

## How the semiotic square came

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### Abstract

In this paper, I intend to give a presentation of the diagram known in semiotics as “the semiotic square”. More precisely, I would like to retrace semiotic square’s origins and early history until its “official” presentation in a dictionary of semiotics. One would expect that the logical square should have taken a great part in the invention of the semiotic diagram. However, the trajectory of the semiotic square was more fluctuating and heterogeneous than what is expected *a priori*, coming under the influence not only of logic but also of other sources of knowledge, as anthropology and linguistics. Shaped at the very same moment by a diagrammatical representation the semiotic square allows an underdetermination of the relations of its objects. The object becomes properly structural simply when the square displayed that structure. So the determinations of the structure can be renewed by the way of theoretical discussion around the square itself, constructing and, soon, deconstructing, a concrete geometrical shape. And this is the usual way semioticians think.

### Keywords

*Binarité, Greimas A.J., Rastier Fr., Semiotic square, Semiotics*

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I intend to give a presentation of the diagram known in semiotics as “the semiotic square”. More precisely, I would like to retrace semiotic square’s origins and early history until its “official” presentation in a dictionary of semiotics. One would expect that the logical square should have taken a great part in the invention of the semiotic diagram. However, as we will see, the trajectory of the semiotic square was more fluctuating and heterogeneous than what is expected *a priori*, coming under the influence not only of logic but also of other sources of knowledge, as anthropology and linguistics. I presume that this would be a sufficient explanation to excuse the rather chaotic aspect of this presentation, which I will of course try to keep within the limits of the tolerable.

But first, some words about semiotics. Little needs to be known here, but I do not expect that everyone amongst logicians — I have especially in mind the youngest ones — has even the slightest idea of what semiotics is. Indeed, even though its domain of research was determined in the Ancient Times and its program established at the beginning of the XX<sup>th</sup> century, semiotics is a rather young discipline: no more than forty years old. This paper is about its first ages, from 1967 to 1970, at the time when semioticians looked for theoretical models and yet unstudied fields of investigation. Basically, semiotic theory intended to be a *theory of meaning*. Its ambition was to spread out the descriptive method of structural linguistics on any kind of languages, either so-called “natural” languages or visual, musical, gestural, literary (and so on) languages. The semiotic square was introduced in this theory as the elementary structure of meaning, that is the structure of any kind of meanings and whatever the field of language described.

During this period, semiotic theory came under the influence of logic, as did its main model, that is to say linguistics. Moreover, logic had precedence over semiotics simply by the way that some of the major semiotic theoreticians, such as Ch. S. Peirce or Ch. Morris, were first of all logicians. However, this direct influence has been more pervasive in Italy than France (the two major countries where semiotics spread out first). As the semiotic square is a French affair, I will only speak then of the indirect influence, that is via linguistics, of logic on semiotics.

The semiotic square is mainly due to A. J. Greimas, who took a leadership role in the discipline in France. But we notice that many of his works about the semiotic square are written in collaboration, firstly with Fr. Rastier (1968), next with J. Courtès (1979), lastly

with J. Fontanille (1991, but I do not follow the semiotic square all the way to that point). Three studies must arrest attention:

- *Sémantique structurale* (1966)
- “Pour une théorie de l’interprétation mythique” (1966 [now in Greimas 1970])
- “The Interaction of Semiotic Constraints” (1968; with Fr. Rastier; [also in French in Greimas 1970])

plus, as a coda:

- *Sémiotique. Dictionnaire raisonné de la théorie du langage* (1979; w. J. Courtés).

There will be two simultaneous approaches in my study. One is simply governed by the chronology of these writings, while the other, in a more specific way, deals with the semiotic intersections between linguistic propositions, symbolical notations and diagrams.

