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Abstract

"The Chinese Challenge"-Teamblog is opening up a discussion about a possible new rationality hidden in the Chinese writing. The main question is: What can we learn from China that China is not teaching us? It is proposed that a study of polycontextural logic and morphogrammatics could be helpful to discover this new kind of rationality.

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This complementary Blog to the Chinese Challenge Blog is presenting studies to a mathematical theory of Diamonds. Diamond theory is studying for the first time, tabular categories as an interaction of categories and saltatories.

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June 2007 / http://rudys-diamond-strategies.blogspot.de/2007/06/

FRIDAY, JUNE 22, 2007 The Diamond Book, Another Intro

The White Queen says to Alice: "It's a poor sort of memory that only works backwards".

Diamond Strategies and Ancient Chinese thinking

"expanding categories", "mutual relations", "changing world"

To diamondize is to invent/discover new contextures.

"A good mathematician is one who is good at expanding categories or kinds (tong lei)."

"Chinese mathematical art aims to clarify practical problems by examining their relations; it puts problems and answers in a system of mutual relation—a yin-yang structure for all the things in a changing world. The mutual relations are determined by the lei (kind), which represents a group of associations, and the lei (kind) is determined by certain kinds of mutual relations."

"Chinese logicians in ancient times presupposed no fixed order in the world. Things are changing all the time. If this is true, then universal rules that aim to represent fixed order in the world for all time are not possible." (Jinmei Yuan) <u>http://ccbs.ntu.edu.tw/FULLTEXT/JR-JOCP/jc106031.pdf</u>

Given those insights into the character of Ancient Chinese mathematical practice the question arises:

How can it be applied to the modern Western way of doing math?

The concept of composition is fundamental for category theory, thus we have to start our diamond deconstruction with it.

"... category theory is based upon one primitive notion – that of composition of morphisms." D. E. Rydeheard

If we agree, that the most fundamental operation in math and logic is to *compose* parts to a composed composition, as in category theory, then we have to ask:

How can the Chinese way of thinking being applied to this most fundamental operation of composition?

Tabular structure of the time "now"

"Chinese logical reasoning instead foregrounds the element of time as now. Time, then, plays a crucial role in the structure of Chinese logic." (Jinmei Yuan)

Because of the "mutual relations" and "bi-directional" structure of Chinese strategies I think the time mode of "now" is not the Western "now" appearing in the linear chain of "pastpresent-future". To understand "now" in a non-positivist sense of "here and now" it could be reasonable to engage into the adventure of reading Heidegger's and Derrida's contemplation about time. This seems to be confirmed by the term "happenstance" (Ereignis) which is crucial to understand the "now"-time structure."

http://www.thinkartlab.com/CCR/2006 09 01 rudys-chinese-challenge archive.html

Hence, the temporality of "now" is at least a complementarity of "past"- and "future"-oriented aspects. In other words, "now" as *happenstance* (Ereignis) is neither past nor future but also not present, but the interplay of these modi of temporality together.

"Deductive steps are not important for Chinese mathematicians; the important thing is to find harmonious relationships in a bidirectional order." (Jinmei Yuan) There is no need to proclaim any kind of proof that the diamond strategies are the ultimate explication and formalization of Ancient Chinese mathematical thinking. What I intent is to elucidate both approaches; and especially to motivate the diamond way of thinking. Borrowing Ancient insights as *metaphors* and *guidelines* to understand the immanent formal stringency of the diamond approach.

Time-structure of mathematical operations

I'm in the mood, now, to belief that I just discovered a possibility to answer this crucial question, *where* and *how* to intervene into the fundamental concept of *composition* in mathematics and logic. The possibility to intervene discovered my readiness to perceive its lucidity to be written into the darkness of this text.

In a closed/open world things are purely functional (operational) and objectional, at once.

Western math is separating objects from morphisms. This happens even in the "object-free" interpretation of category theory.

My aim is not to regress to a state of mind, where we are not able to make such a

difference like between objects and morphisms, but to go beyond of its fundamental restrictiveness.

Towards a diamond category theory

A morphism or arrow between two objects, morph(A, B), is always supposing, that A is first and B is second. That is, (A, B), is an ordered relation, called a tuple. It is also assumed that A and B are disjunct.

To mention such a triviality sounds tautological and unnecessarily. It would even be clumsy to write (A;first, B; second). Because we could iterate this game one step further: ((A;first;first, B; second;second) and so on.

The reason is simple. It is presumed that the order relation, written by the tuple, is established in advance. And where is it established? Somewhere in the *axioms* of whatever axiomatic theory, say set theory.

In a diamond world such pre-definitions cannot be accepted. They can be domesticated after some use, but not as a pre-established necessity.

Hence, we have to reunite at each place the operational and the objectional character of our inscriptions.

 $morph(A; \alpha, B; \omega)$, or as a graph, $morph: (A, \alpha) \longrightarrow (B, \omega)$

As we know from mathematics, especially from category theory, a morphism at its own is not doing the job. We have to compose morphisms to composed morphisms. At this point, the clumsy notation starts to make some sense.

The conditions of compositions are expressed, even in classic theories, as a *coincidence* of the codomain of the first morphism with the domain of the second morphism. Hence, the composition takes the form:

 $\begin{array}{l} (A', \ \alpha_1) & \xrightarrow{s_n} (B', \ \omega_1) \ o \ (A^2, \ \alpha_2) & \xrightarrow{s_n} (B^2, \ \omega_2) \\ composition \ defined \ with \ \ \begin{bmatrix} \omega_1 \ \simeq \ \alpha_2 \\ A^2 \ \triangleq \ B' \end{bmatrix} \end{array}$

When we met, it wasn't that you and me met each other, it was our togetherness which brought us together without our knowledge of what is happening with us together.

And now, a full complementation towards a Diamond category.

$$(B', \omega_4) \leftarrow (A^2, \alpha_4)$$

$$(A', \alpha_1) \xrightarrow{\operatorname{recept}} (B', \omega_1) \circ (A^2, \alpha_2) \xrightarrow{\operatorname{recept}} (B^2, \omega_2)$$

$$(A', \alpha_3) \xrightarrow{\operatorname{recept}} (B^2, \omega_3)$$

Your brightness didn't blend me to see this minutious difference in the composition of actions. What confused me, and still is shaking me, is this coincidence and synchronicity of our encounter and what I started to write without understanding what I was writing and how I could write you to understand our togetherness.

Which could be the words left which could be chosen to write you my wordlessness?

We are together in our differentness. Our differentness is what brought us together. We will never come together without the differentness of our togetherness.

Our togetherness is our differentness; and our differentness is our togetherness.

 $\begin{cases} o = \begin{cases} \lambda(\omega_1) = \lambda(\alpha_2) \\ \lambda(A^2) \triangleq \lambda(B^1) \end{cases} \\ \varphi(A^1, \alpha_1) = \varphi(A^1, \alpha_3) \\ \varphi(B^2, \omega_2) = \varphi(B^2, \omega_3) \\ \delta((B^1, \omega_1) \circ (A^2, \alpha_2)) = \\ (\delta(B^1), \omega_4) \leftarrow (\delta(A^2), \alpha_4) \end{cases}$

You have given me the warmth I needed to open my eyes.

Together we are different; in our differentness we are close.

Our closeness is disclosing us futures which aren't enclosing our past.

Was it coincidence, parallelism and synchronicity or simply the diamond way of life which brought us together, not only you and me, but us together into our togetherness and into the work which has overtaken me?

What I couldn't see before, that always was in front of me, was illuminated by the brightness of your feelings.

diamond composition of morphisms

 $\forall i, morph^{i} \in MORPH : morph^{i} \circ morph^{2} \\ \hline morph^{3} \mid \overline{morph^{4}} \\ thus, morph^{(4)} = \begin{bmatrix} \overline{morph^{4}} \\ morph^{4} \\ morph^{i}, morph^{2} \\ morph^{3} \end{bmatrix}$

I was walking on the pavement, thinking about all this beautiful coincidences and the scientific problems of the temporal structure of synchronicity. And just at this moment I heard a voice calling my name. It was you on your bike. I had been stuck in my thoughts, you in a hurry and the dangers of the traffic. But down to earth and the street, doing what made me happy. A différence minutieuse. Giving me a hug and a kiss.

"Bump, is a meeting of coincidence!", you text me.

Then I started to write this text as another approach to an Intro for The Book of Diamonds, to be written.

What are our diagrams telling us?

First of all, the way the arrows are connected is not straight forwards. There is additionally, a mutual counter-direction of the morphisms involved. Because of this split, the diagram is mediating two procedures, called the *acceptional* and the *rejectional*. Thus, an interaction between these two parts of the diagram happens. Such an interaction is not future-oriented but happens in the now, the happenstance, of its interactivity.

All the goodies of the classical orientation, the unrestricted iterativity of composition, is included in the diamond diagram. Nothing is lost. Morphisms in categories are not only composed, but have to realize the conditions of associativity for compositions.

Complementarity of composition and hetero-morphism

The composition is legitimate if its hetero-morphism is established. If the hetero-morphism is established the composition is legitimate. The hetero-morphism is legitimating the composition of morphisms.

Only if the hetero-morphism of the composition is established, the composition is legitimate. Only if the composition of the morphism is realized, the hetero-morphism is legitimate.



connectivity and jumps

I didn't look for you; you didn't look for me. We didn't look for each other. Neither was there anything to look.

It happened in the happenstance of our togetherness.

We jumped together; we bridged the abyss. You bridged the abyss; I bridged the abyss. In a balancing act we bridged the abyss together. The abyss bridged me and you. The bridge abyssed us together into our differentness, again.

Une quadrille burlesque indécidable.

Now I can see, I always was looking for you.

But I couldn't see in the darkness of my thoughts that you had been there for all the time.

We learned to live with the deepness of our differentness. Discovered guiding rules to compose our journeys.

The time structure of synchronicity is antidromic, parallel, both at once forwards and backwards. Not in chronological time but in lived time of encounters and togetherness.

You have given me the warmth I needed to open my eyes.

Associativity of saltatories

With the *associativity* of categories new insights in to the functionality of diamonds are shown.

Diamonds may be thematized as 2-categories where two mutual *antidromic* categories are in an interplay. Hence possibiliy, not exactly in the classic sense of 2-category theory neither in the sense of the *polycontexturality* of mediated categories.

complementarity of accept and reject

 $\begin{aligned} reject(gf) &= k \text{ iff } accept(k) = (gf) \\ reject(hg) &= l \text{ iff } accept(l) = (hg) \\ reject(hgf) &= m \text{ iff } accept(m) = (hgf) \end{aligned}$

Another notation is separating the *acceptional* from the *rejectional* morphisms of the diamond. A diamond consists on a simultaneity of a category and a jumpoid , also called a *saltatory*. If the category is involving m arrows, its antidromic saltatory is involving m-1 inverse arrows. Some simplification in the notation of saltatories is achieved if we adopt the category method of connecting arrows. This can be considered as a kind of a double strategies of thematization, one for compositions and one for saltas.

With such a separation of different types of morphisms, *diagram chasing* might be supported.

$$\begin{array}{c|c} A & \stackrel{\ell}{\longrightarrow} B \\ h & \searrow & \downarrow_{\mathcal{S}} \\ C \end{array} \qquad b_{1} \leftarrow b_{2} \\ \end{array}$$

What went together, too, is the fact that I changed to a PPC, hence, this text written here, is written on the fly. For you and me.

Diamond $A \xrightarrow{i} B \qquad \begin{cases} saltatory \\ saltatory \\ \downarrow h \qquad \downarrow g \\ C \xrightarrow{i} D \\ c \xrightarrow{i} D \\ c \xrightarrow{i} C \\ c \xrightarrow{i}$

In our togetherness we are separated.

In our separateness we are associated.

Together, nous some un ensembletrès fort.

Diamond rules

$$\begin{bmatrix} A & \xrightarrow{\ell} & B & \xrightarrow{2} & C & \xrightarrow{h} & D \\ \\ b_1 & \xleftarrow{k} & b_2 \parallel c_1 & \xleftarrow{\ell} & c_2 \end{bmatrix}$$
$$A & \xrightarrow{\kappa} & D \mid b_1 & \xleftarrow{n} & c_2$$

On the other side, I was aware that something special will happen this year. I told this my son. It is an odd year. I love odd numbers. But as we know there are about the same amount of even numbers. And there is something more.

Our society told me all the time, that, in my age, it will be time for the very end of the game.

Hence, I had to make a difference and to start a new round in this interplay of neither-nor. And that's what's going on, now.

Diamond Relatedness

 $(g \Diamond f) = chiasm \begin{pmatrix} g & o & f : sameness \\ f \parallel g : differentness \end{pmatrix}$ of relatedness

$$(g \diamond f) = \chi \begin{pmatrix} g \circ f : cod(f) \triangleq dom(g) \\ f \parallel g : \omega(f) \neq \alpha(g) \end{pmatrix}$$

short,
$$(g \diamond f) = \chi \begin{pmatrix} g \circ f \\ f \parallel g \end{pmatrix}$$

It is this difference you made , I was blind before. After the difference made myself, I can see, how to meet you, again.

To play this game of sameness and differentness as the interplay of our relatedness.

I remember, you said: "Later!".

What's new?

Hence, what is new with the diamond approach to mathematical thinking is the fact, that, after 30 years of distributing and mediating formal systems over the kenomic grid with the mechanism of proemiality and tetradic chiasms, which goes far beyond *"translations, embeddings, fibring, combining logics"*, I discovered finally the hetero-morphisms, and thus, the diamond structure, *inside*, i.e. immanently and intrinsically, of the very notion of category itself.

First steps, where to go

Following the arrows of our diagram some primary steps towards a formalization of the structure of our cognitive journeys may be proposed.



As written above, diamonds don't fall from the *blue sky*, we have to bring them together, for a first trial, to borrow methods, with the well known formalizations of arrows in category theory.

$$\begin{split} \mathbf{Diamond}_{\mathsf{cakegory}}^{(m)} &= \left(\mathbf{Cat}_{\mathsf{conc}}^{(m)} \mid \mathbf{Cat}_{\mathsf{jump}}^{(m,0)} \right) \\ \mathbb{C} &= \left(M, o, || \right) \end{split}$$

1. Matching Conditions

```
a. g o f, h o g, k o g and

b<sub>1</sub> ← b<sub>2</sub>

c<sub>1</sub> ← c<sub>2</sub>

d<sub>1</sub> ← c<sub>2</sub>

d<sub>1</sub> ← d<sub>2</sub>

l || m || n are defined,
b. h o ((g o f) o k) and

b<sub>1</sub> ← b<sub>2</sub> || c<sub>1</sub> ← c<sub>1</sub> || d<sub>1</sub> ← d<sub>2</sub>

l || (m || n) are defined
c. ((h o g) o f) o k and

(l || m) || n are defined,
d. mixed: f, l, m

l || m, l o f o m

(l o f) o m,

l o (f o m) are defined.
```

After the entry steps, the nice properties of associativity for morphisms and heteromorphisms are notified.

2. Associativity Condition

a. If f, g, $h \in MC$, then h o $((g \circ f) \circ k) = ((h \circ g) \circ f) \circ k$ and l, m, $n \in MC$ l || (m || n) = (l || m) || n

b. If \overline{l} , f, $\overline{m} \in MC$, then $(\overline{l} \circ f) \circ \overline{m} = \overline{l} \circ (f \circ \overline{m})$

The definition of units has to interplay with identity and difference.

3. Unit Existence Condition

a. $\forall f \exists (u_c, u_p) \in (M, o, \parallel) : \begin{cases} u_c \circ f, u_p \circ f, \\ u_c \parallel f, u_p \parallel f \end{cases}$ are defined.

To not to lose ground, a smallness definition is accepted, at first.

4. Smallness Condition $\forall (u_1, u_2) \in (M, o, ||): hom (u_1, u_2) \land het (u_1, u_2) = \begin{cases} f \in M \mid f \ o \ u_1 \land u_2 \ o \ f, \\ f \in M \mid f \ || \ u_1 \land u_2 \ || \ f \ are \ defined \end{cases} \in SET$

As in category theory, many other approaches are accessible to formalize categories. The same will happen with diamonds; later. posted by Rudolf | 12:15 PM | 0 comments links to this post

TUESDAY, JUNE 19, 2007 The Book of Diamonds, Intro

Pour Lorna Duffy Blue, qui ma poussé, à tout hasard, dans une quadrille burlesque indécidable. Printemps 2007, Glasgow

A book I didn't write

This is not the book I wanted to write. Nor did I want to read the book I didn't write. What you are reading now is the book which has written me into the book of diamonds I never owned. I never wanted to write you such a book. Nor that you are reading the book I didn't write.

It happened in a situation where I lost connection to what I have just written and what I had written before, again and again. While I was writing what I wanted to write I was writing what I never thought to write. A book of Diamonds. Or even *The Book of Diamonds*.

I haven't written this book. After I have written some parts I started to read it. I think what happened is the most radical departure from Occidental thinking and writing I ever have read before.

I remember vaguely what I was writing all those years before. I tried to read it and had the feeling to discover a way of thinking which has become a dark continent of what I always wanted to think but never succeeded. This is because this darkness wasn't illuminated enough to let discover this *tiny* but most fundamental difference in the way we are thinking and doing mathematics.

What jumped into my eyes, or was writing itself automatically into my formula editor, was the resistance of a difference to be levelled by the common approach of thinking.

The brightness of the new (in)sight is still troubling me.

It isn't my aim to write this book. I never wanted to write a book.

Nevertheless, I don't see a chance not to write this text as *The Book of Diamonds* whether or not I'm in the possession of diamonds. Nor do I want to be the author of a book I didn't write myself.

What troubles me, is that, as a matter of course, I don't understand what I have written in this book yet to be written.

The most self-evident situation, which is leading our thinking in whatever had been thought before, has become obsolete in its ridiculous restrictiveness.

Before I was overtaken by this tetra-lemmatic trance sans dance, I tried to overcome and surpass this boring narrowness of our common thinking by wild constructions of disseminated, i.e., distributed and mediated, formal systems. Like symbolic logic, formal arithmetic, programming languages and even category theory. This was a big step beyond the established way of thinking. And it still is.

But that isn't the real thing to write.

The striking news is the discovery of a new way of writing. Writing, until now, was the composition of letters, words and sentences to a composite, called text or book. The composition operation is no different from the composition of journeys. Let's have a look at how journeys are composed together to form a nice trip. We will be confronted with some surprising experiences in the middle of safe commodities.

Different times?

What is well known in time-related arts, that the temporality of a piece can be an intertwined movement of different futures and different pasts, is a thing of absolute impossibility in science and mathematics.

Time in science is uni-directional. It may be linear, branched or even cyclical, it remains oriented in one and only one direction. It is the direction of the next step into the future. But what we also know quite well is the fact that this is not the time of life, it is the time of chronology. Chronology is connecting time with numbers, forgetting the liveliness of lived time. Watchmakers know it the best.

Can you imagine a Swiss watch running forwards and backwards at once? Or our natural numbers, being disseminated and interwoven into counter-dynamic patterns? Utter nonsense!

Today, everything has to be linearized to be compatible with our scientific world-view and to be computed by our computerized technology and be measured by our chronology. No cashpoint is working without the acceptance of global linearization.

We need this simple structure to compose our actions in a reasonable way. Reason is reduced to the ability to compose. To compose actions is the most elementary activity in life

as well in science and maths. Hence, it is exactly the place to be analyzed and deconstructed in the search for a new way of composing complexity.

Well developed in time-based arts are patterns of poly-rhythms, poly-phony, multitemporality of narratives, interwoven and fractal structures of stories, tempi developing in different directions, even the magic I'm interested in this book to be written, the simultaneous developments of tempi in contra-movements, at once forwards and backwards, and neither in the one nor in the other direction, and all that at once in a well balanced "*harmony*". This is not placed in the world of imagination and fantasy, only, but becoming a reality in our life, technology and science.

What's for?

As we know, time-related arts can be of intriguing temporal complexity. And the fact, that it happens in a limited and measurable time at a well-defined place for a calculable price is not interfering with its artistic and aesthetic complexity.

In terms of a theatre play we can imagine, and realizing it much more distinctively as it has been done before, a development of the drama at once forwards, future-oriented, and backwards, past-oriented. Both, simultaneously interplaying together.

This is not really new in drama, music or dance, nor in film, video and other time-related arts. But there is no theory, no instrumental support for it, thus based entirely on intuition, and therefore highly vulnerable and badly restricted in its possible complexity. At the same time, the paradigm of linearized and calculable time is intruding all parts of our life. It becomes more and more impossible for the arts to resist this way of thinking and organizing life.

The aim of the diamond approach is to reverse this historic situation. Complex temporal structures have to be implemented into the very basic notions and techniques of mathematics itself. With the diamond approach we will be able to design, calculate and program the complex qualities of interplaying time structures.

