An HPSG analysis of French clitic pronouns

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Declaration

I hereby declare that this thesis is entirely my own work and that it has not been submitted as an exercise for a degree at any other university.

______________________________ May 5, 2004

student’s name
I would like to thank, first and foremost, my supervisor, Dr. Carl Vogel for all his assistance with this project. His help has been endless. His advice has been treasured. I owe so much of this project to him.

I would also like to thank my parents and family, my fellow classmates and all my friends for putting up with me during this difficult time.

Further thanks goes to Dr. Rachel Hoare for agreeing to be my second reader and for helping so much over the years to improve my French. Thanks also to Annick Ferré for helping me with my research on French clitic pronouns.

And finally, I would like to thank the following linguists who had responded to emails of mine in search of information and advice: Ivan Sag, Philip Miller, Arnold Zwicky (for posting me a paper all the way from Stanford University!), Paola Monachesi, Carl Pollard, Danièle Godard and Robert Borsley.
An elderly vinter is testing his grandchild on her knowledge of the vineyard as she will become heiress to the family business and its accompanying estates.

The doubtful curmudgeon asks the child, “How can you tell the difference between the blueberry shrubs we use as hedges and the vines?”

The intelligent eight year old replies without hesitation, “Unlike the shrubs they would seem to be able to climb”.

Un vieux viticulteur interroge sa petite fille sur sa connaissance de sa vignoble dont elle deviendra un jour h´erit`iere.

L’incertain avare lui demande, “Comment on distingue l’arbuste myrtille qu’on utilise comme haie et les vignes?”

La petite intelligente de huit ans lui r´epond sans h´esitation, “Diff´erente des arbustes, elles semblent pouvoir monter”
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Abstract

This project is a HPSG analysis of French clitic pronouns. Head-Driven Phrase Structure Grammar is the linguistic formalism in vogue at the moment. In this project I have derived a HPSG framework of my own for the analysis of French clitics. This framework is based on that of Miller and Sag (1997). I have modified their framework, however, to propose an approach to subcategorization in terms of a ‘flat’ SUBCAT list. I have followed their proposal of analysing French clitics as lexically-attached pronominal affixes. Furthermore, I have made novel contributions to the field of clitic theory by positing a ‘diagnostic principle’ whose purpose was to help me find the best location of ARG-ST for the particular analysis in question.
Chapter 1

Introduction to the project
1.1 Introduction

This project is concerned with the syntactic analysis of French clitic pronouns. The syntactic formalism used will be Head-Driven Phrase Structure Grammar (HPSG). Alternatively, this project is an examination of clitic pronouns and their problematic nature with particular respect to the syntax of the French language. The project was carried out within the area of computational linguistics. The topic chosen is one which is very specific, unlike other linguistic or syntactic analyses. It has been chosen out of personal interests (see §1.2) and I envisage that it will demand a great deal of research in order to achieve its ambitious goals (see §1.3).

This first chapter begins with a brief overview of my motivations in choosing the subject of this project. The aims of the project are then given, following which I present a concise description of the linguistics of the French language. The theoretical issues underlying the project are then outlined. A brief commentary on HPSG framework is also included followed by a sketch of the overall structure of the project.

1.2 Motivations

French and linguistics are core areas of my degree which I find thoroughly interesting. It therefore seemed appropriate for me to choose a cross-disciplinary project. Moreover, after having spent my third year of university studying at l’Université Paris 7 - Denis-Diderot where I took many courses in French linguistics (syntax, semantics, morphology, phonetics and phonology), I developed, in particular, an avid interest in French syntax and its inherent syntactic idiosyncrasies. For example, I took a course in Lexical-Functional Grammar (LFG) with specific reference to the French language. During this course I learned a great deal about many aspects of the syntax of French, which I found highly stimulating. Nonetheless, it was the phenomenon of clitics that I found the most rousing. In addition, I completed a module in HPSG in the second year of my degree in which I also developed a considerable interest. The prospect, therefore, of combining both of these interests seemed a natural, convenient and befitting choice of project for me. Such a choice of project, I felt, would also encompass the more general interests of mine in the syntax and semantics of French and allow me the opportunity to produce a piece of work in an area of contemporary syntax which I consider to be one of the most fascinating.

