.3)$
- 7  $(3.1\ 2.2\ 1.2\ 0.2) \times (2.0\ 2.1\ 2.2\ 1.3)$
- 8  $(3.1\ 2.2\ 1.2\ 0.3) \times (3.0\ 2.1\ 2.2\ 1.3)$
- 9  $(3.1\ 2.2\ 1.3\ 0.3) \times (3.0\ 3.1\ 2.2\ 1.3)$
- 10  $(3.1\ 2.3\ 1.3\ 0.3) \times (3.0\ 3.1\ 3.2\ 1.3)$
- 11  $(3.2\ 2.2\ 1.2\ 0.2) \times (2.0\ 2.1\ 2.2\ 2.3)$
- 12  $(3.2\ 2.2\ 1.2\ 0.3) \times (3.0\ 2.1\ 2.2\ 2.3)$
- 13  $(3.2\ 2.2\ 1.3\ 0.3) \times (3.0\ 3.1\ 2.2\ 2.3)$
- 14  $(3.2\ 2.3\ 1.3\ 0.3) \times (3.0\ 3.1\ 3.2\ 2.3)$
- 15  $(3.3\ 2.3\ 1.3\ 0.3) \times (3.0\ 3.1\ 3.2\ 3.3)$

6.  $ZR_{4,4} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d)$  mit  $a, b, c, d \in \{.1, .2, .3, .\mathbf{O}\}$

- 1  $(3.0\ 2.0\ 1.0\ 0.0) \times (0.0\ 0.1\ 0.2\ 0.3)$
- 2  $(3.0\ 2.0\ 1.0\ 0.1) \times (1.0\ 0.1\ 0.2\ 0.3)$
- 3  $(3.0\ 2.0\ 1.0\ 0.2) \times (2.0\ 0.1\ 0.2\ 0.3)$
- 4  $(3.0\ 2.0\ 1.0\ 0.3) \times (3.0\ 0.1\ 0.2\ 0.3)$
- 5  $(3.0\ 2.0\ 1.1\ 0.1) \times (1.0\ 1.1\ 0.2\ 0.3)$
- 6  $(3.0\ 2.0\ 1.1\ 0.2) \times (2.0\ 1.1\ 0.2\ 0.3)$
- 7  $(3.0\ 2.0\ 1.1\ 0.3) \times (3.0\ 1.1\ 0.2\ 0.3)$
- 8  $(3.0\ 2.0\ 1.2\ 0.2) \times (2.0\ 2.1\ 0.2\ 0.3)$
- 9  $(3.0\ 2.0\ 1.2\ 0.3) \times (3.0\ 2.1\ 0.2\ 0.3)$
- 10  $(3.0\ 2.0\ 1.3\ 0.3) \times (3.0\ 3.1\ 0.2\ 0.3)$
- 11  $(3.0\ 2.1\ 1.1\ 0.1) \times (1.0\ 1.1\ 1.2\ 0.3)$
- 12  $(3.0\ 2.1\ 1.1\ 0.2) \times (2.0\ 1.1\ 1.2\ 0.3)$
- 13  $(3.0\ 2.1\ 1.1\ 0.3) \times (3.0\ 1.1\ 1.2\ 0.3)$
- 14  $(3.0\ 2.1\ 1.2\ 0.2) \times (2.0\ 2.1\ 1.2\ 0.3)$
- 15  $(3.0\ 2.1\ 1.2\ 0.3) \times (3.0\ 2.1\ 1.2\ 0.3)$
- 16  $(3.0\ 2.1\ 1.3\ 0.3) \times (3.0\ 3.1\ 1.2\ 0.3)$
- 17  $(3.0\ 2.2\ 1.2\ 0.2) \times (2.0\ 2.1\ 2.2\ 0.3)$
- 18  $(3.0\ 2.2\ 1.2\ 0.3) \times (3.0\ 2.1\ 2.2\ 0.3)$
- 19  $(3.0\ 2.2\ 1.3\ 0.3) \times (3.0\ 3.1\ 2.2\ 0.3)$
- 20  $(3.0\ 2.3\ 1.3\ 0.3) \times (3.0\ 3.1\ 3.2\ 0.3)$
- 21  $(3.1\ 2.1\ 1.1\ 0.1) \times (1.0\ 1.1\ 1.2\ 1.3)$
- 22  $(3.1\ 2.1\ 1.1\ 0.2) \times (2.0\ 1.1\ 1.2\ 1.3)$

- 23 (3.1 2.1 1.1 0.3) × (3.0 1.1 1.2 1.3)
- 24 (3.1 2.1 1.2 0.2) × (2.0 2.1 1.2 1.3)
- 25 (3.1 2.1 1.2 0.3) × (3.0 2.1 1.2 1.3)
- 26 (3.1 2.1 1.3 0.3) × (3.0 3.1 1.2 1.3)
- 27 (3.1 2.2 1.2 0.2) × (2.0 2.1 2.2 1.3)
- 28 (3.1 2.2 1.2 0.3) × (3.0 2.1 2.2 1.3)
- 29 (3.1 2.2 1.3 0.3) × (3.0 3.1 2.2 1.3)
- 30 (3.1 2.3 1.3 0.3) × (3.0 3.1 3.2 1.3)
- 31 (3.2 2.2 1.2 0.2) × (2.0 2.1 2.2 2.3)
- 32 (3.2 2.2 1.2 0.3) × (3.0 2.1 2.2 2.3)
- 33 (3.2 2.2 1.3 0.3) × (3.0 3.1 2.2 2.3)
- 34 (3.2 2.3 1.3 0.3) × (3.0 3.1 3.2 2.3)
- 35 (3.3 2.3 1.3 0.3) × (3.0 3.1 3.2 3.3)

