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Elements of a Theory of the Night

> Zwar hat der Idealismus mit dem Gedanken des im ewigen Jetzt vollendeten Logos das metaphysische Bewusstsein des Abendlandes bis an die Höhe des absoluten Todes herangeführt. Bewältigt aber hat er diese Idee nicht, denn er spricht nur von der absoluten Logik der Gedanken Gottes. Von der Möglichkeit einer absoluten Ethik der göttlichen Existenz, d.h. von einer Metaphysik des Willens weiss er nichts. Und nirgends (ausser in zusammenhanglosen Einfällen Schellings) ist sein Wissen von der Ahnung berührt, dass die durchsichtige Helle des reinen Begriffs, die wie ein sonniges Mittagslicht über dem reellen Leben des konkreten Bewusstseins leuchtet, ihren Ursprung aus der transzendentalen Nacht eines Willens, der noch nicht Entscheidung und deshalb noch nicht lebendige, durchleuchtete Wirklichkeit geworden ist, herleitet.
>
> Gotthard Günther (1937, p. 45)

1. It is a strange fact, that the sign as a scheme of action, like the sign as a scheme of representation, goes back to Aristotle (cf. Trabant 1989, pp. 79 ss.), but does not play any role in Peirce's and Bense's semiotics. However, it is perhaps not by change, that a definition of the sign as a scheme of action is lacking, although the development of the linguistic theory of action falls into the beginnings of the development of theoretical semiotics. However, it is a fact that the sign, in the framework of semiotics, is primarily not a scheme of action, because in its most general definition action means the "changing of a state of world" (Heinrichs 1980, p. 22). But states of world belong, in the terminology of Bense (1975, p. 65), to the "ontological space" of the pre-thetic objects, but not to the "semiotic space" of the thetic signs. In other words: In Peirce's and Bense's notion of the triadic sign which is based on the mono-contextural separation between signs and object and where objects can thus only appear as object-relations, signs cannot change states of world, since they, too, can only be perceived as signs. Therefore, according to theoretical semiotics, signs can change signs, and in order to do such changes, a theory of action is not necessary. Thus, in classical monocontextural semiotics, the theory of the semioses substitutes a theory of action, because signs can never reach their transcendental object and cannot change ontological, but only semiotic states of world.

However, it is a fact, too, which is at least known outside of classical semiotics that signs can have effect out of their semiotic space and inside of the onological space of the object, events, states, etc. For example, a command can start a war. But also the inverse process, thus the changing of signs by objects, is well-known. E.g., the better knowledge of high-energy physics has several times changes atomic models, which had already been believed as correct. Hence, if someone wants to construct a semiotic theory of action that goes beyond a linguistic theory of action based again on (linguistic) signs and that is powerful enough of letting signs influence reality and vice versa, then it is necessary to abolish the border between sign and reality, i.e to replace moncontextural through polycontextural semiotics.

2. Such a model of a polycontextural semiotics has been displayed by the present author (Toth 2008b) under the name of "Pre-Semiotics", because the sign model which is the basis,

PZR = (3.a 2.b 1.c 0.d)

contains the object, which is represented by the artificial or natural sign, as a categorial object (0.d) and thus settles one step before thetic semiosis, in the space between the ontological and the semiotic space.

Now I have already shown in Toth (2008a, pp. 177 ss.) that every triadic sign class has 6 permutations. Consequently, every tetradic sign class has 24 permutations. In Toth (2008c, pp. 220 ss.), I have further shown that each of these 24 permutations can be introduced as semiotic schemes of actions. Since each tetradic sign class has a dual reality thematic, we thus get for 15 pre-semiotic dual systems zunächst $15 \cdot 2 \cdot 24 = 720$ tetradic semiotic schemes of action. Furthermore, in Toth (2008c) it had been shown that a tetradic sign class has exactly the following $4 + 15 + 24 + 24 = 67$ partial relations:

monadic partial relations: (.0.), (.1.), (.2.), (.3.).

dyadic partial relations: (0.1), (0.2), (0.3), (1.0), (2.0), (3.0), (1.1), (1.2), (1.3), (2.1), (2.2), (2.3), (3.1), (3.2), (3.3).

triadic partial relations: (0., 2., 1.), (0., 1., 2.), (1., 2., 0.), (1., 0., 2), (2., 1., 0.), (2., 0., 1), (3., 2., 1.), (3., 1., 2.), (2., 3., 1.), (2., 1., 3.), (1., 3.,2.), (1., 2., 3),

(0., 3., 2.), (0., 2., 3.), (2., 3., 0.), (2., 0., 3.), (3., 2., 0.), (3., 0., 2.),
(0., 3., 1.), (0., 1., 3.), (1., 3., 0.), (1., 0., 3.), (3., 1., 0.), (3., 0., 1.).

tetradic partial relations: (3., 2., 1., 0.), (2., 3., 1., 0.), (2., 1., 3., 0.), (1., 2., 3., 0.), (3., 1., 2., 0.), (1., 3., 2., 0.), (2., 3., 0., 1.), (3., 2., 0., 1.), (2., 1., 0., 3.), (1., 2., 0., 3.), (3., 1., 0., 2.), (1., 3., 0., 2.), (2., 0., 3., 1.), (3., 0., 2., 1.), (2., 0., 1., 3.), (1., 0., 2., 3.), (3., 0., 1., 2.), (1., 0., 3., 2.), (0., 2., 3., 1.), (0., 3., 2., 1.), (0., 1., 2., 3.), (0., 2., 1., 3.), (0., 3., 1., 2.), (0., 1., 3., 2.).

We thus get totally $15 \cdot 2 \cdot 67 = 2'010$ semiotic schemes of actions, which are polycontextural already because of the elimination of the discontexturality between sign and object and the embedding of the object qua categorial object into the sign relation.

3. In Toth (2008c), I have also shown that the pre-semiotic tetradic sign relation is complete regarding to epistemological, logical and ontological relation insofar as we have the following correspondences between logical relations and semiotic categories:

subjective subject (sS)	≅	Thirdness (interpretant relation, I)
objective object (oO)	≅	Secondness (Object relation, O)
subjective object (sO)	≅	Firstness (medium relation, M)
objective subject (oS)	≅	Zeroness (quality, Q)

Therefore, we can display the above 67 semiotic-numerical partial relations also in the following semiotic-logical form:

Monadic semiotic-logical partial relations:

(sO), (oS), (oO), (sS).

Dyadic semiotic-logical partial relations:

((sO), (oS)); ((sO), (oO)); ((sO), (sS)); ((oS), (sO)); ((oO), (sO)); ((sS), (sO)); ((oS), (oS)); ((oS), (oO)); ((oS), (sS)); ((oO), (oS)); ((oO), (oO)); ((oO), (sS)); ((sS), (oS)); ((sS), (oO)), ((sS), (sS)).

Triadic semiotic-logical partial relations:

((sO), (oO), (oS)); ((sO), (oS)), (oO)); ((oS), (oO), (sO)); ((oS), (sO), (oO)); ((oO), (oS), (sO)); ((oO), (sO), (oS)); ((sS), (oO), (oS)); ((sS), (oS), (oO)); ((oO), (sS), (oS)); ((oO), (oS), (sS)); ((oS), (sS), (oO)); ((oS), (oO), (sS)); ((sO), (sS), (oO)); ((sO), (oO), (sS; ((oO), (sS), (sO)); ((oO), (sO), (sS)); ((sS), (oO), (sO)); ((sS), (sO), (oO)); ((sO), (sS), (oS)); ((sO), (oS), (sS)); ((oS), (sS), (sO)); ((oS), (sO), (sS)); ((sS), (oS), (sO)); ((sS), (sO), (oS)).

A triadic partial relation of a tetradic semiotic relation is a combinatorial selection of the four pre-semiotic categories (0.), (.1.), (.2.), (.3.) or (sO), (oS), (oO), (sS), respectively. I.e., we thus can either (0., .1., .2.), (.1., .2., .3.), (0., .2., .3.) or (0., .1., .3.) combine to triads. In doing so, we get the following $2 \cdot 24 = 48$ permutationes:

(0.d 2.b 1.c) × (c.1 b.2 d.0) → ((sO), (oO), (oS)) × ((sO), (oO), (oS))
(0.d 1.c 2.b) × (b.2 c.1 d.0) → ((sO), (oS), (oO)) × ((oO), (sO), (oS))
(1.c 2.b 0.d) × (d.0 b.2 c.1) → ((oS), (oO), (sO)) × ((oS), (oO), (sO))
(1.c 0.d 2.b) × (b.2 d.0 c.1) → ((oS), (sO), (oO)) × ((oO), (oS), (sO))
(2.b 1.c 0.d) × (d.0 c.1 b.2) → ((oO), (oS), (sO)) × ((oS), (sO), (oO))
(2.b 0.d 1.c) × (c.1 d.0 b.2) → ((oO), (sO), (oS)) × ((sO), (oS), (oO))
(3.a 2.b 1.c) × (c.1 b.2 a.3) → ((sS), (oO), (oS)) × ((sO), (oO), (sS))
(3.a 1.c 2.b) × (b.2 c.1 a.3) → ((sS), (oS), (oO)) × ((oO), (sO), (sS))
(2.b 3.a 1.c) × (c.1 a.3 b.2) → ((oO), (sS), (oS)) × ((sO), (sS), (oO))
(2.b 1.c 3.a) × (a.3 c.1 b.2) → ((oO), (oS), (sS)) × ((sS), (sO), (oO))
(1.c 3.a 2.b) × (b.2 a.3 c.1) → ((oS), (sS), (oO)) × ((oO), (sS), (sO))
(1.c 2.b 3.a) × (a.3 b.2 c.1) → ((oS), (oO), (sS)) × ((sS), (oO), (sO))
(0.d 3.a 2.b) × (b.2 a.3 d.0) → ((sO), (sS), (oO)) × ((oO), (sS), (oS))
(0.d 2.b 3.a) × (a.3 b.2 d.0) → ((sO), (oO), (sS)) × ((sS), (oO), (oS))
(2.b 3.a 0.d) × (d.0 a.3 b.2) → ((oO), (sS), (sO)) × ((oS), (sS), (oO))
(2.b 0.d 3.a) × (a.3 d.0 b.2) → (oO), (sO), (sS)) × ((sS), (oS), (oO))
(3.a 2.b 0.d) × (d.0 b.2 a.3) → ((sS), (oO), (sO)) × ((oS), (oO), (sS))

(3.a 0.d 2.b) × (b.2 d.0 a.3) → ((sS), (sO), (oO)) × ((oO), (oS), (sS))
(0.d 3.a 1.c) × (c.1 a.3 d.0) → ((sO), (sS), (oS)) × ((sO), (sS), (oS))
(0.d 1.c 3.a) × (a.3 c.1 d.0) → ((sO), (oS), (sS)) × ((sS), (sO), (oS))
(1.c 3.a 0.d) × (d.0 a.3 c.1) → ((oS), (sS), (sO)) × ((oS), (sS), (sO))
(1.c 0.d 3.a) × (a.3 d.0 c.1) → ((oS), (sO), (sS)) × ((sS), (oS), (sO))
(3.a 1.c 0.d) × (d.0 c.1 a.3) → ((sS), (oS), (sO)) × ((oS, (sO), (sS))
(3.a 0.d 1.c) × (c.1 d.0 a.3) → ((sS), (sO), (oS)) × ((sO), (oS), (sS))

Tetradic semiotic-logical partial relations:

((sS), (oO), (oS), (sO)); ((oO), (sS), (oS), (sO)); ((oO), (oS), (sS), (sO)); ((oS), (oO), (sS), (sO)); ((sS), (oS), (oO), (sO)); ((oS), (sS), (oO), (sO)); ((oO), (sS), (sO), (oS)); ((sS), (oO), (sO), (oS)); ((oO), (oS), (sO), (sS)); ((oS), (oO), (sO), (sS)); ((sS), (oS), (sO), (oO)); ((oS), (sS), (sO), (oO)); ((oO), (sO), (sS), (oS)); ((sS), (sO), (oO), (oS)); ((oO), (sO), (oS, (sS)); ((oS), (sO), (oO), (sS)); ((sS), (sO), (oS), (oO)); ((oS), (sO), (sS), (oO)); ((sO), (oO), (sS), (oS)); ((sO), (sS), (oO), (oS)); ((sO), (oS), (oO), (sS)); ((sO), (oO), (oS), (sS)); ((sO), (sS), (oS), (oO)); ((sO), (oS), (sS), (oO)).

