

## ***POLYPHONY AND INTERNALIZATION OF CONTEXTUAL CUES***

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**Résumé** : La polyphonie, telle qu'elle se manifeste à travers les schémas de situation, se définit entièrement par rapport à la Théorie de l'Argumentation, laquelle se veut de surcroît, strictement linguistique. L'hypothèse qui sera pourtant mise en avant est qu'elle est susceptible d'un ancrage neurocognitif. Une telle hypothèse s'inscrit dans une perspective adaptative.

**Summary**: Polyphony, as exemplified by schematized situations is theory-bound, and Argumentation Theory, from which it arises, also happens to insist on strict boundaries between linguistics and adjacent areas of investigation. This, however, does not rule out that it is amenable to neurocognitive grounding. The overall perspective is adaptive.

**Mots clés** : polyphonie, schéma de situation, internalisation, contexte

**Keywords** : polyphony, schematized situation, internalization, contextual cues

## Polyphony and internalization of contextual cues

Following Ducrot (1984), « polyphony » will be used in this paper to refer to certain aspects of utterance meaning, those construable in terms of interacting viewpoints. This usage, as Nowakowska (2005) points out, constitutes a departure from the Bakhtine tradition, which, in this case, would have opted for « dialogisme ».

But rather than utterance meaning in general, I will be focussing on that of argumentative discourse markers (DMs), which has been described in terms of « schematized situations » (SSs), a notion widely used in the 1980s by practitioners of Anscombe and Ducrot's argumentation theory (AT). Consider this example, borrowed from Cadiot *et al.* (1985a: 108):

- (1) Allons au bistro, on y sera toujours au chaud!  
(Let's go to the bistro, at least it will be nice and warm)

This occurrence of « toujours » was assigned an SS,<sup>1</sup> consisting of a set of interacting viewpoints (V1...V5):

- V1: What the bistro has going for it is central heating.  
V2: On that basis it is worth checking out.  
V3: The feature in question is of no great interest.  
V4: Therefore, it is hardly worth the trouble.  
V5: This may be so, but it is still an incentive.

V1, V2 and V5 correspond to views held by the speaker; and V3 and V4, to those held by the interlocutor.

The way DMs are meant to constrain interpretation is by imposing the SS on host utterances<sup>2</sup> in a top-down mode of processing. In other words, this SS is to act as a relational template whereby host utterances are categorized.

The question I am addressing concerns the possibility of neurocognitive grounding for SSs, and hence « internal polyphony ».

In terms of organization, I begin by responding to some obvious questions such a project may prompt. Next, I put forward a proposal. This is to be followed by supporting arguments, examples of linguistic phenomena that are amenable to the same type of account, and finally pending issues.

## 1 – POLYPHONY AND NEUROCOGNITIVE GROUNDING

### 1.1 – Issues raised

It is not uncommon for those familiar with AT to query the « legitimacy » of this type of project. Such a response, though understandable, is based on a conflation of issues that are, in fact, quite distinct. AT's insistence on maintaining strict boundaries between linguistic and adjacent areas of investigation will, as a matter of course, have consequences on what it allows itself to bring to bear in evaluating of its own hypotheses. Such a stance, however, a) has no bearing on whether the entities it postulates can

<sup>1</sup> In the French version, below, E stands for 'énonciateur':

'E1 présente un certain fait F, en l'occurrence une certaine propriété P (chaleur) de l'objet 0 (bistro) [...] en la donnant comme un avantage de 0.

E2 fait apparaître ce caractère favorable de la propriété P comme un argument pour la conclusion r (r = 'Allons au bistro')

E3 présente la propriété P comme un avantage seulement faible.

E4 fait apparaître cette faiblesse comme enlevant à F toute valeur argumentative – ce qui a pour effet de rejeter, de réfuter le point de vue E2.  
E5 maintient que P, avantage faible, reste un argument envisageable pour la conclusion r [...] – ce qui a pour effet de rejeter, de réfuter le point de vue E4.'