To achieve and realize this vision of a complex temporality, we have, paradoxically, to subvert the hegemony of time and time-related thinking. Different time movements can be interwoven only if there is some space offered for their interactions. Hence, a new kind of spatiality, obviously beyond space and time, has to be uncovered, able to open up an arena to localize the game of interacting time lines.

How to travel from Dublin to London via Glasgow?

Metaphorically, things are as trivial as possible. If you are travelling from Dublin to Glasgow you are doing a complementarity of two moves: you are leaving Dublin, mile by mile, and at the same time you are approaching Glasgow, mile by mile. What we learned to do, until now, is to travel from Dublin to Glasgow and to arrive more or less at the time we calculated to arrive. To practice the complementarity of the movement is not as simple as it sounds. You have to have one eye in the driving mirror and the other eye directed to the front window and, surely, you have to mediate, i.e., to understand together, what you are perceiving: leaving and approaching at once. And the place you are thinking these two counter-movements which happens at once is neither the forward nor the backward direction of your journey. It's your awareness of both. Both together at once and, at the same time, neither the one nor the other. It is your arena where you are playing the play of leaving and arriving.

This complementarity of movements is just one part of the metaphor.

Because life is complex, it has to be composed by parts. Or it has to be de-composed into parts. We may drive from Dublin to Glasgow and then from Glasgow to London to realize our trip from Dublin to London. This, of course, is again something extremely simple to think and even to realize.

But again, there is a difference to discover which may change the way we are thinking for ever.

To arrive and to depart are two activities, i.e., two functions, two operations. Dublin, Glasgow and London as cities have nothing to do with arrivals and departures per se. They are three distinct cities. We can arrive and we can depart from these cities. But cities are not activities but entities, at least in this metaphor of traveling.

Things come into the swing if applied to the quadrille.

departure(Dublin)
arrival(Glasgow)/departure(Glasgow)
arrival(London)

Obviously, Glasgow, in this case, is involved in the double activity of arrival and departure. It also seems to be clear, that the city Glasgow as the arrival city and Glasgow as the departure city are the same or even identical. It wouldn't make sense for our exercise if the arrival city would be Glasgow in Scotland and the departure city Glasgow would be Glasgow in the USA.

But what does that mean exactly? If we stay for a while in Glasgow before we move on to London, Glasgow could have changed. Is it then still the same Glasgow we arrived in? And the same from which we want to depart? It could even happen that the city is changing its name in between!

On the other hand, it doesn't matter how much Glasgow is changing, the activity of arrival and the activity of departure are independent of a possible change of Glasgow.

It seems also quite clear, that the activity of arrival and the *activity* of departure are not only different but building an opposition. They are opposite activities.

It is also not of special interest for our consideration if the way of arriving and the way of departing is changing. Instead of taking a bus to leave Glasgow we could take a train or an airplane. Nothing would change the functionality of *departing* and *arriving* as such.

Thus, we can distinguish two notions in the movement or even two separated movements playing together the movement of the journey:

1. Dublin--> Glasgow --> London, and

2. departure --> arrival/departure --> arrival.

The classic analysis of the situation would naturally suppose that there is a kind of an equivalence or coincidence between Glasgow as arrival city and Glasgow as departure city, hence not making a big deal about the two distinctions just separated. Thus: arrival (Glasgow) = departure (Glasgow)

City-oriented travel diagram



A closer look at the place where the connection of both parts of the travel happens shows a more intricate structure than we are used to knowing. If we *zoom* into the connection of both journeys we discover an interesting interplay between the function of arrivals and the function of departures.



The activity-oriented diagram is thematizing what really happens at the place of "arrival(Glasgow)=departure(Glasgow)". That is, the internal logical structure of the simple or simplifying equality, "arrival(Glasgow)" and " departure(Glasgow)", is analyzed and has to be studied in its 2-leveled structure and its complementary dynamics.

Obviously, the travel from Dublin to Glasgow, and from Glasgow to London is a composition of two sub-travels. Thus, the composition "o" in the first diagram is working only if the coincidence of both, *Glasgow(arrival)* and *Glasgow(departure)* is established.

If this coincidence is not given, the composition of the journeys cannot happen. Maybe something else will happen but not the connection of both journeys we wanted to happen. If we wanted to model what happened if it didn't happen we would have to draw a new diagram with its own arrows and it wouldn't be bad to find a connection from the old diagram to the new one.

What is the zoom telling us?



zooming into the composition

First, we observe the composition of the part-travels "o" aiming forwards to the aim. *Second*, we discover a counter-movement in this activity of connecting parts, aiming into the opposite direction of the composition operation.

It may not be easy to understand why we have to deal with complicating such simple things. But we remember, even a single journey, without any connections, is a double movement. It is always simultaneously a dynamic of *away* and *anear*, to and fro, an intriguing *mêlée* of both. Not a toggle between one and the other, no flip-flop at all, but happening simultaneously both at once, coming and going.

Hence, it comes without surprise, that this *mêlée* happens for compositions too. In fact, it becomes inevitable in light of compositions. We simply have to zoom into it. We could forget about this complications if we would be on one and only one travel for ever. Then the backsight or retrospect would become obsolete. And only the foresight or prospect would count. Or in a further turn, only the journey per se without origin nor aim could become the leading metaphor.

Funnily enough, that is the way life is organized in *Occidental* cultures, modern and post-modern.

More profane, everything in the modern world-view is conceived as a problem to be solved, i.e. life appears as problem solving. Soon, happily enough, machines will overtake this *destin sinistre*.

Diamonds are not involved into the paradigm of problem solving and its time structure but are opening up playful games of the *joie de vivre*, spacing possibilities where problems can find their re-solution.

Lets go on! Keep it real!

This intriguing situation we are discovering with our zoom, happens for all stations of our travel. We started at Dublin and ended in London. And these two stations are looking simple and harmless. But this is only the case because we have taken a snapshot out of the dynamics of traveling. That is, in some way we arrived before in Dublin and at some time we will leave London. Hence, Dublin and London have to be seen in the same light of dynamics between the categories of arrival and departure as it is the case for Glasgow as the connecting *interstation*to London.

Coming to terms

In mathematics, the study of such composed arrows is called category theory. *Category theory* is studying arrows (morphisms), *diamond theory* is studying composition of morphisms as the primary topic. The activity is not in the arrows but in the composition of the arrows. Hence, the complementary movement of the rejectional arrows (morphisms). At

the cross-point of compositions the magic complementarity of encounters happens.

There is nothing similar happening with morphisms alone and their objects. Category theory, without doubt, is dealing with compositions, too. But the focus is not on the intrinsic structure and dynamics of the composition itself but on the construction of new arrows based on the composition of arrows (morphisms).

Without such a magic of complementarity there is no realm for *rendez-vous*. Departure is always the opposite of arrival. But this simple fact is also always doubled. The departure is the double opposite of arrival, the past arrival and the arrival in the future. Thus, the duplicity has to be realized at once.

Let's read the diagram!



We can change terms now to introduce a more general approach to our intellectual journey. We replace for departure "*alpha*" and for arrival "*omega*" and omit the names of the cities. We get the first diagram. Then we stretch it to a nicer form. This is the diamond diagram of the arrows. Connected with a known terminology we get into the *diamond* of (proposition, opposition, acceptance, rejectance).



Further wordings

The class of departures can be taken as the position of proposition. The class of arrivals can be taken as the position of the opposition. The class of compositions can be taken as the position of the acceptance. The class of complements can be taken as the position of the rejectance.

Acceptance means: both at once, proposition and opposition. Rejectance means: neither-nor, neither proposition nor opposition.

Putting things together again, cities and activities, we get a final diagram



We learned to deal with identities, Glasgow is Glasgow. But our diagram is teaching us a difference. Glasgow as arrival city and Glasgow as departure city are not the same. As the location of arrival and departure of our journey, they are different.

More insights into the game are accessible if we go one step further with our journey.



Category theory as the study of arrows is studying the rules of the connectedness of arrows. The diagram above, with its 3 arrows f, g, h and its compositions (fg), (gh) and (fgh), shows clearly one of the main rules for arrows: associativity.

```
In a formula,
for all arrows f, g, h: ( f o g ) o h = f o ( g o h ).
```

Applying associativity to our journey analogy we have to add one more destination. Hence, if we travel from (*Dublin to Glasgow and from Glasgow to London*) and then from(*London to Brighton*), we are realizing the same trip as if we travel first from (*Dublin to Glasgow*) and then from (*Glasgow to London and from London to Brighton*).

In contrast, within *Diamond theory*, for the very first time, additional to the category theory and in an interplay with it, the gaps and jumps involved are complementary to the connectedness of compositions. The counter-movements of compositions are generating jumps.

In our diagram: between the red arrows I and k there is no connectedness but a *gap* which needs a *jump*. We can *bridge* the separated arrows by the red arrow (kI), which is abalancing act over the gap, called *spagat*. If we want to compromise, we can build a risky bridge: (lgk), which is involving *acceptional* and the *rejectional* arrows. Both together, connectedness and jumps, are forming the diamond structure of any journey.

Positioning Diamonds

The part of the book I have written myself is the part of localizing or positioning diamonds into the *kenomic grid of polycontexturality* without knowing exactly their internal structure. Diamonds are not falling from the *blue sky*, they have to be positioned. This happens on different levels in the tectonics of the graphematic system. The logical structure of distributed diamonds, especially, is enlightening this brand new experience and is producing further insights into the diamond paradigm of writing.

Diamonds in Ancient thinking

Furthermore, a connection is risked between diamond thinking and ancient Greek, Pythagorean, and the ancient Chinese way of thinking. Diamonds are not necessarily connected with any phono-logocentric notions. That is, diamonds are inscribed beyond the conception of names, notions, sentences, propositions, numbers and advice. Diamonds are not about eternal logical truth but are opening up worlds to discover. Diamonds had been surviving in Western thinking as neglected creatures, reduced to logical entities, like Aristotle's Square of Oppositions. To do the diamond, i.e., to *diamondize* is still the challenge we have to enjoy to risk.

We are proud to live our life in an open world, not restricted to any limitations, allowing all kind of infinities, endless progresses, and feeling open to unlimited futures.

This enthusiasm for an open, infinite and dynamic world-view can be summarized in the very concept of natural numbers. Their counting structure is open and limitless.

With such an achievement in thinking and technology we are proud to distinguish our culture from Ancient cultures which had been closed, limited and static, and often involved with cyclic time-structures and their endless repetition of the same.

At a time where this proudness has achieved its aims, we are wakening up from this dream of liberty.

The whole *hallucination* of the openness turns round into the nightmare of a sinister narrowness of endless iterativity and the shocking discovery of the endlessness of its resources.

It is time to acknowledge that the Ancient world-view wasn't as closed as its critics propagated. In fact since Aristotle we simply have lost any understanding of a world-view which is neither open nor closed, neither finite nor infinite, and neither static nor dynamic, simply because these distinctions are not thought in the sense of the Ancient world-view but in the modern way of thinking. Its simple two-valuedness is automatically forcing this attitude of thinking to evaluate the binaries involved, i.e. open is good, closed is bad, dynamic is good, static is bad, infinite is good, finite is bad.

closed, static, temporal vs. open, dynamic, eternal worlds

In a closed world, which consists of many worlds, there is no narrowness. In such a world, which is open and closed at once, there is profoundness of reflection and broadness of interaction. In such a world, it is reasonable to conceive any movement as coupled with its counter-movement.

In an open world it wouldn't make much sense to run numbers forwards and backwards at once. But in a closed world, which is open to a multitude of other worlds, numbers are situated and distributed over many places and running together in all directions possible. Each step in a open/closed world goes together with its counter-step. There is no move without its counter-move.

$1 \xrightarrow{b} N \xrightarrow{z} N$ $\sum_{k \to k} A \xrightarrow{k} A$	==>	$A \xrightarrow{v} A$ $\stackrel{2}{\sim} \uparrow r \qquad \uparrow r$ $1 \xrightarrow{v} N \xrightarrow{\tau} N$ $\stackrel{z}{\sim} \downarrow r \qquad \downarrow r$ $A \xrightarrow{k} A$
$A \xleftarrow{\nu} A$ $\stackrel{2}{\sim} \uparrow \uparrow \qquad \uparrow \uparrow$ $\begin{bmatrix} 1 \xleftarrow{\nu} N \xleftarrow{c'} N \\ 1 \xleftarrow{\nu} N \xleftarrow{r} N \end{bmatrix}$ $\stackrel{2}{\sim} \downarrow \uparrow \qquad \downarrow \uparrow$ $A \xleftarrow{\nu} A$	==>	$A \xleftarrow{\nu} A$ $\uparrow c \qquad \uparrow c$ $\begin{bmatrix} N \xleftarrow{\nu} & N \\ N & \xrightarrow{\nu} & N \end{bmatrix}$ $\downarrow c \qquad \downarrow c$ $A \xrightarrow{k} A$

If we respect the situation for closed/open worlds, then we can omit the special status of an initial object. That is, there is no zero as the ultimate beginning or origin of natural numbers in a diamond world. Everything begins everywhere.

Thus, *parallax* structures of number series, where numbers are *ambivalent* and *antidromic*, are natural. It has to be shown, how such ambivalent and antidromic number systems are well founded in diamonds.

What's new?

So, after all these journeys about journeys, what is new and interesting about at all? To cite, what I might have written, I can answer this question with an interrogative first trial. But first, I have to write, what's new is the fact that I'm writing without knowing what I'm

writing. Until now, I was quite aware and in control of my writings. "If everything is in itself in a contractional struggle, involved into the dynamics of its opposites, hence, what does it mean for the most fundamental mathematical action, the composition of objects (relations, functions, morphisms, etc.)? The main opposites of thinking are sameness and differentness (difference, distinctness, diversity). They have to be inscribed in their chiastic interplay. How can their struggle at the place of the most elementary mathematical operation be inscribed?"

The discovery of the realm of *rejectionality*, the *"royaume sans roy et capital"*, which is inscribing the writer into his writing, is the new theme of writing to be risked and explored.

All this together could become a book I would like (you) to read. What is written now could be called a sketch, or a proposal of a book I would like to write. But such a book would remain, necessarily, an endless sketch. What I have done until now was to disseminate formal systems (logics, arithmetic, category theory, etc.) based on triadic structures, i.e., I diamondized triangles (triads).

Classical thinking is dealing with dyads, like (yes/no), (true/false), (good/bad). *Modern thinking* tries to be involved with triads: (true/false/context) or (operator/operand/operation).

The brand new exciting event to enjoy is: Diamondization of diamonds!

How to play the game of tetrads of tetrads, diamonds of diamonds?

How to do it? Let's do it!

Read the book to be written: "The Book of Diamonds".

posted by Rudolf | 8:17 AM | 5 comments links to this post

July 2007 / http://rudys-diamond-strategies.blogspot.de/2007/07/ SUNDAY, JULY 15, 2007 Summary "How to Compose?"

Composing the answers of

"How to compose?"

This is a systematic summary of the paper "How to Compose?" It may be used as an introduction into the topics of a general theory of composition. Categorical composition

Category theory is defining the rules of composition. It answers the question: How does composition work? What to do to compose morphisms?

Answer: Category Theory.

1.1.1 Categories I: graphs with structure

Definition 1 A category is given by

i) DATA: a diagram $C_1 \xrightarrow{i} C_0$ in Set

ii) STRUCTURE: composition and identities

iii) PROPERTIES: unit and associativity axioms.

The data $C_1 \xrightarrow{a} C_0$ is also known by the (over-used) term "". We can

interpret it as a set C_1 of arrows with source and target in C_0 given by s, t.

It is focused on the *surface-structures* of the process of composing morphism, realized by the triple DPS of

Data (source, target), Structure (composition, identity) and Properties (unity, associativity)

by fulfilling the matching conditions for morphisms.

The properties (axioms) of categories are the *global* conditions for the final realization of the local rules of composition, i.e., the *matching conditions* for morphisms to be composed.

Categories are based on their global Properties of "*unit*" and "*associativity*", understood as the axioms of categorical composition of morphisms.

Proemial composition

Proemiality answers the question: What enables categorical composition? What is the deepstructure of categorical composition?

Answer: proemial relationship.

Proemial relationship is understood as a cascade of order- and exchange-relations, as such it is conceived as a pre-face (pro-oimion) of any composition.

Parts of the categorial Structure are moved into the proemial Data domain. Or inverse: Parts of the Data (source, target) are moved into the Structure as exchange relation.

Thus, *Data* (order relation=morphism), *Structure* (exchange relation, position; identity, composition). *Properties* (diversity; unit, associativity)

That is, categorical Structure is distributed by "*positions*" over different levels of the proemial relationship.

Proemiality is based on order- and exchange relations.

That is, order relations are based on a cascade of exchange relations and exchange relations are founded in cascade of order relations.

But this interlocking mechanism is not inscribed into the definition of proemiality, it occurs as an interpretation, only.

Hence, proemiality as a pre-face may face the essentials of composition but not its Janusfaced movements.

Chiastic composition

Chiastic approach to composition answers the question: How is proemiality working? What enables proemiality to work?

Answer: Chiasm of the proemial constituents, i.e., order- and exchange relation.

The chiasm of composition is the inscription of the reading of the proemial relationship. It is mediating the upwards and downwards reading of proemiality, which in the proemial approach is separated.

Hence, it is realizing the Janus-faced movements of double exchange relations.

To avoid empty phantasms and eternal dizziness of the Janus-faced double movements of

exchange relations, iterative and accretive, up- and downwards, the *coincidence relations* of chiasms have to enter the stage.

That is, the matching conditions have to be applied to the exchange relations as well as to the coincidence relations to perform properly the game of chiasms on trusted arenas.

Thus, proemiality, with its single exchange relation and lack of coincidence, is still depending on logo-centric thematizations even if its result are surpassing radically its limits by the introduction of *polycontexturality*.

Hence, proemiality is depending on a specific *reading*, i.e., a mental mapping of chiasms. This proemial reading has to imagine the double movements of the way up and the way down. And the coherence of the different levels, formalized in chiasms by the coincidence relations.

The DSP-transfer is: *Data* (morphisms), *Structure* (exchange, coincidence, position; identity, composition), *Properties* (diversity; unity, associativity)

Diamond of composition

The diamond approach answers the question: What is the deep-structure of composition per se, i.e., independent from the definition or view-point of morphisms and its chiasms?

Answer: the interplay of *acceptional* and *rejectional* process/structures as complementary movements of diamonds. Without such an interplay there is no chiasm, and hence, no proemiality nor categorial composition.

The acceptional parts are defining *categories*, the rejectional *saltatories*, both together are defining diamonds.

The DSP-transfer is:

Data (morphisms, hetero-morphism),

Structure (double-exchange, coincidence, position; identity, difference, composition, decomposition),

Properties (unity, diversity, associativity, complementarity).

In fact, diamonds don't have Data and Structure, everything is in the Properties as an interplay of global and local parts.

Hence, diamonds are playing the

Properties (global/local, surface/deep-structure),

which is realized by the interplay of categories and saltatories, hence, again,

Properties (categories, saltatories).

Diamond				
A−́→B	saltatory			
↓À ↓8 C>D	a <i>⊷i</i> b _X _^™			
category	c			

Saltatories are founded in categories and categories are founded in saltatories; both together in their interplay are realizing the diamond structure of composition.



Descriptive Definition of Diamond

Interplay of the 4 approaches

How are the 4 approaches related? What's their interplay? What is the deep-structure of "interplay"?

Answer: Diamonds as the *interplay of interplays*, i.e., the play of global/local and surface-/deep-structures are realizing the autonomous process/structure "diamond".

Diamond (categories, saltatories)

Kenogrammatics of Diamonds

Diamonds are taking place, they are positioned, hence their *positionality* is their deepstructure.

The positionality of diamonds, marked by their *place-designator*, is the *kenomic grid* with its tectonics of proto-, deutero- and trito-structure of kenogrammatics. (Don't ask, where the kenomic grid is located?!)

Kenogrammatics answers the question: How to get rid of diamonds (without loosing them)?

In other words, kenogrammatics is inscribing diamonds without the necessity to relate them to the drama of composition.

Therefore, the kenogrammatics of diamonds is opening up a *composition-free calculus of* "composition".

Polycontexturality of Diamonds

Because of the iterability of diamonds based in the fact that diamonds are placed and situated in a kenomic grid they can be *repeated* in an iterative and a accretive way.

Iteration is application inside the framework of a diamond system, hence iteration remains mono-contextural.

Polycontexturality of diamonds is an accretive repetition, i.e., a dissemination of frameworks of diamonds.

posted by Rudolf | 6:42 AM | 0 comments links to this post

MONDAY, JULY 2, 2007 How to compose?