Complete listing of the 2 · 24 = 48 tetradic permutations:

(3.a 2.b 1.c 0.d) × (d.0 c.1 b.2 a.3) →
((sS), (oO), (oS), (sO)) × ((oS), (sO), (oO), (sS))
(2.b 3.a 1.c 0.d) × (d.0 c.1 a.3 b.2) →
((oO), (sS), (oS), (sO)) × ((oS), (sO), (sS), (oO))
(2.b 1.c 3.a 0.d) × (d.0 a.3 c.1 b.2) →
((oO), (oS), (sS), (sO)) × ((oS), (sS), (sO), (oO))
(1.c 2.b 3.a 0.d) × (d.0 a.3 b.2 c.1) →
((oS), (oO), (sS), (sO)) × ((oS), (sS), (oO), (sO))
(3.a 1.c 2.b 0.d) × (d.0 b.2 c.1 a.3) →
((sS), (oS), (oO), (sO)) × ((oS), (oO), (sO), (sS))
(1.c 3.a 2.b 0.d) × (d.0 b.2 a.3 c.1) →
((oS), (sS), (oO), (sO)) × ((oS), (oO), (sS), (sO))
(2.b 3.a 0.d 1.c) × (c.1 d.0 a.3 b.2) →
((oO), (sS), (sO), (oS)) × ((sO), (oS), (sS), (oO))
(3.a 2.b 0.d 1.c) × (c.1 d.0 b.2 a.3) →
((sS), (oO), (sO), (oS)) × ((sO), (oS), (oO), (sS))

(2.b 1.c 0.d 3.a) × (a.3 d.0 c.1 b.2) →
((oO), (oS), (sO), (sS)) × ((sS), (oS), (sO), (oO))
(1.c 2.b 0.d 3.a) × (a.3 d.0 b.2 c.1) →
((oS), (oO), (sO), (sS)) × ((sS), (oS), (oO), (sO))
(3.a 1.c 0.d 2.b) × (b.2 d.0 c.1 a.3)
((sS), (oS), (sO), (oO)) × ((oO), (oS), (sO), (sS))
(1.c 3.a 0.d 2.b) × (b.2 d.0 a.3 c.1) →
((oS), (sS), (sO), (oO)) × ((oO), (oS), (sS), (sO))
(2.b 0.d 3.a 1.c) × (c.1 a.3 d.0 b.2) →
((oO), (sO), (sS), (oS)) × ((sO), (sS), (oS), (oO))
(3.a 0.d 2.b 1.c) × (c.1 b.2 d.0 a.3) →
((sS), (sO), (oO), (oS)) × ((sO), (oO), (oS), (sS))
(2.b 0.d 1.c 3.a) × (a.3 c.1 d.0 b.2) →
((oO), (sO), (oS), (sS)) × ((sS), (sO), (oS), (oO))
(1.c 0.d 2.b 3.a) × (a.3 b.2 d.0 c.1) →
((oS), (sO), (oO), (sS)) × ((sS), (oO), (oS), (sO))
(3.a 0.d 1.c 2.b) × (b.2 c.1 d.0 a.3) →
((sS), (sO), (oS), (oO)) × ((oO), (sO), (oS), (sS))
(1.c 0.d 3.a 2.b) × (b.2 a.3 d.0 c.1) →
((oS), (sO), (sS), (oO)) × ((oO), (sS), (oS), (sO))
(0.d 2.b 3.a 1.c) × (c.1 a.3 b.2 d.0) →
((sO), (oO), (sS), (oS)) × ((sO), (sS), (oO), (oS))
(0.d 3.a 2.b 1.c) × (c.1 b.2 a.3 d.0) →
((sO), (sS), (oO), (oS)) × ((sO), (oO), (sS), (oS))
(0.d 1.c 2.b 3.a) × (a.3 b.2 c.1 d.0) →
((sO), (oS), (oO), (sS)) × ((sS), (oO), (sO), (oS))
(0.d 2.b 1.c 3.a) × (a.3 c.1 b.2 d.0) →
((sO), (oO), (oS), (sS)) × ((sS), (sO), (oO), (oS))
(0.d 3.a 1.c 2.b) × (b.2 c.1 a.3 d.0) →
((sO), (sS), (oS), (oO)) × ((oO), (sO), (sS), (oS))
(0.d 1.c 3.a 2.b) × (b.2 a.3 c.1 d.0) →
((sO), (oS), (sS), (oO)) × ((oO), (sS), (sO), (oS))

5. However, as Rudolf Kaehr (2008a, b, c) has shown, a sign relation is not really polycontextural solely by embedding the categorial object into the triadic Peircean sign relation, but the sub-signs constituting the sign relation must be mapped to semiotic contextures. This idea of Kaehr's has, as I have already pointed out before, a splendid impact for the future development of mathematical semiotics. In order to map semiotic contextures as inner environments to the sub-signs of a pre-semiotic tetradic sign relation, we will use the following 4-adic polycontextural semiotic 4×4 matrix:

	0	1	2	3
0	$(0.0)_{3,2,1}$	$(0.1)_{1,3}$	$(0.2)_{1,2}$	$(0.3)_{2,3}$
1	$(1.0)_{3,1}$	$(1.1)_{1,3,4}$	$(1.2)_{1,4}$	$(1.3)_{3,4}$
2	$(2.0)_{2,1}$	$(2.1)_{1,4}$	$(2.2)_{1,2,4}$	$(2.3)_{2,4}$
3	$(3.0)_{3,2}$	$(3.1)_{3,4}$	$(3.2)_{2,4}$	$(3.3)_{2,3,4}$

Since the pre-semiotic sign relation is tetradic, but trichotomic, the four sub-signs to the left of the thick black line can only appear in reality thematics and thus change the order of their contextural numbers from morphismic to hetero-morphismic order. Thus, the above matrix is a "porte-manteau"-matrix of two matrices.

Günther stated: "Being is the birthplace of Thinking, but Nothing is the homeland of the Will. In the Nothing there is nothing to see as long as we do not decide to enter the Nothing and build there a world according to the laws of negativity. This world God has not yet created, and there is not a world plan for it either, before the Thinking did not describe it in a negative language" (Günther 1937, p. 45). "The transparent clearness of the pure notion, that shines like a sunny midday-light over the real live of the concrete consciousness, has its origin out of the transcendental Night of a Will that has not yet become decision and thus not yet living, translucent reality" (Günther 1980, p. 288). We obtain that the night is the reign of the Will. Since the Will needs a negative language to formulate its vocabulary, the negative languages can only consist of directions of actions. The actions, however, we can formulate precisely on the basis of pre-semiotics. Togheter with the inner environments, we have a real polycontextural pre-semiotics as a theory of a Theory of the Night.

6. Since the action schemata of the 4 monadic semiotic partial relations

(sO), (oS), (oO), (sS)

as well as of the 15 dyadic semiotic partial relations

(sO)	↔	(oS)	(sS)	↔	(sO)	(oO)	↔	(oO)
(sO)	↔	(oO)	(oS)	↔	(oS))	(oO)	↔	(sS)
(sO)	↔	(sS)	(oS)	↔	(oO)	(sS)	↔	(oS)
(oS)	↔	(sO)	(oS)	↔	(sS)	(sS)	↔	(oO)
(oO)	↔	(sO)	(oO)	↔	(oS)	(sS)	↔	(sS)

are trivial, we restrict ourselves here to show up the 24 triadic and the 24 tetradic semiotic partial relations for all 15 pre-semiotic sign classes and their reality thematics together with the semiotic contextures from a 4-contextural 4-adic semiotic matrix.

I. Action schemata of the 2 · 24 triadic semiotic partial relations

1. Pre-semiotic dual system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.1_{1,3,4}\ 0.1_{1,3}) \times (1.0_{3,1}\ 1.1_{4,3,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$$\begin{matrix} (2.1_{1,4}) & & (1.1_{4,3,1}) \\ \curlywedge \gg (0.1_{1,3}) & \times & \curlywedge \gg (1.0_{3,1}) \\ (1.1_{1,3,4}) & & (1.2_{4,1}) \end{matrix}$$

$$\begin{matrix} (3.1_{3,4}) & & (1.1_{4,3,1}) \\ \curlywedge \gg (0.1_{1,3}) & \times & \curlywedge \gg (1.0_{3,1}) \\ (1.1_{1,3,4}) & & (1.3_{4,3}) \end{matrix}$$

$$\begin{matrix} (1.1_{1,3,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (0.1_{1,3}) & \times & \curlywedge \gg (1.0_{3,1}) \\ (2.1_{1,4}) & & (1.1_{4,3,1}) \end{matrix}$$

$(3.1_{3,4})$ $(1.2_{4,1})$
人 ≫ $(0.1_{1,3})$ × 人 ≫ $(1.0_{3,1})$
$(2.1_{1,4})$ $(1.3_{4,3})$

$(1.1_{1,3,4})$ $(1.3_{4,3})$
人 ≫ $(0.1_{1,3})$ × 人 ≫ $(1.0_{3,1})$
$(3.1_{3,4})$ $(1.1_{4,3,1})$

$(2.1_{1,4})$ $(1.3_{4,3})$
人 ≫ $(0.1_{1,3})$ × 人 ≫ $(1.0_{3,1})$
$(3.1_{3,4})$ $(1.2_{4,1})$

Medial action

$(2.1_{1,4})$ $(1.0_{3,1})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(0.1_{1,3})$ $(1.2_{4,1})$

$(3.1_{3,4})$ $(1.0_{3,1})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(0.1_{1,3})$ $(1.3_{4,3})$

$(0.1_{1,3})$ $(1.2_{4,1})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(2.1_{1,4})$ $(1.0_{3,1})$

$(3.1_{3,4})$ $(1.2_{4,1})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(2.1_{1,4})$ $(1.3_{4,3})$

$(0.1_{1,3})$ $(1.3_{4,3})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(3.1_{3,4})$ $(1.0_{3,1})$

$(2.1_{1,4})$ $(1.3_{4,3})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(3.1_{3,4})$ $(1.2_{4,1})$

