Hartley Slater and False Contradictions

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Abstract

In this note I say a few words about my interaction with the late Hartley Slater and his work.

> *Si on appelle un chat un chat*
> *Cela évite les embrouilles*
> *Et on retombe toujours sur ses pattes*
> Baron de Chambourcy

1 From Los Angeles to Helsinki: 20 years of friendship

Barry Hartley Slater recently died (July 8, 2016). We are publishing in this issue of the *South American Journal of Logic* the paper "Gödel's theorems and the epsilon calculus" that he submitted early this year [17]. His paper "The grammar of platonism" [16] was also recently published in another journal I am managing, *Logica Universalis*.

I take this opportunity to write my interaction with him. I think that interaction is fundamental for research. It is in fact the motor of modern science in particular through peer-reviews and congresses. Internet has accelerated interaction at a speed close to light speed but it is still worth meeting and discussing with people in flesh and blood. My work has been influenced by the encounters with many strangers, Hartley is one them.

I virtually met Hartley in 1995 in Los Angeles when I was doing a post-doc at UCLA. My first contact with him was when I was asked to write for *Mathematical Review* a review [2] of his paper entitled "Paraconsistent logics?" [15]. As I have explained in another paper entitled "The new rising of the square of opposition" [7], this was the starting point of my work on the square of opposition, generating many publications and a series of events: SQUARE – *World Congress on the Square of opposition*. Slater was invited speaker at the 2nd edition of the SQUARE which took place in June 2010 at the University Pasquale Paoli in Corsica. Below a picture where

Hartley stands between myself and Damian Niwinski. On my left Pierre Cartier, the famous Bourbachic mathematician, and on the extreme left Pierre Simonnet, the main co-organizer of the event with me.

FIGURE 1 - Hartely Slater at the 2nd SQUARE in Corsica in 2010

I really met Hartley for the first time at the 11th LMPS (Congress of Logic, Methodology and Philosophy of Science) in Kraków in 1999 and for the last time at the 15th LMPS in Helsinki in 2015. Along the years we frequently met at many congresses. Hartley liked very much to go to events, he was curious to cruise the world and to meet people, always good-humored. Here is a tentative list of logical congresses where I met Hartley over the years:

- 11th International Congress of Logic, Methodology and Philosophy of Science, August 20-26,1999, Kraków, Poland

- 2nd World Congress on Paraconsistency, Juquehy, Brazil, May 8-10, 2000

- LOGICA 2003, June 17-20, 2003, Kravsko , Czech Republic

- 3rd World Congress on Paraconsistency, July 28-31, 2003, Toulouse, France

- 12th International Congress of Logic, Methodology and Philosophy of Science, August 7-13, 2003, Oviedo, Spain

- 1st World Congress and School on Universal Logic, March 31 – April 3, 2005, Montreux, Switzerland

- 13th International Congress of Logic, Methodology and Philosophy of Science, August 9-15, 2007, Beijing, China

- 2nd World Congress and School on Universal Logic, August 16-22, 2007, Xi'an, China

- 4th Fourth World Congress on Paraconsistency, July 13-18, 2008, Melbourne, Australia

- 2nd World Congress on the Square of Opposition, June 17-20, 2010, Corte, Corsica

- 5th World Congress and School on Universal Logic, June 20-30, 2015, Istanbul, Turkey

- 15th International Congress of Logic, Methodology and Philosophy of Science, August 20-26,2015, Helsinki, Finland

I also visited him in at the University of Western Australia in Perth in 2001 doing my first trip around the world, mainly in the Southern Hemisphere. At this time I was working at Stanford: I flew from San Francisco to Melbourne, then to Perth and from Perth to South Africa, then Brazil and back to California. In Perth I gave my first talk on the square of opposition. Hartley invited me at his home, I remember that he had a nice piano. We also went to visit Perth's zoo and had dinner in town.