1.3 Aims

Kayne (1975, pg. xiii) makes the following remark about all studies that deal with linguistic analyses (of aspects) a language:

“A linguist working in the context of a specific linguistic theory undertakes two tasks simultaneously. On the one hand, he attempts to demonstrate the theory’s ability to provide insight into the language studied, and if successful
he helps to confirm the significance of that theory. On the other hand, he uses the language studied to obtain evidence bearing on issues that arise within the theory. Particular principles or analyses can be supported or brought into question, and modifications suggested, through precise argument. The illumination of the language by the theory, and of the theory through study of the language, constitutes a dual goal throughout the present work”.

This statement applies no differently to my project, and in fact, could be regarded as the general aim of this project.

Nevertheless, the primary aim of this project is to provide a novel contribution to the field of linguistics that is concerned with the syntactic analysis of French clitic pronouns. Upon completion of this project, I aspire to have produced a paper which merits publication and which in order to receive recognition at HPSG conferences held internationally. This will, in turn, involve the contribution of an accurate analysis of the data in question so as to make the necessary modifications to the theory in order to give an accurate account of French clitics, as (Kayne, 1975) above suggests. I also seek to gain a deeper understanding of the HPSG formalism, the French language and how to apply the framework of HPSG to the data that constitutes clitics. Due to the problematic nature of clitics and the predicament they create for any syntactic analysis, a further aim is to provide a clear-cut solution to the problems that they have posed, and continue to pose, even up to their present day analysis. Moreover, I wish that, on completion of this project, to have provided a more uniform and novel account of cliticization in French. I intend, on the one hand, to investigate the idiosyncrasies of French clitics using the HPSG formalism, and I also intend, on the other hand, to examine contemporary linguistic formalisms, in order to derive a framework of my own that will allow for the systematic treatment of clitics in French in response to the debate in the literature over their dubious status. I hope to have demonstrated a mastery of the basics of linguistic argumentation and the HPSG framework for providing descriptions and explanations of the relevant phenomena. And finally, a more remote goal is to further the knowledge of other linguists who also have an interest in this very specific and concentrated domain of analysis.

1.4 The language in question

French is a Romance language with Germanic influence, while English is a Germanic language with Latin and French influence. In linguistic terms, “Romance” and “romantic” come from the word Roman and simply imply “from Latin”. The complete language family classification of the French language is as follows:

\[
\text{Indo-European}^1 \rightarrow \text{Italic} \rightarrow \text{Romance}
\]

\^Indo-European is the largest language family in the world. It comprises most of the languages of Europe, the Americas, and Asia, including such varied languages as Latin, Greek, Russian, Persian, and Sanskrit. Italic, on the other hand, essentially refers to Latin. Romance languages originally evolved in Western Europe, but colonialism helped to spread some of them all over the world
Thus French and English have a lot in common, notably large numbers of cognates. On the other hand, there are a number of differences between French and English, especially in terms of syntax. Pronominal clitics (see §1.5) are a phenomenon of language characteristic of the Romance languages, hence the large amount of research carried out on them by French and Italian syntacticians. One of the primary aims of this chapter is to illustrate the complexity of the French pronominal, or, to be more precise, clitic system. Through the study of clitic pronouns in French, this complexity shall become very evident in the forthcoming chapters.