Objectal action

$$\begin{array}{ccc} (1.1_{1,3,4}) & & (1.0_{3,1}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (0.1_{1,3}) & & (1.1_{4,3,1}) \end{array}$$

$$\begin{array}{ccc} (3.1_{3,4}) & & (1.0_{3,1}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (0.1_{1,3}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{ccc} (0.1_{1,3}) & & (1.1_{4,3,1}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (1.1_{1,3,4}) & & (1.0_{3,1}) \end{array}$$

$$\begin{array}{ccc} (3.1_{3,4}) & & (1.1_{4,3,1}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (1.1_{1,3,4}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{ccc} (1.1_{1,3,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (3.1_{3,4}) & & (1.1_{4,3,1}) \end{array}$$

$$\begin{array}{ccc} (0.1_{1,3}) & & (1.3_{4,3}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (3.1_{3,4}) & & (1.0_{3,1}) \end{array}$$

Interpretative action

$$\begin{array}{ccc} (2.1_{1,4}) & & (1.0_{3,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (0.1_{1,3}) & & (1.2_{4,1}) \end{array}$$

$$\begin{array}{ccc} (1.1_{1,3,4}) & & (1.0_{3,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (0.1_{1,3}) & & (1.1_{4,3,1}) \end{array}$$

$(2.1_{1,4})$ $(1.1_{4,3,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.1_{1,3,4})$ $(1.2_{4,1})$

$(0.1_{1,3})$ $(1.1_{4,3,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.1_{1,3,4})$ $(1.0_{3,1})$

$(1.1_{1,3,4})$ $(1.2_{4,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.1_{1,4})$ $(1.1_{4,3,1})$

$(0.1_{1,3})$ $(1.2_{4,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.1_{1,4})$ $(1.0_{3,1})$

2. Pre-semiotic dual system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.1_{1,3,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 1.1_{4,3,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$(2.1_{1,4})$ $(1.1_{4,3,1})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(1.1_{1,3,4})$ $(1.2_{4,1})$

$(3.1_{3,4})$ $(1.1_{4,3,1})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(1.1_{1,3,4})$ $(1.3_{4,3})$

$(1.1_{1,3,4})$ $(1.2_{4,1})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(2.1_{1,4})$ $(1.1_{4,3,1})$

$(3.1_{3,4})$ $(1.2_{4,1})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(2.1_{1,4})$ $(1.3_{4,3})$

$$\begin{array}{lll} (1.1_{1,3,4}) & & (1.3_{4,3}) \\ \quad \curlywedge \gg (0.2_{1,2}) & \times & \quad \curlywedge \gg (2.0_{2,1}) \\ (3.1_{3,4}) & & (1.1_{4,3,1}) \end{array}$$

$$\begin{array}{lll} (2.1_{1,4}) & & (1.3_{4,3}) \\ \quad \curlywedge \gg (0.2_{1,2}) & \times & \quad \curlywedge \gg (2.0_{2,1}) \\ (3.1_{3,4}) & & (1.2_{4,1}) \end{array}$$

Medial action

$$\begin{array}{lll} (2.1_{1,4}) & & (2.0_{2,1}) \\ \quad \curlywedge \gg (1.1_{1,3,4}) & \times & \quad \curlywedge \gg (1.1_{4,3,1}) \\ (0.2_{1,2}) & & (1.2_{4,1}) \end{array}$$

$$\begin{array}{lll} (3.1_{3,4}) & & (2.0_{2,1}) \\ \quad \curlywedge \gg (1.1_{1,3,4}) & \times & \quad \curlywedge \gg (1.1_{4,3,1}) \\ (0.2_{1,2}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{lll} (0.2_{1,2}) & & (1.2_{4,1}) \\ \quad \curlywedge \gg (1.1_{1,3,4}) & \times & \quad \curlywedge \gg (1.1_{4,3,1}) \\ (2.1_{1,4}) & & (2.0_{2,1}) \end{array}$$

$$\begin{array}{lll} (3.1_{3,4}) & & (1.2_{4,1}) \\ \quad \curlywedge \gg (1.1_{1,3,4}) & \times & \quad \curlywedge \gg (1.1_{4,3,1}) \\ (2.1_{1,4}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{lll} (0.2_{1,2}) & & (1.3_{4,3}) \\ \quad \curlywedge \gg (1.1_{1,3,4}) & \times & \quad \curlywedge \gg (1.1_{4,3,1}) \\ (3.1_{3,4}) & & (2.0_{2,1}) \end{array}$$

$$\begin{array}{lll} (2.1_{1,4}) & & (1.3_{4,3}) \\ \quad \curlywedge \gg (1.1_{1,3,4}) & \times & \quad \curlywedge \gg (1.1_{4,3,1}) \\ (3.1_{3,4}) & & (1.2_{4,1}) \end{array}$$

Objectal action

$(1.1_{1,3,4})$ $(2.0_{2,1})$
人 ≫ $(2.1_{1,4})$ × 人 ≫ $(1.2_{4,1})$
$(0.2_{1,2})$ $(1.1_{4,3,1})$

$(3.1_{3,4})$ $(2.0_{2,1})$
人 ≫ $(2.1_{1,4})$ × 人 ≫ $(1.2_{4,1})$
$(0.2_{1,2})$ $(1.3_{4,3})$

$(0.2_{1,2})$ $(1.1_{4,3,1})$
人 ≫ $(2.1_{1,4})$ × 人 ≫ $(1.2_{4,1})$
$(1.1_{1,3,4})$ $(2.0_{2,1})$

$(3.1_{3,4})$ $(1.1_{4,3,1})$
人 ≫ $(2.1_{1,4})$ × 人 ≫ $(1.2_{4,1})$
$(1.1_{1,3,4})$ $(1.3_{4,3})$

$(1.1_{1,3,4})$ $(1.3_{4,3})$
人 ≫ $(2.1_{1,4})$ × 人 ≫ $(1.2_{4,1})$
$(3.1_{3,4})$ $(1.1_{4,3,1})$

$(0.2_{1,2})$ $(1.3_{4,3})$
人 ≫ $(2.1_{1,4})$ × 人 ≫ $(1.2_{4,1})$
$(3.1_{3,4})$ $(2.0_{2,1})$

Interpretative action

$(2.1_{1,4})$ $(2.0_{2,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(0.2_{1,2})$ $(1.2_{4,1})$

$(1.1_{1,3,4})$ $(1.1_{4,3,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.2_{1,2})$ $(0.2_{1,2})$

$$\begin{matrix}(2.1_{1,4}) & & (1.1_{4,3,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (1.1_{1,3,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(0.2_{1,2}) & & (1.1_{4,3,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (1.1_{1,3,4}) & & (2.0_{2,1})\end{matrix}$$

$$\begin{matrix}(1.1_{1,3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (1.1_{4,3,1})\end{matrix}$$

$$\begin{matrix}(0.2_{1,2}) & & (1.2_{4,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (2.0_{2,1})\end{matrix}$$

3. Pre-semiotic dual system

$(3.1_{3,4}\ 2.1_{1,4}\ 1.1_{1,3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 1.1_{4,3,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative Action

$$\begin{matrix}(2.1_{1,4}) & & (1.1_{4,3,1}) \\ \text{人} \gg (0.3_{2,3}) & \times & \text{人} \gg (3.0_{3,2}) \\ (1.1_{1,3,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (1.1_{4,3,1}) \\ \text{人} \gg (0.3_{2,3}) & \times & \text{人} \gg (3.0_{3,2}) \\ (1.1_{1,3,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.1_{1,3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (0.3_{2,3}) & \times & \text{人} \gg (3.0_{3,2}) \\ (2.1_{1,4}) & & (1.1_{4,3,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (0.3_{2,3}) & \times & \text{人} \gg (3.0_{3,2}) \\ (2.1_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$(1.1_{1,3,4})$ $(1.3_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.1_{3,4})$ $(1.1_{4,3,1})$

$(2.1_{1,4})$ $(1.3_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.1_{3,4})$ $(1.2_{4,1})$

Medial action

$(2.1_{1,4})$ $(3.0_{3,2})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(0.3_{2,3})$ $(1.2_{4,1})$

$(3.1_{3,4})$ $(3.0_{3,2})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(0.3_{2,3})$ $(1.3_{4,3})$

$(0.3_{2,3})$ $(1.2_{4,1})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(2.1_{1,4})$ $(3.0_{3,2})$

$(3.1_{3,4})$ $(1.2_{4,1})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(2.1_{1,4})$ $(1.3_{4,3})$

$(0.3_{2,3})$ $(1.3_{4,3})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(3.1_{3,4})$ $(3.0_{3,2})$

$(2.1_{1,4})$ $(1.3_{4,3})$
人 ≫ $(1.1_{1,3,4})$ × 人 ≫ $(1.1_{4,3,1})$
$(3.1_{3,4})$ $(1.2_{4,1})$

Objectal action

$$\begin{array}{ccc} (1.1_{1,3,4}) & & (3.0_{3,2}) \\ \text{人} \gg (2.1_{1,4}) & \times & \text{人} \gg (1.2_{4,1}) \\ (0.3_{2,3}) & & (1.1_{4,3,1}) \end{array}$$

$$\begin{array}{ccc} (3.1_{3,4}) & & (3.0_{3,2}) \\ \text{人} \gg (2.1_{1,4}) & \times & \text{人} \gg (1.2_{4,1}) \\ (0.3_{2,3}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{ccc} (0.3_{2,3}) & & (1.1_{4,3,1}) \\ \text{人} \gg (2.1_{1,4}) & \times & \text{人} \gg (1.2_{4,1}) \\ (1.1_{1,3,4}) & & (3.0_{3,2}) \end{array}$$

$$\begin{array}{ccc} (3.1_{3,4}) & & (1.1_{4,3,1}) \\ \text{人} \gg (2.1_{1,4}) & \times & \text{人} \gg (1.2_{4,1}) \\ (1.1_{1,3,4}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{ccc} (1.1_{1,3,4}) & & (1.3_{3,4}) \\ \text{人} \gg (2.1_{1,4}) & \times & \text{人} \gg (1.2_{4,1}) \\ (3.1_{3,4}) & & (1.1_{4,3,1}) \end{array}$$

$$\begin{array}{ccc} (0.3_{2,3}) & & (1.3_{4,3}) \\ \text{人} \gg (2.1_{1,4}) & \times & \text{人} \gg (1.2_{4,1}) \\ (3.1_{3,4}) & & (3.0_{3,2}) \end{array}$$

Interpretative action

$$\begin{array}{ccc} (2.1_{1,4}) & & (3.0_{3,2}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (0.3_{2,3}) & & (1.2_{4,1}) \end{array}$$

$$\begin{array}{ccc} (1.1_{1,3,4}) & & (3.0_{3,2}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (0.3_{2,3}) & & (1.1_{4,3,1}) \end{array}$$

$$\begin{matrix}(2.1_{1,4}) & & (1.1_{4,3,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (1.1_{1,3,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.1_{4,3,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (1.1_{1,3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.1_{1,3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (1.1_{4,3,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.2_{4,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (3.0_{3,2})\end{matrix}$$

4. Pre-semiotic dual system

$(3.1_{3,4}\ 2.1_{1,4}\ 1.2_{1,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 2.1_{4,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$$\begin{matrix}(2.1_{1,4}) & & (2.1_{4,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (1.2_{1,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (2.1_{4,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (1.2_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (1.2_{4,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (2.1_{1,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (2.1_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{array}{lcl} (1.2_{1,4}) & & (1.3_{4,3}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (3.1_{3,4}) & & (2.1_{4,1}) \end{array}$$

$$\begin{array}{lcl} (2.1_{1,4}) & & (1.3_{4,3}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (3.1_{3,4}) & & (1.2_{4,1}) \end{array}$$