7.  $ZR_{4,5} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d)$  mit  $a, b, c, d, e \in \{.1, .2, .3, \mathbf{O}, \bullet\}$

- 1 (3.0 2.0 1.0 0.0)
- 2 (3.0 2.0 1.0 0.●)
- 3 (3.0 2.0 1.0 0.1)
- 4 (3.0 2.0 1.0 0.2)
- 5 (3.0 2.0 1.0 0.3)
- 6 (3.0 2.0 1.● 0.●)
- 7 (3.0 2.0 1.● 0.1)
- 8 (3.0 2.0 1.● 0.2)
- 9 (3.0 2.0 1.● 0.3)
- 10 (3.0 2.0 1.1 0.1)
- 11 (3.0 2.0 1.1 0.2)
- 12 (3.0 2.0 1.1 0.3)
- 13 (3.0 2.0 1.2 0.2)
- 14 (3.0 2.0 1.2 0.3)
- 15 (3.0 2.0 1.3 0.3)
- 16 (3.0 2.● 1.● 0.●)
- 17 (3.0 2.● 1.● 0.1)
- 18 (3.0 2.● 1.● 0.2)
- 19 (3.0 2.● 1.● 0.3)
- 20 (3.0 2.● 1.1 0.1)
- 21 (3.0 2.● 1.1 0.2)
- 22 (3.0 2.● 1.1 0.3)
- 23 (3.0 2.● 1.2 0.2)
- 24 (3.0 2.● 1.2 0.3)

- 25 (3.0 2.⊙ 1.3 0.3)
- 26 (3.0 2.1 1.1 0.1)
- 27 (3.0 2.1 1.1 0.2)
- 28 (3.0 2.1 1.1 0.3)
- 29 (3.0 2.1 1.2 0.2)
- 30 (3.0 2.1 1.2 0.3)
- 31 (3.0 2.1 1.3 0.3)
- 32 (3.0 2.2 1.2 0.2)
- 33 (3.0 2.2 1.2 0.3)
- 34 (3.0 2.2 1.3 0.3)
- 35 (3.0 2.3 1.3 0.3)
- 36 (3.⊙ 2.⊙ 1.⊙ 0.⊙)
- 37 (3.⊙ 2.⊙ 1.⊙ 0.1)
- 38 (3.⊙ 2.⊙ 1.⊙ 0.2)
- 39 (3.⊙ 2.⊙ 1.⊙ 0.3)
- 40 (3.⊙ 2.⊙ 1.1 0.1)
- 41 (3.⊙ 2.⊙ 1.1 0.2)
- 42 (3.⊙ 2.⊙ 1.1 0.3)
- 43 (3.⊙ 2.⊙ 1.2 0.2)
- 44 (3.⊙ 2.⊙ 1.2 0.3)
- 45 (3.⊙ 2.⊙ 1.3 0.3)
- 46 (3.1 2.1 1.1 0.1)
- 47 (3.1 2.1 1.1 0.2)
- 48 (3.1 2.1 1.1 0.3)
- 49 (3.1 2.1 1.2 0.2)
- 50 (3.1 2.1 1.2 0.3)
- 51 (3.1 2.1 1.3 0.3)
- 52 (3.1 2.2 1.2 0.2)
- 53 (3.1 2.2 1.2 0.3)
- 54 (3.1 2.2 1.3 0.3)
- 55 (3.1 2.3 1.3 0.3)
- 56 (3.2 2.2 1.2 0.2)
- 57 (3.2 2.2 1.2 0.3)
- 58 (3.2 2.2 1.3 0.3)
- 59 (3.2 2.3 1.3 0.3)
- 60 (3.3 2.3 1.3 0.3)

8.  $ZR_{4,6} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d)$  mit  $a, b, c, d, e, f \in \{.1, .2, .3, \mathbf{O}, \cdot\odot, \cdot\odot\}$

- 1 (3.0 2.0 1.0 0.0)
- 2 (3.0 2.0 1.0 0.⊙)
- 3 (3.0 2.0 1.0 0.⊙)

- 4 (3.0 2.0 1.0 0.1)
- 5 (3.0 2.0 1.0 0.2)
- 6 (3.0 2.0 1.0 0.3)
- 7 (3.0 2.0 1.● 0.●)
- 8 (3.0 2.0 1.● 0.●)
- 9 (3.0 2.0 1.● 0.●)
- 10 (3.0 2.0 1.● 0.1)
- 11 (3.0 2.0 1.● 0.1)
- 12 (3.0 2.0 1.1 0.1)
- 13 (3.0 2.0 1.● 0.2)
- 14 (3.0 2.0 1.● 0.2)
- 15 (3.0 2.0 1.1 0.2)
- 16 (3.0 2.0 1.2 0.2)
- 17 (3.0 2.0 1.● 0.3)
- 18 (3.0 2.0 1.● 0.3)
- 19 (3.0 2.0 1.1 0.3)
- 20 (3.0 2.0 1.2 0.3)
- 21 (3.0 2.0 1.3 0.3)
- 22 (3.0 2.● 1.● 0.●)
- 23 (3.0 2.● 1.● 0.●)
- 24 (3.0 2.● 1.● 0.1)
- 25 (3.0 2.● 1.● 0.2)
- 26 (3.0 2.● 1.● 0.3)
- 27 (3.0 2.● 1.● 0.●)
- 28 (3.0 2.● 1.● 0.1)
- 29 (3.0 2.● 1.1 0.1)
- 30 (3.0 2.● 1.● 0.2)
- 31 (3.0 2.● 1.1 0.2)
- 32 (3.0 2.● 1.2 0.2)
- 33 (3.0 2.● 1.● 0.3)
- 34 (3.0 2.● 1.1 0.3)
- 35 (3.0 2.● 1.2 0.3)
- 36 (3.0 2.● 1.3 0.3)
- 37 (3.0 2.● 1.● 0.●)
- 38 (3.0 2.● 1.● 0.1)
- 39 (3.0 2.● 1.● 0.2)
- 40 (3.0 2.● 1.● 0.3)



