Prof. Dr. Alfred Toth

Paarweise Transgressionen von Knoten statt logischer Belegungswechsel in Hamilton-Zyklen

1. In einer 4-wertigen Logik, deren zugehöriger Hamilton-Kreis 4! = 24 Schritte (und somit 23 paarweise Transgressionen logischer Werte) beträgt (vgl. die folgende Darstellung aus Kaehr 2013)

```
t4 = Permutations[Range[4], {4}]

Length[Permutations[Range[4], {4}]]

24

Grid[t4, Frame → All]
```

1	2	3	4
1	2	4	3
1	3	2	4
1	3	4	2
1	4	2	3
1	4	3	2
2	1	3	4
2	1	4	3
2	3	1	4
2	3	4	1
2	4	1	3
2	4	3	1
3	1	2	4
3	1	4	2
3	2	1	4
3	2	4	1
3	4	1	2
3	4	2	1
4	1	2	3
4	1	3	2
4	2	1	3
4	2	3	1
4	3	1	2
4	3	2	1

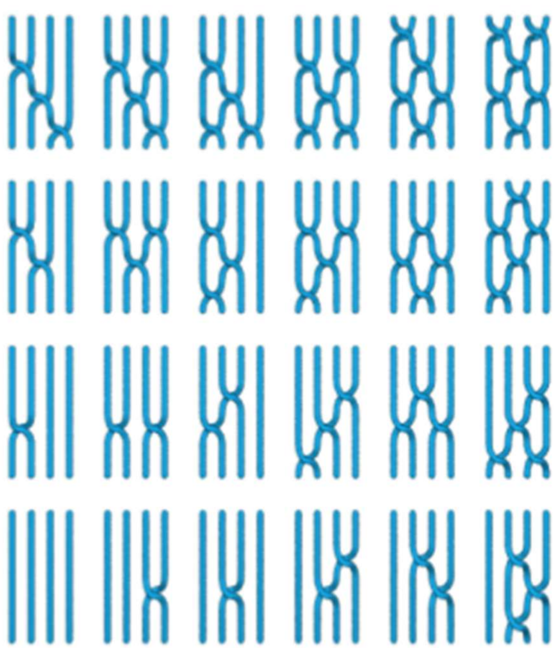
Permutation group NegSys(4) as braids

kann man, wie Kaehr gezeigt hat, die Werte-Austausche in den Permutationsfolgen durch Zöpfe der folgenden Definitionen darstellen

Corresponce table for *B*4

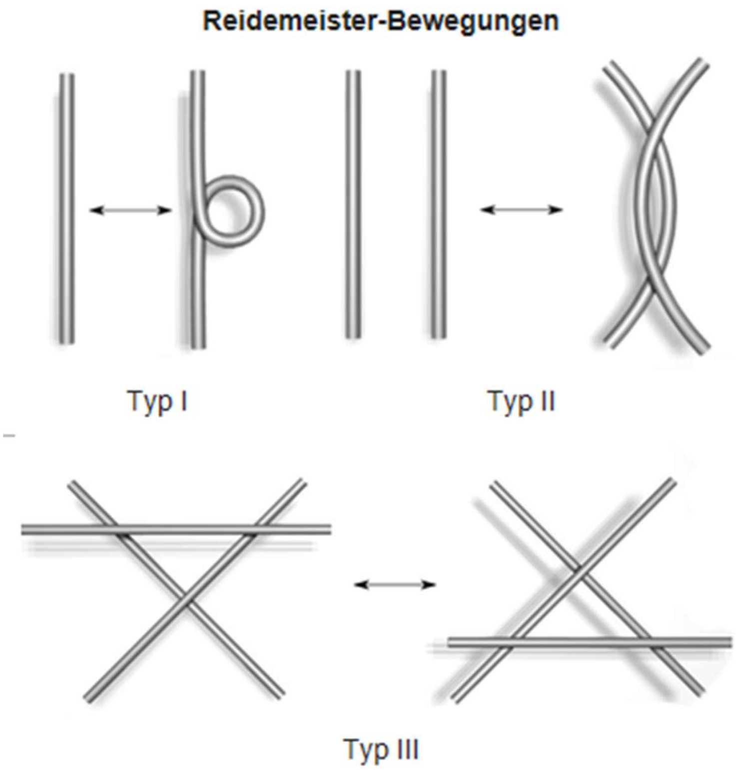
Negation system properties	**Braid words**	**Gunther**
$N_i(N_i(X)) = X$, i=1,2,3	: $\sigma_1 \sigma_1^{-1} = 1$	: Is (mirror identity)
$N_1(N_3) = N_3(N_1)$	: $\sigma_1 \sigma_3 = \sigma_3 \sigma_1$	: K (circle), L, R
$N_1(N_2(N_1)) = N_2(N_1(N_2))$	: $\sigma_1 \sigma_2 \sigma_1 = \sigma_2 \sigma_1 \sigma_2$	: O (order relation)
$N_2(N_3(N_2)) = N_3(N_2(N_3))$	: $\sigma_2 \sigma_3 \sigma_2 = \sigma_3 \sigma_2 \sigma_3$	: O
And: $N_i(X)$ (exchange relation).	: σ_i	: U, L, R

Das vollständige 4 = 24 Zöpfe umfassende System ist.