<sup>2</sup> This is followed by a process whereby host utterances are searched for suitable contents to instantiate the SS. As part of this process, general knowledge is also accessed to provide a basis for inferences.

have a basis outside its framework, or analogues at levels of analysis not dealt with by linguistics; b) does not entail that there is any theoretical inconsistency in raising the issue of grounding in respect of SSs. In so doing one is stepping outside AT's framework, in any case.

Granted that, though theory-bound, polyphony – as exemplified by SSs – is amenable to neurocognitive grounding, how would it, as part of the meaning of DMs, have come about?

## 1.2 - Proposal

A possible answer lies in a non-linguistic strategy, whereby contextual factors, over time, become internalized by organisms, for adaptive reasons.

A case in point is that of Vervet monkeys, which are believed to have internalized – via genetic assimilation<sup>3</sup>– invariant characteristics associated with their predators (such as size, overall silhouette, movement patterns, and responses they elicit). This allows for quicker identification, and hence quicker action selection on the basis of insufficient contextual cues (Deacon 1997: 330-1); predators, indeed, rarely exhibit a full set of perceptual properties. Linked to these internalized characteristics are four distinctive alarm calls, each of which associated with a distinct predator.

The parallel between the genetic and non-genetic cases is illustrated in Figures 1 and 2:

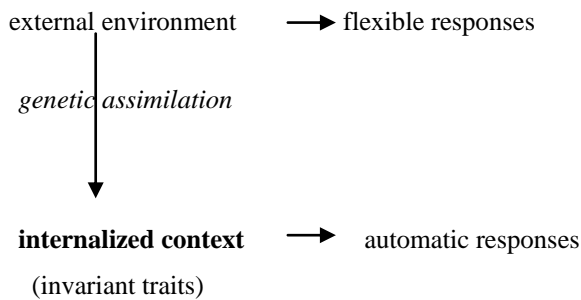


fig. 1. Genetic assimilation case

<sup>3</sup> « Genetic assimilation» refers to an « evolutionary trend», whereby adaptive responses to continuing environmental factors, after many generations, become increasingly less dependent on external factors and more dependent on genetic predispositions. « A learned behavioral response can be genetically assimilated to become a behavioral predisposition by virtue of the costs it imposes on the organism » (Deacon 1997: 324, 326).

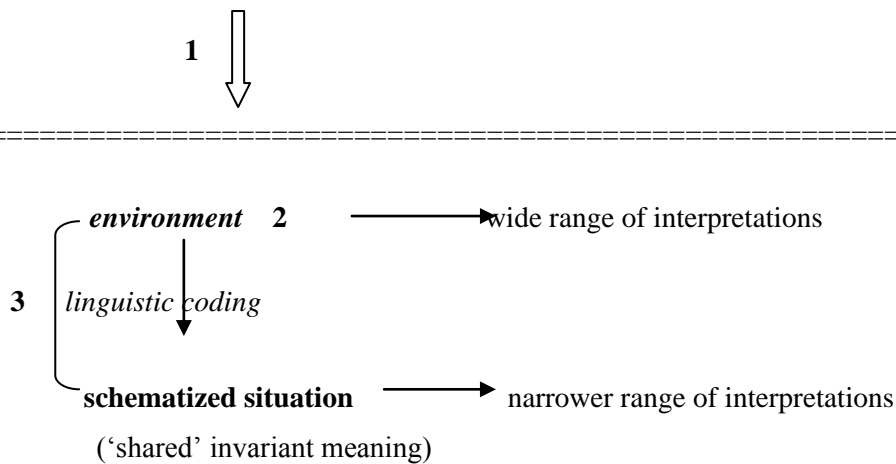


fig. 2. DM case

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## 2 – ARGUMENTS IN SUPPORT OF THIS PARALLEL

For this parallel to be more than coincidental, we must be able to answer at least three questions:

- 1) What kind of perspective would accommodate the possibility of such a parallel?
- 2) What type of environment, in the DM case, would be amenable to internalization?
- 3) What kind of mediating systems and processes would be involved in such internalization?