As a chapter from The Book of Diamonds

the following is presenting a nice journey from *categorical* composition, to the *proemial* and *chiastic* understanding of composition of morphisms, finally, to the *diamond* approach to any kind of composition.

Have a look at the PDF: How to Compose?

and to Chinese Ontology, An Aperçu

But first, listen to CHIASM

How to compose?

- 1 Categorical composition of morphisms
- 2 Proemiality of composition
- 3 Chiasm of composition
- 3.1 Proemiality pure
- 3.2 Proemiality with acceptional systems

4 Diamond of composition

5 Applications

- 5.1 Foundational Questions
- 5.2 Diamond class structure
- 5.3 Communicational application
- 5.4 Diamond of system/environment structures
- 5.5 Logification of diamonds
- 5.6 Arithmetification of diamonds
- 5.7 Graphematics of Chinese characters
- 5.8 Heideggers crossing as a rejectional gesture

posted by Rudolf | 10:32 AM | 0 comments links to this post

November 2007 / http://rudys-diamond-strategies.blogspot.de/2007/11/

TUESDAY, NOVEMBER 6, 2007

Steps Towards Diamond Category Theory

The story of developing diamond theory is going on quite well. I just published a draft chapter of *The Book of Diamonds*:

Steps Towards Diamond Category Theory

http://www.thinkartlab.com/pkl/lola/Diamond-Category-Theory.pdf

Experimental Sketch 0.1

Steps Towards a Diamond Category Theory

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Overview

http://www.thinkartlab.com/pkl/PDF-Overview/PDF-Overview.html

posted by Rudolf | 6:21 AM | 0 comments links to this post

January 2008 / http://rudys-diamond-strategies.blogspot.de/2008/01/

WEDNESDAY, JANUARY 23, 2008

Double Cross Playing Diamonds

The paper <u>"Double Cross Playing Diamonds"</u> is a further development of the Diamond Way of Thinking, which is inspired by the Chinese writing system and applications of polycontextural logics to category theory. A new understanding of interactivity is proposed. It is introduced as a comparison between Robin Milner's model of interaction and the diamond strategies to interactionality.

PREVIEW of Double Cross Playing Diamonds, which will be published in:

Seifert, Uwe/Jin Hyun Kim/Anthony Moore (Eds.): Paradoxes of Interactivity Perspectives for Media Theory, Human-Computer Interaction, and Artistic Investigations, Bielefeld: Transcript 2008 (in editing).

1. Models of Interactivity between flows and salti "Interactivity is all there is to write about: It is the Paradox and the Horizon of Realization."

Grammatologically, the Western notational system is not offering space in itself to place sameness and otherness necessary to realize interaction/ality.

Alphabetism is not prepared to challenge the dynamics of interaction directly. The Chinese writing system in its scriptural structuration is able to place complex differences into itself, necessary for the development and design of formal systems and programming languages of interaction. The challenge of *interactionality* to Western thinking, modeling and design interactivity has to be confronted with the decline of the scientific power of alphanumeric notational systems as media of living in a complex world.

The challenge I see for media artists is not only to develop interactional media constellations but also to *intervene* between the structures and dynamics of interactional systems as international corporations, governments, military and academia force them on us.

1.1 Comparison of two approaches to interactivity

This paper takes the risk to compare two fundamentally different approaches to interaction and reflection in computational systems:

Milner's bigraphs and diamond theory.

Milner's bigraph model and theory of interaction is highly developed, while the diamond model applied to this interactional scenario and confronted with the bigraphs model is presented here for the first time.

The *Milner model* is presupposing a world-view (ontology, epistemology) of homogeneity and openness. Its basic operation is composition in the sense of category theory. Composition is associative and open for infinite iterability.

The Milner model is a model of interaction in a global sense but it is not yet thematizing formally the chiastic interplay of local and global aspects of interaction.



RESOLVING A BIGRAPH INTO PARTS

Its merits is to have developed a strict separation of *topography* (locality) and *connectivity* for a unifying theory of global and mobile interaction (ubiquitous computing) surpassing, in principle, the limits of Turing computability.

In contrast, the diamond model, which is just emerging, is based on

an *antidromic* and *parallactic* structure of combination of events in an open/closed world of a multitude of discontextural universes. In such a pluri-versal world model, each composition is having its complementary combination. With that, iterability for diamonds is not an abstract iterativity but interwoven in the concrete situations to be thematized, and determined by iterative and accretive repetitions, involving their complementary counterparts, without a privileged conceptual initial/final object.



This leads to a theory of diamonds as a*complementary* interplay of categories and saltatories (jumpoids) with the main rules, globally, of complementarity and locally, of bridging. Diamonds are involving bi-objects belonging at once to categories and to saltatories, ruled by composition and saltisition (jump-operation).

1.2 Interactionality as interplays between categories and saltatories

In less technical terms, the polycontextural approach of diamond theory is supporting three new features:

First, it supports the idea of irreducible multi-medial contextures and their qualitative incomparability. That is, different media like sound, video, picture, text, graphics, etc., are conceived as logically different and as organized and distributed conceptually in a heterarchical sense.

To thematize media as a digital contexture is not more than to emphasize their informatical and physical aspect, which is as such a contexture, too.

Second, it supports the possibility of mapping the (outer) environment of a contexture (media) in itself, i.e., to offer an inner environment for reflectionality. Contextures, to be different from systems, have to reflect their environment into their own domain. Hence, a contexture has to be understood as being involved into interplays of inner and outer environments.

Third, it supports the possibility of realizing simultaneously movements (actions) and complementary counter-movements on a basic level of conceptualization and formalization.

If composition of events inside a contexture and mediation of different contextures to a compound-contexture, polycontexturality, are characterized by the rules of combination, i.e., *identity, commutativity* and *associativity*, a new feature of composition is discovered by the diamond approach, which is *antidromic* and *parallax*, corresponding structurally the otherness of the categorical system.

Therefore, the questions of interactionality in a diamond framework are not primarily, how do we globally move, physically and informatically, from one topographic place to another, but how do we move by interaction from one medium to another medial system of a complex*knowledge* space.

With the appearance of the semantic web and knowledge grid such developments are unavoidable. Obviously, the polycontextural diamond approach is not opting for a principally homogeneous global field of informatical and physical events but for a discontexturality of different media, situations, contexts of meaning. The *Milner Model* is well based, principally, on category theory, the diamond model has to develop its own new formalism, risked here as a diamondization of category theory. Hence, both theories are in a constellation, which offers a reasonable possibility for comparisons.

Because the bigraph model is based on category theory and its concept of composition with its abstract iterability, the diamond model has to develop a distinct concept of composition (combination), one which involves a complementarity of, at least, two different concepts of composition; technically, the *categorical* and the *saltatorical* composition, and which is opening up the operativity of an open/closed concept of iter/alterability.

Even if only metaphorically and still vague, what is common to both models is there dichotomous, dual, *complementary* and *orthogonal* approach to interaction and interactionality.

The Milner model is focused on message passing, *flow* of informatic objects, the diamond model on agents and their reflectional/interactional activities with an emphasis on *intervention*.

Double Cross Playing Diamonds

Understanding interactivity in/between bigraphs and diamonds

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5 Bibliography

http://www.thinkartlab.com/pkl/lola/Interactivity.pdf

posted by Rudolf | 9:29 AM | 0 comments links to this post

August 2008 / http://rudys-diamond-strategies.blogspot.de/2008/08/

WEDNESDAY, AUGUST 13, 2008

Diamond Disremption

Diamond interpretation of the kenomic succession operation

Diamond interpretation of kenomic succession.

Kenomic disremption and equality in contrast to semiotic, category and diamond theory.

Diamondization of the concept of explanation and hermeneutic circles. Complementary commutativity.

In contrast to the *successor* operation in word algebras, the operation of *disremption*, with its two aspects of iteration and accretion, is always defined by the simultaneity of a retro-grade and a progression action.

Disremption in kenogrammatics seems to be an operation which is defined by a simultaneous interplay of retro-grade and progressive interactions. If we take this double-movement of the kenogrammatic succession into account a reasonable formalization of it might be given by the diamond approach.

Again, what's the profit?

The existing paradigms are working! We have found water on mars! There is nothing wrong with our universal approach to natural numbers! Children, Robots and Aliens are doing it!

If it is correct that the main part of the introduction mechanism for natural numbers is depending on a mental representation in the understanding by a mathematician and not on a scriptural notation in a textual space, i.e. on inscription, then there is no hope to create Artificial Intelligence capable of doing arithmetic as arithmetic and not of doing arithmetic as physical manipulations on informatical objects depending on the mental decisions of mathematicians or programmers.

FULL TEXT:

http://www.thinkartlab.com/pkl/media/Diamond Disremption/Diamond Disremption.html

http://www.thinkartlab.com/pkl/media/Diamond Disremption/Diamond Disremption.pdf

posted by Rudolf | 2:38 PM | 0 comments links to this post

Generalized Diamonds From monosemic to tectonic complementarity Abstract

The construction of diamonds can be generalized towards *polysemic* and *metamorphic* interactions between categories and saltatories.

After having developed some insights and experiences with the diamond approach and its complementary structures, a design of diamond category theory might be introduced which is not as close to the introductory analogy to classic category theory. Following the classic

strategy of academic research a *generalization* of the introduced concepts of diamond category theory shall be sketched.

FULL TEXT:

http://www.thinkartlab.com/pkl/media/Generalized Diamonds/Generalized Diamonds.html http://www.thinkartlab.com/pkl/media/Generalized Diamonds/Generalized Diamonds.pdf

posted by Rudolf | 10:12 AM | 0 comments links to this post

October 2008 / http://rudys-diamond-strategies.blogspot.de/2008/10/ MONDAY, OCTOBER 27, 2008 Paradoxes of Interactivity

"Interactivity is all there is to write about:

It is the Paradox and the Horizon of Realization."

Finally, the Book arrived:



Paradoxes of Interactivity:

Perspectives for Media Theory, Human-Computer Interaction, and Artistic Investigations (Paperback)

by <u>Uwe Seifert</u> (Editor), <u>Jin Kim</u> (Editor), <u>Anthony Moore</u> (Editor)

Oktober 2008, 344 S., kart., zahlr. Abb., 35,80 € ISBN 978-3-89942-842-1 Reihe <u>Kultur- und Medientheorie</u> http://www.transcript-verlag.de/ts842/ts842l.php

includes: Double Cross Playing Diamonds

"The paper <u>"Double Cross Playing Diamonds"</u> is a further development of the Diamond Way of Thinking, which is inspired by the Chinese writing system and applications of polycontextural logics to category theory.

A new understanding of interactivity is proposed.

It is introduced as a comparison between Robin Milner's model of interaction and the diamond strategies to interactionality."

Über das Buch [transcript]

Current findings from anthropology, genetics, prehistory, cognitive and neuroscience indicate that human nature is grounded in a co-evolution of tool use, symbolic communication, social interaction and cultural transmission. Digital information technology has recently entered as a new tool in this co-evolution, and will probably have the strongest impact on shaping the human mind in the near future. A common effort from the humanities, the sciences, art and technology is necessary to understand this ongoing co- evolutionary process.

Interactivity is a key for understanding the new relationships formed by humans with social robots as well as interactive environments and wearables underlying this process. Of special importance for understanding interactivity are human-computer and human-robot interaction, as well as media theory and New Media Art.

»Paradoxes of Interactivity« brings together reflections on »interactivity« from different theoretical perspectives, the interplay of science and art, and recent technological developments for artistic applications, especially in the realm of sound.

Editorial Reviews (Amazon)

Product Description

Taking into account the drastic over-use of the term "interactivity" in connection with new media, this anthology is designed to scrutinize the preconceptions that surround the idea of human-computer interaction.

German media theories of agency, algorithmic semiotics, interfaciology, mediality, performativity, and transcriptivity are combined with international artistic and technological investigations including interactive audio programming as well as robotic and artificial life art.

Several essays give an overview of interactive music and sound performances, which up to now have rarely been discussed.

posted by Rudolf | 8:26 AM | 0 comments links to this post

Morphogrammatics of Change A monomorphy based sketch of morphogrammatic transformations Its all about change.

From the Book of Change (I Ching) to the challenges of a change in politics.

How to change something?

What are the possibilities of a change of something?

How to be changed by changing something? How can change happen without something being changed? How can change be changed by change? How can something change the changer of a change? How can something change the changer of a change without being itself neither change nor something at all?

And what's about the "Change we can believe in"?



Is it not enough into what we believed in all the time, again and again?

Isn't it time to stop believing and to start to compute our beliefs in an arithmetic we have not to believe in, like we have to do with our *"natural and universal"* systems of computation nobody believes in because nobody even knows that their calculations are based on beliefs.

> Change we can count on. Count we can believe in. Belief on which we can trust and count. Count we can change. Trust and count we haven't to believe in. On ins and ons we neither bet.

To study such difficult conceptual *challenges* it seems to be reasonable to study it with the most simple model possible.

There is nothing more elementary and well known than *natural numbers*, sign systems or the stroke calculus.

By adding a new stroke to a chain of strokes, or by adding a numeric unit to a number, or to

add a sign to an existing sign sequence is the most elementary operation of change. As we know it until now.

And this simple operation is secure. It is based on our fundamental intuition, initialized by education – and its axiomatics. And this simple operation can be repeated endlessly. Never ever encountering any obstacle. There are no limits in the resources of matter, time and space. And the poor guys who have to count. At least in this world of abstraction.

But is that enough?



In a non-notational scenario children or scientists are adding to their Lego blocks new Lego blocks to build an extension, prolongation, i.e. a change towards more exiting Lego constructions. Such an extension of a pattern can happen at all loci possible for continuation. No linearity has to be supposed.

And for the metaphor we can forget the need for any atomicity of the added elements. In the same sense, the actor is changing his identity depending on what and how he or she or it is creating his constructions and how those interactions are changing simultaneously the definitions of the actors.

In an experimental scenario children or scientists might add at each possible location of their chemical formulas new elements to produce more complex chemical patterns. Or they may organize mutations to their organisms.

And obviously, all started in the caves and ended with Paul Lorenzen's stroke calculus.

Nevertheless, there are different modi of change. Are there? And why should we trust in numbers which don't know their past and are blind to their future – by principle?

There are no changes without new beginnings and no new beginnings without changes.

For real-world systems based on numbers there is necessarily only endless iteration of the same or fatal crash.

What has changed for the formal theory of change, keno- and morphogrammatics, in the last 40 years?

For a change I will sketch some ideas about elementary features of change in formal systems surpassing, as it will turn out, the principal limitations of known formalisms. This sketch of *morphogrammatics* is choosing thoroughly a *descriptive* approach.

Maybe there is still a way out of the cave of neolitic inscriptions and its culmination in the stroke calculus of digital speculations?

Modi of beginnings and transformations

Instead of a beginning with the statement "*Given X*", the kenomic formulation might be "*Having encountered Y*". That is, if having encountered Y, find an appropriate succession or predeccession of Y. Depending on the structural complexity of Y, different prolongations are opened up. Not all have to be realized.

Hence, a decision for a specific prolongation (succession) has to be drawn. Therefore, there is no beginning pre-given.

Each situation encountered might be accepted as a beginning of an interaction. Complementary, there is no situation given which couldn't be accepted as an end.

Semiotics, category theory and arithmetic are playing with a single ultimate beginning and are believing in endless continuation. "One start, no end" is the slogan of the dream. Until it gets stopped by a wee crash.

To begin with the simplest elements in a formalism is more a question of an economic or stylistic decision than a compulsory conceptual necessity. As much as we can agree to start a stroke calculus with a single elementary stroke as the first action of the calculus we can agree to accept to encounter a morphogram of whatever complexity and to start to interact with it on the level of its encountered complexity.

Atomic concatenation

The most secure mode of change is to add to an existing linear sequence of signs, numbers or marks an new one. This addition, called concatenation, is strictly independent of the preexisting sequence and refers only to a pre-given sign repertoire, i.e. to its alphabet. Its security is demanding to accept the linear order of the atomic signs and the rule not to intervene into the pre-given sign sequence.

Probably the most popular presentation of semiotic concatenation is given by the concept of lists and its manipulation in the programming language Lisp. Lisp was leading the advent and decline of AI (Artificial Intelligence) research.

Kenomic evolution

Kenogrammatic concatenation still relies to some degree on the linear order of its kenoms. But there is no need anymore for a pre-given alphabet and concatenation itself is only one of elementary operation of change. Further operations are chaining and different kinds of fusion.

Without a pre-given alphabet the risk has to be taken to develop change out of the encountered kenogram sequence only. With that the abstractness of the semiotic concatenation is surpassed. There is not only no alphabet given, but the kenoms involved are semiotically indistinguishable. The operation of concatenation is defined by an interaction
with the encountered kenogram sequence. Its range is determined by the occurring kenoms of the sequence which remains itself still untouched by the process of concatenation.

Hence, kenogrammatic concatenation is not defined in an abstract way but retro-grade to the encountered kenomic pattern.

Lack of a pre-given alphabet

Because of the lack of an alphabet as a source for signs from the outside, i.e. from a lower level of the tectonics of the formal system, evolution of morphograms have to be constructed as extensions out of their inner structure. This is a kind of an evolution of morphograms based on the mononomorphies of the morphogram.

Self-generated alphabets

The wording that there is "no" alphabet means, there is no alphabet pre-given as the start of a kenogrammatic calculus. But what is not pre-given is not denied to exist in a different way. Hence, a positive wording concerning the alphabet of kenogrammatics might be turned into this: Encountered a morphopgram, a kenomic abstraction is collecting the kenoms involved into the morphogram. A successor operation then can rely on those kenograms to precede to the next morphogram, in an iterative or an accretive way. Therefore, albeit there is no alphabet pre-given, kenogrammatic operations are producing situatively their own alphabet, i.e. set of kenoms, to proceed their operations. Again, it is reasonable to speak about a parallelism or diamond movement of operators and operands of kenomic operations. The kenomic alphabet has to be elicited. There is no need for a kenomic alphabet without the intended interactions with morphograms.

Despite the big difference between semiotic and kenogrammatic concatenation there are still some important similarities. Both share a kind of a linear order of their objects, signs and kenoms. And their units of iteration and concatenation are of similar structure. Semiotics depends on atomic signs, kenogrammatics on the other hand, on monadic kenoms.

The successor operation in kenogrammatics was up to now defined mainly as the iterative or accretive repetition of the kenoms in a kenogrammatic sequence. This approach is still supposing a kind of atomicity, i.e. of atomic separability of kenoms to be repeated. With this presumption, interesting results have been achieved.

Morphic evolution

The morphogrammatic approach to change is changing the presumption of a linear order of kenoms as it is supposed in the term "keno-sequence" and is emphasizing the tabular pattern structure of morphograms (morphe=pattern, Gestalt). As a consequence, changes in the sense of an evolution out of the pattern itself can happen at all loci of the pattern.

Hence, their is no need for a reduction to a successional prolongation. It can happen at all loci involved. Therefore, the encountered morphogram which is involved into a morphogrammatic concatenation operation is loosing its neutrality and gets itself involved

into a change.

This might be called an *interventional*evolution.

Kenogrammatic concatenation is played by a retro-grade self-referentiality, which has a diamond structure. To success, simultaneously, a retro-grade action happens. But the actand itself isn't touched by this intriguing retro-grade interaction. It remains stable and is solely offering kenograms for further prolongations of the morphogram.

Such a change of the actand itself happens with the morphic evolution. The actand of change gets itself changed in the process of change. This is realized with operation of *reconfiguration* (reconfigurative evolution, coalitions, composition).

Monomorphic concatenation

Morphograms are changed by the monomorphic concatenation according to their monomorphies. Monomorphies are patterns of kenoms and parts of the whole of the patternstructure of the morphogram.

A new feature out of the morphic evolution is the change of the actor (operator) of the interaction. Such an immanent evolution of morphograms is not changing the structure of the morphogram involved into the process of evolution. The structure of the original morphogram stays untouched. Despite the retro-grade movement of the kenomic successor operation to build successions the beginning morphogram is not involved in any change of the successor procedure.

The triviality of this observation gets a new turn with the tabular notational successor operation which is changing its beginning morphogram too. That is, to add something to a morphogrammatic structure might change the structure itself.

Hence, two events happens, a) the succession of the morphogram and b) the 'self'transformation of the morphogram. Therefore, an interaction with morphograms might emerge into a monomorphic evolution of the involved morphograms. Further interactions between morphograms are, e.g. concatenation, chaining and fusion. That is, the progression or succession is not depending on any external objects, kenoms, to be added from the outside to the kenomic pattern but is fully defined by the structure of the morphogram involved into the interaction.

With that, a kind of a symmetry between the composition of morphograms and their decomposition into monomorphies is established.

Actional concatenation

A change of the actor in the process of interaction happens as a transformation of the actor "concatenation" into other evolutionary operators. It turns out that "concatenation" is only one interaction of a family of different interactions, like "chaining" and "fusion".