French has two genders: all nouns are either masculine or feminine. Many of the Romance languages, including Spanish and Italian, are “pro-drop”, meaning that the subject pronoun can be dropped because the verb conjugation is different for each grammatical person. In contrast, French is not a pro-drop language - subject pronouns are always required for all verb forms except the imperative. French verbs are categorized by their endings: -ER, -IR, and -RE. Each of these categories can be further broken down into regular, irregular, impersonal, and reflexive verbs. Many of the verbs of the French language subcategorize for (see §2.8.2) complements that, when pronominalised, constitute pronominal clitics. They therefore play a huge role with respect to the syntax of the French language. This is simply due to the fact that pronouns are employed ubiquitously in speech and written texts in order to ensure that the message being communicated does not sound redundant.

Similar to English, French is an SVO language. This implies that the general word order of constituents is as follows - subject, verb, object. A major characteristic of French speech is that of the liaison. A liaison occurs when an extra sound is ‘added’ in between words that form a grammatical phrase. For example, in the phrase Nous allons... ‘We go...' there is an obligatory liaison between the subject clitic nous and the verb with which it forms a grammatical phrase allons.

Overall, the French language is an extremely interesting language both to learn and study. I have an avid interest in its syntax, the very specific aspect of which I shall describe in the following subsection.

1.5 The entities in question

Originally, the notion of clitic is a phonological one, as reflected in the Oxford English Dictionary’s (1st ed.) entry for enclitic (Zwicky, Nevis, Joseph, & Wanner, 1994)

\textbf{Adj} — That ‘leans its accent on the preceding word’ (Liddell and Scott): in Greek grammar the distinctive epithet of those words which have no accent, and which (when phonetic laws permit) cause a secondary accent to be laid on the last syllable of the word which they follow. Hence applied to the analogous Latin particles -que, -ve, -ne, etc. and in mod. use (with extension of sense) to

\footnote{Certain liaisons are obligatory, certain are facultative}
those unemphatic words in other langs. that are treated in pronunciation as if forming part of the preceding word.

According to Zwicky et al. (1994), clitics are so called because they are claimed not to constitute autonomous syntactic units. Rather, they seem to form a unit with some host either syntactically (syntactic clitics) or phonologically (phonological clitics). Syntactic clitics cannot be separated from their host by any syntactic process and are necessarily phonological clitics. Phonological clitics are syntactically autonomous if they are not syntactic clitics as well.

Clitics have been the object of much debate in linguistics literature for decades now and, to the present day, their exact identity is still a bone of contention among many linguists. Monachesi (1999, pg. 1) refers to clitics as “little words such as te in the French je t’aime or the ‘s in the English the girl’s dress”. They are usually associated with certain properties such as the fact that they occur in a special position in a sentence. The following French example illustrates this:

(1.1) a. Marie a vu Jean
   b. Marie l’a vu
   Mary cl.(acc) has seen
   ‘Mary has seen him’

Here, the object of the (1.1.a), Jean, is being pronominalised, or more precisely ‘cliticized’. This particular process in French involves replacing the NP Jean with a specific ‘clitic’ le (‘him’), and a change in the position of this constituent. It can be seen from this example that due to this type of cliticization, the NP Jean, which was initially in a sentence-final position, has now been transformed into a clitic pronoun and moved to a more sentence-initial position, where the clitic ‘attaches’ itself to another constituent in the sentence. This constituent, normally the main verb of the sentence, is referred to in the literature as the host. Therefore, continuing the use of this terminology, the relationship between the clitic and the host could be described as ‘parasitic’. That is to say, the clitic cannot exist without the host - it is dependent on the host. It is evident from the translation of this example sentence into English that the English language does not exhibit the same pronominal distribution as the French language. In fact, pronominal clitics such as the one in (1.1.b) do not exist in English. Clitics aren’t very common in English. A well known

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3From now on, the cl element of a sentence will constitute the clitic pronoun in question. In brackets after this, any important information pertaining to the clitic is optionally included. This will constitute, for the most part, the case of the clitic. For future reference, the following should also be stated. Certain clitics in French, for example, y and en, have no direct equivalent in English. In cases in this project where there is no direct equivalent translation into English, cl.(y) and cl.(en) will be included as the case specification for these clitics in the glossed version of the sentence in question. In this particular case, the information chosen to be included is that the clitic is of accusative (acc) case

4The appropriate term to use here would be ‘climbed’ as this sentence illustrates a classic example of clitic climbing in French (see §4.7.1)
clitic in English, however, would be the *resumptive pronoun*, for example, *he* in *John, he likes cheese*, or the *possessive marker* (‘s) as noted above.