- 41 (3.0 2.⊙ 1.1 0.1)
- 42 (3.0 2.⊙ 1.1 0.2)
- 43 (3.0 2.⊙ 1.2 0.2)
- 44 (3.0 2.⊙ 1.1 0.3)
- 45 (3.0 2.⊙ 1.2 0.3)
- 46 (3.0 2.⊙ 1.3 0.3)
- 47 (3.0 2.1 1.1 0.1)
- 48 (3.0 2.1 1.1 0.2)
- 49 (3.0 2.1 1.1 0.3)
- 50 (3.0 2.1 1.2 0.2)
- 51 (3.0 2.1 1.2 0.3)
- 52 (3.0 2.1 1.3 0.3)
- 53 (3.0 2.2 1.2 0.2)
- 54 (3.0 2.2 1.2 0.3)
- 55 (3.0 2.3 1.3 0.3)
- 56 (3.⊙ 2.⊙ 1.⊙ 0.⊙)
- 57 (3.⊙ 2.⊙ 1.⊙ 0.⊙)
- 58 (3.⊙ 2.⊙ 1.⊙ 0.1)
- 59 (3.⊙ 2.⊙ 1.⊙ 0.2)
- 60 (3.⊙ 2.⊙ 1.⊙ 0.3)
- 61 (3.⊙ 2.⊙ 1.⊙ 0.⊙)
- 62 (3.⊙ 2.⊙ 1.⊙ 0.1)
- 63 (3.⊙ 2.⊙ 1.1 0.1)
- 64 (3.⊙ 2.⊙ 1.⊙ 0.2)
- 65 (3.⊙ 2.⊙ 1.1 0.2)
- 66 (3.⊙ 2.⊙ 1.2 0.2)
- 67 (3.⊙ 2.⊙ 1.⊙ 0.3)
- 68 (3.⊙ 2.⊙ 1.1 0.3)
- 69 (3.⊙ 2.⊙ 1.2 0.3)
- 70 (3.⊙ 2.⊙ 1.3 0.3)
- 71 (3.⊙ 2.1 1.1 0.1)
- 72 (3.⊙ 2.1 1.1 0.2)
- 73 (3.⊙ 2.1 1.1 0.3)
- 74 (3.⊙ 2.1 1.2 0.2)
- 75 (3.⊙ 2.1 1.2 0.3)
- 76 (3.⊙ 2.1 1.3 0.3)
- 77 (3.⊙ 2.2 1.2 0.2)

- 78 (3.⊙ 2.2 1.2 0.3)
- 79 (3.⊙ 2.2 1.3 0.3)
- 80 (3.⊙ 2.3 1.3 0.3)
- 81 (3.1 2.1 1.1 0.1)
- 82 (3.1 2.1 1.1 0.2)
- 83 (3.1 2.1 1.1 0.3)
- 84 (3.1 2.1 1.2 0.2)
- 85 (3.1 2.1 1.2 0.3)
- 86 (3.1 2.1 1.3 0.3)
- 87 (3.1 2.2 1.2 0.2)
- 88 (3.1 2.2 1.2 0.3)
- 89 (3.1 2.2 1.3 0.3)
- 90 (3.1 2.3 1.3 0.3)
- 91 (3.2 2.2 1.2 0.2)
- 92 (3.2 2.2 1.2 0.3)
- 93 (3.2 2.2 1.3 0.3)
- 94 (3.2 2.3 1.3 0.3)
- 95 (3.3 2.3 1.3 0.3)

9.  $ZR_{5,3} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d\ \odot.e)$  mit  $a, b, c \in \{.1, .2, .3\}$

- 1 (3.1 2.1 1.1 0.1 ⊙.1)
- 2 (3.1 2.1 1.1 0.1 ⊙.2)
- 3 (3.1 2.1 1.1 0.1 ⊙.3)
- 4 (3.1 2.1 1.1 0.2 ⊙.2)
- 5 (3.1 2.1 1.1 0.2 ⊙.3)
- 6 (3.1 2.1 1.1 0.3 ⊙.3)
- 7 (3.1 2.1 1.2 0.2 ⊙.2)
- 8 (3.1 2.1 1.2 0.2 ⊙.3)
- 9 (3.1 2.1 1.2 0.3 ⊙.3)
- 10 (3.1 2.1 1.3 0.3 ⊙.3)
- 11 (3.1 2.2 1.2 0.2 ⊙.2)
- 12 (3.1 2.2 1.2 0.2 ⊙.3)
- 13 (3.1 2.2 1.2 0.3 ⊙.3)
- 14 (3.1 2.2 1.3 0.3 ⊙.3)
- 15 (3.1 2.3 1.3 0.3 ⊙.3)
- 16 (3.2 2.2 1.2 0.2 ⊙.2)
- 17 (3.2 2.2 1.2 0.2 ⊙.3)
- 18 (3.2 2.2 1.2 0.3 ⊙.3)

- 19 (3.2 2.2 1.3 0.3 ●.3)
- 20 (3.2 2.3 1.3 0.3 ●.3)
- 21 (3.3 2.3 1.3 0.3 ●.3)

10.  $ZR_{5,4} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d\ \bullet.e)$  mit  $a, b, c, d \in \{.1, .2, .3, \mathbf{O}\}$