Combinations of actors are involved into the actional abstractions responsible for the behavioral equality of different morphograms. In an actor terminology we can say that change in the sense of morphogrammatics is changing all parts of interactivity, the actor and the actands and thus interaction as the operation.

Discontexturality

But with such a fulfillment of a change in the conceptual triadicity a new feature emerges. Until now I stipulated only one encountered morphogram.

Interactions happened with the morphogram which had been answered by a kind of a selfevolutionary process. But what happens if two morphograms encounter? The same game might go on. In this case it doesn't make much a difference to the singular situation of selfevolution. We continue triadicity and silently suppose that there is no discontextural difference between morphograms. How can different morphograms interact if they are of different contextures, thus not only disjunct in their elements and operators but discontextural in their conceptionality? With the introduction of a multitude of contextures, i.e. with polycontexturality, interactions between morphogrammatic systems are enabled which are surpassing the limits of operational triadicity by disseminating it.

To mention proudly, "the sum is more than its parts", is supposing that a summation is possible and that the terms are commensurable. This innocent constellation might turn out as a fundamental limitation of the desire for change.

Metaphors and heuristics

Morphograms are considered as groups of monomorphies. A group, of whatever kind of objects or agents, might be in a situation where it has to change its constellation by growing or by self-differentiation. Also the group might encounter another group and strategies of co-operations, fusions or incorporation are occuring as necessary.

What are the structural possibilities for such a group to change?

The group may decide to not to grow, i.e. not to enlarge its domain with new positions but better to differentiate into a more complex structure or to reduce its complexity (complication) to a lower degree of differentiation.

The group is emanating between higher or lower complication and keeping its complexity stable.

This shall be called an *emanative* change of the group.

Emanative developments are preserving the structural complexity of the actional system. Hence, it easily reaches its limits. A new strategy is called for. The group might extend its complexity by divesting parts of it. Every part might be divested and helping the group to *evolve*. Such evolvement by divestment is not outsourcing its agencies but is repeating and adding its existing agencies of the group to the group as a whole.

This is a relatively secure procedure but nevertheless it is augmenting the structural capacity of the group (organization, company, organism, chemism, etc.). Because such a divestment is purely structural it is not a simple repetive addition of existing faculties but an augmentation of the structural complexity of the whole.

This shall be called *iterative* transformation (change, disremption, prolongation, augmentation, etc.).

The group might decide to augment its complexity with a structural risk. The risk for the new to be taken by the group is transforming the complexity of the group by accepting to evolve into an unknown domain (contexture), creating a structurally new position.

Again, the degree of the risk is ruled by the structure of the group. The new, added to the group, is only new in respect to the existing constellation of the group. Hence, there is nothing hazardous involved into this risk of extending the complexity into new dimensions. What's new is new solely in respect to the historically developed structuration of the group (organization).

This shall be called *accretive* transformation (metamorphosis, change).

Hence, iteration and accretion are the two modi of change which are augmenting the complexity of the group (whole).

Gotthard Gunther calls this two complementary modi of transformation, evolutive change.

Both, evolution and emanation together, are designing the framework of structural change of organizations (groups, wholes, etc.), i.e. the morphogenesis of structuration. This kind of double structuration shall be called *disremption*.

Disremption is understood as the keno- and morphogrammatic opposite to the semiotic operation of concatenation.

Hence, a group inscribed as a morphogram is embedded into a complementarity of evolutive (iteration/accretion) and emanative (differentiation/reduction) transformations.

Because the whole is build by its parts, those strategies of evolution and emanation, are applicable to the single parts as well as to the whole as such. Such an understanding of the structuration of change is not depending on any identities, objects, agents, processes, information, etc in the known sense.

Therefore, this strategy and theory of change (structuration) is called *morphogrammatics*.

Morphogrammatics is independent of any system and complexity theory.

Its material resource are kenograms, i.e. the place-holders for the parts of morphograms (groups, constellations) created in the process of structuration. The parts of morphograms are called the monomorphies of the morphogram.

Morphogrammatics of change sounds extremely *simple*.

There are no strange attractors, chaos theory, maturation and adaption, autopoiesis and homeostasis, etc. involved at all. Neither any logical systems, multiple-valued, modal, paraconsistent, etc. nor terms like paradox, circularity, antinomy, etc. nor information processing, computability, diagonalization, etc. and so on.

But there is a morphogrammatics of logic and arithmetics, mono- and polycontextural.

With this turn, logic – and formal systems in general as our leading rational operativity – are appearing as maximally reductionist theories of change, i.e. as stable theories and formalisms of zero structural change.

FULL TEXT : <u>HTML</u> PDF

http://www.thinkartlab.com/pkl/media/Morphogrammatics/Morphogrammatics.html http://www.thinkartlab.com/pkl/media/Morphogrammatics/Morphogrammatics.pdf posted by Rudolf | <u>6:01 AM</u> | <u>0 comments links to this post</u>

December 2008 / http://rudys-diamond-strategies.blogspot.de/2008/12/ WEDNESDAY, DECEMBER 17, 2008 Diamond Semiotics An interplay of semiotic and graphematic diamonds

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Diamond Semiotics/Diamond Semiotics.html http://www.thinkartlab.com/pkl/lola/Diamond Semiotics/Diamond Semiotics.pdf http://www.thinkartlab.com/pkl/lola/Diamond Semiotics/Diamond Semiotics.nb

Some preliminary remarks about an interplay of semiotic and graphematic diamonds are sketched.

Abstract

A reconstruction of Alfred Toth's semiotic constructions of diamonds with the help of different notations is introduced.

A distinction between the diamond properties of basic semiotic configurations and the composition of semiotic configurations as micro- and macro-analysis is proposed. The as-abstraction for semiotic connections is introduced and a mechanism to complement semiotic figures is proposed.

Semiotics, again?

Thanks to the recent work of the semiotician Alfred Toth about mathematical semiotics and its application to polycontextural and kenogrammatic concepts, like chiasms and diamonds, a chapter of semiotization of diamonds and a diamondization of semiotics has to be added to the project of *Short Studies*.

This is a very first response to the profound work of Alfred Toth. It takes me back to the 70s/80s when I got involved in this headaching adventure of confronting Bense's semiotics with Gunther's polycontextural logic and kenogrammatics, both, at this time, quite in status nascendi, especially Gunther's project.

Semiotics is defined by Peirce and is elaborated in extenso by Bense and Toth as a triadictrichotomic system of semiosis, i.e. as a scheme of generating signs. Obviously, it has not to be confused with other sign theoretical projects, like semiology (de Saussure, Barthes) or the pre-war Semiotik for formal systems by Manfred Schröter and Hans Hermes.

Diamonds are not triadic-trichotomic but genuinely tetradic, chiastic, antidromic and 4-fold.

Hence, diamonds are not semiotical.

Are semiotic diamonds semiotical?

First diamondization: internal or micro

The semiotic sign relation is a product of semiosis which can be modeled as a categorical composition of elementary sign relations. Hence, a diamondization of semiotics is a diamondization of the semiotic composition operation of elementary sign relations. This kind of diamondization shall be called internal (micro) diamondization in contrast to the external (macro) diamondization of the composition of full sign systems.

Basic work to the study of diamonds of elementary semiotic compositions had been published by the semiotician Alfred Toth. Toth gives a solution for the diamondization of sign systems with the help of the inversion operation (INV) he introduced.

Second diamondization: external or macro

A second kind of diamondization is introduced with the diamondization of the composition of signs as it occurs, i.e. in the constructions of iterative and accretive compositions of sign schemes, e.g. superposition and superisation of signs.

Transpositions, dualizations, inversions and compositions are semiotic operations, diamondization consists of difference, saltisitions, bridges and complementarity.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Diamond Semiotics/Diamond Semiotics.html http://www.thinkartlab.com/pkl/lola/Diamond Semiotics/Diamond Semiotics.pdf http://www.thinkartlab.com/pkl/lola/Diamond Semiotics/Diamond Semiotics.nb posted by Rudolf | 11:05 AM | 0 comments links to this post

February 2009 / http://rudys-diamond-strategies.blogspot.de/2009/02/ FRIDAY, FEBRUARY 13, 2009 Toth's semiotic diamonds Analyzing construction principles for semiotic diamonds

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Toth-Diamanten/Toth-Diamanten.pdf

A a detailed comparison of Toth's semiotic diamonds (Diamanten) and the diamonds of diamond category theory is presented.

It turns out that Toth's Diamanten are based on *inversions* of acceptional morphisms and are not constituting any rejectional morphisms, i.e. hetero-morphisms.

A proper definition of the matching conditions is missing by Toth.

A comparison of the matching conditions for Diamanten and diamonds gives easy criteria for a separation of the approaches.

As a result, semiotic Diamanten are not working as semiotic *models* of categorical diamonds.

Nevertheless, semiotic Diamanten are a *novelty* in semiotics and are opening up new fields of semiotic studies.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Toth-Diamanten/Toth-Diamanten.pdf posted by Rudolf | <u>7:10 AM</u> | <u>0 comments links to this post</u>

March 2009 / http://rudys-diamond-strategies.blogspot.de/2009/03/ MONDAY, MARCH 30, 2009 Diamond Relations Sketch of a theory of diamond relations

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Diamond Relations/Diamond Relations.html http://www.thinkartlab.com/pkl/lola/Diamond Relations/Diamond Relations.pdf

Abstract

Because of their concreteness, the complexity of *relations* is more structured and is not always tackled by the axioms or properties of mathematical categories. E.g. the categorical properties of *commutativity* and *transitivity* are not necessarily holding for relations.

As an application, relations and the category of PATH as proposed by Pfalzgraf is presented. Diamond relations and a diamond version of PATH, i.e. JOURN (journey), based on diamond set theory, is sketched.

Motivation

How to introduce intransitivity (non-commutativity) in category theory? Two approaches are presented: Pfalzgraf's *generalized* morphisms which are re-establishing categorical commutativity on a generalized level of relations and a sketch of polycontextural diamond constructions which are introducing different types of non-commutativity on the level of a generalized (disseminated) paradigm of categoricity.

Non-transitivity in diamond theories, thus, is not simply a total negation or rejection of transitivity but the acceptance of a plurality of different kinds of transitivity, enabling many kind of specific non-transitive relations.

Nontransitivity appears naturally for relations. Categories are by definition transitive (commutative). Hence, intransitivity for categories can be introduced only as a secondary concept. On the other hand, intransitivity for relations might be transformed to transitivity by a kind of a generalization or an abstraction to generalized relations, i.e. "*a more general type of morphism*" based on the difference of *direct* and *indirect* arrows (Pfalzgraf).

It is based on a very different paradigm to ask: "How to introduce intransitivity on the epistemological level of the definition of categories as such?"

It shall be shown, say sketched, that such a basic interplay of transitivity and different forms of non-transitivity is accessible in the framework of a polycontextural diamond category theory.

Road Map Metaphor

"Let us consider, for illustration, a simple practical example of *real* life: Looking at general relational structures is quite natural since transitivity and even reflexivity are not always existent in *applications*. As a practical example let us look at a *road map* where the nodes (objects) are towns and the arcs (arrows) are road connections, then not every pair of towns has a *direct* connection (arrow), in general. Therefore, generally, starting from a point we have to follow a path of direct road connections passing several nodes (towns) before we can reach a goal." (Pfalzgraf)

Pfalzgraf gives an example about direct connections between towns. The same observation holds for most intensional verbs, like *win*, *love*, *hate*, etc., e.g. *A loves B*, *B loves C*. Does *A loves C* hold necessarily? Obviously not.

Pfalzgraf's strategy to keep transitivity by *generalization* could be paraphrased as: A loves B, B loves C, A hate C, then, by generalization from intransitivity to transitivity: A is-in-emo-relation to B, B is-in-emo-relation to C, hence, A is-in- emo-relation to C.

On the other hand, if A is connected with B, and B is connected with C, then A is connected with C, too. At least in a stable world, where the definition of connection is not suddenly transforming itself.



$$\operatorname{architect}_{\operatorname{star}}^{\left(4\right)} = \begin{pmatrix} \operatorname{dom}_{1} & - & -\\ \operatorname{cod}_{1} & \operatorname{dom}_{2} & \operatorname{dom}_{3} \\ - & \operatorname{cod}_{2} & -\\ - & - & \operatorname{cod}_{3} \end{pmatrix} \Longrightarrow \begin{pmatrix} A \longrightarrow B \circ \begin{pmatrix} B \longrightarrow C \\ B \longrightarrow D \end{pmatrix} \end{pmatrix}$$



Star⁽⁴⁾ – rules

$$\frac{A \longrightarrow B \circ \begin{pmatrix} B \longrightarrow C \\ B \longrightarrow D \end{pmatrix}}{A \longrightarrow C \mid A \longrightarrow D \mid C \longrightarrow D}$$

JOURN's catalogue of journeys

There are structurally different kinds of journeys on offer.

1. **PATH** is a very special type of journey. It is an intra-contextural journey in a single contexture without structural environment. Hence, properly formalized as a category.

2. This situation might be distributed. Journeys in different but mediated contextures are possible. Still isolated and each thus intra-contextural.

3. A new kind appears with possible switches (permutation) and transjunctional splitting (bifurcation) simultaneously into paths of different contextures. Still without complementary environment in the sense of diamond theory.

4. Now, each contexture, even an isolated mono-contexture, might be involved into itself and its environment. This happens for diamonds, which are containing antidromically oriented path in categorical and saltatorial systems. Such journeys ar group-journeys with running into opposite directions.

5. Here, a new and risky journey is offered by the travel agency by inviting to use the bridging rules between complementary acceptional and rejectional domains of categories and saltatories of a diamonds. All that happens intra-contexturally, i.e. diamonds are defined as the complementarity of an elementary contexture.

6. Obviously, diamond journeys might be organized for advanced travellers into polycontextural constellations. Hence, there are transcontextural transitions between diamonds to risk. Interestingly, such journeys might be involved into metamorphic changes between acceptional and rejectional domains of different contextures of the polycontextural scenario.

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 \begin{array}{c} \operatorname{JOURN}^{(3)} \left(\operatorname{oycle}\right) \left(\operatorname{Diam}^{(3)}\right) : \\ \operatorname{U}^{(3)} \sim \overline{\operatorname{U}^{(3)}} = \emptyset \\ \left( \lor \lor \lor \right) \operatorname{A}^{(3)}, \operatorname{B}^{(3)}, \operatorname{C}^{(3)} \in \operatorname{U}^{(2)} \parallel \lor \operatorname{4}^{4} \operatorname{d}^{(3)} \in \overline{\operatorname{U}^{(3)}} : \\ \\ \left[ \begin{array}{c} \operatorname{Cat}^{1} : A \longrightarrow B \circ B \longrightarrow C \Longrightarrow A \longrightarrow C \\ \operatorname{Cat}^{2} : A \longrightarrow B \circ B \longrightarrow C \Longrightarrow A \longrightarrow C \\ \operatorname{Cat}^{3} : A \longrightarrow B \circ B \longrightarrow C \Longrightarrow A \leftarrow C \end{array} \right] \parallel \left[ \begin{array}{c} \operatorname{d}_{1} \leftarrow \operatorname{d}_{2} : \operatorname{Salt}^{1} \\ \operatorname{d}_{1} \leftarrow \operatorname{d}_{2} : \operatorname{Salt}^{2} \\ \operatorname{d}_{1} \leftarrow \operatorname{d}_{2} : \operatorname{Salt}^{3} \end{array} \right] \\ \\ \left[ \begin{array}{c} \left( A \longrightarrow B \right) & - & - & - & - \\ & \circ & \left( B \longrightarrow C \right) & - & - & - \\ & \circ & \left( B \longrightarrow C \right) & - & - & - \\ & \circ & \left( A \leftarrow C \right) \end{array} \right] \mid \operatorname{d}_{1} \leftarrow \operatorname{d}_{2} \end{array} \right]
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Short: $Cat^{(3)}: (A \longrightarrow B \longrightarrow C \longrightarrow A \longleftarrow C) || (d_1 \longleftarrow d_2) : Salt^{(3)}.$

Further Metaphors

As a metaphor, the idea of *colored* contextures, each containing a full PATH-system, involved in *interactions* between neighboring contextures, might inspire the understanding of journeys in pluri-labyrinths of JOURN.

Such journeys are not safely connected in the spirit of secured transitivity but are challenging by jumps, salti and bridging and transjunctional bifurcations and transcontectural transitions.

This metaphor of *colored* categories, logics, arithmetic and set theories gets a scientific implementation with real world systems containing incommensurable and incompatible but interacting domains, like for bio- and social systems.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Diamond Relations/Diamond Relations.html http://www.thinkartlab.com/pkl/lola/Diamond Relations/Diamond Relations.pdf

posted by Rudolf | 9:23 AM | 0 comments links to this post

WEDNESDAY, MARCH 25, 2009 Elements of Diamond Set Theory Some more parts of the mosaic towards semiotics, logic, arithmetic and category theory

Abstract

Further elements are sketched towards an interplay of polycontextural logic, semiotics, arithmetic and set theory. Basics for junctional and transjunctional quantification in polycontextural logic are presented. Hints to *metamorphic* changes between sets, classes and conglomerates in *pluri-verses* are given.

1. Diamond set theory



2. Quantification in polycontextural logics

$\begin{bmatrix} id_9 \\ id_4 id_8 \\ dual_1 id_2 id_5 \\ id_3 id_6 \\ id_7 \end{bmatrix} : \begin{bmatrix} S_4 \\ S_4 \\ S_1 \\ S_3 \\ S_3 \\ S_5 \end{bmatrix}$	$\begin{vmatrix} S_8 \\ S_2 \\ S_5 \end{vmatrix} \xrightarrow{dual_1} \delta_5$	$\begin{bmatrix} S_9 \\ S_4 & S_8 \\ \overline{S}_1 & S_3 & S_5 \\ S_2 & S_7 \\ S_6 \end{bmatrix}$
Example		
$\begin{bmatrix} \forall_9 \\ \forall_4 & \forall_8 \\ \forall_1 & \forall_2 & \forall_5 \\ \forall_3 & \forall_6 \\ \forall_7 & \end{bmatrix}$	$ \Rightarrow \begin{bmatrix} \forall_9 \\ \exists_4 & \forall_8 \\ \exists_1 & & \forall_3 & \forall_5 \\ \forall_2 & & \forall_7 \\ \forall_6 \end{bmatrix} $	
$ \begin{pmatrix} V_9 \\ \exists_4 & V_8 \\ \exists_1 & V_3 & V_6 \\ V_2 & V_7 \\ V_6 \end{pmatrix} \begin{pmatrix} x_4 \\ x_1 & x_2 \\ x_2 & x_3 \end{pmatrix} $	$ \begin{vmatrix} x_{9} \\ x_{8} \\ x_{3} \\ x_{7} \\ x_{6} \end{vmatrix} \begin{vmatrix} P_{1} \\ P_{1} \\ P_{1} \\ P_{2} \\ P_{6} \end{vmatrix} $	$\begin{vmatrix} x_{9} \\ x_{4} \\ x_{8} \\ x_{1} \\ x_{2} \\ x_{2} \\ x_{6} \end{vmatrix} \rangle$

3. Interplay of semiotics, logics, set theory and arithmetic

A study of polycontextural semiotics, focused on semiotics alone, is not yet guaranteeing its *polycontexturality*.

The logical, arithmetical and set theoretical status of semiotics, mono- and polycontextural, remains undetermined if its corresponding logics, arithmetic and set theory (incl. category theory) are not determined and explicitly developed as polycontextural systems.

On the other hand, what value would have a semiotic system without any chances to proof statements, studying its arithmetical, set and category theoretical properties?

Until now, arithmetic, e.g., in semiotics, is not recognizing semiotical complexity but is calculating some combinatorial properties which are independent of the genuine, say triadic-trichotomous structure.

Similar mismatches happens with well known inadequate combinatorial studies of morphoand kenogrammatics.

The same situation has to be recognized for other formal systems. A formalization of polycontextural logic is easily reduced to monocontexturality by arithmetization (*Gödelization*) if there is not at the same time a polycontextural arithmetic at hand to defend the strategies of polycontextural logic.

And obviously, because there is no initial origin, the carousel has to go through all stations of logic, arithmetic, semiotic, category and set theory, thematization, meta- and proto-language, etc. to deliver and interplaying foundation for each other.

Proto- and *meta-languagues* of formal systems, as normed natural languages, are important to rule the relation between natural and formal languages, especially in the case of the interpretation of formal terms for philosophical or applicative aims.

If proto-language-based considerations are limiting the formal possibilities of formal constructions, the reasons for the restrictive decision should be made as explicit as possible. Also should the formal possibilities be accepted even if they haven't yet found an interpretation.

