**Prof. Dr. Alfred Toth**

**Reference in theoretical semiotics**

1. In Toth (2008) we have shown that the 6 transpositions of a each of the 10 sign classes forming the operational basis of theoretical semiotics can be mapped onto the three subjects (I, thou, he/she) of both grammatical numbers (singular and plural) of a three-valued (and thus minimal) polycontextural logic, and that their 6 dual reality thematics correspond to the one object of this logic, thus differentiating the logical notion of object in a six-fold way: In the following table, we will use as example the sign class (3.1 2.1 1.3). "sS" stands for "subjective subject" and "oS" for "objective subject" (cf. Günther 1966):

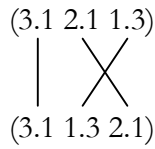| | | | | |
|---|---|---|---|---|
| (I→O→M) | ⇔ | sS-singular (I) | ⇔ | (3.1 2.1 1.3) × (3.1 <u>1.2 1.3</u>) |
| (I→M→O) | ⇔ | sS-plural (we) | ⇔ | (3.1 1.3 2.1) × (<u>1.2</u> 3.1 <u>1.3</u>) |
| (O→I→M) | ⇔ | O-singular (thou) | ⇔ | (2.1 3.1 1.3) × (3.1 <u>1.3 1.2</u>) |
| (O→M→I) | ⇔ | O-plural (you) | ⇔ | (2.1 1.3 3.1) × (<u>1.3</u> 3.1 <u>1.2</u>) |
| (M→I→O) | ⇔ | oS-singular (he/she) | ⇔ | (1.3 3.1 2.1) × (<u>1.2 1.3</u> 3.1) |
| (M→O→I) | ⇔ | oS-plural (they [m., f.]) | ⇔ | (1.3 2.1 3.1) × (<u>1.3 1.2</u> 3.1) |

2. First, we will have a look at the 6 cases where a subjective subject refers to itself. In English and many other languages, this is expressed by reflexive pronouns: (I see) myself, (you see) thyself, (he sees) himself, (we see) ourselves, (you see) yourselves, (they see) themselves. Given the above correspondences, grammatical reflexivity is thus expressed on the logical-semiotic level by identical connections of transpositions, i.e. by semiotic connections that do not cross one another. We will use "↔" as sign for reference.

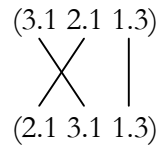| **I ↔ I** | **we ↔ we** | **thou ↔ thou** | **you ↔ you** | **he ↔ he** | **they ↔ they** |
|---|---|---|---|---|---|
| (3.1 2.1 1.3) | (3.1 1.3 2.1) | (2.1 3.1 1.3) | (2.1 1.3 3.1) | (1.3 3.1 2.1) | (1.3 2.1 3.1) |
| ⏐ ⏐ ⏐ | ⏐ ⏐ ⏐ | ⏐ ⏐ ⏐ | ⏐ ⏐ ⏐ | ⏐ ⏐ ⏐ | ⏐ ⏐ ⏐ |
| (3.1 2.1 1.3) | (3.1 1.3 2.1) | (2.1 3.1 1.3) | (2.1 1.3 3.1) | (1.3 3.1 2.1) | (1.3 2.1 3.1) |

2. In all other 15 cases, i.e. when a subjective subject refers to another subjective subject, the two subjective subjects thus not being identical, we find semiotic connections with at least one crossing. As in grammar theory, we differentiate here between anaphoric (backward) and cataphoric (forward) reference:
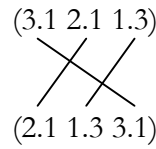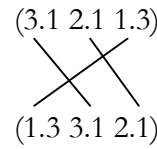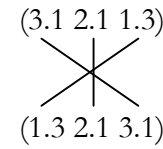
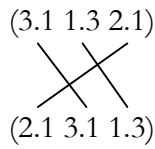## 1. Anaphoric reference

**I ↔ we**  **I ↔ thou**  **I ↔ you**  **I ↔ he**  **I ↔ they**

(3.1 2.1 1.3)  (3.1 2.1 1.3)  (3.1 2.1 1.3)  (3.1 2.1 1.3)  (3.1 2.1 1.3)

(3.1 1.3 2.1)  (2.1 3.1 1.3)  (2.1 1.3 3.1)  (1.3 3.1 2.1)  (1.3 2.1 3.1)

