



I-C2-1
PREDICATE LOGIC

Sartre said:

"Having discovered the world through language, I have over long time taken language for the world".

We say with him:

He who starts with the world will find in it the meaning of the language.

But he who starts with the language will fail to find both, its meaning and the world.

It's a literary version of the Abstractions Postulate which underlies science and epistemology since the Second Scientific Revolution of the Extended Relativity (see "STRUCTURES OF MIND"):

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Abstract, symbolic constructs may be justified solely by their capacity to coordinate events which represent their unique meaning and justification, where coordination of events implies considering them in their context, i.e. upon their background of continuum.

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In the "Natural Model" we saw that extrinsic logical systems may only be justified by extending and simulating the ER (Expression/Relation) structures of the natural inferring faculty. None of the established logical systems satisfies this requirement, all being based on reifying, noumenal natural languages. In the present chapter we present their flagship, the Predicate Logic (PL).

I-C2-2

The crucial for PL noumenal "container" structure of natural languages is represented by the Predicative Assignment Expression symbolized by "[E][&][A]", "E"(entity) standing for "object", "&"(assign symbol) for "contains" and "A" (attribute(s)) for contained sense impressions.

The symbolic expression [E][&][A] has the syntactic form [Subject][copula][Property], e.g. "my-car is green", or "my-car has greenness", where the copula "is/has" embodies the assign symbol "&" and can be implied, like in Semitic languages or in Russian. It may also have the apparently recursive form [E][&][e], "e" standing for a more general entity than "E", e.g. "my car is a vehicle", but it is just a shortcut for [E][&][all attributes of (e)].

And this noumenal predicative expression is the only foundation of PL. One would expect Logic to be founded in Epistemology and Ontology, one would hope to see it founded in rational study of basic functions of human Mind. It's with astoundment that one discovers a noumenal, "kitchen" language expression as cornerstone of "Logic", which pretends to be the absolute foundation of Mathematics and Science.

At best, one could understand it in the pre-Crisis context of the flat out reaction of Dogmatism against the First Enlightenment. But one can think only with disappointment about Russell. His own Paradox wrecked exclusively the noumenal PL and in no way Logic in general. Yet, he tried vainly to save and rebuild the collapsed structure upon its rotten base rather than to construct a new edifice upon solid rational foundations.

I-C2-3

And, what's worse, he roped in all his followers, the entire established Logic for this enormous wasted effort.

As result, our epoch stays without any well defined and well founded Logic. Facing global problems calling in question mankind's survival and impossible to be even formulated, let alone solved, without pertinent logical structures, it needs it more than any other one in history.

A randomly chosen example from 1 160 000 Web articles on PL listed by Google tells us what PL can do:

First-order logic permits reasoning about the propositional connectives (as in propositional logic) and also about quantification ("all" or "some"). A classic, if elementary, example of what can be done with the predicate logic is the inference from the premises:

- * All men are mortal.
- * Socrates is a man.

to the conclusion

- * Socrates is mortal ###

Yes, disinter syllogisms after 2000 years and unnecessarily muddle them, that's all what it can do.

One may object that First Order PL does much more, namely founds Mathematics. But does it?

I-C2-4

It IMPORTS from Mathematics several concepts (marked "#*"):

- relations# (also called "predicate variables")
- constants#
- variables#
- valence# (of relations# and variables#)
greater#/equal# 1# (numbers and 1 in particular are not yet defined)
- equality# and its symbol "="
- "logical" boolean# operators#, or, better said, the whole Boolean Algebra# corrupted and incorporated into noumenal "Logic" under the misnomer "Propositional Calculus" (see "BOOLEAN SUPPORT OF ERN LOGIC").

So, PL imports from Mathematics enough to found Mathematics in Mathematics. This may look to any normal Human as a vicious circle, but who would insult established Logicians by calling them normal Humans?

PL does not restrict its imports to Mathematics, but rubbing shoulders with Gods upon the vertiginous heights of the Olympus a priori, juggles joyously with metaphysical Beings, Objects, Things, Individuals, Properties, Existences, Truths, Falsities, Falsehoods.

In his Types Theory Russell introduces the notion of first-order, second-order and higher order logics in this way:

-...We may define an individual as something destitute of complexity; it is then obviously not a proposition, since propositions are essentially complex. Hence in applying the process of generalization to individuals we run no risk of incurring reflexive fallacies.

I-C2-5

Elementary propositions together with such as contain only individuals as apparent variables we will call first-order propositions. We can thus form new propositions in which first-order propositions occur as apparent variables. These we will call second-order propositions; these form the third logical type.

-Thus, for example, if Epimenides asserts "all first-order propositions affirmed by me are false," he asserts a second-order proposition; he may assert this truly, without asserting truly any first-order proposition, and thus no contradiction arises.-

One seems to be daydreaming. Facing an "individual", let's say, B. Russell himself, we are impressed by his biological, genetical, social and spiritual complexity, the latter so clearly manifested by his writings. Compared with intricacy of the "individual" B. Russell, the proposition "B. Russell is dead" appears to be totally "destitute of complexity".

Algebraizing a human being, or for that matter any perceivable object, as a "variable" void of complexity would indicate the incapacity of elementary reflection, let alone of conceiving logical systems.