Due to the ambiguity of their syntactic status, clitics have attracted much attention. Despite the abundance of research that has been carried out on them, a great deal of ambiguity still remains attached to them. There are many different types of clitics, but those on which I focus in this project are the pronominal clitics of the French language. Pronominal clitics\(^5\) are a classical feature of Romance languages like French, Italian, Portuguese or Romanian. The extent of their coverage in linguistics literature has continued to grow over the years. They have been analysed by many syntacticians under many different frameworks but it is perhaps the approaches through HPSG\(^6\) that have led to the biggest breakthrough in modern day syntax.

As I mentioned above, the French pronominal system is quite complex and intricate. As I shall illustrate in Chapter 4, purely from a grammatical point of view, there is quite a diverse range of pronominal types and subtypes, out of which pronominal clitics constitute only a subset. The clitics that I shall focus on in this project are presented in table 1.1 below. It can be seen from this table that there is quite a substantial amount of overlapping of clitics according to their various functions, person and number. For example, the clitic *me* has three separate functions, according to the table. In all three of its functions, it is first person and singular in number. However, each function of *me* differs with respect to the type of object it replaces i.e. either direct, indirect. It is also a reflexive clitic or anaphor, which, according to Binding Theory (see §2.12.1), must be coindexed with the subject to which it refers.

<table>
<thead>
<tr>
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<th>Singular</th>
<th>Direct object</th>
<th>Indirect object</th>
<th>Reflexive</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st person</td>
<td>Je</td>
<td>me</td>
<td>me</td>
<td>me</td>
</tr>
<tr>
<td>2nd person</td>
<td>Tu</td>
<td>te</td>
<td>te</td>
<td>te</td>
</tr>
<tr>
<td>3rd person (masc)</td>
<td>Il</td>
<td>le</td>
<td>lui</td>
<td>se</td>
</tr>
<tr>
<td>3rd person (fem)</td>
<td>Elle</td>
<td>la</td>
<td>lui</td>
<td>se</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>le/la</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plural</td>
<td>Nous</td>
<td>nous</td>
<td>nous</td>
<td>nous</td>
</tr>
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<td>1st person</td>
<td>Vous</td>
<td>vous</td>
<td>vous</td>
<td>vous</td>
</tr>
<tr>
<td>2nd person</td>
<td>IIs</td>
<td>les</td>
<td>leur</td>
<td>se</td>
</tr>
<tr>
<td>3rd person (fem)</td>
<td>Elles</td>
<td>les</td>
<td>leur</td>
<td>se</td>
</tr>
</tbody>
</table>

Table 1.1: French pronouns

\(^5\)Despite the fact that there are different types of clitics, for the sake of simplicity I shall resort to referring to French pronominal clitics or the pronominal clitics of any other language, simply as clitics, unless otherwise stipulated

\(^6\)See §4.6.4 and §4.6.5
1.6 The formalism in question

HPSG is a synthetic, constraint-based theory of grammar. As mentioned above, one of the aims of this project is to consider cliticization not only from the perspective of syntax, but to take account also of the phonological and morphological properties of French clitics. Therefore, a sign-based theory such as HPSG suggests itself as a framework. In fact, in HPSG, the sign is a fundamental object which integrates several levels of description. It encodes phonological, morphological, syntactic and semantic information. In this respect, HPSG is a multi-level theory because several levels of representation are posited, but it is monostratal because there is only one representation for each level.

