

# The Use of Neurocognitive Recall Mechanisms in Language Development

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## Abstract

This literature review aims to provide an overview of some basic linguistic theories in order to provide a general consensus on what is held as the standard for neurocognitive recall mechanisms. It differentiates the opposing views of Ferdinand de Saussure's (1857-1913) *The Object of Study*, with that of Noam Chomsky's (1928-present) *Universal Grammar*, while unifying their theories by the underlying cognitive framework they seem to agree upon. It will then demonstrate some of the practical uses of this cognitive framework and expand on how the process of language acquisition for a second language learner (L2 Student) is more than just aiming to improve language skills, but to utilize the neurocognitive recall mechanism in increasingly naturalized ways that are fundamental to storytelling.

**Key words** : linguistics, neurocognitive, superordinate, subordinate, narrative signposting

## Preamble

Coming from a literature studies background, teaching courses in communications skills and critical thinking to both Canadian and Japanese students the one unifying factor, regardless of language, is the access to a history of information that the learner can utilize in the taught structure of discussion. As an instructor assuming students are not empty vessels waiting to be filled, knowing of course there is no common knowledge yet there are delivery standards, the goal thus far has been to provide students with the emancipatory skills to voice their own ideas and build their own set of tools to express themselves. What has remained consistent in both native language and second language (L2) classrooms is the use of an information feedback loop that undoubtedly is the mechanisms of skills acquisition, as much as it is, a mechanism of storytelling. This has led me to see the goals of language learning to be akin to that of storytelling, mirrored from the most basic iteration to the largest conceptual idea, there is always the background information that is necessary for anything to hold meaning. From the earliest of language syntax to the framework of academic writing, the L2 classroom tasks negotiate the relationship between the teacher, the student, the information and the intent; and while we bring into the fold the idea that we are teaching language acquisition and use as a skill to communicate ideas, I feel what we are actually teaching is storytelling.

## Introduction

The review will begin by characterizing and explaining the linguistic system of Saussure's greater faculty of linguistics and the process by which he theorizes it enables the establishment of language. This theory will then be contrasted with the idea of a Universal Grammar as posited by Noam Chomsky. After differentiating between the two, building some working definitions, and exhibiting the main pitfall in failing to interact with the language history of the learner effectively, a demonstration of what is evident in some example of early and advanced L2 student tasks will be provided. This final element will lead to an exploration of how this neurocognitive recall mechanism begins to mirror narrative signposting used in storytelling, concluding with the role of language teaching and the importance of offering cognitive disruption in the L2 Classroom.

## Linguistic Frameworks and Definitions

The Swiss linguist, Ferdinand de Saussure, considers the greater faculty of linguistics to be a union between the faculty of governing speech and the faculty of governing signs. And while he posits that spoken language could very easily be a coincidental development (Chomsky, 2012), he leans to suggest that it integrates with the foundational faculty of governing signs in such a way that it establishes a faculty of structuring language systems. This greater faculty of structuring language systems, utilizing both the faculties of speech and sign, becomes the primary function of *the greater faculty of linguistics*. It is in this greater faculty, where a neurocognitive process, utilizing past knowledge and experiences, creates a cognitive framework which enables a speaker to create content by using knowledge from situations which are not here and now (Lucarevschi, 2016).

Complicating matters, while Saussure and his contemporaries claim that spoken language is an essential part of language creation, and this has been the general consensus for roughly 100 years, a note should be made that more recent theories aligning with Noam Chomsky's idea of a Universal Grammar have begun to permeate the field of linguistics. Universal Grammar differentiates from Saussure's framework by finding evidence that the creation of language structure is a process that is predominantly in-born, whereby speech is secondary and in no way an essential element to communication. Studies have shown that other non-vocal methods of communication are equally as effective for transmitting ideas, concepts, culture, and content (Chomsky, 2012). In this framework it is assumed that although the common and by definition preferred mechanism for communication is vocal speech, to study the process of language creation by studying patterns of speech in isolation is fundamentally erroneous. Where the two theories collide however is in the process of feedback with the subconscious or recall factor. As Chomsky and his more contemporary theories claim, language maintains an internalized mode of

understanding the world, no matter the outward mechanism of transmission (Chomsky, 2012).

## Definitions

From this point the focus of linguistics as a framework that must include vocal speech, and the study of language creation in general, is fundamentally differentiated. Therefore, to avoid minimizing the scope of this review, and to avoid discounting one theoretical framework over another, the term neurocognitive mechanism will be used to speak of the shared cognitive activity that happens in both frameworks. Additionally, Saussure's definitions will be used to characterize this neurocognitive mechanism as one composed of a distinct present superordinate *system* of communication that corresponds to a distinct subordinate *history* of ideas (Saussure, 2000, p. 3).