- 1 (3.0 2.0 1.0 0.0 ●.0)
- 2 (3.0 2.0 1.0 0.0 ●.1)
- 3 (3.0 2.0 1.0 0.0 ●.2)
- 4 (3.0 2.0 1.0 0.0 ●.3)
- 5 (3.0 2.0 1.0 0.1 ●.1)
- 6 (3.0 2.0 1.0 0.1 ●.2)
- 7 (3.0 2.0 1.0 0.1 ●.3)
- 8 (3.0 2.0 1.0 0.2 ●.2)
- 9 (3.0 2.0 1.0 0.2 ●.3)
- 10 (3.0 2.0 1.0 0.3 ●.3)
- 11 (3.0 2.0 1.1 0.1 ●.1)
- 12 (3.0 2.0 1.1 0.1 ●.2)
- 13 (3.0 2.0 1.1 0.1 ●.3)
- 14 (3.0 2.0 1.1 0.2 ●.2)
- 15 (3.0 2.0 1.1 0.2 ●.3)
- 16 (3.0 2.0 1.1 0.3 ●.3)
- 17 (3.0 2.0 1.2 0.2 ●.2)
- 18 (3.0 2.0 1.2 0.2 ●.3)
- 19 (3.0 2.0 1.3 0.3 ●.3)
- 20 (3.0 2.0 1.3 0.3 ●.3)
- 21 (3.0 2.1 1.1 0.1 ●.1)
- 22 (3.0 2.1 1.1 0.1 ●.2)
- 23 (3.0 2.1 1.1 0.1 ●.3)
- 24 (3.0 2.1 1.1 0.2 ●.2)
- 25 (3.0 2.1 1.1 0.2 ●.3)
- 26 (3.0 2.1 1.1 0.3 ●.3)
- 27 (3.0 2.1 1.2 0.2 ●.2)
- 28 (3.0 2.1 1.2 0.2 ●.3)
- 29 (3.0 2.1 1.2 0.3 ●.3)

- 30 (3.0 2.2 1.2 0.2 ●.2)
- 31 (3.0 2.2 1.2 0.2 ●.3)
- 32 (3.0 2.2 1.2 0.3 ●.3)
- 33 (3.0 2.3 1.3 0.3 ●.3)
- 34 (3.1 2.1 1.1 0.1 ●.1)
- 35 (3.1 2.1 1.1 0.1 ●.2)
- 36 (3.1 2.1 1.1 0.1 ●.3)
- 37 (3.1 2.1 1.1 0.2 ●.2)
- 38 (3.1 2.1 1.1 0.2 ●.3)
- 39 (3.1 2.1 1.1 0.3 ●.3)
- 40 (3.1 2.1 1.2 0.2 ●.2)
- 41 (3.1 2.1 1.2 0.2 ●.3)
- 42 (3.1 2.1 1.2 0.3 ●.3)
- 43 (3.1 2.1 1.3 0.3 ●.3)
- 44 (3.1 2.2 1.2 0.2 ●.2)
- 45 (3.1 2.2 1.2 0.2 ●.3)
- 46 (3.1 2.2 1.2 0.3 ●.3)
- 47 (3.1 2.2 1.3 0.3 ●.3)
- 48 (3.1 2.3 1.3 0.3 ●.3)
- 49 (3.2 2.2 1.2 0.2 ●.2)
- 50 (3.2 2.2 1.2 0.2 ●.3)
- 51 (3.2 2.2 1.3 0.3 ●.3)
- 52 (3.2 2.3 1.3 0.3 ●.3)
- 53 (3.3 2.3 1.3 0.3 ●.3)

11.  $ZR_{5,5} = (3.a\ 2.b\ 1.c\ \mathbf{0}.d\ \bullet.e)$  mit  $a, b, c, d, e \in \{.1, .2, .3, \mathbf{0}, \bullet\}$

- 1 (3.0 2.0 1.0 0.0 ●.0)
- 2 (3.0 2.0 1.0 0.0 ●.●)
- 3 (3.0 2.0 1.0 0.0 ●.1)
- 4 (3.0 2.0 1.0 0.0 ●.2)
- 5 (3.0 2.0 1.0 0.0 ●.3)
- 6 (3.0 2.0 1.0 0.● ●.●)
- 7 (3.0 2.0 1.0 0.● ●.1)
- 8 (3.0 2.0 1.0 0.● ●.1)

- 9 (3.0 2.0 1.0 0.0 ● ●.2)
- 10 (3.0 2.0 1.0 0.0 ● ●.2)
- 11 (3.0 2.0 1.0 0.0 ● ●.3)
- 12 (3.0 2.0 1.0 0.0 ● ●.3)
- 13 (3.0 2.0 1.0 0.1 ●.1)
- 14 (3.0 2.0 1.0 0.1 ●.2)
- 15 (3.0 2.0 1.0 0.1 ●.3)
- 16 (3.0 2.0 1.0 0.2 ●.2)
- 17 (3.0 2.0 1.0 0.2 ●.3)
- 18 (3.0 2.0 1.0 0.3 ●.3)
- 19 (3.0 2.0 1.1 0.1 ●.1)
- 20 (3.0 2.0 1.1 0.1 ●.2)
- 21 (3.0 2.0 1.1 0.1 ●.3)
- 22 (3.0 2.0 1.1 0.2 ●.2)
- 23 (3.0 2.0 1.1 0.2 ●.3)
- 24 (3.0 2.0 1.1 0.3 ●.3)
- 25 (3.0 2.0 1.2 0.2 ●.2)
- 26 (3.0 2.0 1.2 0.2 ●.3)
- 27 (3.0 2.0 1.2 0.3 ●.3)
- 28 (3.0 2.0 1.3 0.3 ●.3)
- 29 (3.0 2.1 1.1 0.1 ●.1)
- 30 (3.0 2.1 1.1 0.1 ●.2)
- 31 (3.0 2.1 1.1 0.1 ●.3)
- 32 (3.0 2.1 1.1 0.2 ●.2)
- 33 (3.0 2.1 1.1 0.2 ●.3)
- 34 (3.0 2.1 1.1 0.3 ●.3)
- 35 (3.0 2.1 1.2 0.2 ●.2)
- 36 (3.0 2.1 1.2 0.2 ●.3)
- 37 (3.0 2.1 1.2 0.3 ●.3)
- 38 (3.0 2.1 1.3 0.3 ●.3)
- 39 (3.0 2.2 1.2 0.2 ●.2)
- 40 (3.0 2.2 1.2 0.2 ●.3)
- 41 (3.0 2.2 1.2 0.3 ●.3)
- 42 (3.0 2.2 1.3 0.3 ●.3)
- 43 (3.0 2.3 1.3 0.3 ●.3)