Earlier on, there was a big philosophical topic to fight against the advent of traditional manyvalued logic with the argument that the natural meta-language used to motivate and to develop many-valuedness is a priori two-valued. Hence, there is no escape from the twovaluedness of human thinking with the help of many-valued logic. Today, not even the question is recognized.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Elements/Elements.html posted by Rudolf | 12:32 PM | 0 comments links to this post

SATURDAY, MARCH 14, 2009

Interactional operators in diamond semiotics From polylogical transjunctions to polysemiotic interactions and reflections

Abstract

Comparing polycontextural logics and semiotics, the idea of interactionality is introduced as a further step of interaction in embedded semiotics. To achieve interactionality/reflectionality for semiotics some new concepts had been introduced.

For polylogical systems, *transjunctional* operators are defining interactions between logics. After a sketch of *polysemiotics*, poly-semiotic formulations of interaction and reflection operators are introduced.

1. Semiotics and polylogics

"Such an interpretation does not exist yet. However, if we look at Peirce's ideas on semiosis as

"an action, or influence, which is, or involves, a co-operation of three subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs",

then we could conclude that Peirce would have used Günther's ideas of polycontexturality if they would have been known to him in his time." (E. von Goldammer)

http://www.vordenker.de/ggphilosophy/la_poly.htm



2. Dissemination of semiotics

Graph of Sem^(3,2) :

$$\operatorname{Semiotics}^{(3,2)} = \begin{bmatrix} (1,1]_{1,3} \longrightarrow (1,2]_{1} \longrightarrow (1,3]_{3} \\ \downarrow & x & \downarrow & x & \downarrow \\ (2,1]_{1} \longrightarrow (2,2]_{1,2} \longrightarrow (2,3]_{2} \\ \downarrow & x & \downarrow & x & \downarrow \\ (3,1]_{3} \longrightarrow (3,2]_{2} \longrightarrow (3,3]_{2,3} \end{bmatrix}$$

Sub – system decomposition of Sem^(3,2) :

$$sub - system_{1} = \begin{bmatrix} (1.1) \longrightarrow (1.2) \\ \downarrow & x & \downarrow \\ (2.1) \longrightarrow (2.2) \end{bmatrix}$$
$$sub - system_{2} = \begin{bmatrix} (2.2) \longrightarrow (2.3) \\ \downarrow & x & \downarrow \\ (3.2) \longrightarrow (3.3) \end{bmatrix}$$
$$sub - system_{3} = \begin{bmatrix} (1.1) \longrightarrow (1.3) \\ \downarrow & x & \downarrow \\ (3.1) \longrightarrow (3.3) \end{bmatrix}$$

3. Interactivity in poly-semiotics

"Transjunctional operations become unavoidable as soon as a system shifts from first-order to second-order observations or, in Günther's terminology, to polycontextural observations.

This comes very close to Derrida's attempt to transcend the limitations of a metaphysical frame which allows for only two states: being and non-being.

It comes close to a rejection of logocentrism.

But it does not imply a rejection of logics or of formalisms.

Günther is not satisfied with the fuzziness of verbal acoustics and paradoxical formulations and tries, whether successful or not, to find logical structures of higher complexity, capable of fixing new levels for the integration of ontology (for more than one subject) and logics (with more than two values)." (Luhmann, Deconstruction as Second-Order Observing, 1993)

4. Logification of semiotics

5. Interactions in diamonds

Transjunctions, as important operators of interaction, are well known in polycontextural logics. Semiotics offers a different approach to cognitive/volitive modeling. In this paper, some steps to sketch an interactional approach in semiotics along the experiences, models and formalizations of polycontextural logic, is undertaken.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Transjunctional Semiotics/Transjunctional Semiotics.pdf http://www.thinkartlab.com/pkl/lola/Transjunctional Semiotics/Transjunctional Semiotics.html

Best with Publicon:

http://www.thinkartlab.com/pkl/lola/Transjunctional Semiotics/Transjunctional Semiotics.nb posted by Rudolf | <u>4:04 AM</u> | <u>0 comments links to this post</u>

TUESDAY, MARCH 3, 2009 Sketch on semiotics in diamonds Embedding semiotics into anchored diamonds

Semiotics are embedded into diamonds in a double way. Semiotics gets a internal environment as its neighbor semiotics and an external environment by its anchors. Embedding semiotics is a process of concretization of the abstract concept of Peircean semiotics.

Peirce' trichotomics is based on his metaphysical intuition, nurtured by his studies of Kant and Hegel, and is not a product of a general generation scheme with steps from 1 to 3 as it is echoed in the semiotic literature since decades.

Such a general generation scheme wouldn't have a built-in stop function, it could go on to arbitrary magnitudes. Only for a reconstructional and didactic interest a start with 1 and an end with 3 makes sense.

"Creation thus means "that Firstness (repertory of 'possible' cases) must be given, so that Secondness (the 'real' case) in the sense of singular, concrete and innovative givenness isselectable in dependency of also given Thirdness (determining law or necessity)"(Bense and Walther 1973, p. 127)." (Toth, In Transit, p. 49)

Intuition of trichotomy

From the point of view of the primary trichotomic intuition and its realization, monadic and dyadic relations occur as reductions of the trichotomic intuition and its realization as a triadic relation.

In a diamond theoretical and polycontextural approach to an embeddement of semiotics, nothing is given. The giveness of the semiotic categories, firstness, secondness and thirdness, are a result of a speculative decision for a trichotomic paradigm of thinking and corresponding world model, initiated scientifically by Peirce.

Semiotics in polycontextural diamond constellations are towfold embedded

- 1. by their neighbor-semiotics and
- 2. by their diamond environments.

Obviously, semiotics and diamond environments are equiprimordial (gleichursprünglich).

- In a further step of concretization, the construction gets its localization as a
- 3. embedment by its place-designators of the kenomic anchors.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Semiotics-in-Diamonds/Semiotics-in-Diamonds.html posted by Rudolf | 5:13 AM | 0 comments links to this post

April 2009 / http://rudys-diamond-strategies.blogspot.de/2009/04/ MONDAY, APRIL 6, 2009 Triadic Diamonds Robertson's algebra of triadic relations, Gunther's founding relation, Toth's semiotics and diamond triads

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Triadic Diamonds/Triadic Diamonds.html http://www.thinkartlab.com/pkl/lola/Triadic Diamonds/Triadic Diamonds.pdf

Abstract

Some further thematizations and formalizations of diamond topics, especially triads, are presented. Triads, and founded triads, are presented in the context of Gunther's epistemology, Toth's semiotics with the help of Robertson's "*Algebra for triadic relations*". It is proposed that founding relations had been thematized externally only. An implementation of founding strategies into the system to be founded by the diamond approach is realizing the simultaneity of construction and verification of the triad.

Substitution for $\begin{pmatrix} 0 \\ a \\ c \end{pmatrix} \Longrightarrow \begin{pmatrix} S^* \\ S^* \\ O \end{pmatrix}$, R, S, T $\in U$, r, s, t $\in \overline{U}$

$$\mathbf{R} = \begin{pmatrix} \mathbf{S}^{\mathbf{s}} \\ \boldsymbol{s}^{\mathbf{s}} \rightarrow \mathbf{O} \end{pmatrix}^{\dagger}, \ \mathbf{S} = \begin{pmatrix} \mathbf{S}^{\mathbf{s}} \\ \boldsymbol{s}^{\mathbf{s}} \rightarrow \mathbf{O} \end{pmatrix}^{2}, \ \mathbf{T} = \begin{pmatrix} \mathbf{S}^{\mathbf{s}} \\ \boldsymbol{s}^{\mathbf{s}} \rightarrow \mathbf{O} \end{pmatrix}^{2}, \\ \mathbf{F} = \begin{pmatrix} (\mathbf{S}^{\mathbf{s}}, \mathbf{S}^{\mathbf{s}}) \\ (\mathbf{S}^{\mathbf{s}}, \mathbf{O}) \\ (\mathbf{S}^{\mathbf{s}}, \mathbf{O}) \end{pmatrix}^{\dagger}, \ \mathbf{F} = \begin{pmatrix} (\mathbf{S}^{\mathbf{s}}, \mathbf{S}^{\mathbf{s}}) \\ (\mathbf{S}^{\mathbf{s}}, \mathbf{O}) \\ (\mathbf{S}^{\mathbf{s}}, \mathbf{O}) \end{pmatrix}^{2}, \ \mathbf{f} = \begin{pmatrix} (\mathbf{S}^{\mathbf{s}}, \mathbf{S}^{\mathbf{s}}) \\ (\mathbf{S}^{\mathbf{s}}, \mathbf{O}) \\ (\mathbf{S}^{\mathbf{s}}, \mathbf{O}) \end{pmatrix}^{2}$$

$$\begin{split} trijcin_{spitten} \begin{pmatrix} \boldsymbol{R} \\ \boldsymbol{S} \rightarrow \boldsymbol{T} \end{pmatrix} = \\ \begin{pmatrix} \boldsymbol{n} & \begin{pmatrix} \boldsymbol{S}^{*} \\ \boldsymbol{S}^{*} \rightarrow \boldsymbol{O} \end{pmatrix}^{\dagger} & \boldsymbol{n} \\ \begin{pmatrix} \boldsymbol{n} & \begin{pmatrix} \boldsymbol{S}^{*} \\ \boldsymbol{S}^{*} \rightarrow \boldsymbol{O} \end{pmatrix}^{\dagger} & \boldsymbol{n} \\ \begin{pmatrix} \boldsymbol{S}^{*} \\ \boldsymbol{S}^{*} \rightarrow \boldsymbol{O} \end{pmatrix}^{2} & \cdots & \begin{pmatrix} \boldsymbol{S}^{*} \\ \boldsymbol{S}^{*} \rightarrow \boldsymbol{O} \end{pmatrix}^{2} \end{pmatrix} \end{split}$$

$$trijcin_{spinor} \begin{pmatrix} \mathbf{R} \\ \swarrow \\ \mathbf{S} \rightarrow \mathbf{T} \end{pmatrix} = \begin{pmatrix} \mathbf{S}^{\mathbf{r}} \\ \swarrow \\ \mathbf{S}^{2} & \mathbf{S}^{2} \\ \checkmark & \checkmark \\ \mathbf{S}^{0} \rightarrow \mathbf{O} / \mathbf{S}^{0} \rightarrow \mathbf{O} \end{pmatrix}$$

Chinese Ontology and Diamonds

A new attempt to formalize the idea of founding relations is proposed by the diamond approach which takes into account the simultaneity of the model and its foundation. It also reflects the fact, that a foundation of an operation is localized on a different level of abstraction. The activity of modeling and the activity of founding are complementary activities demanding different kinds of abstractions. Hence, any applicative iteration of the model on itself is not fulfilling the criteria of foundation. "The idea of in-sourcing the matching conditions into the definition of diamonds tries to realize the two postulates of "Chinese Ontology", the permanent change of things and the endness (finitness) or closeness of situations. That is, diamonds should be designed as structural explications of the happenstance of compositions and not as a succession of events (morphisms).

More exactly, diamond are contemplating the interplay of acceptional and rejectional thematizations. Thus, morphisms with their matching conditions and composability are in fact of secondary order for the understanding of diamonds.

The complementarity of construction and verification, which is happening at once and not in a temporal delay, is a consequence of the finiteness and dynamics postulate of polycontextural "ontology". This simultaneous interplay is based on the insight that a delayed verification (or testing in programming) would not necessarily verify the construction in question because, at least, the context will have changed in-between. Delayed verification is possible only in the very special case of frozen dynamics.

In other words, in a changing open/closed world, the activities of construction and verification (of correctness and relevance) have to happen at once. Otherwise, because the conditions might have changed, the relevancy of the construction to be verified would have to be verified itself, again, and this ad nauseam.

Obviously, the statement is not about/against the stability of the construction (program, system, agreement, contract), this might be rock solid, but about the relevancy of the rock solid construction.

(In therapy or coaching, even by constructivists, this delayed checks are called "*reality check*". Nearly always, such a reality to be checked has escaped any relevance.)

$trijoin_{cisen} \begin{pmatrix} \mathbf{S} \\ \mathbf{R} \ \mathbf{T} \end{pmatrix} \ \begin{pmatrix} \mathbf{s} \\ \mathbf{r} \ \mathbf{t} \end{pmatrix} \ =$		$trijoin_{clism} \binom{S}{R \ T} \left\ \binom{s}{r \ t} \right\ =$
$ \begin{bmatrix} \begin{pmatrix} b \\ a c \\ \vdots \\ y \\ z \\ z$		$\begin{bmatrix} \begin{pmatrix} b \\ a & c \end{bmatrix} x, y, z; \exists \overline{x, y, z} \end{pmatrix}:$ $\begin{bmatrix} x \\ a & z \end{bmatrix} \begin{bmatrix} \bar{x} \\ \bar{a} & c \end{bmatrix} \begin{bmatrix} \bar{x} \\ \bar{a} & c \end{bmatrix}$ $\begin{bmatrix} b \\ x & y \end{bmatrix} \begin{bmatrix} \bar{b} \\ \bar{x} & c \end{bmatrix} \begin{bmatrix} \bar{b} \\ \bar{x} & c \end{bmatrix}$ $\begin{bmatrix} b \\ \bar{x} & c \end{bmatrix} \begin{bmatrix} \bar{b} \\ \bar{x} & c \end{bmatrix}$
$x, y, z \in D, x, y, z \in \overline{D}, trijoin \subseteq (D \cup \overline{D})$		$x, y, z \in D, x, y, z \in \overline{D}, \text{ trijoin } \subseteq (D \square$

In-sourcing the matching conditions

Diamond strategies are offering a fundamentally different approach. Each step in a diamond world has simultaneously its counter-step. Hence, each operation has an environment in

D)

which a legitimation of it can be stated. The legitimation is not happening before or after the step is realized but immediately in parallel to it. Morphisms are representing mappings between objects, seen as domains and codomains of the mapping function. Hetero-morphisms are representing the conditions of the possibility (Bedingungen der Möglichkeit) of the composition of morphisms. That is, the conditions, expressed by the matching conditions, are reflected at the place of the heteromorphisms.



http://cartoonbox.slate.com/static/314.html

Hetero-morphisms as reflections of the matching conditions of composition are therefore second-order concepts realized "inside" the diamond system. Morphisms and their composition are first-order concepts, which have to match the matching conditions defined by the axiomatics of the categorical composition of morphisms. But these matching conditions are not explicit in the composition of morphism but implicit, defined "outside" of the compositional system. Hence, in diamonds, the matching conditions of categories are explicit, and moved from the "outside" to the inside of the system. In this sense, the rejectional system of hetero-morphisms is a reflectional system, reflecting the interactions of the compositions of the acceptional system. Heteromorphisms are, thus, the "morphisms" of the matching conditions for morphisms.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Triadic Diamonds/Triadic Diamonds.html http://www.thinkartlab.com/pkl/lola/Triadic Diamonds/Triadic Diamonds.pdf posted by Rudolf | 8:08 AM | 0 comments links to this post

May 2009 / http://rudys-diamond-strategies.blogspot.de/2009/05/ TUESDAY, MAY 19, 2009 Interpretations of the kenomic matrix **Exercises to the topics of Poly-Change**

Abstract

Examples for the exercises, § 5.2, of the recent article "Poly-Change" are given, concerning the logical, computational and semiotic interpretation of the kenomic matrix. http://www.thinkartlab.com/pkl/lola/Polychange/Polychange.html

4.1.4 What is the practical use of that fuss?

If there is any practical use for triadic-trichotomic semiotics, as Toth and others demonstrated in extenso, any extension of triadicity might open up some more complexity to deal with real-world matters in an operative and not reducing manner.

In sociology, cultural theory, international law, legitimations for torture and killing innocent people for good and accepted reasons, we encounter, in short, only two structural models of reasoning and acting. One is reducing complexity of what ever domain to a binary and dichotomic pattern. The other extreme is dissolving complexity into a multitude of autonomous isolated and not-mediated dichotomous systems.

The first has the advantage of maximal operativity in technological and juridical systems, supporting nearly fully-automated surveillance systems and killing procedures. The second is hopelessly non-operative and still based on humanistic propaganda for a better world – and even for Change.

"The genius of Michelangelo is like the genius of the Talmud, with several layers of meaning, one on top of another. So you can interpret it in terms of Christianity and Judaism, sociologically, historically and artistically. We are just adding one level that has either been ignored or covered up over the centuries." Cathryn Drake, Did Michelangelo Have a Hidden Agenda?

http://online.wsj.com/article/SB122661765227326251.html

"For the third millennium, the struggle against semantic disorder and perversions of the intellect should supersede, precede and be sustained in all cultures, religions, systems of thought and political systems whenever there is a historical necessity to initiate a war of liberation from oppression, domination and exclusion."

Mohammed Arkoun, ISLAM: To Reform or to Subvert?, The rule of law and civil society in Muslim context, Beyond Dualist Thinking, 2006, p. 381

Hence, the academic question still remains:

Wouldn't it be worth to support a development of a cultural paradigm in which pluriversity and operativity could co-operate together?

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Matrix/Matrix.html http://www.thinkartlab.com/pkl/lola/Matrix/Matrix.pdf

posted by Rudolf | 5:39 AM | 0 comments links to this post

TUESDAY, MAY 5, 2009 Polycontextural and diamond dynamics

Sketches and exercises for dynamics and metamorphosis for formal systems

FULL TEXT http://www.thinkartlab.com/pkl/lola/Polychange/Polychange.html http://www.thinkartlab.com/pkl/lola/Polychange/Polychange.pdf

Abstract

The Ancient Chinese idea of a permanently changing world in which stable formulations, i.e. axioms in logic, are obsolete is thematized by the polycontextural strategy of permanently changing complexity. As a framework to realize complexity change for formal systems the kenomic matrix is involved. Examples for such formal notations are given and exercises to learn more about polycontextural diamond systems are proposed.

2. A remainder from Chinese Ontology

"Traveler, there are no path. Path are made by walking." Antonio Machado

"A good mathematician is one who is good at expanding categories or kinds (tong lei)."

The Chinese philosopher Jinmei Yuan has given some crucial hints to the understanding of ancient Chinese mathematical thinking:

Chinese mathematical art aims to clarify practical problems by examining their relations; it puts problems and answers in a system of mutual relation--a yin-yang structure for all the things in a changing world. The mutual relations are determined by the lei (kind), which represents a group of associations, and the lei (kind) is determined by certain kinds of mutual relations.

"Chinese logicians in ancient times presupposed no fixed order in the world. Things are changing all the time. If this is true, then universal rules that aim to represent fixed order in the world for all time are not possible."(Jinmei Yuan)

An Aperçu

Chinese ontology (cosmology) can be put into two main statements:

- **A**. Everything in the world is changing.
- **B**. The world, in which everything is changing, doesn't change.

This two main statements are designing a paradoxical constellation.

Polycontexturality is complementing this ancient Chinese world model of *harmony* by dynamizing the concept of world-models:

C. A multitude of worlds are interplaying together.

The paradox to formulate mathematical rules in an ever changing world is very puzzling. Many attempts to shed some light into it or even to solve the problem had been proposed.

It is not my intention to solve this 'unsolvable' problem.

Polycontextural logic attempts to formulate formal laws for an ever changing world. Nevertheless, we first have to abandon a Western interpretation of `change'. The Book of Change has nothing to do with Heraklit's or Leibniz's flux of things.

Many aspects about a philosophy of *logic and time* had been studied profoundly by the philosopher Gotthard Gunther. The connection of time and logic in polycontextural systems is not to confuse with any attempts of time or tense logics or physical time systems of any kind.

My own attempt to deal with the formal structure of changing first-order ontologies can be reduced, at this place, to two propositions:

Strategies of change

1. *Diamond strategies*: Each move is involved with its simultaneous counter-move.

2. *Complexity strategies*: Each move has to decide (elect/select) its intra-/trans-contextural continuation depending on the actual complexity encountered or created.

Because the strategies of change happens on the most fundamental levels of formal systems (logic, arithmetic, mathematics, ontology, semiotics, computability) a real combination of the antagonistic features of permanent change and formal operativity is opened up and accessible to realization.

One mechanism to realize change is given by the proemiality or chiasm between intracontextural 'parts' and trans-contextural 'whole'. A predicate defined inside a contexture can become the criteria for a new contexture which is augmenting the complexity of the contextural constellation.

For the sake of simplicity, 3 constellations of change are considered:
a) *balanced* constellation between formalism and application, with equal complexity for the formalism and the system to be formalized: compl(Form) = compl(System),
b) *under-balanced* constellation, with compl(Form) <= compl(System) and c) *over-balanced* constellation, with compl(Form) >= compl(System).

For classical Western thinking, based, shortly, on ontology and logic, only the balanced constellation with minimal complexity is available. Change is accessible in formal systems as change of complexion only. This strategy might be extremely sophisticated but it remains stable in respect to the logico-structural complexity of its paradigm.