### *Opposition and correlation*

Let us first have a look on two symbolical notations:

$$\frac{\overline{a}}{\text{non } a} \quad \text{vs} \quad \frac{a}{\text{non } a} \qquad \frac{\overline{p}}{\text{non } p} \quad \cong \quad \frac{p}{\text{non } p}$$

**Fig. 1 & 2 : Two narrative structures (Greimas 1966 : 196 & 198)**

They appear in *Sémantique structurale* only two pages away from each other. We can consider them as similar, since we do not pay attention to what those symbolical notations are about. The symbols *a* and *p* appear as interchangeable units, as nothing determines the use of *a* or *p*, and their variations with connectors (*non* and  $\overline{\phantom{x}}$ , either taken separately or one combined with the other) are strictly identical. The only difference between the notations is the use of distinct symbols between the two quotients, *i.e.* *vs* in the first notation,  $\cong$  in the second one.

Since those symbols are distinct, one can presume that they are used distinctively. But this is not exactly what happens. There is no such thing as a table or index in *Sémantique structurale* where you could find a strict correspondence between symbols and, say, operations, as opposed to what we are quite assured of finding in a work of logic. Neither will you find any presentation of the symbols that are used as metalinguistic expressions in this work. The only way you have to test your presumption that those two symbols are used distinctively is to verify, for each occurrence of those symbols, whether the co-references between the symbolical notation and an introductory or commentarial sentence are equivalent or not. My

examination leads me to conclude that, *generally*, *vs* stands for an *opposition*,  $\cong$  for a *correlation*, whatever opposition and correlation mean (again, this is not specified in Greimas' work). There is however a persistent problem as, in some cases, Greimas refers verbally to those symbols as *articulation*, more often as *categorical articulation*<sup>1</sup>. Does it condemn our attempt to make a distinction? or, as a minor disappointment, does it mean that Greimas renounces, in some cases, to make a distinction between them and instead regards the use of the two symbols indifferently? Of course, a better suggestion would be that articulation is a semantic category comprising both opposition and correlation, but this is purely hypothetical — and a risky hypothesis, since it has implications not only for the interpretation of symbols but also for the interpretation of the theory itself. More reasonably, I will stick to facts: (i) in *Sémantique structurale* the use of symbols is not controlled by a verbal metalanguage ; (ii) the co-reference is variable between symbolical notations and verbal expressions, even if — I prefer to assure the reader about this — one can easily interpret, for each particular case, what specific symbolical notations refers to; the fluctuation is only noticeable in consideration of second-order language (the language referring to its own expressions).

To which causes can we ascribe those indiscriminate uses? We can surely put it down to the novelty of the practice, of semiotics in general, and of symbolical notations inside semiotic works in particular. Moreover, the semiotician borrowed the symbolical notations from several sources. Two sources are unquestionable, since Greimas quotes both many times, namely the French anthropologist Lévi-Strauss and Roman Jakobson, the Russian linguist exiled in America.

In many of Lévi-Strauss' works, there are symbolical notations, such as:

$$F_x(a) : F_y(b) \cong F_x(b) : F_{a-1}(y)$$

**Fig. 3 : Canonical relations (Lévi-Strauss 1958 : 252)**

This notation, excerpted from *Anthropologie structurale* (1958), would itself be borrowed from logico-mathematical language: the units of this formulæ are built on the model of the symbolization of logico-mathematical functions. However, logicians and mathematicians would be surprised to learn that in *Le Cru et le Cuit* (1964), the symbol  $\cong$  has been replaced by the symbol  $:$  : while no change in the meaning is noticeable between the formulæ. There is no doubt that, from one book to another, Lévi-Strauss had the right to choose different symbols to refer only to one operation, that is simply “relations”, without saying anything about it. The change should be noticed by the exegetes and accounted for coherence, or as some author's influence happening in the interval, or any other hypothesis. But it would be,

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<sup>1</sup> In French : *articulation catégorique* ; nowadays, French logicians would say instead *articulation catégorielle*.