- 44 (3.1 2.1 1.1 0.1 ●.1)
- 45 (3.1 2.1 1.1 0.1 ●.2)
- 46 (3.1 2.1 1.1 0.1 ●.3)
- 47 (3.1 2.1 1.1 0.2 ●.2)
- 48 (3.1 2.1 1.1 0.2 ●.3)
- 49 (3.1 2.1 1.1 0.3 ●.3)
- 50 (3.1 2.1 1.2 0.2 ●.2)
- 51 (3.1 2.1 1.2 0.2 ●.3)
- 52 (3.1 2.1 1.2 0.3 ●.3)
- 53 (3.1 2.1 1.3 0.3 ●.3)
- 54 (3.1 2.2 1.2 0.2 ●.2)
- 55 (3.1 2.2 1.2 0.2 ●.3)
- 56 (3.1 2.2 1.2 0.3 ●.3)
- 57 (3.1 2.2 1.3 0.3 ●.3)
- 58 (3.1 2.3 1.3 0.3 ●.3)
- 59 (3.2 2.2 1.2 0.2 ●.2)
- 60 (3.2 2.2 1.2 0.2 ●.3)
- 61 (3.2 2.2 1.2 0.3 ●.3)
- 62 (3.2 2.2 1.3 0.3 ●.3)
- 63 (3.2 2.3 1.3 0.3 ●.3)
- 64 (3.3 2.3 1.3 0.3 ●.3)

12.  $ZR_{5,6} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d, \odot.e)$  mit  $a, b, c, d, e, f \in \{.1, .2, .3, .\mathbf{O}, .\odot, .\odot\}$

- 1 (3.0 2.0 1.0 0.0 ●.0)
- 2 (3.0 2.0 1.0 0.0 ●.●)
- 3 (3.0 2.0 1.0 0.0 ●.◎)
- 4 (3.0 2.0 1.0 0.0 ●.1)
- 5 (3.0 2.0 1.0 0.0 ●.2)
- 6 (3.0 2.0 1.0 0.0 ●.3)
- 7 (3.0 2.0 1.0 0.● ●.●)
- 8 (3.0 2.0 1.0 0.● ●.◎)
- 9 (3.0 2.0 1.0 0.◎ ●.◎)
- 10 (3.0 2.0 1.0 0.◎ ●.1)
- 11 (3.0 2.0 1.0 0.◎ ●.1)

- 12 (3.0 2.0 1.0 0.0 0.2)
- 13 (3.0 2.0 1.0 0.0 0.2)
- 14 (3.0 2.0 1.0 0.0 0.3)
- 15 (3.0 2.0 1.0 0.0 0.3)
- 16 (3.0 2.0 1.0 0.0 0.3)
- 17 (3.0 2.0 1.0 0.0 0.3)
- 18 (3.0 2.0 1.0 0.0 0.1)
- 19 (3.0 2.0 1.0 0.0 0.2)
- 20 (3.0 2.0 1.0 0.0 0.3)
- 21 (3.0 2.0 1.0 0.0 0.3)
- 22 (3.0 2.0 1.0 0.0 0.1)
- 23 (3.0 2.0 1.0 0.1 0.1)
- 24 (3.0 2.0 1.0 0.0 0.2)
- 25 (3.0 2.0 1.0 0.1 0.2)
- 26 (3.0 2.0 1.0 0.2 0.2)
- 27 (3.0 2.0 1.0 0.0 0.3)
- 28 (3.0 2.0 1.0 0.1 0.3)
- 29 (3.0 2.0 1.0 0.2 0.3)
- 30 (3.0 2.0 1.0 0.3 0.3)
- 31 (3.0 2.0 1.0 0.0 0.3)
- 32 (3.0 2.0 1.0 0.0 0.3)
- 33 (3.0 2.0 1.0 0.0 0.1)
- 34 (3.0 2.0 1.0 0.0 0.2)
- 35 (3.0 2.0 1.0 0.0 0.3)
- 36 (3.0 2.0 1.0 0.0 0.3)
- 37 (3.0 2.0 1.0 0.0 0.1)
- 38 (3.0 2.0 1.0 0.1 0.1)
- 39 (3.0 2.0 1.0 0.0 0.2)
- 40 (3.0 2.0 1.0 0.1 0.2)
- 41 (3.0 2.0 1.0 0.0 0.3)
- 42 (3.0 2.0 1.0 0.1 0.3)
- 43 (3.0 2.0 1.0 0.2 0.2)
- 44 (3.0 2.0 1.0 0.2 0.3)
- 45 (3.0 2.0 1.0 0.3 0.3)
- 46 (3.0 2.0 1.0 0.0 0.3)