The obsession of "reflexive fallacies" pertains to mental disorder and not to Logic. It's true that Russell has the merit of having discovered and honestly published Paradoxes, whose "reflexive fallacy" shuttered his dear PL. It's a pity that he did not take the hint and scrap the wrecked phantasm rather than spend the rest of his life hunting "reflexive fallacies" as if they were rats and by virtue of his celebrity transforming established Logic into rat hunting.

I-C2-6

Rats hunt started in Russell's 1908 paper, "Mathematical Logic as Based on the Theory of Types", where he enumerated seven paradoxes, starting with that of Epimenides' Liar followed by his own Paradox and other "reflexive fallacies".

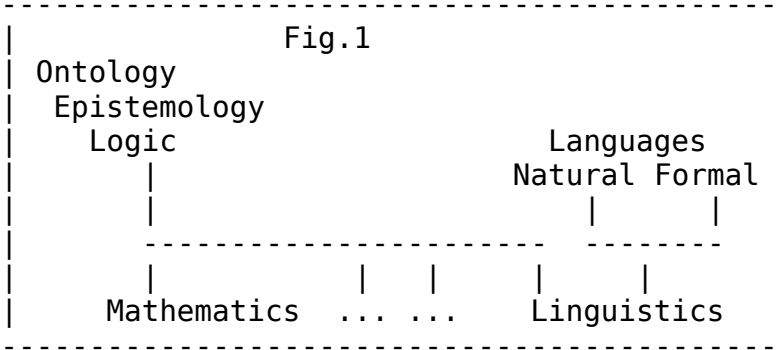
The choice of "Liar" as leader speaks by itself. In the chapter "LIAR, RUSSELL AND GOEDEL" we show that "Liar" is not a paradox, but a simple sophism, a Syllogism error dead and buried at Aristoteles time. And, its Eubulides' version "This statement is false", a starting block of Russell's Types, is by his own standards not a proposition at all. Indeed, it does not assign any property to anything: "falsity" is not a property of "things", but of Assignment Expression. Statement "Joe is tall" is an assignment of tallness to Joe, a proposition which may be true or false. But "This statement is false" does not assign anything to anything, does not assert anything about anything, so it's no proposition, but just empty, meaningless noise, which cannot be true, nor false.

Definition and Foundations

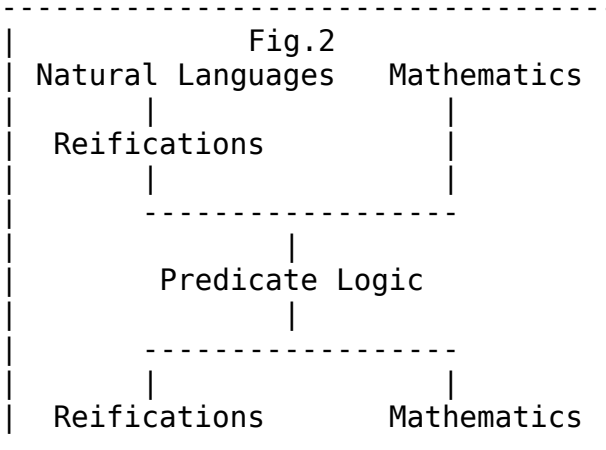
Strangely enough, Logic was seldom, if ever, rigorously defined and founded. True, one would expect only a vague intensional definition for a concept of that generality, but solid, stable foundations and an extensional definition enumerating its objectives, procedures, structures and rules seem indispensable to talk about Logic. We have seen that extensional definition of PL presents it vaguely as a branch of Mathematics without anything properly "logical" and that its "foundations" in noumenal structures of common languages are no foundations at all.

I-C2-7

One would expect Logic to be founded in Ontology and Epistemology and to found in turn Mathematics, Linguistics and other disciplines, as schematically shown in figure 1.



PL's foundations schema looks instead as shown in figure 2.



We arrive at the source of Paradoxes, Antinomies and other "reflexive fallacies" constitutive of PL, viz. fallacious pseudo-foundations in the Natural Languages via Reifications and the circularity Reifications - PL - Reifications.

I-C2-8

The other circularity, Mathematics - PL - Mathematics accounts for the success of PL as universally accepted foundation of Mathematics, but in fact boils down to the conjurer trick of Mathematics founding Mathematics.

Our critique of PL and its authors and adherents, to mention Frege, Russell, Wittgenstein, Quine, Tarski, Goedel, may seem excessively severe. Yet, we believe to have shown, that it is a noumenal, dogmatic phantasm which has resulted, like Aether in physics, in wasted efforts of generations of scientists and in wrecked established logic. Actually, PL turns out more noxious than Aether, whose destructive effects were after all restricted to physics. PL, contrariwise, impacts the totality of human praxis, leaving the mankind in want of means to formulate, let alone to solve current problems critical for its very survival.

We believe that when a Russell or a Hegel, no matter how famous and celebrated, makes a blunder, it stays a blunder. And, when a Smith or a Dupont says something reasonable, it stays reasonable.

For the sake of Smiths and Duponts somebody's got to say that the Emperor is naked.