**We ↔ thou**  **We ↔ you**  **We ↔ he**  **We ↔ they**

(3.1 1.3 2.1)  (3.1 1.3 2.1)  (3.1 1.3 2.1)  (3.1 1.3 2.1)

(2.1 3.1 1.3)  (2.1 1.3 3.1)  (1.3 3.1 2.1)  (1.3 2.1 3.1)
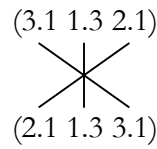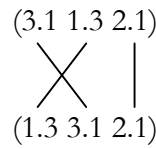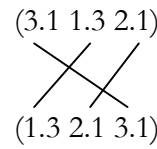
**Thou ↔ you**  **Thou ↔ he**  **Thou ↔ they**

(2.1 3.1 1.3)  (2.1 3.1 1.3)  (2.1 3.1 1.3)

(2.1 1.3 3.1)  (1.3 3.1 2.1)  (1.3 2.1 3.1)

**You ↔ he**  **You ↔ they**  **He ↔ they**

(2.1 1.3 3.1)  (2.1 1.3 3.1)  (1.3 3.1 2.1)

(1.3 3.1 2.1)  (1.3 2.1 3.1)  (1.3 2.1 3.1)
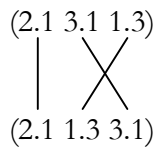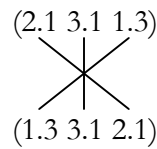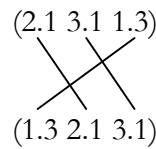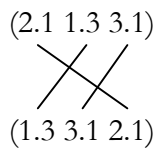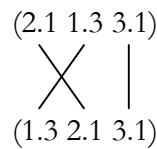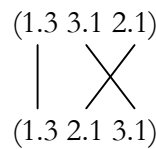
## 2. Cataphoric reference

**we ↔ I**  **thou ↔ I**  **you ↔ I**  **he ↔ I**  **they ↔ I**

(3.1 1.3 2.1)  (2.1 3.1 1.3)  (2.1 1.3 3.1)  (1.3 3.1 2.1)  (1.3 2.1 3.1)

(3.1 2.1 1.3)  (3.1 2.1 1.3)  (3.1 2.1 1.3)  (3.1 2.1 1.3)  (3.1 2.1 1.3)
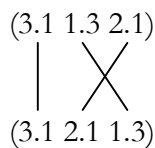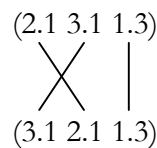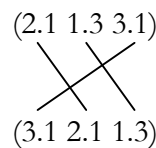
Since the logical-semiotic connecting schemes for anaphoric and cataphoric reference are obtained by simple exchange of the transpositions above and below, we have not to show the remaining 10 cases. However, we recognize that the following logical-semiotic schemes of reference have the same type of thematizations:

(I ↔ we) = (Thou ↔ you) = (He ↔ they)
(I ↔ thou) = (We ↔ he) = (You ↔ they)

$(\text{I} \leftrightarrow \text{you}) = (\text{We} \leftrightarrow \text{they}) = (\text{You} \leftrightarrow \text{he})$
$(\text{I} \leftrightarrow \text{he}) = (\text{We} \leftrightarrow \text{thou}) = (\text{Thou} \leftrightarrow \text{they})$
$(\text{I} \leftrightarrow \text{they}) = (\text{We} \leftrightarrow \text{you}) = (\text{Thou} \leftrightarrow \text{he})$

On the level of grammar, this means, f. ex., that the fundamental semiotic representations for the following three English sentences

I see you.
We see them.
You see him/her.

are identical, i.e. their respective representation schemes share the same type of semiotic connections.

3. If we combine all 6 subjective subjects with all 6 objects, we get the following 36 types of logical-semiotic reference out of which only the connections of the same categorial types of subjective subjects and objects have no crossings:

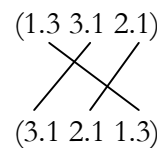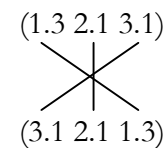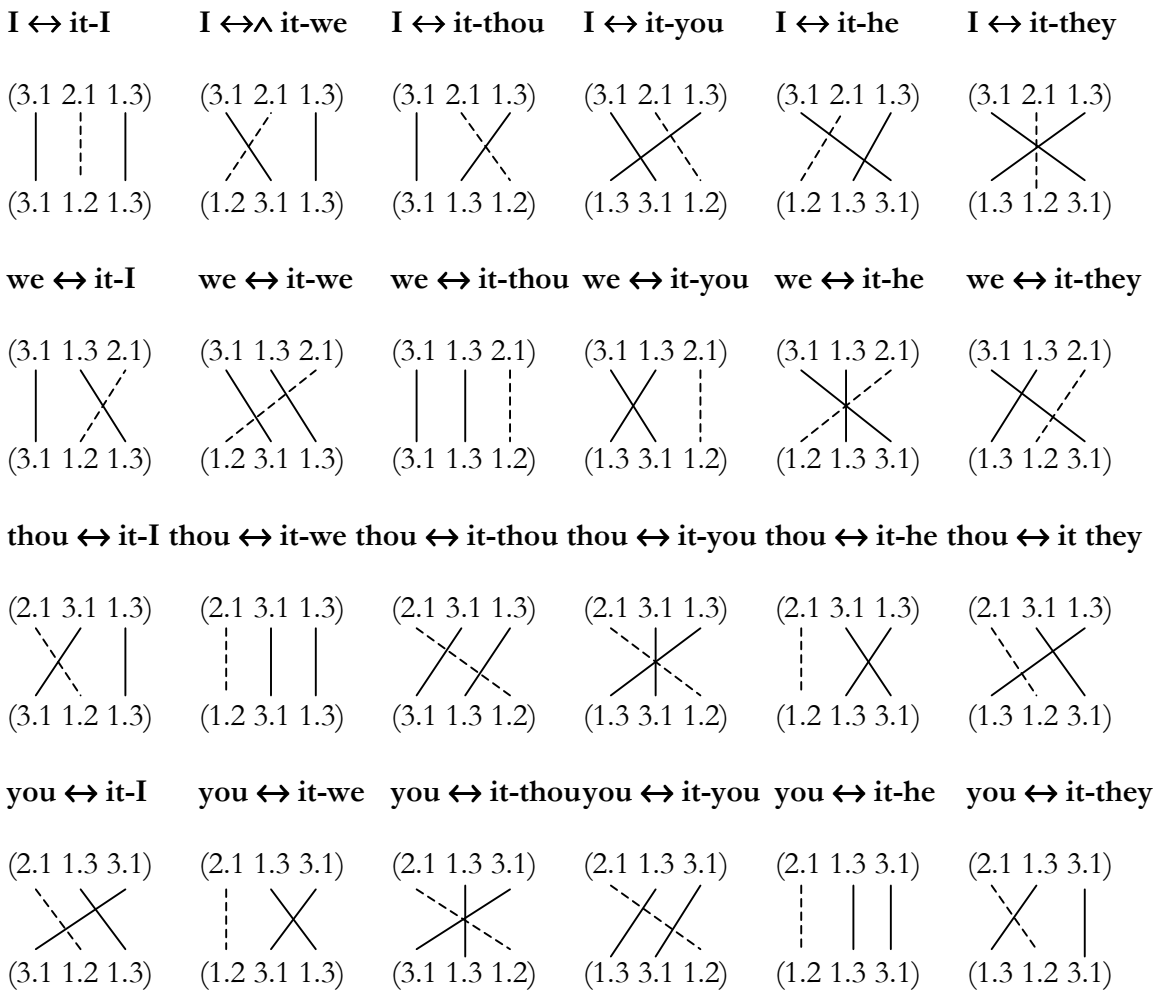| **I ↔ it-I** | **I ↔∧ it-we** | **I ↔ it-thou** | **I ↔ it-you** | **I ↔ it-he** | **I ↔ it-they** |
|---|---|---|---|---|---|
| (3.1 2.1 1.3) | (3.1 2.1 1.3) | (3.1 2.1 1.3) | (3.1 2.1 1.3) | (3.1 2.1 1.3) | (3.1 2.1 1.3) |
| (3.1 1.2 1.3) | (1.2 3.1 1.3) | (3.1 1.3 1.2) | (1.3 3.1 1.2) | (1.2 1.3 3.1) | (1.3 1.2 3.1) |

| **we ↔ it-I** | **we ↔ it-we** | **we ↔ it-thou** | **we ↔ it-you** | **we ↔ it-he** | **we ↔ it-they** |
|---|---|---|---|---|---|
| (3.1 1.3 2.1) | (3.1 1.3 2.1) | (3.1 1.3 2.1) | (3.1 1.3 2.1) | (3.1 1.3 2.1) | (3.1 1.3 2.1) |
| (3.1 1.2 1.3) | (1.2 3.1 1.3) | (3.1 1.3 1.2) | (1.3 3.1 1.2) | (1.2 1.3 3.1) | (1.3 1.2 3.1) |