Strict lexicalism is one of the leading ideas of the HPSG theory, and given the lexical character of the analysis of cliticization that I will propose, it seems natural to formulate it within such a framework. In addition, HPSG provides an extended lexical representation and certain hypotheses about lexical organisation. Lexical information is organised in terms of multiple-inheritance hierarchies and lexical rules; the hierarchical lexicon allows cross-cutting generalizations about words to be expressed in a compact and efficient manner.

The formal properties of formalisms based on sorted feature structures, like HPSG, have been the topic of a certain line of research - feature logics have been proposed for specifying constraints on the feature structures used in linguistic analyses. Therefore, HPSG has the advantage of providing the basis of both for theoretical linguistic work and further computational implementations. A possible computational linguistic implementation that I shall consider in this project relates to the LKB (Linguistic Knowledge Building) system designed by Ann Copesteak. Overall, it is evident from the above properties of HPSG that it suggests itself as a very suitable framework for the lexical analysis of French clitics that I shall propose.

1.7 Theoretical issues

Although the primary aim of this project is to provide a novel contribution to the field of syntax concerned with French clitic theory, there are nonetheless some theoretical issues that will be addressed throughout the project.

Firstly, the notion of grammatical functions, in particular ‘subject’, will be questioned throughout this paper. The status of the ‘subject’ will be at the forefront of my argumentation in favour of the particular version of HPSG that I will be using. It will essentially enable me to rule out LFG as an alternative formalism to HPSG for this project. It will, in turn affect, how this particular HPSG accounts for subcategorization. The account of subcategorization I will provide, itself a theoretical sub-issue of the current issue, will ultimately have a direct effect on the HPSG representation I shall provide with respect to the combinatoric potential of clitic pronouns. It will also form the first half of the novel contribution to this project (see §5.4)

A second issue that underlies this project is the issue of argument structure7. This

\footnote{ARG-ST in HPSG terminology.}
CHAPTER 1. INTRODUCTION TO THE PROJECT

Feature, motivated by Manning and Sag (1999), has been the subject of much attention in recent HPSG literature. Generally considered to be a CAT feature, ARG-ST specifies a list of synsens that correspond to the arguments selected by a lexical head. However, in more recent papers published by Müller (2001) and Przepiórkowski (1999), it has been argued that ARG-ST can propagate up the syntax tree, more often than not, via a HEAD feature specification. Given the morphological idiosyncrasies of French clitics (§5.2.1), trying to find the most appropriate location for ARG-ST within the sign for the analysis of French clitics is the essential aim of this second theoretical issue. To this end, I shall propose a ‘diagnostic principle’ (§5.4) which will be applied to various French clitic data. This principle will ultimately make up the second half of my novel contribution to French clitic theory. Hence, I shall place great emphasis on both the location and function of ARG-ST within the HPSG sign.

The status of clitics constitutes a third underlying theoretical issue to this project. Clitics, in particular French clitics, have been the subject of much linguistic literary controversy for the last century now, and much confusion still surrounds their dubious syntactic status. This issue will be raised in many places throughout this project and it is an objective of mine, based on the two previous theoretical issues, to derive a suitable HPSG model for French clitics that will clarify this confusion over their status. This model will then constitute the overall novel contribution of the project.

From these theoretical issues outlined it is obvious that ‘subject’ plays an intricate role throughout the entire project. I would like to bring to light here, that it is not the semantic subject that is of concern, but the notion of grammatical subject I wish to question. Keenan (1976) outlined the properties pertaining to subjects in any language. I shall summarize these in §3.2.4 and, on the basis of them, claim that the notion of subject is undefinable and hence is not a sensible one for the natural language syntactic analysis of language.