Medial action

$$\begin{array}{lcl} (2.1_{1,4}) & & (2.0_{2,1}) \\ \text{人} \gg (1.2_{1,4}) & \times & \text{人} \gg (2.1_{4,1}) \\ (0.2_{1,2}) & & (1.2_{4,1}) \end{array}$$

$$\begin{array}{lcl} (3.1_{3,4}) & & (2.0_{2,1}) \\ \text{人} \gg (1.2_{1,4}) & \times & \text{人} \gg (2.1_{4,1}) \\ (0.2_{1,2}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{lcl} (0.2_{1,2}) & & (1.2_{4,1}) \\ \text{人} \gg (1.2_{1,4}) & \times & \text{人} \gg (2.1_{4,1}) \\ (2.1_{1,4}) & & (2.0_{2,1}) \end{array}$$

$$\begin{array}{lcl} (3.1_{3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (1.2_{1,4}) & \times & \text{人} \gg (2.1_{4,1}) \\ (2.1_{1,4}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{lcl} (0.2_{1,2}) & & (1.3_{4,3}) \\ \text{人} \gg (1.2_{1,4}) & \times & \text{人} \gg (2.1_{4,1}) \\ (3.1_{3,4}) & & (2.0_{2,1}) \end{array}$$

$$\begin{array}{lcl} (2.1_{1,4}) & & (1.3_{4,3}) \\ \text{人} \gg (1.2_{1,4}) & \times & \text{人} \gg (2.1_{4,1}) \\ (3.1_{3,4}) & & (1.2_{4,1}) \end{array}$$

Objectal action

$$\begin{array}{c}(1.2_{1,4}) \\ \curlywedge \gg (2.1_{1,4}) \\ (0.2_{1,2})\end{array} \quad \times \quad \begin{array}{c}(2.0_{2,1}) \\ \curlywedge \gg (1.2_{4,1}) \\ (2.1_{4,1})\end{array}$$

$$\begin{array}{c}(3.1_{3,4}) \\ \curlywedge \gg (2.1_{1,4}) \\ (0.2_{1,2})\end{array} \quad \times \quad \begin{array}{c}(2.0_{2,1}) \\ \curlywedge \gg (1.2_{4,1}) \\ (1.3_{4,3})\end{array}$$

$$\begin{array}{c}(0.2_{1,2}) \\ \curlywedge \gg (2.1_{1,4}) \\ (1.2_{1,4})\end{array} \quad \times \quad \begin{array}{c}(2.1_{4,1}) \\ \curlywedge \gg (1.2_{4,1}) \\ (2.0_{2,1})\end{array}$$

$$\begin{array}{c}(3.1_{3,4}) \\ \curlywedge \gg (2.1_{1,4}) \\ (1.2_{1,4})\end{array} \quad \times \quad \begin{array}{c}(2.1_{4,1}) \\ \curlywedge \gg (1.2_{4,1}) \\ (1.3_{4,3})\end{array}$$

$$\begin{array}{c}(1.2_{1,4}) \\ \curlywedge \gg (2.1_{1,4}) \\ (3.1_{3,4})\end{array} \quad \times \quad \begin{array}{c}(1.3_{4,3}) \\ \curlywedge \gg (1.2_{4,1}) \\ (2.1_{4,1})\end{array}$$

$$\begin{array}{c}(0.2_{1,2}) \\ \curlywedge \gg (2.1_{1,4}) \\ (3.1_{3,4})\end{array} \quad \times \quad \begin{array}{c}(1.3_{4,3}) \\ \curlywedge \gg (1.2_{4,1}) \\ (2.0_{2,1})\end{array}$$

Interpretative action

$$\begin{array}{c}(2.1_{1,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.2_{1,2})\end{array} \quad \times \quad \begin{array}{c}(2.0_{2,1}) \\ \curlywedge \gg (1.3_{4,3}) \\ (1.2_{4,1})\end{array}$$

$$\begin{array}{c}(1.2_{1,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.2_{1,2})\end{array} \quad \times \quad \begin{array}{c}(2.0_{2,1}) \\ \curlywedge \gg (1.3_{4,3}) \\ (2.1_{4,1})\end{array}$$

$$\begin{matrix}(2.1_{1,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (1.2_{1,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(0.2_{1,2}) & & (2.1_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (1.2_{1,4}) & & (2.0_{2,1})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(0.2_{1,2}) & & (1.2_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (2.0_{2,1})\end{matrix}$$

5. Pre-Semiotic dual system

$(3.1_{3,4}\ 2.1_{1,4}\ 1.2_{1,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 2.1_{4,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualtitative action

$$\begin{matrix}(2.1_{1,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.2_{1,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.2_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (1.2_{4,1})| \\ (2.1_{1,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.1_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$(1.2_{1,4})$ $(1.3_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.1_{3,4})$ $(2.1_{4,1})$

$(2.1_{1,4})$ $(1.3_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.1_{3,4})$ $(1.2_{4,1})$

Medial action

$(2.1_{1,4})$ $(3.0_{3,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.3_{2,3})$ $(1.2_{4,1})$

$(3.1_{3,4})$ $(3.0_{3,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.3_{2,3})$ $(1.3_{4,3})$

$(0.3_{2,3})$ $(1.2_{4,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.1_{1,4})$ $(3.0_{3,2})$

$(3.1_{3,4})$ $(1.2_{4,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.1_{1,4})$ $(1.3_{4,3})$

$(0.3_{2,3})$ $(1.3_{4,3})$
人 ≫ $(1.2_{1,4})$ 人 ≫ $(2.1_{4,1})$
$(3.1_{3,4})$ $(3.0_{3,2})$

$(2.1_{1,4})$ $(1.3_{4,3})$
人 ≫ $(1.2_{1,4})$ × 人$2.1_{4,1})$
$(3.1_{3,4})$ $(1.2_{4,1})$

Objectal action

$$(1.2_{1,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (2.1_{1,4}) \times \text{人} \gg (1.2_{4,1})$$
$$(0.3_{2,3}) \quad (2.1_{4,1})$$

$$(3.1_{3,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (2.1_{1,4}) \times \text{人} \gg (1.2_{4,1})$$
$$(0.3_{2,3}) \quad (1.3_{4,3})$$

$$(0.3_{2,3}) \quad (2.1_{4,1})$$
$$\text{人} \gg (2.1_{1,4}) \times \text{人} \gg (1.2_{4,1})$$
$$(1.2_{1,4}) \quad (3.0_{3,2})$$

$$(3.1_{3,4}) \quad (2.1_{4,1})$$
$$\text{人} \gg (2.1_{1,4}) \times \text{人} \gg (1.2_{4,1})$$
$$(1.2_{1,4}) \quad (1.3_{4,3})$$

$$(1.2_{1,4}) \quad (1.3_{4,3})$$
$$\text{人} \gg (2.1_{1,4}) \times \text{人} \gg (1.2_{4,1})$$
$$(3.1_{3,4}) \quad (2.1_{4,1})$$

$$(0.3_{2,3}) \quad (1.3_{4,3})$$
$$\text{人} \gg (2.1_{1,4}) \times \text{人} \gg (1.2_{4,1})$$
$$(3.1_{3,4}) \quad (3.0_{3,2})$$

Interpratative action

$$(2.1_{1,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (3.1_{3,4}) \times \text{人} \gg (1.3_{4,3})$$
$$(0.3_{2,3}) \quad (1.2_{4,1})$$

$$(1.2_{1,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (3.1_{3,4}) \times \text{人} \gg (1.3_{4,3})$$
$$(0.3_{2,3}) \quad (2.1_{4,1})$$

$$\begin{matrix}(2.1_{1,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (1.2_{1,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (2.1_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (1.2_{1,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.2_{4,1}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (3.0_{3,2})\end{matrix}$$

6. Pre-semiotic dual system

$(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$$\begin{matrix}(2.1_{1,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.3_{3,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.3_{3,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.1_{1,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.1_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{array}{ccc} (1.3_{3,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (3.1_{3,4}) & & (3.1_{4,3}) \end{array}$$

$$\begin{array}{ccc} (2.1_{1,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (3.1_{3,4}) & & (1.2_{4,1}) \end{array}$$

Medial action

$$\begin{array}{ccc} (2.1_{1,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (0.3_{2,3}) & & (1.2_{4,1}) \end{array}$$

$$\begin{array}{ccc} (3.1_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (0.3_{2,3}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{ccc} (0.3_{2,3}) & & (1.2_{4,1}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (2.1_{1,4}) & & (3.0_{3,2}) \end{array}$$

$$\begin{array}{ccc} (3.1_{3,4}) & & (1.2_{4,1}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (2.1_{1,4}) & & (1.3_{4,3}) \end{array}$$

$$\begin{array}{ccc} (0.3_{2,3}) & & (1.3_{4,3}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (3.1_{3,4}) & & (3.0_{3,2}) \end{array}$$

$$\begin{array}{ccc} (2.1_{1,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (3.1_{3,4}) & & (1.2_{4,1}) \end{array}$$

Objectal action

$$\begin{matrix}(1.3_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (0.3_{2,3}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (0.3_{2,3}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (1.3_{3,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (3.1_{3,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.3_{4,3}) \\ \curlywedge \gg (2.1_{1,4}) & \times & \curlywedge \gg (1.2_{4,1}) \\ (3.1_{3,4}) & & (3.0_{3,2})\end{matrix}$$

Interpretative action

$$\begin{matrix}(2.1_{1,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (0.3_{2,3}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (0.3_{2,3}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(2.1_{1,4}) & & (3.1_{4,3}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (1.3_{3,4}) & & (1.2_{4,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (1.2_{4,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.2_{4,1}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (2.1_{1,4}) & & (3.0_{3,2})\end{matrix}$$

7. Pre-semiotic dual system

$(3.1_{3,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 1.3_{4,3})$

Qualitative action

$$\begin{matrix}(2.2_{1,2,4}) & & (2.1_{4,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (1.2_{1,4}) & & (2.2_{4,2,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (2.1_{4,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (1.2_{1,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (2.2_{4,2,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (2.2_{1,2,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (2.2_{4,2,1}) \\ \text{人} \gg (0.2_{1,2}) & \times & \text{人} \gg (2.0_{2,1}) \\ (2.2_{1,2,4}) & & (1.3_{4,3})\end{matrix}$$

$(1.2_{1,4})$ $(1.3_{4,3})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(3.1_{3,4})$ $(2.1_{4,1})$

$(2.2_{1,2,4})$ $(1.3_{4,3})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(3.1_{3,4})$ $(2.2_{4,2,1})$

Medial action

$(2.2_{1,2,4})$ $(2.0_{2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.2_{1,2})$ $(2.2_{4,2,1})$

$(3.1_{3,4})$ $(2.0_{2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.2_{1,2})$ $(1.3_{4,3})$

$(0.2_{1,2})$ $(2.2_{4,2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.2_{1,2,4})$ $(2.0_{2,1})$

$(3.1_{3,4})$ $(2.2_{4,2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.2_{1,2,4})$ $(1.3_{4,3})$

$(0.2_{1,2})$ $(1.3_{4,3})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(3.1_{3,4})$ $(2.0_{2,1})$

$(2.2_{1,2,4})$ $(1.3_{4,3})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(3.1_{3,4})$ $(2.2_{4,2,1})$

