Temporality and Consciousness: possible roles for logic

Notes for the NY Phenomenology Reading Group

Andrés Villaveces / *Universidad Nacional de Colombia - Bogotá*

Stops

Phenomenology, reality, invariance

Time Consciousness - Transcendental Logic

THK: Beginning TL?

Conclusion

WHERE FROM? (ETTINGER AND ZALAMEA)

In 2018 we started a long (slow) project with Mark Ettinger (here present!), vaguely connected to shared preoccupations with

▶ Phenomenology,

▶ Logic,

▶ Time Perception,

▶ Temporality (and the role of the Self),

▶ Other kinds of connections between Mathematics and the previous (category theory, etc.)

WHERE FROM? (ETTINGER AND ZALAMEA)

In 2018 we started a long (slow) project with Mark Ettinger (here present!), vaguely connected to shared preoccupations with

- ▶ Phenomenology,
- ▶ Logic,
- ▶ Time Perception,
- ▶ Temporality (and the role of the Self),
- ▶ Other kinds of connections between Mathematics and the previous (category theory, etc.)

In early 2019 I was invited to Fernando Zalamea's 60th Birthday Festschrift. My lecture dealt with some of these connections. Some winter weeks spent in Italy ended up being providential for this project.

Zalamea has written provocative works on the philosophy of mathematics and the role of logic and categories.

Here is part of the blend.

Plan

Phenomenology, reality, invariance

Time Consciousness - Transcendental Logic

THK: Beginning TL?

Conclusion

Phenomenology, reality, invariance
○●○○○○○○○○○○○

Time Consciousness - Transcendental Logic
○○○○○○○○○○

THK: Beginning TL?
○○○○○○○○○

Conclusion
○○○

Phenomenology:

"the study of everything that remains <u>invariant</u> under a change of <u>mode of reality</u>"…
simulation / dream / …

Phenomenology, reality, invariance
○○●○○○○○○○○○○

Time Consciousness - Transcendental Logic
○○○○○○○○○○

THK: Beginning TL?
○○○○○○○○○

Conclusion
○○○

PHENOMENOLOGY:

"the study of everything that remains <u>invariant</u> under a change of <u>mode of reality</u>"…
simulation / dream / …

Fenomenología:

"the study of everything that remains <u>invariant</u> under a change of <u>mode of reality</u>"…
simulation / dream / …

Blue

the experience of perception of "being blue" and in particular its
<u>anchoring</u> in spatiality is invariant under a change of reality mode
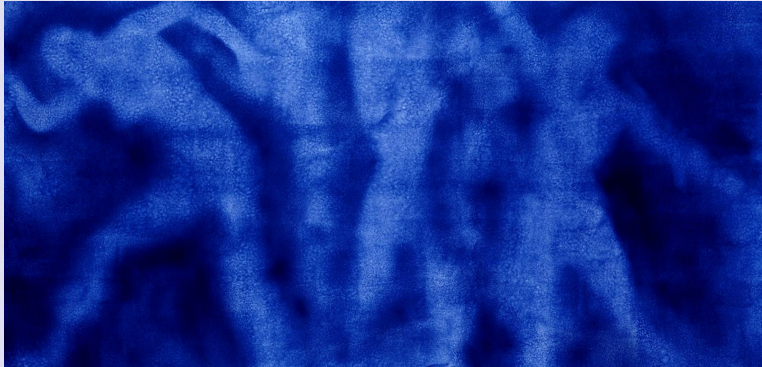
Dependence/Fundierung

Dependence of "blue" on spatiality

Dependence/Fundierung

Dependence of "blue" on spatiality

Blue	$\mapsto$	Spatiality
Life	$\mapsto$	C + O
Consciousness	$\mapsto$	Synapses

BLUE

Blue   ↔   Spatiality

Blue

Blue   ↔   Spatiality

Phenomenology, reality, invariance
○○○○○○○○○●○○○○

Time Consciousness - Transcendental Logic
○○○○○○○○○○

THK: Beginning TL?
○○○○○○○○○

Conclusion
○○○

More variations around Fundierung

…eyes moving, neuronal activations occurring as we read, the parsing of words letter by letter, the understanding of each individual word, etc. clearly <u>are not sufficient</u> to "determine unequivocally someone <u>is reading</u>"
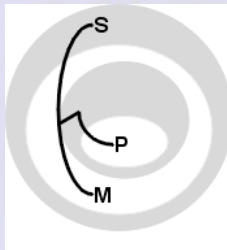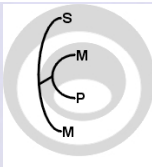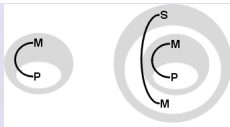
Wittgenstein / Rota