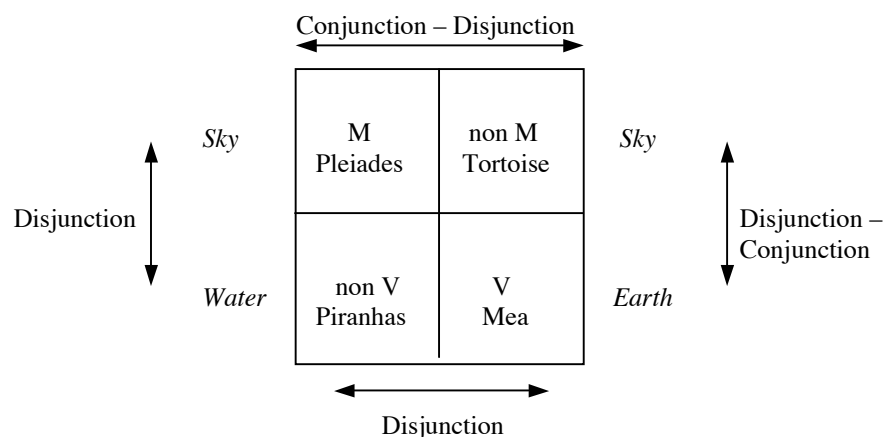
from Greimas' part, an interpretation which demands some commentary as to his use in one and the same book of the one or other symbol as though they are.

In addition, in Jakobson, whose *Selected Writings* were published in 1962, we can find many symbolical notations, some with the symbol  $∴$ , others with the symbol  $=$ . The verbal expressions referring to those notations are, indifferently, "set of ratios" (Jakobson 1962, p. 420), "equivalence" (Jakobson 1962, p. 518) or "mutually proportional relations" (Jakobson 1962, p. 644).

Thus, in the works of the two authors that could most probably have been a source of influence for Greimas for his own symbolical notations, there is a possibility of confusion, that is an unexpected and implicit equivalence, between symbols such as  $∴$  and  $≡$ , as well between operations such as correlation and opposition. The symbols in these sources are numerous, disparate and ambivalent. Greimas himself does not seem to put the use of these symbols in order: symbols are simply witness to the intersections between his own work and those linguistic and anthropological sources; they are not investigated by any theoretical thought. Logicians could consider that something seems awkward here. I would say that this lack of definition about symbols indicates only that semiotic theorization happens somewhere else. Now we are going to try to find where, since rigour in Greimas' work cannot be doubted.

### *Locking binarity*

In contrast, what is markedly new in Greimas' work is the elaboration of other graphical representations, such as tables, trees and schemas<sup>2</sup>. One of those schemas is clearly, retrospectively, a prefigurement of the semiotic square, its first draft :



**Fig. 4 : Structure of Bororo's "natural" culture (Greimas [1966] 1970, p. 228; my translation)**

<sup>2</sup> See, for instance, the table in Greimas 1970, p. 214, or a tree in Greimas 1970, p. 196. It is interesting to notice that this tree is an analytical presentation of one of Lévi-Strauss' works, although there is no such thing as a tree diagram in Lévi-Strauss.

In the study from where this schema is taken, Greimas has no new material to lay forward about Bororo's culture; the only interest he takes in the subject is based on an analysis of some anthropological material which was presented in a study by Lévi-Strauss (the one published in *Le Cru et le Cuit*). So, what Greimas intends to do, is to raise the level of the analysis to a systematisation matching to his "semantic" theory (he will call the same theory a *semiotic* theory two years later). The schema reproduced above comes up in the last pages of the paper, so it could appear as the very result of the "semantic" analysis of the Bororo's myths, actually the original contribution of the Greimas' study in comparison with that of Lévi-Strauss.

Of what nature is this contribution? An analytical one, as it is explicitly stated by Greimas. But also, clearly, a renewal of its presentation. More than this, I will lay stress on the conjunction of analytical result and graphical presentation. It must be obvious when you look at the schema, even without knowing anything about semiotics, that the analysis is based on a binary principle, that an analytical result from a semiotic point of view is a binary one. This is what the schema expresses better than any previous forms of language. Each element, verbal or properly graphical (line, geometrical figure or arrow), is coupled to another element. The systematisation of the binary principle gives a *structure* to the analysis. It turns the analysis itself into a structure, and one that is, by the best means, displayable by a schema.

Notice the natural categories outside the square: *sky*, *water*, *earth*. Those categories are generally disposed in a tripartite division; or, at least, they should be associated with a fourth term: *fire*. But this is not what happens here. They are included in two bipartite oppositions. It is very doubtful that we can put this down to Bororo's culture, since one term, namely *sky*, is split into two categories. It is the semiotical analysis only, not the analysed material, that allows for this binarism<sup>3</sup>.