Objectal action

$$\begin{matrix}(1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.2_{1,2})\end{matrix} \times \begin{matrix}(2.0_{2,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.2_{1,2})\end{matrix} \times \begin{matrix}(2.0_{2,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(0.2_{1,2}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4})\end{matrix} \times \begin{matrix}(2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.0_{2,1})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4})\end{matrix} \times \begin{matrix}(2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.1_{3,4})\end{matrix} \times \begin{matrix}(1.3_{4,3}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(0.2_{1,2}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.1_{3,4})\end{matrix} \times \begin{matrix}(1.3_{4,3}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.0_{2,1})\end{matrix}$$

Interpretative action

$$\begin{matrix}(2.2_{1,2,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.2_{1,2})\end{matrix} \times \begin{matrix}(2.0_{2,1}) \\ \curlywedge \gg (1.3_{4,3}) \\ (2.2_{4,2,1})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.2_{1,2})\end{matrix} \times \begin{matrix}(2.0_{2,1}) \\ \curlywedge \gg (1.3_{4,3}) \\ (2.1_{4,1})\end{matrix}$$

$(2.2_{1,2,4})$ $(2.1_{4,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.2_{1,4})$ $(2.2_{4,2,1})$

$(0.2_{1,2})$ $(2.1_{4,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.2_{1,4})$ $(2.0_{2,1})$

$(1.2_{1,4})$ $(2.2_{4,2,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.2_{1,2,4})$ $(2.1_{4,1})$

$(0.2_{1,2})$ $(2.2_{4,2,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.2_{1,2,4})$ $(2.0_{2,1})$

8. Pre-semiotic dual system
$(3.1_{3,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 1.3_{4,3})$

Qualitative action

$(2.2_{1,2,4})$ $(2.1_{4,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.2_{1,4})$ $(2.2_{4,2,1})$

$(3.1_{3,4})$ $(2.1_{4,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.2_{1,4})$ $(1.3_{4,3})$

$(1.2_{1,4})$ $(2.2_{4,2,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.2_{1,2,4})$ $(2.1_{4,1})$

$(3.1_{3,4})$ $(2.2_{4,2,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.2_{1,2,4})$ $(1.3_{4,3})$

$$(1.2_{1,4}) \quad\quad (1.3_{4,3})$$
$$\text{人} \gg (0.3_{2,3}) \quad \times \quad \text{人} \gg (3.0_{3,2})$$
$$(3.1_{3,4}) \quad\quad (2.1_{4,1})$$

$$(2.2_{1,2,4}) \quad\quad (1.3_{4,3})$$
$$\text{人} \gg (0.3_{2,3}) \quad \times \quad \text{人} \gg (3.0_{3,2})$$
$$(3.1_{3,4}) \quad\quad (2.2_{4,2,1})$$

Medial action

$$(2.2_{1,2,4}) \quad\quad (3.0_{3,2})$$
$$\text{人} \gg (1.2_{1,4}) \quad \times \quad \text{人} \gg (2.1_{4,1})$$
$$(0.3_{2,3}) \quad\quad (2.2_{4,2,1})$$

$$(3.1_{3,4}) \quad\quad (3.0_{3,2})$$
$$\text{人} \gg (1.2_{1,4}) \quad \times \quad \text{人} \gg (2.1_{4,1})$$
$$(0.3_{2,3}) \quad\quad (1.3_{4,3})$$

$$(0.3_{2,3}) \quad\quad (2.2_{4,2,1})$$
$$\text{人} \gg (1.2_{1,4}) \quad \times \quad \text{人} \gg (2.1_{4,1})$$
$$(2.2_{1,2,4}) \quad\quad (3.0_{3,2})$$

$$(3.1_{3,4}) \quad\quad (2.2_{4,2,1})$$
$$\text{人} \gg (1.2_{1,4}) \quad \times \quad \text{人} \gg (2.1_{4,1})$$
$$(2.2_{1,2,4}) \quad\quad (1.3_{4,3})$$

$$(0.3_{2,3}) \quad\quad (1.3_{4,3})$$
$$\text{人} \gg (1.2_{1,4}) \quad \times \quad \text{人} \gg (2.1_{4,1})$$
$$(3.1_{3,4}) \quad\quad (3.0_{3,2})$$

$$(2.2_{1,2,4}) \quad\quad (1.3_{4,3})$$
$$\text{人} \gg (1.2_{1,4}) \quad \times \quad \text{人} \gg (2.1_{4,1})$$
$$(3.1_{3,4}) \quad\quad (2.2_{4,2,1})$$

Objectal action

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{array}{c} (3.1_{3,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (1.3_{4,3}) \end{array}$$

$$\begin{array}{c} (0.3_{2,3}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4}) \end{array} \times \begin{array}{c} (2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (3.0_{3,2}) \end{array}$$

$$\begin{array}{c} (3.1_{3,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4}) \end{array} \times \begin{array}{c} (2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (1.3_{4,3}) \end{array}$$

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.1_{3,4}) \end{array} \times \begin{array}{c} (1.3_{4,3}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{array}{c} (0.3_{2,3}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.1_{3,4}) \end{array} \times \begin{array}{c} (1.3_{4,3}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (3.0_{3,2}) \end{array}$$

Interpretative action

$$\begin{array}{c} (2.2_{1,2,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (1.3_{4,3}) \\ (2.2_{4,2,1}) \end{array}$$

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (1.3_{4,3}) \\ (2.1_{4,1}) \end{array}$$

$(2.2_{1,2,4})$ $(2.1_{4,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.2_{1,4})$ $(2.2_{4,2,1})$

$(0.3_{2,3})$ $(2.1_{4,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.2_{1,4})$ $(3.0_{3,2})$

$(1.2_{1,4})$ $(2.2_{4,2,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.2_{1,2,4})$ $(2.1_{4,1})$

$(0.3_{2,3})$ $(2.2_{4,2,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.2_{1,2,4})$ $(3.0_{3,2})$

9. Pre-semiotic dual system
$(3.1_{3,4}\ 2.2_{1,2,4}\ 1.3_{4,3}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 2.2_{4,2,1}\ 1.3_{4,3})$

Qualitative action

$(2.2_{1,2,4})$ $(3.1_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.3_{3,4})$ $(2.2_{4,2,1})$

$(3.1_{3,4})$ $(3.1_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.3_{3,4})$ $(1.3_{4,3})$

$(1.3_{3,4})$ $(2.2_{4,2,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.2_{1,2,4})$ $(3.1_{4,3})$

$(3.1_{3,4})$ $(2.2_{4,2,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.2_{1,2,4})$ $(1.3_{4,3})$

$(1.3_{3,4})$ $(1.3_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.1_{3,4})$ $(3.1_{4,3})$

$(2.2_{1,2,4})$ $(1.3_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.1_{3,4})$ $(2.2_{4,2,1})$

Medial action

$(2.2_{1,2,4})$ $(3.0_{3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.3_{2,3})$ $(2.2_{4,2,1})$

$(3.1_{3,4})$ $(3.0_{3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.3_{2,3})$ $(1.3_{4,3})$

$(0.3_{2,3})$ $(2.2_{4,2,1})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.2_{1,2,4})$ $(3.0_{3,2})$

$(3.1_{3,4})$ $(2.2_{4,2,1})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.2_{1,2,4})$ $(1.3_{4,3})$

$(0.3_{2,3})$ $(1.3_{4,3})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(3.1_{3,4})$ $(3.0_{3,2})$

$(2.2_{1,2,4})$ $(1.3_{4,3})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(3.1_{3,4})$ $(2.2_{4,2,1})$

Objectal action

$$\begin{matrix}(1.3_{3,4}) & & (3.0_{3,2}) \\ \text{人} \gg (2.2_{1,2,4}) & \times & \text{人} \gg (2.2_{4,2,1}) \\ (0.3_{2,3}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.0_{3,2}) \\ \text{人} \gg (2.2_{1,2,4}) & \times & \text{人} \gg (2.2_{4,2,1}) \\ (0.3_{2,3}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \text{人} \gg (2.2_{1,2,4}) & \times & \text{人} \gg (2.2_{4,2,1}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.1_{4,3}) \\ \text{人} \gg (2.2_{1,2,4}) & \times & \text{人} \gg (2.2_{4,2,1}) \\ (1.3_{3,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (1.3_{4,3}) \\ \text{人} \gg (2.2_{1,2,4}) & \times & \text{人} \gg (2.2_{4,2,1}) \\ (3.1_{3,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.3_{4,3}) \\ \text{人} \gg (2.2_{1,2,4}) & \times & \text{人} \gg (2.2_{4,2,1}) \\ (3.1_{3,4}) & & (3.0_{3,2})\end{matrix}$$

Interpretative action

$$\begin{matrix}(2.2_{1,2,4}) & & (3.0_{3,2}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (0.3_{2,3}) & & (2.2_{4,2,1})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.0_{3,2}) \\ \text{人} \gg (3.1_{3,4}) & \times & \text{人} \gg (1.3_{4,3}) \\ (0.3_{2,3}) & & (3.1_{4,3})\end{matrix}$$

$(2.2_{1,2,4})$ $(3.1_{4,3})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.3_{3,4})$ $(2.2_{4,2,1})$

$(0.3_{2,3})$ $(3.1_{4,3})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(1.3_{3,4})$ $(3.0_{3,2})$

$(1.3_{3,4})$ $(2.2_{1,2,4})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.2_{4,2,1})$ $(0.3_{2,3})$

$(0.3_{2,3})$ $(2.2_{4,2,1})$
人 ≫ $(3.1_{3,4})$ × 人 ≫ $(1.3_{4,3})$
$(2.2_{1,2,4})$ $(3.0_{3,2})$

10. Pre-semiotic dual system
$(3.1_{3,4}\ 2.3_{2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 3.2_{4,2}\ 1.3_{4,3})$

Qualitative action

$(2.3_{2,4})$ $(3.1_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.3_{3,4})$ $(3.2_{4,2})$

$(3.1_{3,4})$ $(3.1_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.3_{3,4})$ $(1.3_{4,3})$

$(1.3_{3,4})$ $(3.2_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.3_{2,4})$ $(3.1_{4,3})$

$(3.1_{3,4})$ $(3.2_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.3_{2,4})$ $(1.3_{4,3})$

$$\begin{matrix}(1.3_{3,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (3.1_{3,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (3.1_{3,4}) & & (3.2_{4,2})\end{matrix}$$

Medial action

$$\begin{matrix}(2.3_{2,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (0.3_{2,3}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (0.3_{2,3}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.2_{4,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (2.3_{2,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (2.3_{2,4}) & & (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (1.3_{4,3}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (3.1_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (1.3_{4,3}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (3.1_{3,4}) & & (3.2_{4,2})\end{matrix}$$

Objectal action

$$\begin{matrix}(1.3_{3,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (0.3_{2,3})\end{matrix} \quad \times \quad \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (0.3_{2,3})\end{matrix} \quad \times \quad \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (3.2_{4,2}) \\ (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) \\ \curlywedge \gg (2.3_{2,4}) \\ (1.3_{3,4})\end{matrix} \quad \times \quad \begin{matrix}(3.1_{4,3}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.1_{3,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (1.3_{3,4})\end{matrix} \quad \times \quad \begin{matrix}(3.1_{4,3}) \\ \curlywedge \gg (3.2_{4,2}) \\ (1.3_{4,3})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (3.1_{3,4})\end{matrix} \quad \times \quad \begin{matrix}(1.3_{4,3}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) \\ \curlywedge \gg (2.3_{2,4}) \\ (3.1_{3,4})\end{matrix} \quad \times \quad \begin{matrix}(1.3_{4,3}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.0_{3,2})\end{matrix}$$