### 2.1 – An adaptive perspective

The answer to Question 1 lies in an adaptive perspective, which includes among its assumptions:

- a) Language is grounded in our neurobiology
- b) Evolution rarely creates new solutions, but tends to call upon pre-existing solutions in dealing with similar problems.

Given that language is a latecomer in the evolutionary process, such a perspective allows for the co-option by language of pre-existing strategies in response to the same type of problem. In this case, the strategy is one associated with the genetic assimilation of contextual cues, and the problem concerns changes in the environment that may impact on survival.

### 2.2 – Processing context

Turning next to Question 2, a suitable type of environment is the interlocutor's *processing context*<sup>4</sup>, and more specifically the context in which current text fragments are integrated in a text representation, as part of text comprehension. According to Ericsson and Kintsch (1995), during integration, the relevant portion of this representation is brought from long-term memory into long-term working memory to provide an integrating structure (called «elaborated memory structure » or EMS).

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<sup>4</sup> Processing context: context constructed in working memory for the purpose of carrying out such tasks as the one described.

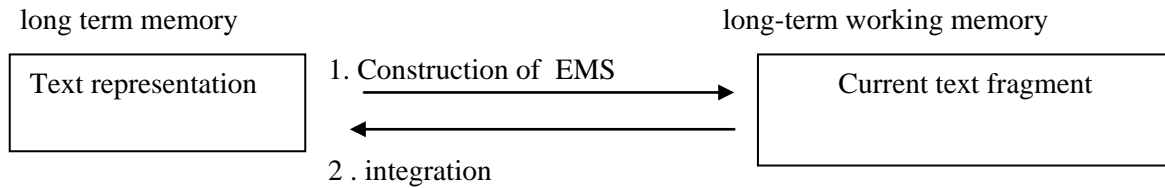


Fig. 3. Ericsson and Kintsch's model of text comprehension

For further reference, the internal structure of an EMS – for skilled and unskilled comprehenders alike – consists of information encoded in memory, resulting from repeated exposure to similar linguistic sequences. In the case of skilled subjects, the EMS will also include an encoded schema – a more abstract version of encoded information – and the associations between them.

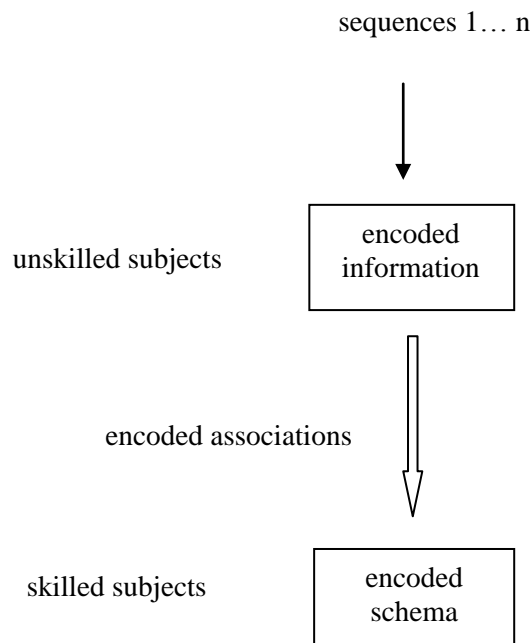


Fig.4: Internal structure of an EMS

### 2.3 – Proposal: further specifications

Given such an environment, *contextual variation* arises when different people view different portions of their mental text representation<sup>5</sup> as relevant, and bring to bear different kinds of background