We can consider that the square diagram brings to binary analysis a sort of locking. Such locking makes that binarism is both the means and the goal of the analysis. From this point of view, the square offers a major advantage in comparison with other graphical diagrams, such as trees or tables, and with symbolical notations. A square can not degenerate in a opened binary series: it is closed on its four sides (or four angles) and can not be developed.

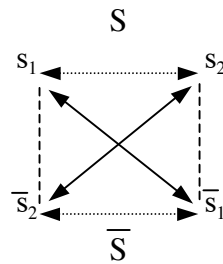
Furthermore, the present square allows us to respond to the problem that we have observed in the choice between correlation and opposition in the symbolical notations: as the conjunction can be equivalent to correlation and disjunction equivalent to opposition, the conjunction – disjunction relation makes them complementary. One could say that this is possible because no symbol is used but instead a closed category of two verbal opposite terms.

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<sup>3</sup> It is a very well-known procedure, named *catalyse* by structuralists.

## Reinventing the structure

Now here it is the first “official” occurrence of the semiotic square:



**Fig. 5 :** « The elementary structure of meaning » (Greimas & Rastier 1968, p. 88)

It came up in 1968 in a paper originally published in English in the *French Yale Studies* journal. The article was signed by Greimas and by François Rastier, then a young bachelor close to Greimas circle<sup>4</sup>. Most of the French readers know it by its inclusion in Greimas’s work *Du Sens*, published in 1970. The authors claim that this square is “only an adapted formulation of that formerly proposed by one of the present authors” (Greimas & Rastier 1968, p. 88) and they refer then not to the square that we have seen in the previous section but, without quoting any precise page, to *Sémantique structurale*, where there is no mention of any semiotic square, whatsoever. What is more, there is no diagram at all in *Sémantique structurale*. The only “formulation” in this book is the symbolical notation, such as those reported in the first section of this study.

Nevertheless, let us compare this square with the former one, which came out two years earlier. First, this square’s object is a high-level of generalisation, as it is nothing less than the “elementary structure of meaning”. In regard to this first point, it is true that it is comparable to some symbolical notations in *Sémantique structurale* that share the same general object. Secondly, the binarity is once again strengthened, as every element of the diagram — lettered symbol, indexed numeral, or line — enters in relation with one other element and constitutes with it a pair of elements. Thirdly, the “diagonal” relations have been added. Fourthly, and this is perhaps the main point, the former diagram was still, in some aspects, a table (because of the four squares and the possible reading of the diagram in lines and columns); the present one could not be taken anymore as a table; it is a graphical representation where each element has the same functional weight. Thus the square can possibly to become a graphical format of its own kind.

This is something we can also say about the logical square: it is its own format. What I mean by “format” is some expressive configuration that you can recognize at first glance. You could change something in a diagram’s format, as for instance the choice of the particular

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<sup>4</sup> Rastier has since distanced himself from greimassian semiotic. He is well known for a semantic theory, called « *Sémantique interprétative* », based on analyses of texts. In English, see Rastier 2002.

lettered symbols, without disturbing its recognizability. The logical square is a diagram that logicians can recognize through out many authors and different interpretations. So will the semiotic square, at least amongst semioticians.

This may appear of no importance at all. One can say that, about the logical square as well as the semiotic square, what it is meaningful is what the graphical representation refers to, and not what it looks like. It is its adequation with its representative function, and not its adaptation to some “format” property. And yet I found some allusions, from Greimas & Rastier themselves, that seem to indicate that they care about the semiotic square status as pure expression.

For example, Greimas & Rastier suggest that “this new presentation makes it isomorphic to the logical hexagon of R. Blanché [...] as well as to the structures called, in mathematics, the Klein group, and, in psychology, the Piaget group” (1968, p. 88). Their suggestion would be completely unfounded if it is interpreted as a comparison of specific objects content in the diagram, since mathematical, psychological, logical and semiotical objects do not have so much in common. It would not make any sense to compare their own faculty of representativeness, for as nothing is said about the objects, it would be a remark far from relevant. What is suggested by the authors is simply to compare the use of different graphical *shapes*.