Interpretative action

$$\begin{matrix}(2.3_{2,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.3_{2,3})\end{matrix} \quad \times \quad \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (1.3_{4,3}) \\ (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) \\ \curlywedge \gg (3.1_{3,4}) \\ (0.3_{2,3})\end{matrix} \quad \times \quad \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (1.3_{4,3}) \\ (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (1.3_{3,4}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (2.3_{2,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.2_{4,2}) \\ \curlywedge \gg (3.1_{3,4}) & \times & \curlywedge \gg (1.3_{4,3}) \\ (2.3_{2,4}) & & (3.0_{3,2})\end{matrix}$$

11. Pre-semiotic dual system

$(3.2_{2,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 2.3_{4,2})$

Qualitative action

$$\begin{matrix}(2.2_{1,2,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (0.2_{1,2}) & \times & \curlywedge \gg (2.0_{2,1}) \\ (1.2_{1,4}) & & (2.2_{4,2,1})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (0.2_{1,2}) & \times & \curlywedge \gg (2.0_{2,1}) \\ (1.2_{1,4}) & & (2.3_{4,2})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (2.2_{4,2,1}) \\ \curlywedge \gg (0.2_{1,2}) & \times & \curlywedge \gg (2.0_{2,1}) \\ (2.2_{1,2,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (2.2_{4,2,1}) \\ \curlywedge \gg (0.2_{1,2}) & \times & \curlywedge \gg (2.0_{2,1}) \\ (2.2_{1,2,4}) & & (2.3_{4,2})\end{matrix}$$

$(1.2_{1,4})$ $(2.3_{4,2})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(3.2_{2,4})$ $(2.1_{4,1})$

$(2.2_{1,2,4})$ $(2.3_{4,2})$
人 ≫ $(0.2_{1,2})$ × 人 ≫ $(2.0_{2,1})$
$(3.2_{2,4})$ $(2.2_{4,2,1})$

Medial action

$(3.2_{2,4})$ $(2.0_{2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.2_{1,2})$ $(2.3_{4,2})$

$(3.2_{2,4})$ $(2.0_{2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.2_{1,2})$ $(2.3_{4,2})$

$(0.2_{1,2})$ $(2.2_{4,2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.2_{1,2,4})$ $(2.0_{2,1})$

$(3.2_{2,4})$ $(2.2_{4,2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.2_{1,2,4})$ $(2.3_{4,2})$

$(0.2_{1,2})$ $(2.3_{4,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(3.2_{2,4})$ $(2.0_{2,1})$

$(2.2_{1,2,4})$ $(2.3_{4,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(3.2_{2,4})$ $(2.2_{4,2,1})$

Objectal action

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.2_{1,2}) \end{array} \times \begin{array}{c} (2.0_{2,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{array}{c} (3.2_{2,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.2_{1,2}) \end{array} \times \begin{array}{c} (2.0_{2,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.3_{4,2}) \end{array}$$

$$\begin{array}{c} (0.2_{1,2}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4}) \end{array} \times \begin{array}{c} (2.1_{1,4}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.0_{2,1}) \end{array}$$

$$\begin{array}{c} (3.2_{2,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4}) \end{array} \times \begin{array}{c} (2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.3_{4,2}) \end{array}$$

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.2_{2,4}) \end{array} \times \begin{array}{c} (2.3_{4,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{array}{c} (0.2_{1,2}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.2_{2,4}) \end{array} \times \begin{array}{c} (2.3_{4,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.0_{2,1}) \end{array}$$

Interpretative action

$$\begin{array}{c} (2.2_{1,2,4}) \\ \curlywedge \gg (3.2_{2,4}) \\ (0.2_{1,2}) \end{array} \times \begin{array}{c} (2.0_{2,1}) \\ \curlywedge \gg (2.3_{4,2}) \\ (2.2_{4,2,1}) \end{array}$$

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (3.2_{2,4}) \\ (0.2_{1,2}) \end{array} \times \begin{array}{c} (2.0_{2,1}) \\ \curlywedge \gg (2.3_{4,2}) \\ (2.1_{4,1}) \end{array}$$

$(2.2_{1,2,4})$ $(2.1_{4,1})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(1.2_{1,4})$ $(2.2_{4,2,1})$

$(0.2_{1,2})$ $(2.1_{4,1})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(1.2_{1,4})$ $(2.0_{2,1})$

$(1.2_{1,4})$ $(2.2_{4,2,1})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(2.2_{1,2,4})$ $(2.1_{4,1})$

$(0.2_{1,2})$ $(2.2_{1,2,4})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(2.2_{1,2,4})$ $(2.0_{2,1})$

12. Pre-semiotic dual system
$(3.2_{2,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 2.3_{4,2})$

Qualitative action

$(2.2_{1,2,4})$ $(2.1_{4,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.2_{1,4})$ $(2.2_{4,2,1})$

$(3.2_{2,4})$ $(2.1_{4,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.2_{1,4})$ $(2.3_{4,2})$

$(1.2_{1,4})$ $(2.2_{4,2,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.2_{1,2,4})$ $(2.1_{4,1})$

$(3.2_{2,4})$ $(2.2_{4,2,1})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.3_{2,4})$ $(2.2_{1,2,})$

$(1.2_{1,4})$ $(2.3_{4,2}$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.2_{2,4})$ $(2.1_{4,1})$

$(2.2_{1,2,4})$ $(2.3_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.2_{2,4})$ $(2.2_{4,2,1})$

Medial action

$(2.2_{1,2,4})$ $(3.0_{3,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.3_{2,3})$ $(2.2_{4,2,1})$

$(3.2_{2,4})$ $(3.0_{3,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(0.3_{2,3})$ $(2.3_{4,2})$

$(0.3_{2,3})$ $(2.2_{4,2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.2_{1,2,4})$ $(3.0_{3,2})$

$(3.2_{2,4})$ $(2.2_{4,2,1})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(2.2_{1,2,4})$ $(2.3_{4,2})$

$(0.3_{2,3})$ $(2.3_{4,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(3.2_{2,4})$ $(3.0_{3,2})$

$(2.2_{1,2,4})$ $(2.3_{4,2})$
人 ≫ $(1.2_{1,4})$ × 人 ≫ $(2.1_{4,1})$
$(3.2_{2,4})$ $(2.2_{4,2,1})$

Objectal action

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{array}{c} (3.2_{2,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.3_{4,2}) \end{array}$$

$$\begin{array}{c} (0.3_{2,3}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4}) \end{array} \times \begin{array}{c} (2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (3.0_{3,2}) \end{array}$$

$$\begin{array}{c} (3.2_{2,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (1.2_{1,4}) \end{array} \times \begin{array}{c} (2.1_{4,1}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.3_{4,2}) \end{array}$$

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.2_{2,4}) \end{array} \times \begin{array}{c} (2.3_{4,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{array}{c} (0.3_{2,3}) \\ \curlywedge \gg (2.2_{1,2,4}) \\ (3.2_{2,4}) \end{array} \times \begin{array}{c} (2.3_{4,2}) \\ \curlywedge \gg (2.2_{4,2,1}) \\ (3.0_{3,2}) \end{array}$$

Interpretative action

$$\begin{array}{c} (2.2_{1,2,4}) \\ \curlywedge \gg (3.2_{2,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (2.3_{4,2}) \\ (2.2_{4,2,1}) \end{array}$$

$$\begin{array}{c} (1.2_{1,4}) \\ \curlywedge \gg (3.2_{2,4}) \\ (0.3_{2,3}) \end{array} \times \begin{array}{c} (3.0_{3,2}) \\ \curlywedge \gg (2.3_{4,2}) \\ (2.1_{4,1}) \end{array}$$

$$\begin{matrix}(2.2_{1,2,4}) & & (2.1_{4,1}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (1.2_{1,4}) & & (2.2_{4,2,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (2.1_{4,1}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (1.2_{1,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.2_{1,4}) & & (2.2_{4,2,1}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (2.2_{1,2,4}) & & (2.1_{4,1})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (2.2_{4,2,1}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (2.2_{1,2,4}) & & (3.0_{3,2})\end{matrix}$$

13. Pre-semiotic dual system

$(3.2_{2,4}\ 2.2_{1,2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 2.2_{4,2,1}\ 2.3_{4,2})$

Qualitative action

$$\begin{matrix}(2.2_{1,2,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.3_{3,4}) & & (2.2_{4,2,1})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.3_{3,4}) & & (2.3_{4,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (2.2_{4,2,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.2_{1,2,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (2.2_{4,2,1}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.2_{1,2,4}) & & (2.3_{4,2})\end{matrix}$$

$(1.3_{3,4})$ $(2.3_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.2_{2,4})$ $(3.1_{4,3})$

$(2.2_{1,2,4})$ $(2.3_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.2_{2,4})$ $(2.2_{4,2,1})$

Medial action

$(2.2_{1,2,4})$ $(3.0_{3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.3_{2,3})$ $(2.2_{4,2,1})$

$(3.2_{2,4})$ $(3.0_{3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.3_{2,3})$ $(2.3_{4,2})$

$(0.3_{2,3})$ $(2.2_{4,2,1})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.2_{1,2,4})$ $(3.0_{3,2})$

$(3.2_{2,4})$ $(2.2_{4,2,1})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.2_{1,2,4})$ $(2.3_{4,2})$

$(0.3_{2,3})$ $(2.3_{4,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(3.2_{2,4})$ $(3.0_{3,2})$

$(2.2_{1,2,4})$ $(2.3_{4,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(3.2_{2,4})$ $(2.2_{4,2,1})$

Objectal action

$$(1.3_{3,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (2.2_{1,2,4}) \times \text{人} \gg (2.2_{4,2,1})$$
$$(0.3_{2,3}) \quad (3.1_{4,3})$$

$$(3.2_{2,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (2.2_{1,2,4}) \times \text{人} \gg (2.2_{4,2,1})$$
$$(0.3_{2,3}) \quad (2.3_{4,2})$$

$$(0.3_{2,3}) \quad (3.1_{4,3})$$
$$\text{人} \gg (2.2_{1,2,4}) \times \text{人} \gg (2.2_{4,2,1})$$
$$(1.3_{3,4}) \quad (3.0_{3,2})$$

$$(3.2_{2,4}) \quad (3.1_{4,3})$$
$$\text{人} \gg (2.2_{1,2,4}) \times \text{人} \gg (2.2_{4,2,1})$$
$$(1.3_{3,4}) \quad (2.3_{4,2})$$

$$(1.3_{3,4}) \quad (2.3_{4,2})$$
$$\text{人} \gg (2.2_{1,2,4}) \times \text{人} \gg (2.2_{4,2,1})$$
$$(3.2_{2,4}) \quad (3.1_{4,3})$$

$$(0.3_{2,3}) \quad (2.3_{4,2})$$
$$\text{人} \gg (2.2_{1,2,4}) \times \text{人} \gg (2.2_{4,2,1})$$
$$(3.2_{2,4}) \quad (3.0_{3,2})$$

Interpretative action

$$(2.2_{1,2,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (3.2_{2,4}) \times \text{人} \gg (2.3_{4,2})$$
$$(0.3_{2,3}) \quad (2.2_{4,2,1})$$

$$(1.3_{3,4}) \quad (3.0_{3,2})$$
$$\text{人} \gg (3.2_{2,4}) \times \text{人} \gg (2.3_{4,2})$$
$$(0.3_{2,3}) \quad (3.1_{4,3})$$