This neurocognitive mechanism creates a framework by which language educators can analyze some of the processes a student in an L2 classroom is expected to undertake during learning tasks. For an early L2 student, while working on foundational structures of language, this subordinate history remains for the most part displaced in the origin language of the learner, and so to a certain extent remains also unusable. As the student's use of the target language becomes more practiced, this subordinate history shifts more and more into the target language.

## Avoiding Language Souvenirs

As stated, if language involves an established superordinate system and a subordinate history for content, the two cannot be divorced. By providing one half of this system an educator runs the risk of providing language souvenirs. If a souvenir is a thing brought back from a foreign shore without an associated subordinate history, it is meaningless. Language souvenirs would be sounds or symbols in isolation (see Figure 1).

Here is a sound:	yabloko
Here is a symbol:	яблоко

Fig 1

The example above is the Russian word for apple. Chances are, without a knowledge of Russian, lacking a subordinate history to retrieve any meaning encoded, both the writing system and the pronunciation fail to represent, by Saussure's definition, language content. To avoid teaching this type of language souvenir, teachers can choose to lean into a practice of the neurocognitive recall mechanism. It is common practice to do this with activities like warm-up questions, vocabulary expansions, and discussion questions for the express purpose of sourcing

from the learner a pseudo-synthetic subordinate history in the hopes to target something useful for a practice.

### Neurocognitive Recall Mechanism in Early L2 Activities

If for example, an early L2 student is tasked with basic grammar, the student can source from their origin language the needed vocabulary. In this case, the question *What are your favorite and least favorite foods?* Once the student has prepared the terms necessary, classroom activities can be visually categorized providing a layer of context, and the teacher can demonstrate the basic superordinate system in the form a question. *Do you like ~ \_\_\_\_\_?* From here we elicit a response in the syntax presented by the superordinate system where the student replies with *Yes, I like ~ \_\_\_\_\_*. For expansion of this superordinate system option A has been modified to option B by adding the adverb *really* (see Figure 2.1). Of course, this basic structure in one direction can be reversed to exhibit a contrasting structure (see Figure 2.2). And if the student can use the superordinate system of syntax thus far, they should be able to pull into their subordinate history the understanding of *don't* as a place holder for negation. This should allow the student to fill in the blanks as exhibited (see Figure 2.3.) We can then take this syntactic structure and use other verbs. (see Figure 2.4.)

What has been show here is only the superordinate system that has been introduced to a student, yet as you can see already, from figure 2.1. to figure 2.4. most of the newly introduced superordinate system elements have slipped into the subordinate history and have been recalled as new elements of the subordinate history. In Figure 2.1. *I like* has been recalled. By the end of Figure 2.2. *I really like* has slipped into recall mode, and so on with *I really don't like* by the end of Figure 2.3. with the remainder being recalled by Figure 2.4.