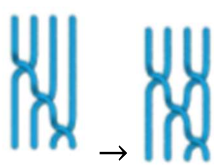
The 24 elements of a permutation group on 4 elements as braids.
Note that all crossings shown are of the left over - right sort
and other choices are possible.

2. Wie im Kommentar bereits vermerkt, kann man also die monokontexturale, da substantielle Ersetzung von Werten in polykontxturalen System viel besser durch Abweichungen, d.h. Differenzen von Knoten (in Zöpfen) definieren. Für diese gelten bekanntlich die drei Reidemeister-Bewegungen

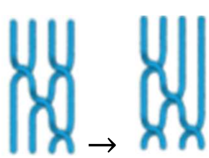


Das ollständige Schema paarweiser Transgressionen von Knoten ist dann

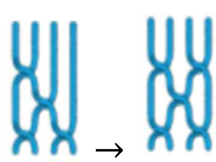
K(1 → 2)



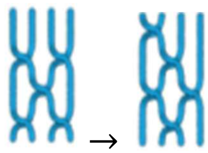
K(2 → 3)



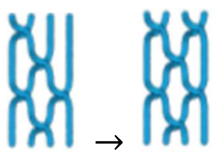
K(3 → 4)



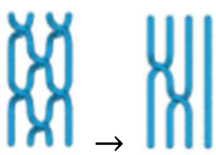
K(4 → 5)



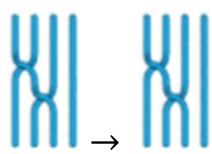
K(5 → 6)



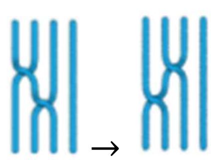
K(6 → 7)



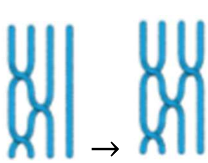
K(7 → 8)



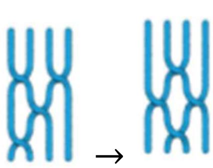
K(8 → 9)



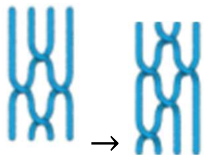
K(9 → 10)



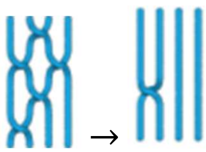
K10 → 11)



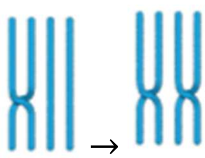
K(11 → 12)



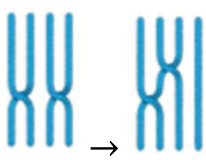
K(12 → 13)



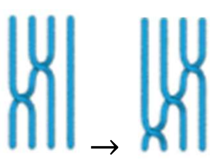
K(13 → 14)



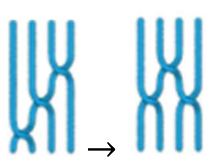
K(14 → 15)



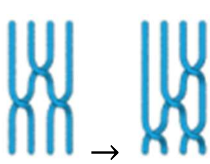
K(15 → 16)



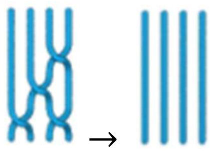
K(16 → 17)



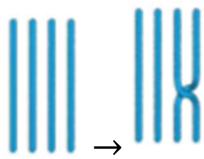
K(17 – 18)



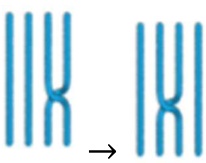
K(18 -19)



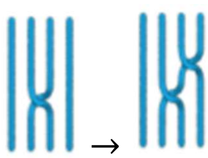
K(19 → 20)



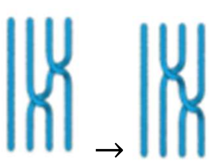
K(20 → 21)



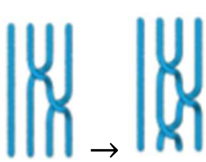
K(21 → 22)



K(22 → 23)



K(23 → 24)



Literatur

Kaehr, Rudolf, Gunther's Negation Cycles and Morphic Palindromes. In: ThinkArtLab (Glasgow) 2013

18.12.2017