There is another indication that the semioticians focused on the graphical shape of the semiotic square. This indication is written in a footnote directly connected to the diagram: “If the existence of this kind of relation seems unquestionable, the problem of its orientation ( $s_1 \rightarrow \bar{s}_2$  or  $\bar{s}_2 \rightarrow s_1$ ) is not determined yet. We will not discuss it, since the solution is not required in the rest of the demonstration”<sup>5</sup>. The kind of relation, allegedly “unquestionable”, is indeed brought up for discussion in *Sémantique structurale*, notably through the functions of correlation and opposition that are evoked in the examination of symbolical notations. But the question of *orientation* is, for that part, entirely new. This question emerges only with graphical representation. And it is indeed remarkable that this question can be formulated in the same time as it is suspended. The graphic is a tool for theoretical discovery: the relation of implication is highlighted simply by the locking of the binarity into the semiotic square.

Thus, by way of presenting its object, *i.e.* the elementary structure of meaning, the semiotic square becomes, in the same time, the “right shape” for this structure: every straight line cutting through two of its angles has to be an elementary relation of meaning, even if the necessity of it had not appeared before.

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<sup>5</sup> This footnote is an addition of the French version, in Greimas 1970: 137.



## Epilog

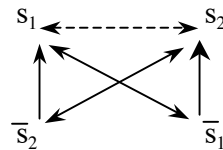
Of course, it is because of this relation of implication that the semiotic square deserves to be compared with the standard logical square (“standard” as it appears in handbooks without any further reference; see, for instance, De Praetere 1998). The semiotic relation of implication would take the place of the relation of subalternation.

There are two possible orientations of this relation, considering whether the inference concerns true or false propositions. One says that truth comes down, and falsity comes up.



**Fig. 6 : Logical inferences (De Praetere 1998)**

How would that appear in the semiotic square? Well, eleven years later, in a dictionary written with J. Courtés, Greimas has solved the question:



**Fig. 7 : Carré sémiotique (Greimas & Courtés 1979, p. 31)**

As we can see, the falsity has definitely increased — but someone must be joking here. More seriously, it should be obvious that the relata of a semiotic square are not responding as logical propositions are in the logical square. Relata of meaning have their own structure of relations that does not correspond to the structure of logical relations. How that could be falls outside the matter of this paper (and it would not be an easy question for any semiotician). In my historical point of view, I would just underline that a logical relation has been taken in consideration, then its role in the structure and its function completely changed. That change is obviously due to the fact that the elementary structure of meaning has its own constraints. And yet, the semiotic relation of implication would never have appeared without the homologation between graphical representations, logical or semiotic, based on their similar format.

Moreover, we can notice that the binarity is not applied with the same systematicity as before. That is a main aspect of its evolution — but we leave the history of the semiotic square at this point. Semioticians will “deconstruct” the structure with the same enthusiasm they built it. Even the structural principle is not completely safe in contemporary semiotics. But what I

would like to stress is that “deconstruction” would not have happened without the tools of graphical representation.

To sum up: We have seen that Greimas looked for some non verbal means, such as symbolical notations. Those means were used to express general, as well as particular, considerations implying the “structure” of the objects. They have been borrowed from authors such as Lévi-Strauss and Roman Jakobson who are not semioticians, but who are the main sources for semiotics at its inception. A square diagrammatical representation appeared at the very same moment. The square has the advantage over symbolical representations to allow an underdetermination of the relations of its objects. The object became properly structural simply when the square displayed that structure, at the same time binarily closed and underdetermined. So the determinations of the structure can be renewed by the way of theoretical discussion around the square itself, constructing and, soon, deconstructing, a concrete geometrical shape. By that means, we see that the graphical representations have participated to the conceptualisation in semiotics at its first ages, as they are a main conceptual instrument in contemporary semiotics. But we also see that graphical representations, simply by the way of their format, can serve as vehicles for exportation of concepts from a theory to another, especially in the case when different disciplinary traditions are concerned; that was the case here, through the square, between logic and semiotics.

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