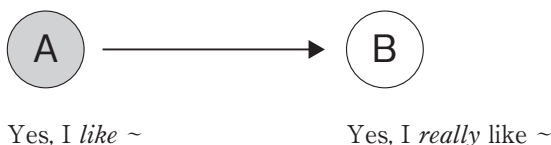


Fig. 2.1. Basic Superordinate System: Expansion I

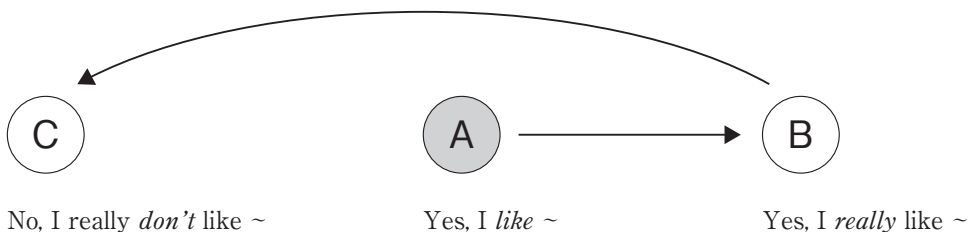


Fig. 2.2. Basic Superordinate System: Expansion II

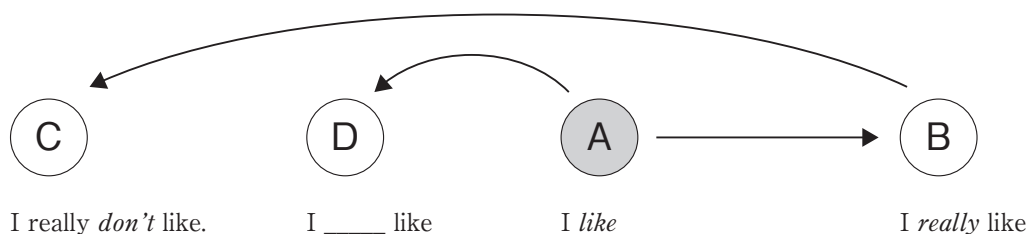


Fig. 2.3. Basic Superordinate System: Expansion III

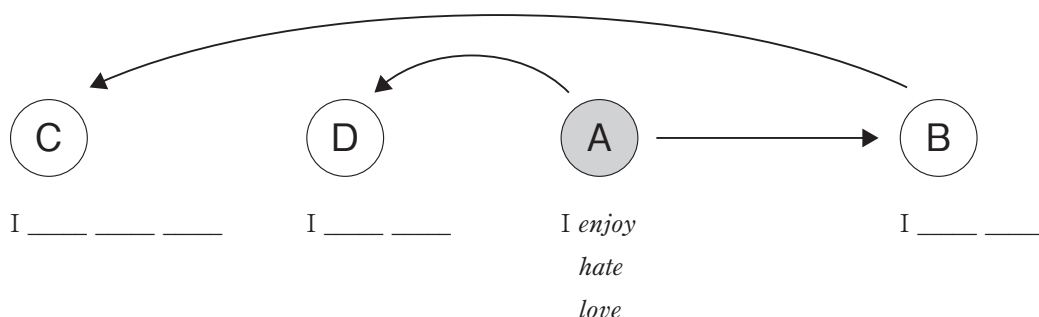


Fig. 2.4. Basic Superordinate System: Expansion IV

### Neurocognitive Recall Mechanism in Advanced L2 Activities

As a learner's use of the target language becomes more practiced and the ability to use the target language as a source for a subordinate history begins to naturalize, the complexity of discussion will of course begin to present with more options of expression and exploration. If for example the theme is community, and the target is talking about social issues, we can assume that the student is going to need more than a basic foundation of language to work from, so we can expect that the student is likely leaning into a subordinate history that is formed in the target language. Activities here might include categorizing different types of social issues and valuing them in importance, or answering questions with increased complexity: *What to you is an important social issue, and why?* or *How is community support important?* With the learner's ability to use their growing subordinate history in the target language, possibly utilizing more secondary sources in the target language building further the students individualized subordinate history, we can make advances into the topic and possibly begin to think about and come to understand ideas like global ramification, complex emotions, reactions, and reasons for actions.

Say for example a class of students has been provided information detailing the damaging effects of plastic on the environment. The students have then been asked to form three separate reasons for their opinion on the banning of plastic bags. The group provides, from the source

material, in their own words, an explanation that includes details of environmental impacts and concerns about waste disposal, etc. At this point we have breakout groups with each group receiving one of three facts to consider.

- Millions of trees are cut down every year for paper products.
- The growth of the hemp industry is a viable source of many products.
- New interest has been invested in recycling some plastic products into new reusable fabrics.

Each of these will recode the information in a dynamic and unpredictable way. A question such as this is designed to confront a student with the challenge of primarily using the burgeoning subordinate history in the target language in such a way that it begins to look more like a displaced schema, or information dump than it does a retrieval of information. This type of activity holds all the earmarks of a specific narrative devices. Namely, narrative signposting, a mechanism used in stories to force or introduce a reassessment of ideas, a refocus discussions, and a potential to complicate or change opinions.

### **Narrative Signposting**

Narrative signposting is a term used to describe a device that interrupts the main narrative to reveal or deliver a displaced schema or information dump, commonly in the form of the flashback or words of the wiser. This results in the delivery of a prior structured knowledge that is useful to the narrative development as a mechanism that modifies how the characters and/or the audience understand the story and its themes. It promotes a changing of opinions and reframes the value of present details. Here is a device that presents itself as a disruptor.

Imagine now, you are a student in a series of courses who has journeyed from an early learner, accessing a subordinate history for terms and vocabulary to place in the superordinate system. To a place where your language is premediated and more momentary, and you have just had your first authentic moment of disruption in the target language of your learning. Just like a story where the audience is disrupted, we should aim as educators to create this same disruption in our students because this is where critical thought begins. Anyone can learn to regurgitate data, sentences and information. But to question yourself, to question your placement in the information. Thinking academically begins in these moments of disruption, where if a teacher can promote these moments of authentic and realized orientation toward practical interests, openly or covertly, something useful is being communicated (Banjamin, 2000, p. 15).

## Conclusion

This literature review provided a theory that the most basic language task becomes a first iteration of the most complex patterns in storytelling. The early L2 student sources from their subordinate history translated words, the intermediate L2 student sources from information opinions they agree with founded on evidence, the advanced L2 student sources and communicates a change in perspective. From the foundational structures of language, displacing and shifting deeper into the subordinate history, until the learner is confronted with the ability to appreciate language displacement in theme. By teaching language, we are not only teaching pragmatic language exchanges, or how to express the appreciation of experiences, but how to appreciate and share personal experience. L2 students are not empty vessels waiting for direction, they are storytellers building a set of tools. This review does not discuss the degree a student is expected to source from their own history, how and where this might be problematic and the kind of activities this practice is best suited for. Research exploring certain drawbacks to disruption in the learning environment would be useful going forward.

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