1.8 Overview of the structure of the paper

- **Chapter 2** gives a detailed description of HPSG and how it is applied to certain linguistic phenomena

- **Chapter 3** discusses the particular approach that I decided to take to the HPSG analysis of French clitics

- **Chapter 4** gives a comprehensive description of French clitics, summarises previous analyses and introduces certain phenomena of clitic theory

- **Chapter 5** describes the particular framework that I derived for the analysis of French clitics and contains the project’s novel contribution to clitic theory

- **Chapter 6** uses the framework from Chapter 5 to analyse the clitics of the French language

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8See §2.5.5 for a description of the internal structure of the sign
• Chapter 7 is the conclusion to the project. It summarises the main results of the project and suggests possible future work
Chapter 2

The HPSG framework
CHAPTER 2. THE HPSG FRAMEWORK

2.1 Introduction

Head-Driven Phrase Structure Grammar (HPSG) is the linguistic formalism in vogue at the moment. Computational linguistically, it has become the most influential framework for the declarative specification of grammar. In fact, there are more people working with HPSG grammars than with any other linguistic grammar model. In this thesis, HPSG will be adopted to explain and represent the analysis made on French clitics. This chapter will give an in-depth explanation of the HPSG framework. The background to the theory and its history are described firstly, followed by an account of the nature of linguistic theory. Some general remarks on HPSG are then made - its characteristics are outlined and I provide a comparison between HPSG and GB. The ‘technical’ aspects of the grammar are then dealt with. These include descriptions of the \textit{sigm} in HPSG, the HPSG feature structure and its linguistic application, \textit{phrasal signs} in HPSG, HPSG’s \textit{Universal principles and rules}, and how HPSG caters for \textit{licensing, semantics, agreement, complement structures} and \textit{binding}. On the whole, HPSG is proving itself as an extremely comprehensive framework for linguistic analyses and the main aim of this chapter is to clearly illustrate this.

2.2 Background and history

Along with the 1980’s revival of interest in the mathematical properties of language, the context-free phrase structure grammar (CFG) theory of natural language syntax was given much attention. It was thought that if this grammar was assigned an appropriate theory of syntactic features and general principles that it would serve as an efficient grammar framework. Gadzar et al (1985) decided to take on this task and quickly developed a theory known as \textit{Generalized Phrase Structure Grammar} (GPSG).\footnote{For more information on GPSG, see Gazdar, Klein, Pullum, and Sag (1985)} As phrase structure grammar continued to advance, GPSG quickly transformed into a new framework known as \textit{Head-Driven Phrase Structure Grammar} (HPSG).

Initially HPSG was not based entirely on a set of innovative rules and constructions. In fact, HPSG began to largely borrow or adapt existing constructs and hypotheses from previously developed theories. It hence became characterised by its \textit{eclectic} nature and thus owes an extensive part of its intelligence to the following pre-existing grammar formalisms: Categorial Grammar (CG), Arc Pair Grammar (APG), Lexical-Functional Grammar (LFG), Government and Binding (GB), and GPSG, from which it most directly evolved.\footnote{In actual fact, the two of the main principles of HPSG, namely the \textit{Head Feature Principle} and the \textit{Subcategorization Principle}, are adaptations of similar principles in GPSG.} HPSG hence took the best from different linguistic frameworks instead of constraining itself to one ideology.

Traditionally, theories of syntax and semantics were developed separately, without a lot of interaction between the two. The understanding of the syntax of a language involves the study of the rules whereby words or other elements of sentence structure are combined to form grammatical sentences. Semantics on the other hand is the study of meaning in...
a language. The underlying principle of HPSG and of its predecessor GPSG was to develop a theory that integrated these two main theories from the beginning, based on the understanding that they cannot be studied in isolation, but only as a whole. Another important motivation for the development of HPSG was the need for a universally adaptable formalism, that would allow a wide range of distinct theories to be studied using the same notation.

First worked upon at Stanford University and Hewlett-Packard Laboratories in the 1980s, HPSG began to undergo more and more research. It was Carl Pollard and Ivan Sag that were at the forefront of investigation into this theory. In 1987, they wrote a book entitled *Information-based syntax and semantics* in which they chose to take, as the title states, an ‘information-based’ approach to study of natural language syntax and semantics, that is, “an approach that considers the objects that make up a human language as bearers of information within the community of people who know how to use them” (Pollard & Sag, 1987, pg. 1). Their focus at the time was placed upon explaining foundational issues of the HPSG formalism with a narrow range of linguistic problems considered. However, in 1994, they published a second book, entitled *Head-Driven Phrase Structure Grammar*, whose goal was to demonstrate the applicability of a theory like the 1987 book but covering a wide range of empirical problems.