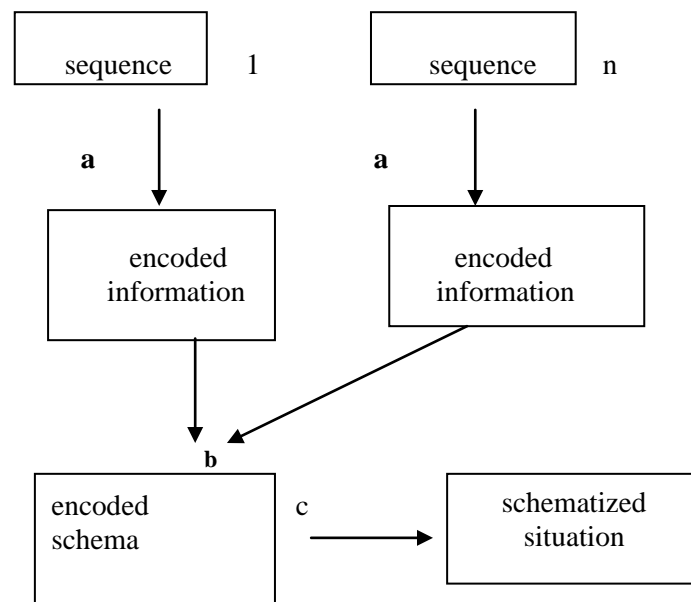
<sup>5</sup> The type of prior co-text that concerns us here consists of exchanges between speech participants that can be interpreted in various ways.

assumptions in selecting it. This results in a wide range of possible EMSs, and, hence, interpretations. Such a situation is hardly satisfactory for the speaker, who has specific communicative goals in mind. How contextual variation can be brought under control is by supplying an *invariant prior context*, one that can be instantly available to interlocutors. Such a prior context would be the end result of a process whereby certain features of the processing context become internalized. The features in question correspond to encoded schemas, as developed by skilled comprehenders. The type of internalization we are dealing with in this case takes the form of *linguistic coding*, that of encoded schemas. Schematized situations, as found in DMs, would be the outcome of this process.

## 2.4 – Mediating systems

Question 3 concerns mediating systems that need to be in place to allow:

- (a) individual linguistic sequences ( in particular prior exchanges) to become encoded information;
- (b) various instances of encoded information to become an encoded schema;
- (c) encoded schemas to give rise to schematized situations.



**Fig.5:** Where mediating systems are required

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(a), (b) and (c) all require categorization. However, the type of categorization appropriate in each case will differ in respect of the nature of the input it needs to accommodate. This input corresponds to external entities in the case of (a) (e.g., external stimuli, linguistic sequences); categories representing such entities (e.g., encoded information), in that of (b); and abstract or relational categories, that is, categories based on the brain's own processes and events (e.g., encoded schemas, encoded associations), where (c) is concerned.

In addition to this highly specific type of categorization (requirement ci), (c) also requires that:

- The memory structures involved should be connected (requirement cii)
- Linguistic concepts should be amenable to a form of recategorization that enables them to include linguistic productions (e.g., prior co-texts) (requirement ciii)

## 2.5 – From processing context to schematized situations

A theory of higher brain functions that meets these various requirements is Edelman's Theory of neuronal group selection (TNGS) (Edelman 1989, 1992). The TNGS takes as its point of departure two assumptions:

The world is unlabeled until it becomes categorized according to the adaptive needs of individuals within a particular species.

The neural structures of individual brains within the same species present a high degree of variability.

Given these assumptions, the TNGS aims to provide an account of how a brain exhibiting this level of variability might categorize an unlabeled world.

Moving on to aspects of the TNGS that are relevant to our concerns, the brain, according to the TNGS is characterized by:

- A process of parallel signaling (called « reentry » ) along connections – for the most part reciprocal – between selected maps of neurons, and hence the memory structures they belong to. (cii)
- A categorization system capable of categorizing past perceptual categories<sup>6</sup> and the brain's own activities ( « conceptual categorization » ), as well as current perceptual stimuli (« perceptual categorization ») (b, ci and a)  
[Such a system not only produces encoded information, but also encoded schemas, which correspond to relational categories (or what Edelman calls « conceptual categorization »)]
- A capacity for conceptual categorization that extends to language (ciii). In Edelman's own words: « at the time in an individual when a lexicon is sufficiently developed, the conceptual apparatus may recursively treat and classify the various productions of language themselves – morphemes, words, sentences – as entities to be categorized and recombined without any necessary further reference to their initial origins or to their basis in perception, learning and social transmission » (Edelman 1989: 174).