Hence, not only every move (composition, concatenation, combination) in polycontextural diamond systems is accompanied by its hetero-morphic counter-movement but each

movement is additionally determined by its polycontextural complexity-decision by *election* and *selection*.

In other words, in such a dynamic formalism, it easily can happen, that in the middle of a formal *transformation* (derivation, deduction, description, modeling) the complexity of the framework within those transformations happens might be changed, enlarged or reduced to legitimate a more reasonable and viable continuation of the transformations.

2.1. Exercises

2.1.1. Collect arguments - pros and cons, and beyond- and articles given in my Blog and elsewhere, which might support or reject the 'Apercu' of a Chinese Ontology and a Diamond World Model.

2.1.2. How are those thoughts connected to the project of Derrida's Grammatology and the deconstruction of phono-logo-centrism in formal systems? Read and comment original texts only (if necessary translations)!

2.1.3. What can you learn from the sketches to a new rationality based on polycontexturality and the concept of Chinese scriptural paradigm for the understanding of the decline of the Western Hegemony?

2.1.4. What are the immanent limits of Western thinking and how might they influence the economic and financial crash? Connect your insights with the proposals given in my *"The Logic of Bailout Strategies"*.

2.1.5. Create more questions and answer of this kind.

2.1.6. A good exercise to experience the patterns and strategies of polycontextural and diamond thinking for more familiar topics, like ethics, human rights, identity, pluricentrism, Web 2.0 etc. might be the reading of the 'exercises' I have written in the collection *"Short Studies 2008"*. All answers to the exercises can be written in English, German or French and posted to my Blogs. Chinese and Japanese proposals are welcomed.

3.4. Exercises

3.4.1. Write an overview of typical notational constellations for balanced formulas. Use the sketches given in *ConTeXtures* and *From Ruby to Rudy*.

3.4.2. Program features of balanced (m,n)-contextural notational systems for junctional, transjunctional connectors and quantifiers.

3.4.3. Try to define and program more efficient and 'ergonomic' notational approaches to general tabular syntactics.

4.3. Exercises

4.3.1. Collect the arguments and constructions given in my articles and build a systematic model of the dynamic interplay of interactionality/reflectionality and interventionality in formal systems. Recommended articles: *ConTeXtures. Programming Dynamic Complexity, Godel's Games, Actors and Objects, From Ruby to Rudy, How to compose?*

4.3.2. Compare those polycontextural and diamond models with models from modal logic, cognitive science, theory of reflection (Levebvre), reflectional programming (Smith, Maes) - and others.

4.3.3. Play around with your own ideas. Would it make fun to simulate polycontextural diamond dynamics with cellular automata models? What could we learn from such modeling, simulation and implementation? What would be lost?

4.3.4. Dynamics based on the 'kenomic matrix' might be studied for logical, arithmetical, categorical and semiotic systems by applying the materials proposed by now.

4.3.5. What are the structural consequences of contextural change for diamond category theory?

5. Metamorphic changes

5.1. Metamorphosis of topics

A transition from one contextural complexity to another doesn't presuppose a pre-given existence of the new contextures. What might be presupposed is the possibility of change. And this possibility is realized by an application of the proemial mechanism between intraand trans-contextural decisions.

An intra-contextural topic might become contextural prominence as a new contexture associated with the previous contextural constellation.

Reflection might change the meaning of an object by applying rules of chiastic metamorphosis.

Reflection is using the statement defining the object and this usage is defining the meaning of the object. Reflection and contemplation or introspection of an object can produce the insight that the meaning of the object under consideration is changing. Reflection as replication, thus, is augmenting the deepeness of the contextural complexity by a replicative, self-thematizing way. Reflection as iteration, is augmenting contextural complexity by an iterative, self-reproducing way. Alternatively, a reflection could change to an interactional augmentation of the contextural complexity. Both together, reflectional and interactional changes, are defining replicative, iterative and accretive contextural complexity of a polycontextural system.

The example below shows that the beginning reflection is interpreting an object as the number *zero* belonging to the topic *numerals*. This situation is implemented in a 1-contextural programming language. A second reflection considers the same object not as a numeral but as *nil* belonging to the topic of *lists*. Reflection has not to come to an end and can go further and with the interpretation and might realize that the object can be understood as belonging to the topic *Booleans* and appearing as the truth-value *true*.

Therefore the introduced *syntactical object* in its neutrality, observed and represented by an "external observer" in *log* is conceived as having simultaneously a *numerical* (in *log*),

a *symbolic* (in *log*_{1.2}) and a *Boolean* (in *log* meaning. Hence, there is a chain of metamorphic replication from the topic *Numerals*, *Lists* to *Booleans and a notation of the* 'neutral' syntactic object "object" of *Syntax*. It starts with a reflection of the object "*zero*" of *Numerals*, ends with the *Boolean* "true" and gets a contextural abstraction as syntactic "object" in *Syntax*.

The example is designed for reflectional poly-topics in the experimental programming language *ConTeXtures*.

5.2. Exercises

5.2.1. Construct examples for *reflectional*, *interactional* and *interventional* constellations for polytopics in the framework of ConTeXtures.

5.2.2. Construct further examples in the framework of ConTeXtures with topics like semiotics, logic, arithmetics.

5.2.3. Describe 'empirical' situations where such contextural changes of augmenting or reducing complexity seems to be unavoidable.

5.2.4. Try to develop a polycontextural measure for complexity.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Polychange/Polychange.html http://www.thinkartlab.com/pkl/lola/Polychange/Polychange.pdf posted by Rudolf | 1:51 PM | 1 comments links to this post

June 2009 / http://rudys-diamond-strategies.blogspot.de/2009/06/

TUESDAY, JUNE 23, 2009 Polycontexturality of Signs? **Are there signs anyway?**

How to read polycontextural sign matrices? Are there such constructs like *polycontextural signs*? It is argued that there are in fact no entities or processes in the "real-world" like signs in the sense of semiotics at all.

Semiotic signs are logocentric constructs realized by semioticians and defined by identity principles. This might be appropriate for a mono-contextural world-view but it is not sufficient for the experiences in a polycontextural world.

An example is given, how to construct and read a polycontextural configuration as a texteme. Also composition/decomposition of sign classes are presented.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/PolySigns/PolySigns.html http://www.thinkartlab.com/pkl/lola/PolySigns/PolySigns.pdf

posted by Rudolf | 5:37 AM | 20 comments links to this post

May 2010 / http://rudys-diamond-strategies.blogspot.de/2010/05/ MONDAY, MAY 17, 2010 Memristics: Why memristors won't change anything Remarks to Todd Hoff's "How will memristors change everything?"

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Memristics/Hype/Memristics:%20Memristors,%20the%20hype.pdf http://www.thinkartlab.com/pkl/lola/Memristics/Hype/Memristics:%20Memristors,%20the%20hype.html

Memristors are first of all a hype. Even a growing hype.

It didn't explode immediately but is infiltrating unstoppably all the fancy IT-magazines. A whole machinery of echoing textual productions is celebrating or denying the advent of the unknown forth element, mathematically constructed by Leon Chua for symmetry-reasons (1971) and realized physically, finally by the HP team for Information and Quantum Systems Lab under the direction of R. Stanley Williams during the year of 2008.

How could a new element, even if it is the fourth, or if it is not even an element but a class of new elements, change the world (of technology)?

This blog-entry will show why such an element as it is reported in the magazines will change nothing. It will just accelerate the dimensions of what we are used to believe as guaranteed. Thus, don't read the magazines, insist on original R&D papers! For free!

"How will memristors change everything?"

It will sound like an echo of an echo but I will not guarantee to keep the mirrors clean. People who have better access to the original papers than myself are disseminating the narrative in all the known styles of quick defences of their established positions. Quite late, well apologized for its retarded intervention, Todd Hoff is summarizing in a well written and entertaining survey, in the blog: *High Scalability*, nearly all points discussing the pros and cons of the new hype.

Todd Hoff, How will memristors change everything?

http://highscalability.com/blog/2010/5/5/how-will-memristors-change-everything.html

I will not echo this summary but will try to point to the main points of the discussion and then I hope to make it clear why all those fancy promises are not worth the excitement.

My own reading of the papers is not in the tradition of Anglo-saxon story-telling. I'm more interested in what could be called a French analysis and deconstruction of the conceptual deep-structure of the narration.

Such an approach is not entertaining and therefore not easy to read. The pleasure might be in the writing, and in the chance to seduce people to enjoy reading such analysis of the deep-structure of scientific and technological narratives, which are not specially welcomed.

Some people are even afraid to get cheated by a kind of a neo-Sokalism.

Now, what are all those changes, the memristor invention/intervention will force on us in the near future?

Faster, smaller, cheaper: Without this programmed reflex to everything possibly new, nothing is working.

There will be no support from academies, companies, military and post-humanists of the future of the human race, if the criteria of "*Faster, Smaller, Cheaper"* are not promised and realizations of it not guaranteed to be accessible in the near(est) future.

How to turn the hype into facts?

The best way to change the hype into facts is a double way. First, disseminate the hype. Not only on Facebook and Twitter, the name of the hype has to become ubiquitous. Second, do some serious research. Support research on all levels of accessibility. Tell the politicians that memristors are the Green Solution they are looking for. Memristics, i.e. the study of memristive systems, is still confronted with two main conceptual and technical challenges. One seems to be well known, the other remains uncovered.

Problem of self-referentiality

What is well known, albeit not solved, and studied mainly in other disciplines, like logic or cybernetics, is the problem of self-referentiality of second-order concepts defining memristive systems.

Self-referentiality occurs in many forms, as circularity, chiasm, proemiality or simply as superposition of formulas of different kind, like linear and non-linear formulas, e.g for the interaction of 'logic and memory'.

Logical, ontological but also technical problems of the interchangeability of the roles of a memristor as a memory or as a logic are not yet conceived properly. The problem of self-referentiality is in fact a surface problem. Its deep-structure is heavily involved with the concept of semiotic, logical and ontological identity.

It seems that there are no working concepts in complex systems theory or in chaos theory, to deal with self-referentiality in a constructive and consistent way.

The localization problem

The second problem is more or less unknown to in the community of computer science and computer technology.

It is the problem of the localization of conceptual patterns. This problem seems not to exist in the literature of computation and realization of computational devices. There are voices pointing to the fact that "*Simulations don't become realizations"* (Pattee) but that's all you get.

On the other side, Jianhua Yang from HP, makes it very clear: Until now, computers are simulating learning, it is the program that tells computers to learn, computers itself are not learning.

With memristive technology things are radically different: It is the computing matter, the computer hardware, which is learning.

"Any learning a computer displays today is the result of software," says Yang. "What we're talking about is the computer itself – the hardware – being able to learn." http://www.hpl.hp.com/news/2008/apr-jun/engineering_memristor.html

The learning matter (or the materiality of learning) is not a bowl of porridge. The 'materiality of learning' has its own time/space-structure.

Hence any behavioral pattern, like a logical implication, in such a system is marked by the place it takes. Any design of a 'cognitive' pattern in a memristive system has to be addressed by the place it takes.

The structural laws are designed by the memristive matter and not by a program of a theoretical formal system from the outside.

I might dare to predict that there will be no such radical development as it was stipulated by Todd Hoff *"How will memristors change everything?"* if the two challenges are not brought to a working (re)solution.

Memristive systems theory still lacks an understanding of the diamond structure of the behavior of memristors and it lacks too a theory of the positionality of memristive behaviors.

In short, what is needed, at least, is a *diamond theory* and a theory of *place-designators* for self-referential and located behaviors in memristive systems.

It is one of the aims of a proposed *memristics*to deliver a conceptual model and formal apparatus to deal with diamond (chiastic, circular, proemial) behaviors and the mechanisms of localizations suitable for memristive systems.

FULL TEXT

http://www.thinkartlab.com/pkl/lola/Memristics/Hype/Memristics:%20Memristors,%20the%20hype.pdf http://www.thinkartlab.com/pkl/lola/Memristics/Hype/Memristics:%20Memristors,%20the%20hype.html

Further reading:

<u>http://www.thinkartlab.com/pkl/lola/Memristics/Memristics:Memristors, again.pdf</u> <u>http://www.thinkartlab.com/pkl/lola/Memristics/Part-II/Memristics-crossbar.pdf</u>

posted by Rudolf | 5:00 AM | 0 comments links to this post

THURSDAY, MAY 13, 2010 What Chinese Grammar? Interchangeability and morphogrammatics of interpretations

Abstract

To put it bluntly:

Ancient Chinese characters (signs, hieroglyphs, characters) are conceived in a transclassic setting as morphograms.

This insight is achieved with the approach of a polycontextural transformation of the categorical concept of bifunctoriality and understood as the interchangeability of locus of a

character and the character itself.

Furthermore the interchangeability of Western grammatical categories to characterize Chinese characters and sentences is applied.

This is proposed with the help of a positive reading of Rolf Elberfeld studies (2003, 2007) and a negative differentiation to other approaches which are not reflecting their complicity with Western grammar.

FULL TEXT

http://www.thinkartlab.com/pkl/media/Chinese%20Grammar/What%20Chinese%20Grammar.pdf http://www.thinkartlab.com/pkl/media/Chinese%20Grammar/What%20Chinese%20Grammar.html posted by Rudolf | 6:19 AM | 0 comments links to this post

June 2010 / http://rudys-diamond-strategies.blogspot.de/2010/06/ MONDAY, JUNE 14, 2010 Memristics own Account [still in preparation!!!]

I just opened an account for memristics!

WELCOME TO ThinkArt Lab's

Office for Memristics

The Study of memristors

and memristive systems

in nanotechnology and diamond theory.

http://memristics.com

with the **subdomains**: **memristors** <u>http://memristors.memristics.com/Memristors.html</u> **crossbars** <u>http://crossbars.memristics.com/Crossbars.html</u> **transhumanism** <u>http://transhumanism.memristics.com/Presentation.html</u> **videos** <u>http://videos.memristics.com/Videos.html</u>

presentations

http://presentations.memristics.com/Presentations.html

posted by Rudolf | 12:25 PM | 0 comments links to this post

WEDNESDAY, JUNE 2, 2010 Diamondization of HP's memristive flip-flop circuit Strategies of implementing memristors as second-order devices

FULL TEXT

http://www.thinkartlab.com/Memristics/Memristive flip-flop/Memristive flip-flop.html http://www.thinkartlab.com/Memristics/Memristive flip-flop/Memristive flip-flop.pdf

The aim of this exercise or first draft is to train the strategy of transforming and diamondizing bufferlike constructions between agents into interactional procedures to avoid unnecessary wastage of resources. This is not supporting the new global mega-trend of parsimonious thriftiness but tries to open up a more liberated play of interactionality for nano-electronic devices.

Hence, memristive systems are conceived as second-order constructions. A crucial conceptual challenge for such an approach is given by the chance to diamondize HP's memristive flip-flop circuit towards a more interactional and diamondized implementation.

Interactionality and memristive systems

This new approach shall be experienced with the transformation of a channel-based to an interactionbased design of a flip-flop circuit. How can a memristor construction save the states of a flip-flop device after a power crash and enabling the flip-flop to continue to work at the state it crashed after the power is re-established?

In other words, how can a volatile flip-flop be modified to a nonvolatile flip-flop device as the basic unit of a nonvolatile processor design? This is an attempt to connect CMOS circuits with memristors. It is therefore not attempted to create processors on the base of memristors alone.

Recall the definition of a master-slave flip-flop:

"A master-slave D flip-flop is created by connecting two gated D latches in series, and inverting the enable input to one of them. It is called master-slave because the second latch in the series only changes in response to a change in the first (master) latch." (WiKi)

A master-slave flip-flop is a serial connection of two latches. The whole approach, to add memristors to CMOS, might be turned into the possibility to program memristive systems connected with CMOS devices to change the behavior of the CMOS systems and not only to save their functioning after a power collapse.

It would be another challenge to construct a flip-flop on the base of memristors only. A first step would be to consider a translation from the material implication plus negativ constant to NAND gates. If the whole construction is based on memristors, a special memristive save-system for the case of power interruptions seems then to become obsolete.

Discussion and interpretations of the diamond approach

Interpretations

What has to be saved by the memristive device are in fact not the first-order data of FF but the conditions of the possibility of the data, i.e. the data of the matching condition of the composition of the master and the slave flip-flop morphisms (processes). From those conditions, as second-order constructs, the first-order data might be reconstructed on the base of the second-order data saved by the memristive device.

In other words, the history saved by the memristor are not the primary data but the data of the history. Historical data are data of data. Those second-order data might then be used to continue processing on the first-order level of the flip-flop.

As a metaphor, the data of an observer of a data processing system are not the data of the observed system. But such observer-depending data of second-order might be given 'back' to the observed, i.e. first-order system to continue its game. Hence, the memristor is playing the game of an observer which is lending or giving away his data to the observed system.

The memristive system is primarily storing the rules of the observed game and only secondarily the data involved.

Slogans

If the "Big Masters" (Master/Slave) fail, the wee masters (master/slave) are in charge, delivering the (ir) carried (stored) information, collected by permanent second-order observations, about the last cycle(s) of the big game. Their role, thus, plays in inverse temporal order (history) and on a second-order level in the tectonics of the system in respect to the big masters. The big masters are playing in CMOS, the wee masters, complementary, in memristors.

The play of the master and the slave as such is, if realized, represented by the compositional play, i.e. in the third system as the composition of system1, FF1, and system2, FF2.

If the play fails, the wee masters are still in charge because they are representing with their memristive capability the history of the ended game represented in the matching conditions of the big game. Hence, if the big masters enters the game again by the power renewed, the wee masters are offering their data to continue at the same level, where their game got interrupted. This is possible by the interplay of the volatile CMOS flip-flop FF and the nonvolatile memristive flip-flop ff functionalities.

Hence again, what is the crucial difference of the proposed sketch for an interactional approach to the buffer-like implementation of HP's circuit?

Diamondization

Diamondization is reflecting the matching conditions (MC) of the composition of the flip-flop construction. Without the MCs, the construction is not working. In an technical model, if the power, which obviously is part of the MCs too, breaks down for the first-order device, the matching conditions

as such remains and are represented by their last status, i.e. stored, in the complementary mapping of the second-order level, which is technically realized by a memristive element.

A distinction of "activated" and "non-activated" first- and second-order levels of permanently installed devices, CMOS and memristive, are in order.

This interactional modeling tries to avoid the disadvantages of a channel modeling of the interactions between Master FF and Slave FF by introducing their double role in an interaction, i.e. as 'big' Masters and 'wee' masters and respectively as 'big' Slaves and 'wee' slaves.

In other words, if an interaction shall happen between two agents, then both are simultaneously in an active and in a passive role.

Master-slave

The Master is able to act on a Slave only if the Slave is enabling this approach. Thus, as an enabler, the Slave acts as an active master and the Master becomes a slave.

Slave-master

The other way round, the Slave is able to be addressed by a Master as a Slave only if the Slave is accepting this approach to be addressed. Thus, as an enabler to be addressed, the slave acts actively as a Master. Both turns are pre-installed by the designer of a classical FF and are not realized by the interaction of the device.

Critics

HP's construction is using the flip-flop channel as a memristive buffer, and is not yet exploiting the possibilities of the interactivity of the master/slave relationship by the involvement of the memristor. The concepts of complementarity, simultaneity and antidromicity are not yet used in the construction

of HP's memristive FF device.

Nevertheless, it is the merit of HP's research team to have opened up unforeseen possibilities for new developments in computing in the large, in hardware, software and architectonics of computing systems.

FULL TEXT

http://www.thinkartlab.com/Memristics/Memristive flip-flop/Memristive flip-flop.html http://www.thinkartlab.com/Memristics/Memristive flip-flop/Memristive flip-flop.pdf posted by Rudolf | <u>11:01 AM | 1 comments links to this post</u>

July 2010 / http://rudys-diamond-strategies.blogspot.de/2010/07/ FRIDAY, JULY 9, 2010 Memristics: Memory is more than Storage

Memristive memory is able to surpass the conceptual limits of computational storage methods

FULL TEXT

http://www.thinkartlab.com/Memristics/Memory/Memory%20is%20more%20than%20Storage.pdf

Abstract

The relationship between memory and computation was not always a happy one. Once fixed by John von Neumann's conceptualization of the practice of engineering solutions for practical computer architectures, it has become the ultimate paradigm of architecture but ending now into its permanent bottleneck foreclosing the former interactivity of memory and computation.

Insights into mnemonics of the Ancient solutions to the process of memorization are slowly recovering from the military hierarchy of commander and commanded, and the reduction of memory to storage.

Memristive systems are prepared to re-dynamize the interplay of memory and computation again.

Some orientation towards conceptual generalizations of memristive approaches is given with the use of poly-categorical methods.