Growing in recognition and receiving increasing attention, HPSG thus developed as a comprehensive linguistic formalism for the description of natural language. Though it must be said that it now bears little resemblance to its once close relative, GPSG, many would argue that HPSG has certainly surpassed it in importance. Although the study of syntax was always a concern to linguists, it was Noam Chomsky (see Chomsky (1981) and Chomsky (1986)) who revolutionised the approach to syntax. He was the first to use mathematical practices in the explanation of syntax. He is the father of what was originally called ‘the Standard Theory’, which eventually became known as *Government-Binding Theory* (GB). GB has been one of the most utilised syntactic frameworks of recent years, and is still very much the preferred choice of many linguists. Chomskys’ theories are always present because they are the basis on which other frameworks like HPSG have been developed. However, HPSG has emerged as arguably the most powerful linguistic formalism of modern day linguistics. As mentioned above, HPSG does not discard the ideas in GB, but instead uses them on which to build a more expressive formalism. Comparisons and contrasts between the two theories are described in the section below entitled ‘Some general remarks on HPSG’.

HPSG developed to become a constraint-based, lexicalist approach to grammatical theory seeking to model human languages as systems of constraints on typed feature structures. GB’s configurational approach had placed much emphasis on the distinction between the head, specifier and complement(s) of nodes of constituent structure, and thus this was not an unfamiliar concept when it came to the creation of HPSG theory. HPSG, on the other hand, chose to focus in on the notion of head - the name ‘Head-Driven Phrase Structure Grammar’ was selected to represent the significance of information encoded in the lexical heads of syntactic phrases. Some of the main properties of HPSG according to Sag and
CHAPTER 2. THE HPSG FRAMEWORK

Wasow (1999) are:

1. A sign-based architecture
2. The organization of linguistic information by way of types, type hierarchies, and constraint inheritance
3. The projection of phrases via general principles from rich lexical information
4. The factorization of phrasal properties into construction-specific and more general constraints

HPSG soon grew to become a comprehensive linguistic formalism whose applications lay in work on syntax, morphology and semantics, as well as phonology and pragmatics. Today much of HPSG work is dedicated to grammatical interfaces, where various grammatical levels mutually constrain each other, but are not superior to one another. As a result, many linguists have recently become attracted to HPSG in order to work on phenomena spreading across grammatical levels, as opposed to constraining themselves to, say, syntax only.

With the recent advent of computational linguistics, the computability of the HPSG framework has become very important. As this was a consideration at the dawn of HPSG, it was thus developed meet the needs of computational linguistics. This meant that more semantic and morphological information could be implemented then ever before. Certain HPSG software programs exist at present which allow the construction and implementation of natural language grammars, the creation of typed feature structures and the visual display of all syntactic, semantic and pragmatic information incorporated in these feature structures. One such system is the LKB system, created by Ann Copesteak. I shall further allude to this system at end of this project.

2.3 The Nature of Linguistic Theory

In theory, it is possible to state theories of a language in natural language. In reality, however, natural languages are not descriptive enough to perform this task competently. According to Pollard and Sag (1994):

“An informal theory is one that talks...in natural language...But as theories become more complicated and their empirical consequences less straightforwardly apparent, the need for formalisation arises” (Pollard & Sag, 1994, pg. 6).

Przepiórkowski (2000) argues that in any mathematical theory about an empirical domain, the phenomena of interest are modelled by mathematical structures. The theory itself doesn’t talk directly about the empirical phenomena; instead it is interpreted by the

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3 All of these properties will be discussed in proceeding sections of this chapter
modelling structures. Hence the predictive power of the theory arises from the conventional correspondence between the model and the empirical domain.