This capacity – I propose (Nyan 2011) – underpins the process whereby encoded schemas make their way into the conceptual structure of relevant linguistic entities, such as *toujours*, in its early function as temporal adverb.

## 2.6 – Encoded schemas as likely candidates for coding

In support of the idea that encoded schemas are likely candidate for coding, it can be pointed out that other aspects of EMSs – encoded associations and encoded information – also emerge at the linguistic end, as constraints on instantiation associated with the SS, and specifications on the nature of the required contents.

Figure 5 shows how SS, their constraints and associated specifications stand in the same relation as encoded schemas, associated information and encoded information.

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<sup>6</sup> Conceptual categorization can be « based on immediate perceptual categorization, on bodily and external events, on motion in relation to time and space, on feeling, and on memory», in particular of memory of « judgments made about classifications of stimuli long past » (Edelman 1989:142). « It is carried out on global mappings by higher-order maps, a process made possible by re-entrant connections from higher-order cortical areas to other cortical areas and to the hippocampus and basal ganglia » (Edelman 1992: 109).

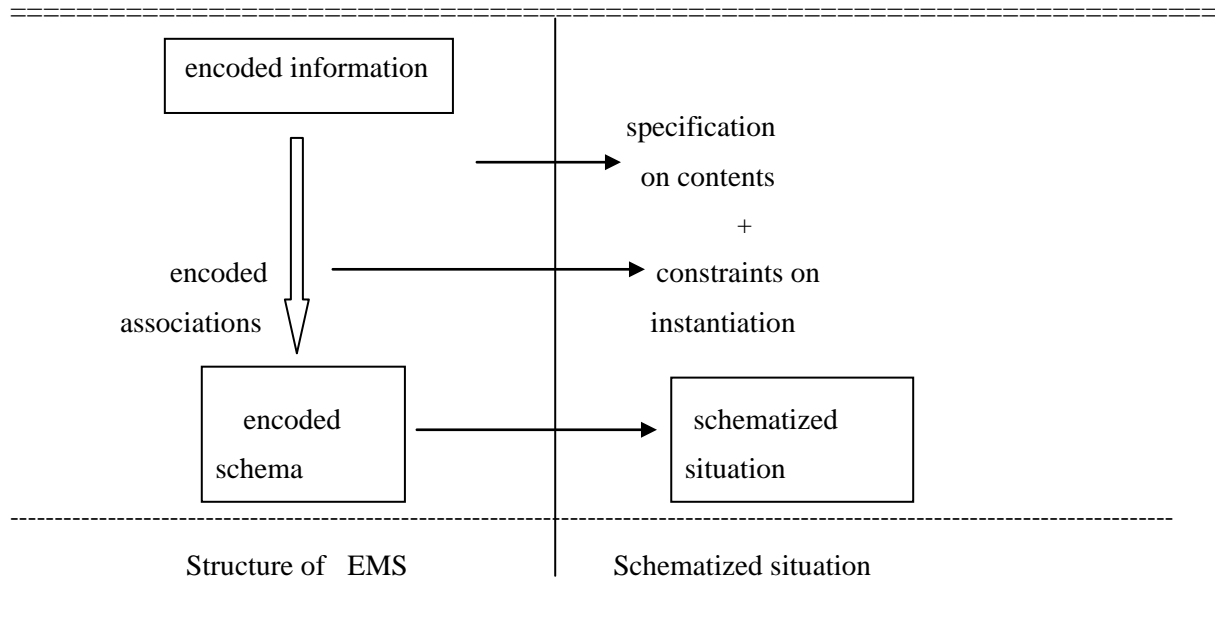


Fig. 6 Corresponding aspects between EMSs and schematized situations are linked by the horizontal arrows.

This level of complexity would be indicative that this is not coincidental. In Futuyma's words, « Complexity cannot evolve, except by natural selection » (Futuyma 1998:356).