- 47 (3.0 2.0 1.0 0.0 0.1)
- 48 (3.0 2.0 1.0 0.0 0.2)
- 49 (3.0 2.0 1.0 0.0 0.3)
- 50 (3.0 2.0 1.0 0.1 0.2)
- 51 (3.0 2.0 1.0 0.2 0.2)
- 52 (3.0 2.0 1.0 0.1 0.3)
- 53 (3.0 2.0 1.0 0.2 0.3)
- 54 (3.0 2.0 1.0 0.3 0.3)
- 55 (3.0 2.0 1.1 0.1 0.1)
- 56 (3.0 2.0 1.1 0.1 0.2)
- 57 (3.0 2.0 1.1 0.1 0.3)
- 58 (3.0 2.0 1.1 0.2 0.2)
- 59 (3.0 2.0 1.1 0.2 0.3)
- 60 (3.0 2.0 1.1 0.3 0.3)
- 61 (3.0 2.0 1.2 0.2 0.2)
- 62 (3.0 2.0 1.2 0.2 0.3)
- 63 (3.0 2.0 1.2 0.3 0.3)
- 64 (3.0 2.0 1.3 0.3 0.3)
- 65 (3.0 2.1 1.1 0.1 0.1)
- 66 (3.0 2.1 1.1 0.1 0.2)
- 67 (3.0 2.1 1.1 0.1 0.3)
- 68 (3.0 2.1 1.1 0.2 0.2)
- 69 (3.0 2.1 1.1 0.2 0.3)
- 70 (3.0 2.1 1.1 0.3 0.3)
- 71 (3.0 2.2 1.2 0.2 0.2)
- 72 (3.0 2.2 1.2 0.2 0.3)
- 73 (3.0 2.2 1.2 0.3 0.3)
- 74 (3.0 2.2 1.3 0.3 0.3)
- 75 (3.0 2.3 1.3 0.3 0.3)
- 76 (3.1 2.1 1.1 0.1 0.1)
- 77 (3.1 2.1 1.1 0.1 0.2)
- 78 (3.1 2.1 1.1 0.1 0.3)
- 79 (3.1 2.1 1.1 0.2 0.2)
- 80 (3.1 2.1 1.1 0.2 0.3)
- 81 (3.1 2.1 1.1 0.3 0.3)



- 82 (3.1 2.1 1.2 0.2 ●.2)
- 83 (3.1 2.1 1.2 0.2 ●.3)
- 84 (3.1 2.1 1.2 0.3 ●.3)
- 85 (3.1 2.1 1.3 0.3 ●.3)
- 86 (3.1 2.2 1.2 0.2 ●.2)
- 87 (3.1 2.2 1.2 0.2 ●.3)
- 88 (3.1 2.2 1.2 0.3 ●.3)
- 89 (3.1 2.3 1.3 0.3 ●.3)
- 90 (3.2 2.2 1.2 0.2 ●.2)
- 91 (3.2 2.2 1.2 0.2 ●.3)
- 92 (3.2 2.2 1.2 0.3 ●.3)
- 93 (3.2 2.2 1.3 0.3 ●.3)
- 94 (3.2 2.3 1.3 0.3 ●.3)
- 95 (3.3 2.3 1.3 0.3 ●.3)

13.  $ZR_{6,3} = (3.a\ 2.b\ 1.c\ 0.d\ \odot.e\ \odot.f)$  mit  $a, b, c \in \{.1, .2, .3\}$

- 1 (3.1 2.1 1.1 0.1 ●.1 ●.1)
- 2 (3.1 2.1 1.1 0.1 ●.1 ●.2)
- 3 (3.1 2.1 1.1 0.1 ●.1 ●.3)
- 4 (3.1 2.1 1.1 0.1 ●.2 ●.2)
- 5 (3.1 2.1 1.1 0.1 ●.2 ●.3)
- 6 (3.1 2.1 1.1 0.1 ●.3 ●.3)
- 7 (3.1 2.1 1.1 0.2 ●.2 ●.2)
- 8 (3.1 2.1 1.1 0.2 ●.2 ●.3)
- 9 (3.1 2.1 1.1 0.2 ●.3 ●.3)
- 10 (3.1 2.1 1.1 0.3 ●.3 ●.3)
- 11 (3.1 2.1 1.2 0.2 ●.2 ●.2)
- 12 (3.1 2.1 1.2 0.2 ●.2 ●.3)
- 13 (3.1 2.1 1.2 0.2 ●.3 ●.3)
- 14 (3.1 2.1 1.2 0.3 ●.3 ●.3)
- 15 (3.1 2.1 1.3 0.3 ●.3 ●.3)
- 16 (3.1 2.2 1.2 0.2 ●.2 ●.2)
- 17 (3.1 2.2 1.2 0.2 ●.2 ●.3)
- 18 (3.1 2.2 1.2 0.2 ●.3 ●.3)

- 19 (3.1 2.2 1.2 0.3 ●.3 ◎.3)
- 20 (3.1 2.2 1.3 0.3 ●.3 ◎.3)
- 21 (3.1 2.3 1.3 0.3 ●.3 ◎.3)
- 22 (3.2 2.2 1.2 0.2 ●.2 ◎.2)
- 23 (3.2 2.2 1.2 0.2 ●.2 ◎.3)
- 24 (3.2 2.2 1.2 0.2 ●.3 ◎.3)
- 25 (3.2 2.2 1.2 0.3 ●.3 ◎.3)
- 26 (3.2 2.2 1.3 0.3 ●.3 ◎.3)
- 27 (3.2 2.3 1.3 0.3 ●.3 ◎.3)
- 28 (3.3 2.3 1.3 0.3 ●.3 ◎.3)