THE BIG QUESTION

Husserl…as Gian-Carlo Rota put it:

Phenomenology, reality, invariance
○○○○○○○○○●○○○

Time Consciousness - Transcendental Logic
○○○○○○○○○○

THK: Beginning TL?
○○○○○○○○○

Conclusion
○○○

THE BIG QUESTION

Husserl…as Gian-Carlo Rota put it:

What kind of <u>logic</u> govern the Fundierung relation?

Propositional Logic. . . millennia ago
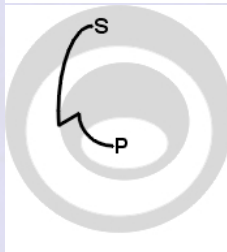
(Images by John F. Sowa in his comment of Peirce's MS 514)
Kossak/Siedlecka project for Mapping Traces

Not taking the world for granted

<u>not taking for granted</u>, as something obvious the "world" was crucial to unveil, millennia ago, the <u>structural</u> character of propositional sentences

WHERE? $\models$?

- ▶ Model Theory?
- ▶ Homotopic Type Theory?
- ▶ Topos Theory?

Plan

Phenomenology, reality, invariance
0000000000000

Time Consciousness - Transcendental Logic
000000000000

THK: Beginning TL?
000000000

Conclusion
000

Protención / Intencionalidad

From those two elements (retention and protention), Husserl builds a whole web of time decomposition into a continuum of anticipations and interpolations, protentions and intentionalities, extremely refined and irreductible to a merely analytical description.

The role of logic

Anchoring in a common way all possible experiences of knowledge of the world.

Husserl basically constructs two levels of logic:

The role of logic

Anchoring in a common way all possible experiences of knowledge of the world.

Husserl basically constructs two levels of logic:

formal logic and transcendental logic.

THE THREE LEVELS, SOKOLOWSKI

Consistency Logic, Truth Logic and finally
Transcendence Logic: Under the risk of an extreme
reduction, there are some kind of strong Peircean
echoes in this a posteriori analysis of Husserl's
logic.

Plan

## Zalamea's model (rthk: Riemann, topoi, sheaves, Kripke)

Zalamea's model (rthk: Riemann, topoi, sheaves, Kripke)

- ► "Base" level **K** (Kripke): beginning of "temporality" (still at a very primitive level compared to Husserl, but already more complex than in Tarskian semantics),

- ► "Intermediate" level s**H** (sHeaves): coherence and glueing - beginning of synthetic substratum in Husserl (intentionality),

- ► "Upper" level **T** (Topoi): the emergence of topos logic - maybe the point where transcendental logic may start (stage I).
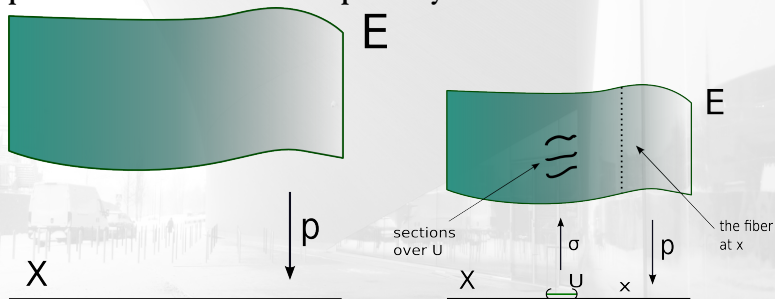
K

Initial temporal level - Kripke models - variable structures - first
flexibilization - **temporality**
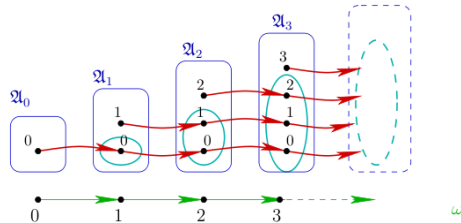
sH

Intermediate **sheaf** level: coherence and (continuous) glueing - the
place of the obstructions - **spatiality I**