Memristors as Logic

"The biggest new news about memristors, though, came in a paper in Nature last week, in which HP announced that the devices can also perform logic functions. In other words, Wiliams said, a memristor can act as both a storage element and a logic element, or *"a lock as well as a gate."*

"There's nothing else I'm aware of that performs both of those functions simultaneously," he said."

Williams said there is an *"intriguing possibility"* that if you could use the same structure to do actual computing as well as storage, you could send the program to where the data is and execute the problem where the data is stored. Of course, that all depends on what the performance of memristor-based devices ends up being, compared with traditional CPUs and memory systems.

http://blogs.pcmag.com/miller/2010/04/memristors a flash memory comp.php#more

Memory is more than storage

"Note the double closure of the system which now recursively operates not only on what it "sees" but on its operators as well."

(Heinz von Foerster, On constructing a Reality, in: Observing Systems, p. 305, 1984) Storage implementation by flip-flops based on NAND or NOR gates are first-order concepts realizing storage and computation with the help of an "external" timer. Memristive realizations are of second-order, they are not genuinely implemented by NANDderivatives build by IMP but by a new kind of second-order construction. Because of their *second*-order status they are not primarily emulating storage but memory.

Memory, in this generalized sense, is a *self-referential* construct, allowing to change the memorized object while memorizing, hence the object is not simply stored as a record, but is accessible to re-interpretation.

Further Notes

A finite state machine has a state but not a memory of a state.

A memristive machine has a state of a state, i.e. a meta-state as a memory, therefore a memristic machine is not a finite state machine.

A meta-state always can be taken as a simple state because a reduction from an asabstraction to an is-abstraction is directly possible because the necessary informations are stored in the meta-state. From "x as y is z" there is an easy way to reduce it to "x is x". A memristive machine, then, is a machine with a tensed time, while finite state machines are not tensed machines. Their temporality is of first-order, memristic time is of second-order, i.e. an interpretation of a state of a state.

Todays interpretation of memristors as memory devices in an ANN is reducing the possibility of *second-order learning* to simple first-order learning as trained adaption.

FULL TEXT

http://www.thinkartlab.com/Memristics/Memory/Memory%20is%20more%20than%20Storage.pdf posted by Rudolf | 1:09 AM | 0 comments links to this post

August 2010 / http://rudys-diamond-strategies.blogspot.de/2010/08/ TUESDAY, AUGUST 31, 2010 Towards Abstract Memristic Machines

I just published a new paper about *"time- and history-dependent"* machines at my MemRistics website:

http://memristors.memristics.com/Machines/Memristic%20Machines.html http://memristors.memristics.com/Machines/Memristic%20Machines.pdf

This is a very first attempt to propose the new possibilities of computation offered by the discovery/invention of memristors and memristive systems.

A comparision with different types of machines is presented: *trivial* machines *non-trivial* machines *self-organizing* machines co-creative autonomous machines.

The framework of *monomorphy-based morphogrammatics* is used to demonstrate some mechanisms of memristic machines.

Time-dependence is modeled as a *retro-grade* evolvement (prolongation, succession, disremption, recursion) of morphograms with simultaneous outcomes.

With that, the characterization of the behavior of memristors as time-dependent devices of nanoscale is taken seriously and is interpreted as *second-order* events, which demands for a specific, non-classical, formalization.

A few basic operations, like "successor", "addition" (coalitions) and "multiplication" (cooperations) of memristive constellations are developed.

Abstract

Memristic machines are time-tensed machines of the nanosphere. Their definition and their rules are not covered by ordinary logic, arithmetics and semiotics, basic for a theory of abstract automata.

The difference to classical concepts of machines to tensed, i.e. memristive machines is elaborated. As an attempt to develop memristive machines, basic constructs from morphogrammatics are applied.

Properties of retro-gradeness (antidromicity), self-

referentiality, *simultaneity* and *locality*(positionality) of operations as they occur in kenogramamtic and morphogrammatic basic operations, like the successor operations, 'addition' and 'multiplication' have to be realized on all levels of operativity in memristive systems.

Hence, the tiny memristive properties of *time- and history-dependence* for kenomic successors are presented for some further operations, like "addition" (coalition), "multiplication" (cooperation), "reflection", etc.

A new framework for design and analysis for memristive systems, i.e. memristics, shall be sketched as a complex methodology of Morphogrammatics, Diamond Category Theory, Diagrammatics and Nanotechnology.

FULL TEXT

http://memristors.memristics.com/Machines/Memristic%20Machines.html http://memristors.memristics.com/Machines/Memristic%20Machines.pdf

posted by Rudolf | 1:53 AM | 0 comments links to this post

SUNDAY, AUGUST 8, 2010 Memristics: Videos and slides Enjoy some new **videos** and**slides**

about memristics and diagrammatics at my new website http//memristics.com

http://videos.memristics.com/Videos.html

posted by Rudolf | 7:01 AM | 0 comments links to this post

September 2010 / http://rudys-diamond-strategies.blogspot.de/2010/09/ FRIDAY, SEPTEMBER 3, 2010 Sketch of a Typology of Abstract Memristic Machines Some orientational attempts to *"Towards Abstract Memristic Machines"*

Have a look at the paper *"Sketch of a Typology of Abstract Memristic Machines",* it might support your understanding of the amazing paradigm shift we are in.

http://memristors.memristics.com/Machines/Orientation/orientation.html http://memristors.memristics.com/Machines/Orientation/orientation.pdf posted by Rudolf | <u>7:05 AM</u> | <u>0 comments links to this post</u>

December 2010 / http://rudys-diamond-strategies.blogspot.de/2010/12/ THURSDAY, DECEMBER 16, 2010 Memristics: From Signals to Reflection New results and perspectives in memristics

Memristics as the study of memristive systems is developing quite succesfully.

Enjoy the new papers about this field opened up by Leon Chua and his memristor and memristive systems.

Memristics is studying the mutual interaction of memristive systems, morphogrammatics and monoidal polycontextural categories.

Some new papers

http://memristors.memristics.com/Signal/Signal%20Theory.html

http://memristors.memristics.com/MorphoReflection/Morphogrammatics%20of%20Reflection.pdf

http://memristors.memristics.com/Polyverses/Polyverses.html

http://memristors.memristics.com/Dominos/Domino%20Approach%20to%20Morphogrammatics.html

http://memristors.memristics.com/MorphoProgramming/Morphogrammatic%20Programming.html posted by Rudolf | <u>3:42 AM</u> | <u>0</u> comments links to this post

January 2012 / http://rudys-diamond-strategies.blogspot.de/2012/01/ MONDAY, JANUARY 30, 2012 Complementary Calculi: Distinction and Differentiation

George Spencer-Brown and Marin Mersenne

Headaches with complementary calculi

If two formal systems have a very close familiarity as a duality or even a complementarity, and are therefore to some degree nearly indistinguishable, but you nevertheless discovered in a strange situation of an insight a decisive difference between them.

Then it might easily be possible, as in my case, that you get nightmares of endless oscillations and manifestations of something you don't yet have access to, and what, as far as you guess, what it could be, you anyway wouldn't like at all.

That's what happens with the discovery of the complementary calculus of indication, a calculus I call a Mersenne calculus of differentiation and separation, in contrast to the Spencer-Brown calculus of indication and distinction.

I have never been a friend of this calculus of *The Laws of Form*, therefore to get involved with its complementary calculus is no pleasure at all.

Obviously, to get rid of the headache with the CI and its ambitious and annoying celebrations, especially in German humanities, the best is to show, or even to prove, that there is a complementary calculus to the calculus of indication, too.

With that, the sectarian propaganda of the CI boils down to a strictly one-sided and utterly blind endeavour.

In-between I have written some papers dealing with the complementarity and applications of the concepts of the CI and the MC.

There might still be too much non-deliberated obfuscation involved, at least, some clear aspects of the new calculus of differentiation, CD, and its complementarity to the calculus of indication and distinction are now elaborated as far as it takes to get a primary understanding of the new situation.

Indication and differentiation in graphematics

Moshe Klein has given a simple introduction to George Spencer-Brown's calculus of indication (CI) as a special case of a bracket grammar. A context-free language with the grammar:

```
e grammar:
S → SSI(S)| λ
```

is generating the proper paranthesis for formal languages.

What was an act of a genius becomes an ad hoc decision to restrict the grammar of bracket production.
Set the restriction of bracket rules to:

$$(())() = ()(())$$

and you get the basic foundation of the famous CI as introduced by George Spencer-Brown.

Nobody insists that this is an appropriate approach but it seems that it takes its legitimacy from the formal correctness of the approach.

Now, with the same decisionism, albeit not pre-thought by a genius, I opt for an alternative restriction,

$$(()) = ().$$

This decision is delivering the base system for a Mersenne calculus, interpreted as a calculus of differentiation, CD.

I stipulate that both calculi, the CI and the CD, are complementary. And both calculi have additionally their own internal duality, delivering the dual calculi, i.e. the dual-CI and the dual-CD.

It will shown that, despite of its non-motivated adhocism, both calculi are well founded in graphematical systems, and are to be seen as interpretations of independent complementary graphematical calculi.

In fact, they belong, with the identity system for semiotics to the only two nonkenogrammatic graphematical systems of the general architectonics of graphematics.

Abstract

The paper "Diamond Calculus of Formation of Forms. A calculus of dynamic complexions of distinctions as an interplay of worlds and distinctions" was mainly based on a deconstruction of the conditions of the calculus of indiction, i.e. the assumption of a "world" and "distinctions" in it.

The present paper "*Complementary Calculi: Distinction and Differentiation"* opts for a graphematic turn in the understanding of calculi in general. This turn is exemplified with the George Spencer-Brown's Calculus of Indication and the still to be discovered complementary Mersenne calculus of differentiations.

First steps toward a graphematics had been presented with "Interplay of Elementary Graphematic Calculi. Graphematic Fourfoldness of semiotics, Indication, Differentiation and Kenogrammatics".

Graphematic calculi are not primarily related to a world or many worlds, like the CI and its diamondization. Graphematic calculi are studying the rules of the graphematic economy of kenomic inscriptions.

Graphematics was invented in the early 1970s as an interpretation of Gotthard Gunther's

keno- and morphogrammatics, inspired by Jaques Derrida's grammatology and graphematics.

Spencer-Brown's calculus of indication has been extensively used to interpret human behavior in general (Niklas Luhmann).

The proposed new complementary calculus to the indicational calculus, the Mersenne calculus, might not be applicable to human beings, but there is a great chance that it will be a success for the interaction and study of non-human beings, e.g. robots, aliens, and Others.

FULL TEXT

http://memristors.memristics.com/Complementary%20Calculi/Complementary%20Calculi.html posted by Rudolf | 5:51 AM | 1 comments links to this post

FRIDAY, JANUARY 20, 2012 NEW APPROACHES

NEW APPROACHES TO THE PROJECT OF UNDERSTANDING THE SPECIFIC RATIONALITY OF THE CHINESE WRITING SYSTEM

It is believed that with the understanding of morphograms as *rules* for morphic *cellular automata* a new approach for an understanding of the specific rationality of Chinese writing systems is achieved. With that the Blog "THE CHINESE CHALLENGE" enters into a new level of understanding Chinese rationality in a non-Western way.

(For technical reasons I publish these comments on the Blog "Rudy's Diamond Strategies" too.)

This will be elaborated in a special paper.

Here are some papers mentioned that had been on the way to this new understanding of the dynamics and pragmatics of Chinese characters.

An intermediary paper to this understanding was published as "What Chinese Grammar".

What Chinese Grammar?

Interchangeability and morphogrammatics of interpretations

To put it bluntly: Ancient Chinese characters (signs, hieroglyphs, characters) are conceived in a transclassic setting as *morphograms*.

This insight is achieved with the approach of a polcontextural transformation of the categorical concept of bifunctoriality and understood as the interchangeability of locus of a

character and the character itself.

Furthermore the interchangeability of Western grammatical categories to characterize Chinese characters and sentences is applied.

This is proposed with the help of a positive reading of Rolf Elberfeld studies (2003, 2007) and a negative differentiation to other approaches which are not reflecting their complicity with Western grammar.

http://www.thinkartlab.com/pkl/media/Chinese%20Grammar/What%20Chinese%20Grammar.pdf http://www.thinkartlab.com/pkl/media/Chinese%20Grammar/What%20Chinese%20Grammar.html

The Amazing Power of Four

Gotthard Gunther's space-travel algorithm and Leon Chua's Fourth electronic Element supported by Robert Rosen's speculations about anticipative systems

Speculations about trans-functorial and morphic metamorphosis of space - time and worlds on one side, and flux and charge of electronics on the other side, leading to the memristor and memristive systems of nanoelectronics.

Achievements and attempts to surpass classical paradigms of science by Gotthard Gunther and Leon O. Chua are portrayed and other attempts of Robert Rosen's anticipatory systems are sketched and Martin Heidegger's late philosophy of the Fourfold are mentioned.

http://www.thinkartlab.com/Memristics/Power%20of%20Four/Power%20of%20Four.html http://www.thinkartlab.com/Memristics/Power%20of%20Four/Power%20of%20Four.PDF

Short Overview of Morphic Cellular Automata

http://memristors.memristics.com/CA-Overview/Short%20Overview%20of%20Cellular%20Automata.html http://memristors.memristics.com/CA-Overview/Short%20Overview%20of%20Cellular%20Automata.html

Graphematic System of Cellular Automata Short characterization of cellular automata by the 9 graphematic levels of inscription

As a further specification of the "overview of morphic cellular automata", described before, a graphematic classification of the inscriptional systems shall be introduced and applied to different types of cellular automata.

http://memristors.memristics.com/Graphematics/Graphematics%20of%20Cellular%20Automata.html http://memristors.memristics.com/Graphematics/Graphematics%20of%20Cellular%20Automata.PDF posted by Rudolf | <u>3:24 AM</u> | <u>0 comments links to this post</u>

TUESDAY, JANUARY 17, 2012 Towards Abstract Memristic Machines

A new paper about the

http://memristors.memristics.com/Machines/Memristic%20Machines.html http://memristors.memristics.com/Machines/Memristic%20Machines.pdf

Abstract

Memristic machines are time-tensed machines of the nanosphere. Their definition and their rules are not covered by ordinary logic, arithmetics and semiotics, basic for a theory of abstract automata. The difference to classical concepts of machines to tensed, i.e. memristive machines is elaborated. As an attempt to develop memristive machines, basic constructs from morphogrammatics are applied. Properties of retro-gradeness (antidromicity), self-referentiality, simultaneity and locality (positionality) of operations as they occur in kenogrammatic and morphogrammatic basic operations, like the successor operations, 'addition' and 'multiplication' have to be realized on all levels of operativity in memristive systems. Hence, the tiny memristive properties of time- and history-dependence for kenomic successors are presented for all further operations, like "addition" (coalition), "multiplication", "reflection", etc. Morphogrammatics will be further developed in Part II of the paper.

A new framework for design and analysis for memristive systems, i.e. memristics, shall be sketched as a complex methodology of Morphogrammatics, Diamond Category Theory, Diagrammatics and Nanotechnology.

posted by Rudolf | 10:20 AM | 0 comments links to this post

Graphematics of Conflicts

Since my studies of *memristics* in the framework of trans-classical logic, I developed a new concept of *cellular automata*, and discovered an interesting application of morphogrammatic-based cellular automata for an interpretation of the *pragmatical* aspects of Chinese characters.

With this post, I would like to introduce an application of novel distinctions to a *theory of conflict management*. And an application to a *theory of propaganda analysis* is proposed.

"Inconsistency robustness is information system performance in the face of continually pervasive inconsistencies-- a shift from the previously dominant paradigms of inconsistency denial and inconsistency elimination attempting to sweep them under the rug." (Carl Hewitt) http://carlhewitt.info/

The role of contradictions and gaps in the analysis of propaganda and databases

Some preliminary thoughts and notes about *conflict-theory* and the strategies of propaganda in politics and science are developed in the framework of graphematics.

This is not yet taking into account the complementary diamond aspects of conflicts.

Orwell's characterization of propaganda: *Newspeak*, *Doublethink* and *Memory-loss* as a defence of truth are modeled by the features of graphematic calculi as new operative tools of propaganda analysis and deconstruction.

Traditionally, a theory of propaganda is covered by the techniques of rhetorics of speechacts. Graphematics proposes elements of a deconstruction of propaganda beyond the level of rhetorics.

On one side we have the propaganda analysis of George Orwell based on a defence of truth, on the other side the self-reflections of the propagandist Joseph Goebbels about the rationality of propaganda as being neutral to the categories of truth and false.

An application of graphematic distinctions to the definition of conflicts in databases is taken as a contrast to explain and demonstrate the functioning of graphematic approaches to conflicts and contradictions, like Boolean, Mersennian, Brownian and Stirlingian.

LINKS

http://memristors.memristics.com/Graphematics%20of%20Conflicts/Graphematics%20of%20Conflicts.html http://memristors.memristics.com/Graphematics%20of%20Conflicts/Graphematics%20of%20Conflicts.pdf posted by Rudolf | <u>6:17 AM | 0 comments links to this post</u>

February 2012 / http://rudys-diamond-strategies.blogspot.de/2012/02/ WEDNESDAY, FEBRUARY 29, 2012 Zu einer Komplementarität in der Graphematik Semiotik zwischen Browns Unterscheidungen und Mersennes Differenzierungen

FULL TEXT

http://www.thinkartlab.com/Memristics/Komplementaritaet/Komplementarität%20in%20der%20Graphematik.pdf

This German Text explains some points of the paper "Complementary calculi" published at: http://memristors.memristics.com/Complementary%20Calculi/Complementary%20Calculi.html

Abstract

Die Komplementarität zwischen dem Kalkül der Unterscheidung im Sinne Spencer-Browns und dem Mersenne Kalkül der Differenzierung wird in nicht formaler Weise kurz skizziert. Dabei werden auch verschiedene z.T. historische Anmerkungen notiert. Anwendungsbespiele der Komplementarität für ein Verständnis der Objekttheorie im Rahmen einer Semiotik, und Reflexionen zur Selbstreferentialität der Reentry-Form und der Form der Selbst-Zitation werden angedeutet. Es wird zwischen kontextunabhängigen und kontexabhängigen, d.h. morphogrammatischen Kalkülen der Unterscheidung und der Differenzierung differenziert.

Objekte der Semiotik angesichts ihrer Janus-Köpfigkeit

The law of complementarity

"There is no stronger mathematical law than the law of complementarity. A thing is defined by its complement, i.e. by what it is not. And its complement is defined by its uncomplement, i.e. by the thing itself, but this time thought of differently, as having got outside of itself to view itself as an object, i.e. `objectively', and then gone back into itself to see itself as the subject of its object, i.e. `subjectively' again. (George Spencer-Brown, Preface to the fifth English edition of LoF)

Objekte werden in der Semiotik differenziert durch Identifikation und Separation. Die Gesetze der Differenzierung sind nicht die Gesetze der Unterscheidungen wie sie durch das Kommado: "Triff eine Unterscheidung! (Draw a distinction!) markiert werden.

Zeichen in der Semiotik werden durch Unterscheidungen von Innen und Aussen konstitutiert. Das Innen-Aussen-Verhältnis definiert eine Zwei-Seiten-Form. Diese wiederum werden grundsätzlich durch den Kalkül der Unterscheidung markiert. Solche dichotomen Gebilde werden dann als Zeichen verstanden.

Der Aspekt der differenz-theoretischen Eigenschaften von Zeichen wurde von *Niklas Luhmann* herausgestellt. Selbst wenn seine Charakterisierung primär auf den selbst-referentiellen Charackter der Verweisungszusammenhänge insistiert, ist das Zeichen bei Luhman als eine 2-Seiten-Form bestimmt.

Der Semiotiker *Alfred Toth* hat in verschiedensten Anläufen das Verhältnis von Zeichen und Objekt thematisiert und versucht einer post-semiotischen Behandlung zugänglich zu machen. Eine starke Verallgemeinerung des Peirce-Bense'schen Zeichenbegriffs ist ihm gelungen durch eine Radikalisierung der Zeichen/Objekt-Beziehung zu einem Innen/Aussen-Verhältnis.

Beide, Toth wie Luhmann, benutzen als Apparat der Argumententation in wesentlichen Teilen *Spencer-Browns* Calculus of Indication, beide mit dem Anspruch und Glauben, damit über die Einschränkungen der Logik hinaus gelangen zu können.

Wie ich in einer früheren Arbeit angefangen habe aufzuzeigen, lässt sich Luhmanns Ansatz vom Second-Order Cybernetics Jargon befreien, ohne dass dabei seine Erkenntnisse aufgeben werden müssten. Es wurde aufgezeigt, dass eine sog. Diamond-Theoretische Thematisierung direkter und prinzipieller den Umstand der Zeichenform als Zwei-Seiten-Form erfassen lässt.