| **thou ↔ it-I** | **thou ↔ it-we** | **thou ↔ it-thou** | **thou ↔ it-you** | **thou ↔ it-he** | **thou ↔ it they** |
|---|---|---|---|---|---|
| (2.1 3.1 1.3) | (2.1 3.1 1.3) | (2.1 3.1 1.3) | (2.1 3.1 1.3) | (2.1 3.1 1.3) | (2.1 3.1 1.3) |
| (3.1 1.2 1.3) | (1.2 3.1 1.3) | (3.1 1.3 1.2) | (1.3 3.1 1.2) | (1.2 1.3 3.1) | (1.3 1.2 3.1) |

| **you ↔ it-I** | **you ↔ it-we** | **you ↔ it-thou** | **you ↔ it-you** | **you ↔ it-he** | **you ↔ it-they** |
|---|---|---|---|---|---|
| (2.1 1.3 3.1) | (2.1 1.3 3.1) | (2.1 1.3 3.1) | (2.1 1.3 3.1) | (2.1 1.3 3.1) | (2.1 1.3 3.1) |
| (3.1 1.2 1.3) | (1.2 3.1 1.3) | (3.1 1.3 1.2) | (1.3 3.1 1.2) | (1.2 1.3 3.1) | (1.3 1.2 3.1) |

**he ↔ it-I**    **he ↔∧ it-we**   **he ↔ it-thou**   **he ↔ it-you**   **he ↔ it-he**   **he ↔ it-they**

(1.3 3.1 2.1)    (1.3 3.1 2.1)    (1.3 3.1 2.1)    (1.3 3.1 2.1)    (1.3 3.1 2.1)    (1.3 3.1 2.1)

(3.1 1.2 1.3)    (1.2 3.1 1.3)    (3.1 1.3 1.2)    (1.3 3.1 1.2)    (1.2 1.3 3.1)    (1.3 1.2 3.1)

**they ↔ it-I they ↔∧ it-we they ↔ it-thou they ↔ it-you they ↔ it-he they ↔ it-they**

(1.3 2.1 3.1)    (1.3 2.1 3.1)    (1.3 2.1 3.1)    (1.3 2.1 3.1)    (1.3 2.1 3.1)    (1.3 2.1 3.1)

(3.1 1.2 1.3)    (1.2 3.1 1.3)    (3.1 1.3 1.2)    (1.3 3.1 1.2)    (1.2 1.3 3.1)    (1.3 1.2 3.1)
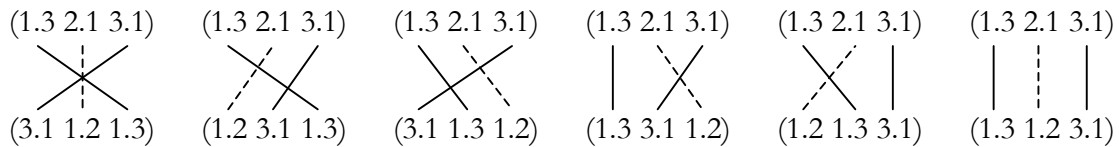
Therefore, in the semiotic basis, each subject has its own object, i.e., there is an inherent coreferentiality between an object and its subjective subject. In other words: Since an object can only be perceived as a sign, at the moment when the object is turned into a meta-object (Bense 1967, p. 1) and thus in a sign, the object-subject abyss is bridged by the respective sign-class indicating the subject-pole and its dual reality thematic indicating the object-pole of the respective epistemic relation (cf. Bense 1976, pp. 36 ss.).

We recognize that the following logical-semiotic schemes of reference between a subjective subject and an object have the same type of thematizations:

(I ↔ it-I) = (they ↔ it-they)          (we ↔ it-you) = (he ↔ it-thou)
(I ↔ it-we) = (they ↔ it-he)           (we ↔ it-he) = (he ↔ it-we)
(I ↔ it-thou) = (they ↔ it-you)        (we ↔ it-they) = (he ↔ it-I)
(I ↔ it-you) = (they ↔ it-thou)        (thou ↔ it-I) = (you ↔ it-they)
(I ↔ it-he) = (they ↔ it-we)           (thou ↔ it-we) = you ↔ it-he)
(I ↔ it-they) = (they ↔ it-I)          (thou ↔ it-thou) = (you ↔ it-you)
(we ↔ it-I) = (he ↔ it-they)           (thou ↔ it-you) = (you ↔ it-thou)
(we ↔ it-we) = (he ↔ it-he)            (thou ↔ it-he) = (you ↔ it-we)
(we ↔ it-thou) = (he ↔ it-you)         (thou ↔ it-they) = (you ↔ it-I)