FIGURE 2 - My first meeting with Hartely Slater at the LMPS in Kraków in 1999

2   False contradictions

Although I had many common interests with Hartley, we didn't necessarily share the same views. But we had various lively interesting discussions, the last one in Helsinki about contradictions, regarding a paper I had just published at the time, pointing out the discrepancy between Graham Priest's view of dialetheia and his logic of paradox [9] (Graham was a colleague of Hartley during many years in Perth).

In "Paraconsistent logics?", the basic idea of Slater is that paraconsistent logic is the result of a linguistic confusion. Philosophy is much linked to linguistic confusion. Wittgenstein is famous to have argued in a 5-minute lecture in Cambridge that traditional philosophy is the product of such kind of confusion (see [14]). This was later

developed at length by Carnap in his piece "Überwindung der metaphysik durch logische analyse der sprache" ("The elimination of metaphysics through logical analysis of language") [13]. Wittgenstein's argument is based on the ambiguous relation between syntax and semantics in natural language. Many sentences can be syntactically correct without having a serious meaning: *Life is a tautology*. This ambiguous feature of language is in fact not only dangerous for philosophy but for any speech act ... How to avoid that? At some point people wanted to construct a perfect scientific language where everything would be precisely meaningful. This attempt has failed and it is not clear that it will be possible to do that one day before the end of the world.

Many formal systems have been constructed. The danger of formalism is to completely loose meaning. Formalists have indeed reached absurdities such as defining a *symbol* as a sign without meaning. A sign without meaning is like a bicycle without wheel, it doesn't take you very far... One of the dangers of formalism is to petrify a meaning distortion. This is what happened with the the symbol "∃" which has been introduced as a sign for the quantifier meaning "at least one", which is nowadays consequently most often read and understood as "there exists", giving to this quantifier a great existential import it has never dreamt of.

Once symbols are introduced they live their own life, as if their meaning had an independent existence. Let us consider "1". It is one universal symbol that was introduced tp express unity . But, as we have recently pointed out (see [11]), there are many ones. We have a similar situation with the symbol for negation "¬". One may argue that there is only one negation and that the symbol "¬" denotes this thing, like the symbol " ☽" denotes the only one moon. This is a radical monolithic solution which is not so simple if we consider, on the one hand that this "thing" is not so easy to define or characterized, and on the other hand that it does not necessarily correspond to what negation is.

Another position consists in considering that there are many negations and generally people use the same sign "¬" for all of them. This strategy makes sense having in mind the motto *unity in diversity*. The mathematician is not using a different sign for each 1. The problem is that it is not obvious to know what is the quintessence of one or negation. And we have to be aware that it would be an illusion to think that this quintessence is given by the sign itself: "1" or "¬".

In paraconsistent logic it is common to see what we can called a *symbolic definition of paraconsistent negation*:

A paraconsistent negation "¬" is a negation such that: $p, \neg p \nvdash q$.
How can we be sure that the operator denoted here by "¬" is really a negation?

Let us consider the following *symbolic definition of para unity*:

A para unity "1" is a unity such that: $1 \times x = 1$.
Is it really a unity? It looks like a zero! However, following a Boolean perspective, a unity such that $1 + 1 = 1$ makes sense.

In which sense a paraconsistent negation is a negation, even if it does not obey $p, \neg p \vdash q$ (*ex-contradictio sequitur quod libet*)? This is a question we have discussed in details in various previous papers ([3], [4]).

Slater is not talking directly about the symbolic confusion of meaning but something underneath. He is more of the kind as defending that there is only one negation, classical negation. His point is that if we consider, in the line of paraconsistent logic, that a proposition p and its negation $\neg p$ can both be true, then according to the traditional definition of opposition given by the square of opposition p and $\neg p$ are not contradictories but at best subcontraries. For this reason, if we consider that a negation is a contradictory forming operator, a paraconsistent negation is not a negation unless we change the definition of "contradictory".

If $\neg$ is a paraconsistent negation, we can say that p and $\neg p$ is a false contradiction. We can agree with Slater that p and $\neg p$ is a true contradiction only when $\neg$ is a classical negation (For more details about this point see [1], [8]).

FIGURE 3 - Hartley behind me at the 2nd UNILOG

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