Durch weitere Arbeiten meinerseits, die erst vor kurzem in einer etwas ausführlicheren Form publiziert wurden, scheint es möglich geworden zu sein, auch den objekt-theoretischen Aspekt der Zeichenbildung, unter der Verallgemeinerung von Innen und Aussen, als eine zur Theorie der Unterscheidung komplementäre Form zu bringen. Und zwar durch den neu eingeführten Calculus of Differentiation. Es wurde in aller Ausführlichkeit gezeigt, dass und wie die beiden Sichtweisen der Unterscheidung und der Differenzierung zu einander komplementär sind.

Im allgemeinen wird der Unterschied zwischen einer Dualität und einer Komplementarität in einem Kalkül, bzw. zwischen Kalkülen, nicht klar gesehen. Dualität existieren für nahezu alle denkbaren Kalküle, auch etwa für den Kalkül der Aussagenlogik oder abstrakter, für die Kategorientheorie, und hat

dort die Funktion, die in Grossbritanien zu einer verkaufs-technischen Belästigung geworden ist, des "Two for One".

Im Gegensatz dazu sind komplementäre Kalküle oder Kalküle der Komplementarität nicht leicht zugänglich, und fristen ein isoliertes Dasein, etwa in der Quantenlogik.

Wurde die Bedeutung der sog. Quadralektik, d.h. des 4-fachen chiastischen Zusammenspiels von Innen und Aussen betont, und im Grundzug formalisiert, ist jetzt ein expliziter Formalismus etabliert worden, der diesen komplementären Aspekt des Aussen-Innen-Verhältnisses formal und operativ zu erfassen vermag.

Wird der Kalkül der Unterscheidung (Calculus of Indication, CI) mit dem Namen George Spencer-Browns, als dessen Schöpfer verbunden, schlage ich vor, den neuen Kalkül der Differenzierung (Calculus of Differentiation, CD) mit dem Namen des Metaphysikers und Mathematikers *Marin Mersenne*(1588 - 1648) in Verbindung zu bringen, und daher die Bezeichnung Mersenne Kalkül zu wählen.

Sollte es diesen Mersenne Kalkül überhaupt geben, würde allerdings dadruch die Einzig(artig)keit des Brown'schen Kalküls radikal relativiert. Der Calculus of Indication der Laws of Form würde damit nicht nur klar von der Form der Logik unterschieden, bzw. exakt unterscheidbar gemacht, sondern der CI kriegte nun, ganz im Widerspruch zu seinem Anspruch und seiner Intention, ein komplementäres Spiegelbild vorgesetzt. Ein solches Spiegelbild muss nicht symmetrisch sein, sonst wäre es schlicht eine Dualität.

Es stellt sich grundsätzlich heraus, dass beide Kalküle, wie auch der von beiden unterschiedene Logikkalkül, eine Realisierung eines passenden Schriftsystems der allgemeinen Theory der Schreibweisen, d.h. der Graphematik, darstellen, und somit in einen umfassenden systematischen Zusammenhang gestellt werden können, ohne dass dabei die eine oder andere Dogmatik bevorzugt werden müsste.

Wolframs Brownesker Tweet: "More than one is one but one inside one is none.", kriegt von der Mersenne App automatisch einen Retour-Tweet: "More than one is none but one inside one is one."

FULL TEXT

http://www.thinkartlab.com/Memristics/Komplementaritaet/Komplementarität%20in%20der%20Graphematik.pdf

posted by Rudolf | 10:37 AM | 0 comments links to this post

July 2012 / http://rudys-diamond-strategies.blogspot.de/2012/07/ TUESDAY, JULY 10, 2012 Notes on the Tabularity of Polycontextural Logics Bifunctoriality and Tabular Notation for Polycontextural Logics

Some new developments in the formalization of tabular logics as attempts to a nonhierarchical and not-tree-based paradigm of formal thinking.

Western Logic and Trees

Logic is easily connected with trees. Raymond Smullyan started the movement of "Logic with Trees" (Colin Howson), Melvin Fitting, the master of all trees dedicates his book "First-order Logic and Automated Theorem Proving" "To Raymond Smullyan who brought me into the trees".

The tree or tableaux method is highly elaborated by Melvin Fitting as the ultimate tableaux method, used today as a proof method for nearly all kinds of logical systems. There had been predecessors, as usual, like Evert Beth and Jaako Hintikka, or the Dialog Logic approaches of Paul Lorenzen and E. M. Barth.

Tree-thinking goes back to the Porphyry of Tyre with his Porphyrian tree. Tree-thinking is fundamental for Western thinking. Chinese thinking in contrast is based not on trees but on grids (Yang Hui (楊輝, c. 1238 - c. 1298)).

http://the-chinese-challenge.blogspot.co.uk/2007/03/chinese-centralism.html

The tableaux approach to logic seems to be very natural. Its emphasis is focussed on a structure with a singular beginning (root) and (mostly) binary decision procedures for the prolongations of the tree build on the base of such a root and its branching. The established hierarchy between the root and its nodes is perfectly stabilized by the success of its applications and its lucid rationality rooted in classical Western thinking of Porphyrian tree-ontology and its re-invention in the Semantic Web, too.

It is believed, historically and actually, that non-rooted and non-hierarchical systems of thought and action are leading for short or long into chaos.

Postmodernist thinking believes that such arguments of and against hierarchical organizations are obsolete. Even the smallest kid experiences and knows how much we all are connected and taking part in massive networks where there is no beginning and no end and everything is nevertheless working fine. What's a correct impression for kids is not necessary the truth of the adult game.

With or without clouds, the internet connections are strictly hierarchically mathematized, programmed, organized, regulated, governed and policed.

The mass of data and "contents" are blinding the fact of the covered simple hierarchical form of organization of the deep-structure of the Web. Not just ICANN and the reduction to unidirectional communication but also the reduction of any sign system to techniques and ideologies of digitalism is determining the structural poverty of the overwhelming possibilities on an informational data-level.

Towards Matrix-based Logics

For whatever reasons I never could find any enthusiasm for such an ultimate tree.

To stay in the context of the established form of rationality I prefer to live with/in forests instead of singular trees. I don't see any reason why a node might not change into a root and a root not becoming a node of a different, equally fundamental tree.

Traditional trees are not just defined by their uniqueness and hierarchy but by the their definitive lack of interchangeability, chiasm or proemiality of the 'fundamental' terms, like nodes and root.

In fact, trees don't come in plural. All the singular and factual trees, say of logic, are dominated by the concept and methods of a single, unique and ultimate idea of a tree.

A first, and simple approach to surpass such limitations is proposed with the idea and some elaborations of forest-based polycontextural logics.

Hence, nothing is wrong with "Logic with Trees". I opt to just disseminate such ultimate trees. This, as such and alone, wouldn't be specially interesting. What makes the forest approach interesting is the possibility of interactions between the plurality of such simultaneously existing ultimate trees. A forest is not the sum of singular trees but the interactivity between trees.

Forests of Tableaux-Trees

For the case of just one singular but ultimate tree we don't have to know much about the structure of the place it is planted. Because of its uniqueness the knowledge of its ground(ing) can freely be omitted. For a forest, the loci of the trees becomes crucial. Disseminated trees are indexed to localize them in the grid of the ground. A ground and locus of a tree is not itself a tree. Hence, any logical characterization of the loci of the trees, that is building of a matrix and a grid, is obsolete. The matrix of the dissemination of logic-trees is defined by a a-logical or pre-logical structure. This pre-logical and pre-semiotic structure is covered by the methods of kenogrammatics. Thus, the grid of the forest is the kenomic matrix.

Again, the game starts again. There is no necessity to suppose a static hierarchy between the grid and the forests.

Trees in formal languages are reduced to the simple structure of "append" and "remove" of "items". Hence, disseminated trees are indexed, in this case, double-indexed to define a matrix of trees, and are defined by the similarly simple operations of "leave" a tree, 'horizontally' for replications (reflection) and "leave" a tree vertically for transpositions (transjunctions).

Other operations between trees, like permutation, reduction and iteration of trees of a forest, are easily introduced and implemented into the formal game of forest-logics. Forests are not static. They might grow or shrink and change their patterns.

From a more mathematical point of view, forests and their interplays are well ruled by the polycontextural concept of interchangeability, i.e. a generalization and subversion of the category-theoretic concept of bifunctoriality.

Without any big deviations and dangerous revolutions a move from the tree-culture to a forest-world of thinking and acting seems to be a fairly save and sane step of evolution even for the timid Western searcher of truth and computational efficiency.

In earlier papers about tree-farming I proposed contextural forests as forests of colored trees. This time, coloring has to wait for the paint.

Full text:

http://memristors.memristics.com/Notes%20on%20Polycontextural%20Logics/Notes%20on%20Polycontextural%20Logics.html http://memristors.memristics.com/Notes%20on%20Polycontextural%20Logics/Notes%20on%20Polycontextural%20Logics.pdf

posted by Rudolf | 11:03 AM | 0 comments links to this post

July 2013 / http://rudys-diamond-strategies.blogspot.de/2013/07/ SATURDAY, JULY 6, 2013 A Morphic Palindrome Grammar and its Program

Programming Aspects:

A grammar for asymmetric palindromes

This note gives the first grammar for *asymmetric palindromes* as they had been introduced in previous papers.

Why are 'asymmetric' palindromes of importance?

Every body knows the famous palindromes in phonetic writing systems.

The simplest western example is the name "*anna*". It reads forwards and backwards the same and it has for both ways of reading the same meaning.

There are competitions about the longest palindrome, and there are even novels written as a palindrome.

But again, their meaning is invariant of the reading direction.

Therefore they are sometimes called *symmetric* palindromes. But in fact, all palindromes are symmetric.

Now, what is an example for an asymmetric palindrome?

I don't know a single asymmetric palindrome in a linguistic version of what ever length and elaboration.

Chinese example 友朋小吃 (you meng xiaochi : a snack bar named *You-Peng*

吃小朋友 (chi xiao pengyou : "Eat little kids"

http://blog.chinesehour.com/

Hence, this very small palindrome is asymmetric in its meaning, albeit its scripture is symmetric. And, again, I don't know of a single Western example of this kind of palindromes.

Now, I introduced the concept of *asymmetric* palindrome that are neither linguistic nor numeric or pictographic.

The simple example is the name "**Annabelle**". Taken as a name it isn't palindromic at all.

Funny enough, it consists of 3 palindromes: "*anna*", "*b*", "*elle*". But as a composition it isn't a palindrome.

Taken as a pattern of *differentiations* it is a palindrome. It reads forwards and backwards as the same.

OK, it is an asymmetric palindrome which reads the same independently of the reading direction albeit it is inscribed differently.

"Annabelle" gets a palindromic interpretation by the asymmetric **morphogram**[1,2,2,1,3,4,5,5,4].

```
ispalindrome[1,2,2,1,3,4,5,5,4];
val it = true : bool
```

More at:

http://memristors.memristics.com/Morphospheres/Asymmetric%20Palindromes.html http://the-chinese-challenge.blogspot.co.uk/2012/12/morphosperes-asymmetric-palindromes.html

Towards Grammars and Programming

Programming classical palindromes is straight forwards, easy to access and realized in all programming languages.

http://rosettacode.org/wiki/Palindrome detection

In general there are 2 approaches to consider:

- 1. The non-recursive and
- 2. The recursive approach.

The non-recursive works with the construct "reverse", the recursive works over the

constructs "head" and "last" of a list.

For the **morphogrammatic** approach, the descriptive approach has to completed by the rules of

- a) reversion
- b) repetition and
- c) accretion.

Example



This case got a presentation in previous papers. http://memristors.memristics.com/Formal%20Aspects/Formal%20Aspects.html

The (retro-)recursive **morphogrammatic** approach has to deal additionally with the concept of trito-normal form, tnf, which is the operator to produce a canonical form by "*relabeling by ascending order*".

But more important for the morphogrammatic approach is the use of the variability of the head (first) and last function for lists.

This *variability* is ruled by the **morphoRules** of the grammar for morphic palindromes.

Recursive definition of morphic palindromes

Basis: [ø] and [1] are morphic palindromes **Induction**: If for [w] = [w1w2], [w] is a palindrome, so are

Rules

R1: $[w] \rightarrow w1[w]w2$ R2: $[w] \rightarrow w2[w]w1$ R3: $[w] \rightarrow w3[w]w3$ R4: $[w] \rightarrow w3[w]w4.$

Defs

w3 = add(|w1|,1) w4 = add(|w3|,1)

Closure

No string is a morphic palindrome of $\Sigma(w)$, unless it follows from this basis and the inductive rules R1 - R4.

With that, inductive proofs of properties of morphoGrammars are enabled.

Hence, [∅] → [1,1], [1,2] : R1, R4 [1] → [1,1,1], [2,1,2], [2,1,3] : R1, R3, R4 Palindrome grammar P = [w1w2], w = w1w2Rule1: w1 P w2 : [w1w1w2w2] Rule2: w2 P w1 : [w2w1w2w1] Rule3: w3 P w3 : [w3w1w2w3] Rule4: w3 P w4 : [w3w1w2w4]. Defs w3 = add (|w1|, 1) w4 = add (|w3|, 1) = add (add (|w2|, 1), 1).

The example shows how to apply the rules on the base of the normed palindrome [1,2,3,4]:

```
      Example for morphogram [3, 1, 2, 4]:

      Inf

      [3, 1, 2, 4]
      [1, 3, 1, 2, 4, 2]: rule1 \rightarrow [1, 2, 1, 3, 4, 3]

      [2, 3, 1, 2, 4, 1]: rule2 \rightarrow [1, 2, 3, 1, 4, 3]

      [3, 1, 2, 4]
      [4, 3, 1, 2, 4, 3]: rule2 \rightarrow [1, 2, 3, 4, 1, 2]

      [3, 3, 1, 2, 4, 4]: rule1 \rightarrow [1, 1, 2, 3, 4, 4]

      [5, 3, 1, 2, 4, 5]: rule3 \rightarrow [1, 2, 3, 4, 5, 1]

      [5, 3, 1, 2, 4, 6]: rule4 \rightarrow [1, 2, 3, 4, 5, 6]
```

Scala Program

The morphic palindrome rules are programmed by the Scala program MorphoGrammar.

This program is not yet *producing* the list of palindromes of arbitrary length but is functioning as a recursive palindrome tester for the lists defined by the *morphoRules*.

In a next step the production of the morphic palindromes will be implemented.

Results for *odd* and *even* palindromes are collected in the two following tables.

Remarks to the use of the tables

The following tables had been manually produced on the base of *normed* palindromes in trito-normal form, tnf, as it is used in the ML implementation.

The *Scala* program for the recursive production of palindromes, *MorphoGrammar*, is not yet accepting this approach. It is based purely, as it is defined, on non-canonized palindromes.

Hence, a morphogram [1,2,3] is not accepted as a palindrome by the *MorphoGrammar* program. Written as the list (1,2,3) it is not recognized as a morphogram that is written as [1,2,3].

```
scala> isPalindrome2(List(1,2,3))
res17: Boolean = false
```

With the list written in the form as it is produced, i.e. as the lists (2,1,3) or (3,1,2), the morphogram [1,2,3] is accepted by the *MorphoGrammar* as a palindrome.

```
scala> isPalindrome2(List(2,1,3))
res2: Boolean = true
```

Hence, the approach of the tables applies some kind of *zigzagging* between produced and normed palindromes. The start palindromes are normed, the produced palindromes are a mix of normed stars and not normed productions.

This approach is accepted by the ML implementation but not yet by the Scala program.

typ::odd result : odd rules tnf start [1] odd(1) 1, 1, 1 rule1 1, 1, 1 2, 1, 2 1, 2, 1 _ _ rule2 [2, 1, 3] [1, 2, 3] rule4 _ _ odd(3) 1, 1, 1 1, 1, 1, 1, 1 rule1 1, 1, 1, 1, 1 [1, 2, 2, 2, 1] 2, 1, 1, 1, 2 rule2 _ _ 1, 2, 2, 2, 3 _ 2, 1, 1, 1, 3 rule4 _ [1, 1, 2, 1, 1] [1, 1, 2, 1, 1] 1, 2, 1 rule1 _ 2, 1, 2, 1, 2 1, 2, 1, 2, 1 rule3 _ _ [3, 1, 2, 1, 3] 1, 2, 3, 2, 1 _ rule3 _ [3, 1, 2, 1, 4] [1, 2, 3, 2, 4] rule4 _ _ 1, 2, 3 1, 1, 2, 3, 1 1, 1, 2, 3, 1 rule1 _ 3, 1, 2, 3, 1 rule4 1, 2, 3, 1, 2 _ _ 2, 1, 2, 3, 2 [1, 2, 1, 3, 1] rule3 _ _ 4, 1, 2, 3, 4 rule3 1, 2, 3, 4, 1 _ _ [4, 1, 2, 3, 5] 1, 2, 3, 4, 5 rule4 _ _

Table of **odd** palindromes of size 1 and 3:

Table of **even** palindromes of size 2 and 4:

type::even	start	result : even(6)	rules	tnf
even(4)	[1, 1, 1, 1]	[1, 1, 1, 1, 1, 1]	rule1	[1, 1, 1, 1, 1, 1]
-	_	[2, 1, 1, 1, 1, 2]	rule3	[1, 2, 2, 2, 2, 1]
_	_	[2, 1, 1, 1, 1, 3]]	rule4	[1, 2, 2, 2, 2, 3]
-	[1, 2, 2, 1]	[1, 1, 2, 2, 1, 1]	rule1	[1, 1, 2, 2, 1, 1]
_	_	[2, 1, 2, 2, 1, 2]	rule3	[1, 2, 1, 1, 2, 1]
_	_	[3, 1, 2, 2, 1, 3]	rule3	[1, 2, 3, 3, 2, 1]
-	-	[3, 1, 2, 2, 1, 4]	rule4	[1, 2, 3, 3, 4, 1]
-	[1, 2, 2, 3]	[1, 1, 2, 2, 3, 3]	rule1	[1, 1, 2, 2, 3, 3]
-	-	[3, 1, 2, 2, 3, 1]]	rule2	[1, 2, 3, 3, 1, 2]
-	-	[4, 1, 2, 2, 3, 5]	rule4	[1, 2, 3, 3, 4, 5]
-	-	[2, 1, 2, 2, 3, 2]]	rule1	[1, 2, 1, 1, 3, 1]
-	-	[4, 1, 2, 2, 3, 4]	rule3	[1, 2, 3, 3, 4, 1]
-	[1, 1, 2, 2]	[1, 1, 1, 2, 2, 2]	rule1	[1, 1, 1, 2, 2, 2]
-	-	[2, 1, 1, 2, 2, 1]	rule2	[1, 2, 2, 1, 1, 2]
-	-	[3, 1, 1, 2, 2, 4]	rule4	[1, 2, 2, 3, 3, 1]
-	-	[3, 1, 1, 2, 2, 3]	rule3	[1, 2, 2, 3, 3, 1]
-	[1, 2, 1, 2]	[1, 1, 2, 1, 2, 2]	rule1	[1, 1, 2, 1, 2, 2]
_	_	[2, 1, 2, 1, 2, 1]	rule2	[1, 2, 1, 2, 1, 2]
_	_	[3, 1, 2, 1, 2, 4]	rule4	[1, 2, 3, 2, 3, 4]
-	_	[3, 1, 2, 1, 2, 3]	rule3	[1, 2, 3, 2, 3, 1]
-	[1, 2, 3, 1]	[1, 1, 2, 3, 1, 1]	rule1	[1, 1, 2, 3, 1, 1]
_	_	[4, 1, 2, 3, 1, 4]	rule3	[1, 2, 3, 4, 2, 1]
_	_	[4, 1, 2, 3, 1, 5]	rule4	[1, 2, 3, 4, 2, 5]
-	_	[2, 1, 2, 3, 1, 3]	rule1	[1, 2, 1, 3, 2, 3]
-	-	[3, 1, 2, 3, 1, 2]	rule2	[1, 2, 3, 1, 2, 3]
_	[1, 2, 3, 4]	[1, 1, 2, 3, 4, 4]	rule1	[1, 1, 2, 3, 4, 4]
-	-	[4, 1, 2, 3, 4, 1]	rule2	[1, 2, 3, 4, 1, 2]
-	-	[2, 1, 2, 3, 4, 3]	rule1	[1, 2, 1, 3, 4, 3]
-	-	[3, 1, 2, 3, 4, 2]	rule2	[1, 2, 3, 1, 4, 3]
-	-	[5, 1, 2, 3, 4, 6]	rule4	[1, 2, 3, 4, 5, 6]
-	-	[5, 1, 2, 3, 4, 5]	rule3	[1, 2, 3, 4, 5, 1]

posted by Rudolf | 6:06 AM | 1 comments links to this post