T

Upper level ("topos"): places "similar to set-theoretic universes" but with the flexibility of the two lower levels - **spatiality II**

R

Zalamea proposes a way of "glueing" the three levels, inspired by ramification points on Riemann surfaces (whence "R")

Phenomenology, reality, invariance
0000000000000

Time Consciousness - Transcendental Logic
0000000000

THK: Beginning TL?
00000000●0

Conclusion
000

TWO ANSWERS THAT HAVE HAD SOME IMPACT

Husserl: <u>manifold</u> - multiplicity Tarski: $\mathsf{M} \models \varphi$…

$$\models$$

Sokolowski proposes to identify "model" in Tarski's sense and the
Husserl notion of "manifold".
Gödel's **completeness** theorem <u>filters</u> in an effective way the notion
of model and makes it "manifold". However…

Limitations of earlier proposals:

- ▶ Tarskian models cannot incorporate time perception in the extremely refined sense proposed by Husserl.

- ▶ Most logical systems lack compactness; when it is present, there are sheaf-like (global/local) properties…

- ▶ Theories of symbiosis (between higher order logic and set theory) and of Internal Categoricity seem to be crucial for any attempt at building Husserl's transcendental logic. Transitions…

- ▶ Grothendieck (topoi + motives + formalism freeness) seems to be the landmark of future logic(s). In addition to sensitivity to local/global aspects, they also seem to be sensitive to measuring failure of smoothness (cohomology)

- ▶ back and forth between Grothendieck and Shelah (contemporary model theory as a "ultrageometry")
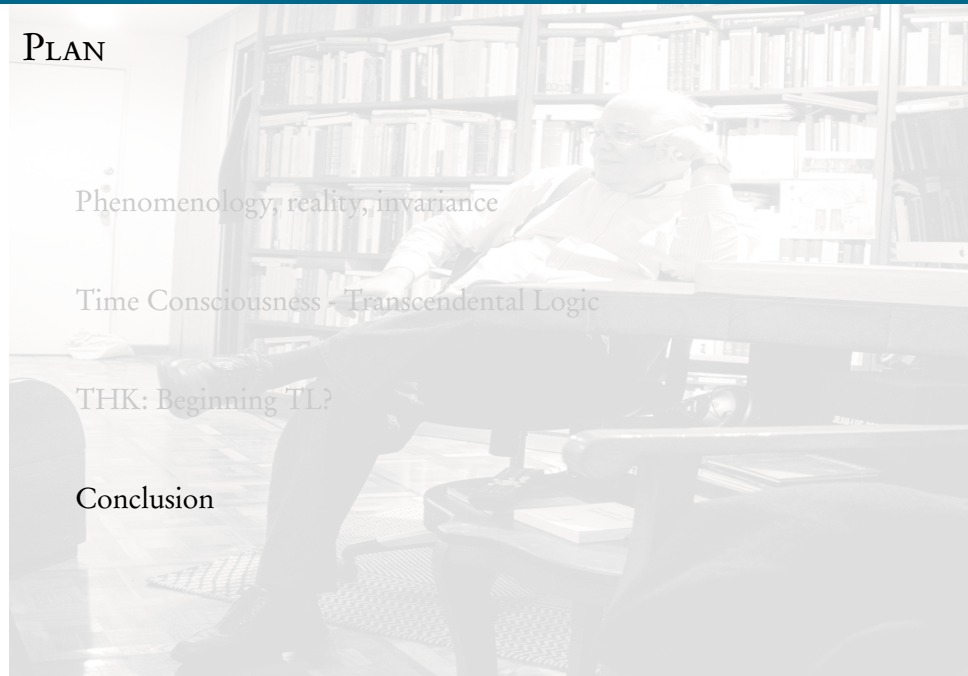
Plan

PESSIMISTIC CONCLUSION ...

▶ The richness of Husserl's questions (in Rota's version) on a logic for Fundierung and transcendental logic has not yet been attained by the mathematizations of logic.

▶ There is (as of now) a mathematical version of transcendent logic.

▶ Rota's question has not quite been answered.

. . . MA NON TROPPO!

On the other hand the richness of mathematical constructions
connected mainly with Grothendieck and Shelah and their two
parallel schools (especially when they will get entangled) has so far
not been matched by philosophers' study of mathematics and logic.
Zalamea's (r)THK model is a beginning.