14.  $ZR_{6,4} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d, \bullet.e, \circ.f)$  mit  $a, b, c, d \in \{.1, .2, .3, \mathbf{O}\}$

- 1 (3.0 2.0 1.0 0.0 ●.0 ◎.0)
- 2 (3.0 2.0 1.0 0.0 ●.0 ◎.1)
- 3 (3.0 2.0 1.0 0.0 ●.0 ◎.2)
- 4 (3.0 2.0 1.0 0.0 ●.0 ◎.3)
- 5 (3.0 2.0 1.0 0.0 ●.1 ◎.1)
- 6 (3.0 2.0 1.0 0.0 ●.1 ◎.2)
- 7 (3.0 2.0 1.0 0.0 ●.2 ◎.2)
- 8 (3.0 2.0 1.0 0.0 ●.1 ◎.3)
- 9 (3.0 2.0 1.0 0.0 ●.2 ◎.3)
- 10 (3.0 2.0 1.0 0.0 ●.3 ◎.3)
- 11 (3.0 2.0 1.0 0.1 ●.1 ◎.1)
- 12 (3.0 2.0 1.0 0.1 ●.1 ◎.2)
- 13 (3.0 2.0 1.0 0.1 ●.1 ◎.3)
- 14 (3.0 2.0 1.0 0.1 ●.2 ◎.2)
- 15 (3.0 2.0 1.0 0.1 ●.2 ◎.3)
- 16 (3.0 2.0 1.0 0.1 ●.3 ◎.3)
- 17 (3.0 2.0 1.0 0.2 ●.2 ◎.2)
- 18 (3.0 2.0 1.0 0.2 ●.2 ◎.3)
- 19 (3.0 2.0 1.0 0.2 ●.3 ◎.3)
- 20 (3.0 2.0 1.0 0.3 ●.3 ◎.3)
- 21 (3.0 2.0 1.1 0.1 ●.1 ◎.1)
- 22 (3.0 2.0 1.1 0.1 ●.1 ◎.2)

- 23 (3.0 2.0 1.1 0.1 ●.1 ◎.3)
- 24 (3.0 2.0 1.1 0.1 ●.2 ◎.2)
- 25 (3.0 2.0 1.1 0.1 ●.2 ◎.3)
- 26 (3.0 2.0 1.1 0.1 ●.3 ◎.3)
- 27 (3.0 2.0 1.2 0.2 ●.2 ◎.2)
- 28 (3.0 2.0 1.2 0.2 ●.2 ◎.3)
- 29 (3.0 2.0 1.2 0.2 ●.3 ◎.3)
- 30 (3.0 2.0 1.2 0.3 ●.3 ◎.3)
- 31 (3.0 2.0 1.3 0.3 ●.3 ◎.3)
- 32 (3.0 2.1 1.1 0.1 ●.1 ◎.1)
- 33 (3.0 2.1 1.1 0.1 ●.1 ◎.2)
- 34 (3.0 2.1 1.1 0.1 ●.1 ◎.3)
- 35 (3.0 2.1 1.1 0.1 ●.2 ◎.2)
- 36 (3.0 2.1 1.1 0.1 ●.2 ◎.3)
- 37 (3.0 2.1 1.1 0.1 ●.3 ◎.3)
- 38 (3.0 2.2 1.2 0.2 ●.2 ◎.2)
- 39 (3.0 2.2 1.2 0.2 ●.2 ◎.3)
- 40 (3.0 2.2 1.2 0.2 ●.3 ◎.3)
- 41 (3.0 2.2 1.3 0.3 ●.3 ◎.3)
- 42 (3.0 2.3 1.3 0.3 ●.3 ◎.3)
- 43 (3.1 2.1 1.1 0.1 ●.1 ◎.1)
- 44 (3.1 2.1 1.1 0.1 ●.1 ◎.2)
- 45 (3.1 2.1 1.1 0.1 ●.1 ◎.3)
- 46 (3.1 2.1 1.1 0.1 ●.2 ◎.2)
- 47 (3.1 2.1 1.1 0.1 ●.2 ◎.3)
- 48 (3.1 2.1 1.1 0.1 ●.3 ◎.3)
- 49 (3.1 2.1 1.2 0.2 ●.2 ◎.2)
- 50 (3.1 2.1 1.2 0.2 ●.2 ◎.3)
- 51 (3.1 2.1 1.2 0.2 ●.3 ◎.3)
- 52 (3.1 2.1 1.3 0.3 ●.3 ◎.3)
- 53 (3.1 2.2 1.2 0.2 ●.2 ◎.2)
- 54 (3.1 2.2 1.2 0.2 ●.2 ◎.3)
- 55 (3.1 2.2 1.2 0.2 ●.3 ◎.3)
- 56 (3.1 2.2 1.2 0.3 ●.3 ◎.3)
- 57 (3.1 2.2 1.3 0.3 ●.3 ◎.3)

- 58 (3.1 2.3 1.3 0.3 ●.3 ◎.3)
- 59 (3.2 2.2 1.2 0.2 ●.2 ◎.2)
- 60 (3.2 2.2 1.2 0.2 ●.2 ◎.3)
- 61 (3.2 2.2 1.2 0.2 ●.3 ◎.3)
- 62 (3.2 2.2 1.3 0.3 ●.3 ◎.3)
- 63 (3.2 2.3 1.3 0.3 ●.3 ◎.3)
- 64 (3.3 2.3 1.3 0.3 ●.3 ◎.3)

15.  $ZR_{6,5} = (3.a\ 2.b\ 1.c\ \mathbf{0}.d, \bullet.e, \circ.f)$  mit  $a, b, c, d, e \in \{.1, .2, .3, \mathbf{0}, \bullet\}$