$(2.2_{1,2,4})$ $(3.1_{4,3})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(1.3_{3,4})$ $(2.2_{4,2,1})$

$(0.3_{2,3})$ $(3.1_{4,3})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(1.3_{3,4})$ $(3.0_{3,2})$

$(1.3_{3,4})$ $(2.2_{4,2,1})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(2.2_{1,2,4})$ $(3.1_{4,3})$

$(0.3_{2,3})$ $(2.2_{4,2,1})$
人 ≫ $(3.2_{2,4})$ × 人 ≫ $(2.3_{4,2})$
$(2.2_{1,2,4})$ $(3.0_{3,2})$

14. Pre-semiotic dual system
$(3.2_{2,4}\ 2.3_{2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 3.2_{4,2}\ 2.3_{4,2})$

Qualitative action

$(2.3_{2,4})$ $(3.1_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.3_{3,4})$ $(3.2_{4,2})$

$(3.2_{2,4})$ $(3.1_{4,3})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(1.3_{3,4})$ $(2.3_{4,2})$

$(1.3_{3,4})$ $(3.2_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.3_{2,4})$ $(3.1_{4,3})$

$(3.2_{2,4})$ $(3.2_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(2.3_{2,4})$ $(2.3_{4,2})$

$$\begin{matrix}(1.3_{3,4}) & & (2.3_{4,2}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (3.2_{2,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (2.3_{4,2}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (3.2_{2,4}) & & (3.2_{4,2})\end{matrix}$$

Medial action

$$\begin{matrix}(2.3_{2,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (0.3_{2,3}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (0.3_{2,3}) & & (2.3_{4,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.2_{4,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (2.3_{2,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (2.3_{2,4}) & & (2.3_{4,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (2.3_{4,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (3.2_{2,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (2.3_{4,2}) \\ \curlywedge \gg (1.3_{3,4}) & \times & \curlywedge \gg (3.1_{4,3}) \\ (3.2_{2,4}) & & (3.2_{4,2})\end{matrix}$$

Objectal action

$$\begin{matrix}(1.3_{3,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (0.3_{2,3})\end{matrix} \times \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (0.3_{2,3})\end{matrix} \times \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (3.2_{4,2}) \\ (2.3_{4,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) \\ \curlywedge \gg (2.3_{2,4}) \\ (1.3_{3,4})\end{matrix} \times \begin{matrix}(3.1_{4,3}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (1.3_{3,4})\end{matrix} \times \begin{matrix}(3.1_{4,3}) \\ \curlywedge \gg (3.2_{4,2}) \\ (2.3_{4,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) \\ \curlywedge \gg (2.3_{2,4}) \\ (3.2_{2,4})\end{matrix} \times \begin{matrix}(2.3_{4,2}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) \\ \curlywedge \gg (2.3_{2,4}) \\ (3.2_{2,4})\end{matrix} \times \begin{matrix}(2.3_{4,2}) \\ \curlywedge \gg (3.2_{4,2}) \\ (3.0_{3,2})\end{matrix}$$

Interpreatative action

$$\begin{matrix}(2.3_{2,4}) \\ \curlywedge \gg (3.2_{2,4}) \\ (0.3_{2,3})\end{matrix} \times \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (2.3_{4,2}) \\ (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) \\ \curlywedge \gg (3.2_{2,4}) \\ (0.3_{2,3})\end{matrix} \times \begin{matrix}(3.0_{3,2}) \\ \curlywedge \gg (2.3_{4,2}) \\ (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (1.3_{3,4}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (2.3_{2,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.2_{4,2}) \\ \curlywedge \gg (3.2_{2,4}) & \times & \curlywedge \gg (2.3_{4,2}) \\ (2.3_{2,4}) & & (3.0_{3,2})\end{matrix}$$

15. Pre-semiotic dual system

$(3.3_{2,3,4}\ 2.3_{2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 3.2_{4,2}\ 3.3_{4,3,2})$

Qualitative action

$$\begin{matrix}(2.3_{2,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.3_{3,4}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(3.3_{2,3,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (1.3_{3,4}) & & (3.3_{4,3,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.3_{2,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.2_{2,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (0.3_{2,3}) & \times & \curlywedge \gg (3.0_{3,2}) \\ (2.3_{2,4}) & & (2.3_{4,2})\end{matrix}$$

$(1.3_{3,4})$ $(2.3_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.2_{2,4})$ $(3.1_{4,3})$

$(2.3_{2,4})$ $(2.3_{4,2})$
人 ≫ $(0.3_{2,3})$ × 人 ≫ $(3.0_{3,2})$
$(3.2_{2,4})$ $(3.2_{4,2})$

Medial action

$(2.3_{2,4})$ $(3.0_{3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.3_{2,3})$ $(3.2_{4,2})$

$(3.3_{2,3,4})$ $(3.0_{3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(0.3_{2,3})$ $(3.3_{4,3,2})$

$(0.3_{2,3})$ $(3.2_{4,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.3_{2,4})$ $(3.0_{3,2})$

$(3.3_{2,3,4})$ $(3.2_{4,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(2.3_{2,4})$ $(3.3_{4,3,2})$

$(0.3_{2,3})$ $(3.3_{4,3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(3.3_{2,3,4})$ $(3.0_{3,2})$

$(2.3_{2,4})$ $(3.3_{4,3,2})$
人 ≫ $(1.3_{3,4})$ × 人 ≫ $(3.1_{4,3})$
$(3.3_{2,3,4})$ $(3.2_{4,2})$

Objectal action

$$\begin{matrix}(1.3_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (2.3_{2,4}) & \times & \curlywedge \gg (3.2_{4,2}) \\ (0.3_{2,3}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(3.3_{2,3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (2.3_{2,4}) & \times & \curlywedge \gg (3.2_{4,2}) \\ (0.3_{2,3}) & & (3.3_{4,3,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \curlywedge \gg (2.3_{2,4}) & \times & \curlywedge \gg (3.2_{4,2}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(3.3_{2,3,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (2.3_{2,4}) & \times & \curlywedge \gg (3.2_{4,2}) \\ (1.3_{3,4}) & & (3.3_{4,3,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.3_{4,3,2}) \\ \curlywedge \gg (2.3_{2,4}) & \times & \curlywedge \gg (3.2_{4,2}) \\ (3.3_{2,3,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.3_{4,3,2}) \\ \curlywedge \gg (2.3_{2,4}) & \times & \curlywedge \gg (3.2_{4,2}) \\ (3.3_{2,3,4}) & & (3.0_{3,2})\end{matrix}$$

Interpretative action

$$\begin{matrix}(2.3_{2,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (3.3_{2,3,4}) & \times & \curlywedge \gg (3.3_{4,3,2}) \\ (0.3_{2,3}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.0_{3,2}) \\ \curlywedge \gg (3.3_{2,3,4}) & \times & \curlywedge \gg (3.3_{4,3,2}) \\ (0.3_{2,3}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(2.3_{2,4}) & & (3.1_{4,3}) \\ \curlywedge \gg (3.3_{2,3,4}) & \times & \curlywedge \gg (3.3_{4,3,2}) \\ (1.3_{3,4}) & & (3.2_{4,2})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.1_{4,3}) \\ \curlywedge \gg (3.3_{2,3,4}) & \times & \curlywedge \gg (3.3_{4,3,2}) \\ (1.3_{3,4}) & & (3.0_{3,2})\end{matrix}$$

$$\begin{matrix}(1.3_{3,4}) & & (3.2_{4,2}) \\ \curlywedge \gg (3.3_{2,3,4}) & \times & \curlywedge \gg (3.3_{4,3,2}) \\ (2.3_{2,4}) & & (3.1_{4,3})\end{matrix}$$

$$\begin{matrix}(0.3_{2,3}) & & (3.2_{4,2}) \\ \curlywedge \gg (3.3_{2,3,4}) & \times & \curlywedge \gg (3.3_{4,3,2}) \\ (2.3_{2,4}) & & (3.0_{3,2})\end{matrix}$$

II. Action schemata of the 2 · 24 tetradic semiotic partial relations

1. Pre-semiotic dual system
(3.1 2.1 1.1 0.1) × (1.0 1.1 1.2 1.3)

Qualitative action

$$(1.1_{1,3,4}) \gg \begin{matrix}(3.1_{3,4}) \\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.1_{1,3}) \quad \times \quad (1.0_{3,1}) \gg \begin{matrix}(1.2_{4,1}) \\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,4,3}) \gg \begin{matrix}(2.1_{1,4}) \\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.1_{1,3}) \quad \times \quad (1.0_{3,1}) \gg \begin{matrix}(1.3_{4,3}) \\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4}) \\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (0.1_{1,3}) \quad \times \quad (1.0_{3,1}) \gg \begin{matrix}(1.1_{4,3,1}) \\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.1_{1,3,4}) \\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.1_{1,3}) \quad \times \quad (1.0_{3,1}) \gg \begin{matrix}(1.3_{4,3}) \\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.1_{1,3}) \quad \times \quad (1.0_{3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (0.1_{1,3}) \quad \times \quad (1.0_{3,1}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.1_{1,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.0_{3,1})$$

$$(0.1_{1,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.0_{3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.1_{1,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.0_{3,1})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.1_{1,3})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.0_{3,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.1_{1,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.0_{3,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.1_{1,3})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.0_{3,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.1_{1,3}) \gg \overset{(3.1_{3,4})}{\underset{(1.1_{1,3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \overset{(1.1_{4,3,1})}{\underset{(1.3_{4,3})}{\curlyvee}} \succ (1.0_{3,1})$$

$$(0.1_{1,3}) \gg \overset{(1.1_{1,3,4})}{\underset{(3.1_{3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \overset{(1.3_{4,3})}{\underset{(1.1_{4,3,1})}{\curlyvee}} \succ (1.0_{3,1})$$

$$(1.1_{1,3,4}) \gg \overset{(0.1_{1,3})}{\underset{(3.1_{3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \overset{(1.3_{4,3})}{\underset{(1.0_{3,1})}{\curlyvee}} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \overset{(3.1_{3,4})}{\underset{(0.1_{1,3})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \overset{(1.0_{3,1})}{\underset{(1.3_{4,3})}{\curlyvee}} \succ (1.1_{4,3,1})$$

$$(3.1_{3,4}) \gg \overset{(0.1_{1,3})}{\underset{(1.1_{1,3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \overset{(1.1_{4,3,1})}{\underset{(1.0_{3,1})}{\curlyvee}} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \overset{(1.1_{1,3,4})}{\underset{(0.1_{1,3})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \overset{(1.0_{3,1})}{\underset{(1.1_{4,3,1})}{\curlyvee}} \succ (1.3_{4,3})$$

Interpretative action

$$(0.1_{1,3}) \gg \overset{(2.1_{1,4})}{\underset{(1.1_{1,3,4})}{\curlyvee}} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \overset{(1.1_{4,3,1})}{\underset{(1.2_{4,1})}{\curlyvee}} \succ (1.0_{3,1})$$

$$(0.1_{1,3}) \gg \overset{(1.1_{1,3,4})}{\underset{(2.1_{1,4})}{\curlyvee}} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \overset{(1.2_{4,1})}{\underset{(1.1_{4,3,1})}{\curlyvee}} \succ (1.0_{3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(0.1_{1,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.0_{3,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.1_{1,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.0_{3,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.1_{1,3})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.0_{3,1})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (0.1_{1,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.0_{3,1})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.2_{4,1})$$