On the level of grammar, this means, f. ex., that the fundamental semiotic representations for the following two English sentences:

We brought thy book.
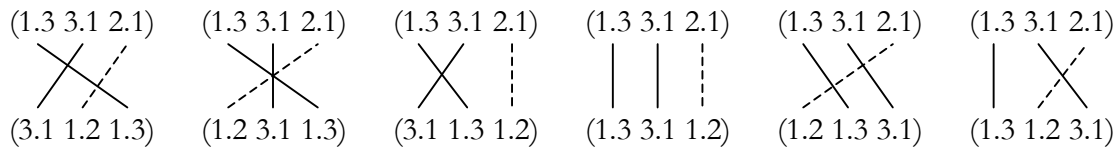He brought your (pl.) book.

are identical, i.e. their respective representation schemes share the same type of semiotic connections.

4. Since most languages do not have explicit systems for pronominal reference in order to express all of the 15 possible combinations of reference between subjective subjects amongst themselves (except the mentioned cases of self-referentiality expressed by reflexive

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pronouns) and all of the 36 possible combinations between subjective subjects and objects, we have here the rare case that the underlying system of semiotic representation is much richer than the linguistic systems which are built above its basis.

Perhaps the language, which is richest in expressing reference by means of its pronominal system, is Mordvin, a language that has, like f. ex. Hungarian, two conjugations: a "subjective" conjugation for reference between indefinite concepts and an "objective" conjugation for reference between definite concepts: "The objective conjugation is also called definite conjugation, since its use presupposes that the object is definite and the verb expresses an action that has to be terminated. Since there are 6 persons of the subject as well as 6 persons of the object, the paradigm of the objective conjugation could consist of 36 different personal endings. However, this is not the case, since for pragmatic reasons there are no forms in which subject and object stand at the same time in the first or second person. Up to a certain degree, homonymy exists, too: If, f. ex., the subject is in the plural, the endings differentiate the person of the object, but not their number, e. g., palasamiź 'you (pl.) kiss me/us', palatadiź 'we kiss you (sg.)/you (pl.)'. Most complete the system is with the object in the third person, e. g., palasa 'I kiss him/she/it', palasak 'you (sg.) kiss him/she/it', palasi 'he/she/it kisses him/she/it', palasiń 'I kiss them', palasit' 'you kiss her', palasińźe 'he/she/it kisses her', but palasińek 'we kiss him/she/it/them', palasink 'you (pl.) kiss him/she/it/them', palasiź 'they kiss him/she/it/them'" (Saarinen, p. 682).

As we recognize, the Mordvin system of pronominal reference is already fairly reduced compared to its underlying logical-semiotic system of reference. Even more reduced is the objective conjugation in Hungarian, a language distantly related to Mordvin. In Hungarian, we have the following systems:

Subjective conjugation:　　　　Objective conjugation:

szeretek "I love"　　　　　　szeretem "I love
szeretsz "thou lovest"　　　　szereted "thou lovest
szeret "he/she loves"　　　　 szereti "he/she loves
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　 him/her/it/us/them"
szeretünk "we love"　　　　　 szeretük "we love
seretek "you love"　　　　　　szeretitek "you love
szeretnek "they love"　　　　 szeretik "they love

The only remaining rest of another system to express the relation between the subjective subject "I" and the objective subject "thou" is the infix –lak:

seretlek "I love thee" (but cf. szeretlek titeket "I love you (pl.)")

If a subjective subject refers to itself, the objective conjugation is used together with the reflexive pronoun:

szeretem magam "I love myself"　　　　szeretjük magunkat "we love ourselves"
szereted magad "thou lovest thyself"　　szeretitek magatokat "you love yourselves"
szereti önmagát "he/she loves himself/　szeretik magukat "they love themselves"
　　　　　　　　　herself"

Since already theoretical semiotics provides us with full systems expressing all possible combinations of reference between reflective and subjective existence in a three-value polycontextural logic, it follows, that languages with objective conjugation and similar devices of expressing pronominal reference and coreference have kept or re-developed important features of polycontexturality otherwise not conserved or developed in most of the known natural languages (cf. Günther 1957, p. xviii).

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