- 1 (3.0 2.0 1.0 0.0 ●.0 ◎.0)
- 2 (3.0 2.0 1.0 0.0 ●.0 ◎.●)
- 3 (3.0 2.0 1.0 0.0 ●.0 ◎.1)
- 4 (3.0 2.0 1.0 0.0 ●.0 ◎.2)
- 5 (3.0 2.0 1.0 0.0 ●.0 ◎.3)
- 6 (3.0 2.0 1.0 0.0 ●.● ◎.●)
- 7 (3.0 2.0 1.0 0.0 ●.● ◎.1)
- 8 (3.0 2.0 1.0 0.0 ●.1 ◎.1)
- 9 (3.0 2.0 1.0 0.0 ●.● ◎.2)
- 10 (3.0 2.0 1.0 0.0 ●.1 ◎.2)
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- 74 (3.1 2.1 1.1 0.1 ●.1 ◎.2)
- 75 (3.1 2.1 1.1 0.1 ●.1 ◎.3)
- 76 (3.1 2.1 1.1 0.1 ●.2 ◎.2)
- 77 (3.1 2.1 1.1 0.1 ●.2 ◎.3)
- 78 (3.1 2.1 1.1 0.1 ●.3 ◎.3)
- 79 (3.1 2.1 1.1 0.2 ●.2 ◎.2)
- 80 (3.1 2.1 1.1 0.2 ●.2 ◎.3)
- 81 (3.1 2.1 1.1 0.2 ●.3 ◎.3)
- 82 (3.1 2.1 1.1 0.3 ●.3 ◎.3)
- 83 (3.1 2.1 1.2 0.2 ●.2 ◎.2)
- 84 (3.1 2.1 1.2 0.2 ●.2 ◎.3)
- 85 (3.1 2.1 1.2 0.2 ●.3 ◎.3)
- 85 (3.1 2.1 1.2 0.3 ●.3 ◎.3)
- 87 (3.1 2.1 1.3 0.3 ●.3 ◎.3)
- 88 (3.1 2.2 1.2 0.2 ●.2 ◎.2)
- 89 (3.1 2.2 1.2 0.2 ●.2 ◎.3)
- 90 (3.1 2.2 1.2 0.2 ●.3 ◎.3)
- 91 (3.1 2.2 1.2 0.3 ●.3 ◎.3)
- 92 (3.1 2.2 1.3 0.3 ●.3 ◎.3)
- 93 (3.1 2.3 1.3 0.3 ●.3 ◎.3)
- 94 (3.2 2.2 1.2 0.2 ●.2 ◎.2)
- 95 (3.2 2.2 1.2 0.2 ●.2 ◎.3)

- 96 (3.2 2.2 1.2 0.2 ●.3 ◎.3)
- 97 (3.2 2.2 1.2 0.3 ●.3 ◎.3)
- 98 (3.2 2.2 1.3 0.3 ●.3 ◎.3)
- 99 (3.2 2.3 1.3 0.3 ●.3 ◎.3)
- 100 (3.3 2.3 1.3 0.3 ●.3 ◎.3)

16.  $ZR_{6,6} = (3.a\ 2.b\ 1.c\ \mathbf{O}.d, \bullet.e, \odot.f)$  mit  $a, b, c, d, e \in \{.1, .2, .3, .\mathbf{O}, .\bullet, .\odot\}$

- 1 (3.0 2.0 1.0 0.0 ●.0 ◎.0)
- 2 (3.0 2.0 1.0 0.0 ●.0 ◎.●)
- 3 (3.0 2.0 1.0 0.0 ●.0 ◎.◎)
- 4 (3.0 2.0 1.0 0.0 ●.0 ◎.1)
- 5 (3.0 2.0 1.0 0.0 ●.0 ◎.2)
- 6 (3.0 2.0 1.0 0.0 ●.0 ◎.3)
- 7 (3.0 2.0 1.0 0.0 ●.● ◎.●)
- 8 (3.0 2.0 1.0 0.0 ●.● ◎.◎)
- 9 (3.0 2.0 1.0 0.0 ●.◎ ◎.◎)
- 10 (3.0 2.0 1.0 0.0 ●.◎ ◎.1)
- 11 (3.0 2.0 1.0 0.0 ●.◎ ◎.1)
- 12 (3.0 2.0 1.0 0.0 ●.◎ ◎.2)
- 13 (3.0 2.0 1.0 0.0 ●.◎ ◎.2)
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- 56 (3.0 2.1 1.1 0.3 ●.3 ◎.3)
- 57 (3.0 2.1 1.2 0.2 ●.2 ◎.2)
- 58 (3.0 2.1 1.2 0.2 ●.2 ◎.3)
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- 60 (3.0 2.1 1.2 0.3 ●.3 ◎.3)
- 61 (3.0 2.1 1.3 0.3 ●.3 ◎.3)
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- 63 (3.0 2.2 1.2 0.2 ●.2 ◎.3)
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- 69 (3.1 2.1 1.1 0.1 ●.1 ◎.2)
- 70 (3.1 2.1 1.1 0.1 ●.1 ◎.3)
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Bei den unbalancierter Zeichenrelationen  $ZR_{m,n}$  mit  $m < n$  oder  $m > n$  finden sich somit entweder nicht alle triadischen Qualitäten in den Trichotomien oder umgekehrt, so dass die Zahlenbereiche also entweder in den semiotischen Haupt- oder Stellenwerten defektiv oder sogar nicht vorhanden sind. Da der Zweck des vorliegenden Beitrags darin besteht, alle Zeichenklasse balancierter und unbalancierter semiotischer Systeme vorzulegen, sparen wir uns die Untersuchung der unbalancierten semiotischen Systemen für spätere Arbeiten auf.

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