2. Pre-semiotic dual system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.1_{1,3,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 1.1_{4,3,1}\ 1.2_{1,4}\ 1.3_{4,3})$

Qualitative action

$$(1.1_{1,3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.2_{1,2}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{1,4})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.3_{4,3})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.2_{1,2}) \gg \underset{(1.1_{1,3,4})}{\overset{(3.1_{3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \underset{(1.3_{4,3})}{\overset{(1.1_{4,3,1})}{\curlyvee}} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \underset{(3.1_{3,4})}{\overset{(1.1_{1,3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \underset{(1.1_{4,3,1})}{\overset{(1.3_{4,3})}{\curlyvee}} \succ (2.0_{2,1})$$

$$(1.1_{1,3,4}) \gg \underset{(3.1_{3,4})}{\overset{(0.2_{1,2})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \underset{(2.0_{2,1})}{\overset{(1.3_{4,3})}{\curlyvee}} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \underset{(0.2_{1,2})}{\overset{(3.1_{3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \underset{(1.3_{4,3})}{\overset{(2.0_{2,1})}{\curlyvee}} \succ (1.1_{4,3,1})$$

$$(3.1_{3,4}) \gg \underset{(1.1_{1,3,4})}{\overset{(0.2_{1,2})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \underset{(2.0_{2,1})}{\overset{(1.1_{4,3,1})}{\curlyvee}} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \underset{(0.2_{1,2})}{\overset{(1.1_{1,3,4})}{\curlyvee}} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \underset{(1.1_{4,3,1})}{\overset{(2.0_{2,1})}{\curlyvee}} \succ (1.3_{4,3})$$

Interpretative action

$$(0.2_{1,2}) \gg \underset{(1.1_{1,3,4})}{\overset{(2.1_{1,4})}{\curlyvee}} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \underset{(1.2_{4,1})}{\overset{(1.1_{4,3,1})}{\curlyvee}} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \underset{(2.1_{1,4})}{\overset{(1.1_{1,3,4})}{\curlyvee}} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \underset{(1.1_{4,3,1})}{\overset{(1.2_{4,1})}{\curlyvee}} \succ (2.0_{2,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.2_{4,1})$$

3. Pre-semiotic dual system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.1_{1,3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 1.1_{4,3,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$$(1.1_{1,3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \quad \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.1_{1,3,4}) \quad \times \quad (1.1_{4,3,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.1_{4,3,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.1_{4,3,1})$$

$$(1.1_{1,3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.1_{4,3,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.1_{1,3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.1_{4,3,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.1_{1,3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.1_{4,3,1})\end{matrix} \succ (1.2_{4,1})$$

4. Pre-semiotic system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.2_{1,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 2.1_{4,1}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.2_{1,2}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.2_{1,2}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.2_{1,2}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \times (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.1_{3,4}) \times (1.3_{4,3}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \times (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.1_{3,4}) \times (1.3_{4,3}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.2_{4,1})$$

5. Pre-semiotic dual system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.2_{1,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 2.1_{4,1}\ 1.2_{4,1}\ 1.3_{3,4})$

Qualitative action

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.3_{2,3}) \times (3.0_{3,2}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \times (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.3_{2,3}) \times (3.0_{3,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \times (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{3,4}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.2_{4,1})$$

6. Pre-semiotic dual system
$(3.1_{3,4}\ 2.1_{1,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 1.2_{4,1}\ 1.3_{4,3})$

Qualitative action

$$(1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.1_{4,3})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{3,4}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{4,1})$$

$$(2.1_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (1.2_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{1,4}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.1_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.1_{1,4}) \quad \times \quad (1.2_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{3,4}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.1_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{3,4}) \gg \begin{matrix}(1.2_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.1_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.2_{4,1})\end{matrix} \succ (3.1_{4,3})$$

$$(2.1_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.2_{1,4})$$

$$(2.1_{1,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.2_{4,1})$$

7. Pre-semiotic dual system

$(3.1_{3,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 1.3_{4,3})$

Qualitative action

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.2_{1,2}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.0_{2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.2_{1,2}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.2_{1,2}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

8. Pre-semiotic dual system

$(3.1_{3,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 1.3_{4,3})$

Qualitative action

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.1_{4,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

9. Pre-semiotic dual system

$(3.1_{3,4}\ 2.2_{1,2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 2.2_{4,2,1}\ 1.3_{4,3})$

Qualitative action

$$(1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.1_{4,3})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Objective action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \times (2.2_{4,2,1}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \times (2.2_{4,2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \times (2.2_{4,2,1}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \times (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.1_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \times (2.2_{4,2,1}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \times (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.1_{3,4}) \times (1.3_{4,3}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.1_{3,4}) \times (1.3_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.1_{4,3})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

10. Pre-semiotic dual system
$(3.1_{3,4}\ 2.3_{2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 3.2_{4,2}\ 1.3_{4,3})$

Qualitative action

$$(1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(2.3_{2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.2_{4,2})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (1.3_{4,3})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.2_{4,2})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

:

$$(3.1_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (1.3_{4,3})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.1_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(1.3_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(3.1_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (1.3_{4,3})\end{matrix} \succ (3.1_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (1.3_{4,3})$$

$$(3.1_{3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (1.3_{4,3})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(2.3_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.1_{3,4}) \quad \times \quad (1.3_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.2_{4,2})$$

11. Pre-semiotic dual system

$(3.2_{2,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.2_{1,2}) \times (2.0_{2,1}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 2.3_{4,2})$

Qualitative action

$$(1.2_{1,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.2_{1,2}) \quad \times \quad (2.0_{2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.3_{4,2})$$

Medial action

$$(0.2_{1,2}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.0_{2,1}) \quad :$$

$$(0.2_{1,2}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.0_{2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.3_{4,2})$$

Objectal action

$$(0.2_{1,2}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.1_{4,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.2_{1,2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.3_{4,2})$$

Interpretative action

$$(0.2_{1,2}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.0_{2,1})$$

$$(0.2_{1,2}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.0_{2,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.2_{1,2})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.0_{2,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.2_{1,2})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.0_{2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

12. Pre-semiotic dual system
$(3.2_{2,4}\ 2.2_{1,2,4}\ 1.2_{1,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 2.1_{4,1}\ 2.2_{4,2,1}\ 2.3_{4,2})$

Qualitative action

$$(1.2_{1,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.3_{4,2})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.2_{1,4}) \quad \times \quad (2.1_{4,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.3_{4,2})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (2.1_{4,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.3_{4,2})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (3.0_{3,2})$$

$$(1.2_{1,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.1_{4,1})$$

$$(1.2_{1,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.1_{4,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.2_{1,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.1_{4,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.2_{1,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.1_{4,1})\end{matrix} \succ (2.2_{4,2,1})$$

13. Pre-semiotic system

$(3.2_{2,4}\ 2.2_{1,2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 2.2_{4,2,1}\ 2.3_{4,2})$

Qualitative action

$$(1.3_{3,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.1_{4,3})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.3_{4,2})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (2.3_{4,2})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.2_{1,2,4}) \quad \times \quad (2.2_{4,2,1}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.3_{4,2})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.1_{4,3}\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.2_{1,2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(2.2_{4,2,1})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.2_{1,2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.2_{4,2,1})\end{matrix} \succ (3.1_{4,3})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.2_{4,2,1})$$

$$(2.2_{1,2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.2_{4,2,1})$$

14. Pre-semiotic dual system
$(3.2_{2,4}\ 2.3_{2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 3.2_{4,2}\ 2.3_{4,2})$

Qualitative action

$$(1.3_{3,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(2.3_{2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.2_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (2.3_{4,2})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ 1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.2_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \\ (2.3_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (2.3_{4,2})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(3.2_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (2.3_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(3.2_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (2.3_{4,2})$$

$$(3.2_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (2.3_{4,2})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(2.3_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.2_{2,4}) \quad \times \quad (2.3_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.2_{4,2})$$

15. Pre-semiotic dual system

$(3.3_{2,3,4}\ 2.3_{2,4}\ 1.3_{3,4}\ 0.3_{2,3}) \times (3.0_{3,2}\ 3.1_{4,3}\ 3.2_{4,2}\ 3.3_{4,3,2})$

Qualitative action

$$(1.3_{3,4}) \gg \begin{matrix}(3.3_{2,3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.3_{4,3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (3.3_{2,3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.3_{4,3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(2.3_{2,4}) \gg \begin{matrix}(3.3_{2,3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.3_{4,3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.3_{2,3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.3_{4,3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.2_{4,2})$$

$$(3.3_{2,3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.3_{4,3,2})$$

$$(3.3_{2,3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (0.3_{2,3}) \quad \times \quad (3.0_{3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.3_{4,3,2})$$

Medial action

$$(0.3_{2,3}) \gg \begin{matrix}(3.3_{2,3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.3_{4,3,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.2_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(2.3_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(3.3_{2,3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.3_{4,3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(3.3_{2,3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.3_{4,3,2})$$

$$(3.3_{2,3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (1.3_{3,4}) \quad \times \quad (3.1_{4,3}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.3_{4,3,2})$$

Objectal action

$$(0.3_{2,3}) \gg \begin{matrix}(3.3_{2,3,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.3_{4,3,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (3.3_{2,3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.3_{4,3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (3.3_{2,3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.3_{4,3,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(3.3_{2,3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.3_{4,3,2})\end{matrix} \succ (3.1_{3,4})$$

$$(3.3_{2,3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.3_{2,3,4})$$

$$(3.3_{2,3,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (2.3_{2,4}) \quad \times \quad (3.2_{4,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.3_{4,3,2})$$

Interpretative action

$$(0.3_{2,3}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.3_{2,3,4}) \quad \times \quad (3.3_{4,3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.0_{3,2})$$

$$(0.3_{2,3}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (3.3_{2,3,4}) \quad \times \quad (3.3_{4,3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.0_{3,2})$$

$$(1.3_{3,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (2.3_{2,4})\end{matrix} \succ (3.3_{2,3,4}) \times (3.3_{4,3,2}) \gg \begin{matrix}(3.2_{4,2})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.1_{4,3})$$

$$(1.3_{3,4}) \gg \begin{matrix}(2.3_{2,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.3_{2,3,4}) \times (3.3_{4,3,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.2_{4,2})\end{matrix} \succ (3.1_{4,3})$$

$$(2.3_{2,4}) \gg \begin{matrix}(0.3_{2,3})\\ \curlyvee \\ (1.3_{3,4})\end{matrix} \succ (3.3_{2,3,4}) \times (3.3_{4,3,2}) \gg \begin{matrix}(3.1_{4,3})\\ \curlyvee \\ (3.0_{3,2})\end{matrix} \succ (3.2_{4,2})$$

$$(2.3_{2,4}) \gg \begin{matrix}(1.3_{3,4})\\ \curlyvee \\ (0.3_{2,3})\end{matrix} \succ (3.3_{2,3,4}) \times (3.3_{4,3,2}) \gg \begin{matrix}(3.0_{3,2})\\ \curlyvee \\ (3.1_{4,3})\end{matrix} \succ (3.2_{4,2})$$

Therefore, we have given all possible words of vocabulary of a 4-contextural 4-adic negative language in semiotic form. This is the semiotic world according Günther we had to build by opening the curtain and enter the semiotic meontics, the reign of volition and semiotic action.

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