### 3 – LINGUISTIC PHENOMENA AMENABLE TO THE SAME TYPE OF ACCOUNT

Linguistic phenomena amenable to an account in terms of the above strategy include those usually described in terms of delocutivity. Consider *enfin*<sup>7</sup> in:

- (2) As-tu *enfin*<sub>2</sub> reçu une lettre de Pierre ?  
 (Have you finally received a letter from Pierre?)

This *enfin* (*enfin*<sub>2</sub>) contains an instruction to the effect that the question is to be processed in the context of the speaker's own expectation, that of a confirmation such as (3), which includes an expression of relief (*enfin*<sub>1</sub>) at the occurrence of a long awaited event.

- (3) I : Oui, j'en ai *enfin*<sub>1</sub> reçu une.  
 (Yes, finally)

According to Cadiot et al. (1985b:218), we are dealing with an instance of delocutivity, and *enfin*<sub>2</sub> results from prior occurrences of *enfin*<sub>1</sub> (« enfin de soulagement »), as attested in dialogue situations such as:

- (4a) S: As-tu reçu une lettre de Pierre?  
 (Have you received a letter from Pierre?)  
  
 (4b) I : Oui, j'en ai *enfin*<sub>1</sub> reçu une.  
 (Yes, finally)

<sup>7</sup> See also Waltereit's analysis of *quand même* (Waltereit 2001: 1404).



At a given stage in its historical development *enfin*, as an expression of relief, would have been found in assertive utterances only (e.g., « Elle est enfin arrivée! »), where it conveys S's own feeling of relief. Its use in questions to convey S's expectation (e.g., « Alors est-elle *enfin*<sub>2</sub> arrivée? ») would be due to a later development, one resulting from the need, time and again, to process questions such as « Est-elle arrivée? » in the context of S's expectation of an answer such as « Oui, elle *enfin*<sub>1</sub> arrivée ». On an account based on the internalization strategy, the meaning of *enfin*<sub>2</sub> made its way into the conceptual structure of *enfin* via recategorization, as construed by Edelman (1989). In other words, the prior conceptual structure of *enfin* (corresponding to *enfin*<sub>1</sub>) became enriched by additional content, thereby giving rise to *enfin*<sub>2</sub>.

Why this should have come about would be due to a need for processing efficiency. Before *enfin* provided coding for the schematized situation, as in *enfin*<sub>2</sub>, each time questions such as (4a) required processing, an integrating structure (EMS) had to be constructed from scratch. Once the conceptual structure for *enfin* had been recategorized to include an encoded schema (or schematized situation, in AT's terminology), an integrating structure became automatically available. This linguistically coded integrating structure corresponds to an abstract polyphonic structure.

The internalization strategy would also explain why some felicity conditions (e.g., the sincerity condition and some preparatory conditions) cannot be denied without giving rise to a contradiction. As idealized context they would have become entrenched in the conceptual structure of speech acts:

(5) \*It is raining, but I don't think it's the case.

(6) \* Get out, but I know you can't do it.

#### 4 – PENDING ISSUES

As can be expected, pending issues are legion. To name but a few:

- What are the decisive factors, in terms processing, that get coding underway?
- What types of linguistic element are likely to be called upon to provide the coding?
- To what extent can people be expected to acquire the same meaning for DMs?

#### 5 – CONCLUSION

From an adaptive perspective, polyphony – as exemplified by schematized situations – is amenable to neurocognitive grounding. I hypothesize that SSs result from the co-option by language of a pre-existing strategy, one involving the internalization of contextual elements.

On this view, SSs are linguistic analogues of internalized contextual cues; and also arise in response to variation in the environment, in this case, the interlocutors' processing context. Such variation concerns the level of integrating skills, among other things.

SSs cater to this variation problem by virtue of their high level of invariance and the fact that, through linguistic coding, they are available to skilled and unskilled interlocutors alike. Failure to address this problem interferes with processing efficiency, and hence communication.

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