HPSG practitioners consider linguistics to be a formal empirical science, similar to any form of science, whose empirical domain is the language in question and which provides a theory predicting the behaviour of its linguistic objects, well-formed feature structures (see §2.5.3). Any linguistic theory should account for the universe of its possible linguistic objects and so it needs to be explicit as to what categories of objects are supposed to populate the domain and as to what sort of model is needed to represent them. Figure (2.1) illustrates this nature of linguistic theory. In HPSG, the modelling domain is a system of sorted feature structures. The types of linguistic entities that correspond to well-formed feature structures constitute predictions of the theory.

The formal theory of HPSG hence describes language explicitly via feature structures whose formal properties represent aspects of the phenomena of the language in question. This intuition is illustrated by the following diagram and is the general picture adopted by HPSG.

2.4 Some general remarks on HPSG

HPSG has many characteristics, some of which are apparent from examining the formalism alone, other which transpire from comparing it to other formalisms or frameworks. §2.4.1 presents the former type of characteristics of HPSG and §2.4.2 describes the latter type of characteristics, by comparison with the GB theory.
2.4.1 Characteristics of HPSG

Przepiórkowski (2000) claims that there are two interrelated aspects of HPSG that should be considered separately: HPSG as a linguistic formalism (a set of tools for formalizing linguistic analyses of various phenomena) and HPSG as a linguistic theory (as a collection of analyses of various phenomena couched in this formalism). He adds that “embracing one does not necessarily entail embracing the other” (Przepiórkowski, 2000, pg. 2).

HPSG is an explicitly formalized, constraint-based, comprehensive, eclectic and generative linguistic formalism. The eclectic nature of HPSG enables linguists from different backgrounds to study a range of grammatical phenomena in unison (and not separately as traditional frameworks have done). HPSG, as already mentioned, actively adopts the most useful syntactic elements from numerous available frameworks including Categorial Grammar (CG), Lexical-Functional Grammar (LFG), the Government and Binding Theory (GB), and more recently, from Construction Grammar and Systematic Grammar. Semantic representations in HPSG are usually given in terms of Situation Semantics (SS) and Discourse Representation Theory (DRT). HPSG can thus be described as a “common, mathematically precise formalism within a wide range of linguistic theories” (Pollard & Sag, 1987, pg. 10)

HPSG has the desired feature of possessing predictive power, that is to say, it is able to predict which expressions belong to the language and which do not. It, therefore, minimally describes natural language. It is not, however, only a linguistic formalism. It is also a cornucopia of novel linguistic analyses of a variety of phenomena from a variety of languages stated in the formalism, as well as a certain sociological approach to linguistic inquiry.

HPSG complies with the fact that words are highly structured and information-rich: hence certain key words play a pivotal role in the processing of the clauses that contain them. In fact, this is central to HPSG theory, whose notion of phrase structure is built around the concept of a lexical head⁴. These lexical heads also generate vital semantic information that can be shared with their phrasal projections. To illustrate the extent to which words in HPSG are information-rich, let’s take, for example, the lexical entry for the noun book. This entry specifies that:

1. the word is pronounced or spelled in a particular way.
2. the HEAD of the phrase in which it occurs is a noun.
3. its CONTENT is an indexed-object.
4. it subcategorizes for a determiner
5. its INDEX is 3rd person and it is singular in number.
6. its CONTENT has a restriction with RELATION book.

⁴A lexical ‘head’ is the single word whose dictionary entry specifies information that determines crucial grammatical properties of the phrase it projects.
7. the instance of the restriction of its CONTENT is the index in 5.

The book entry thus shares 2 and 3 with all nouns, 4 and 7 with all common nouns and 5 with all 3rd person singular nouns.

HPSG exemplifies par excellence the family of grammatical theories which have come to be known as unification-based. It takes full advantage of the power of unification. It replaces the metarules of GPSG completely with lexical rules, and as its name reflects, lexical heads are of significant importance in syntactic phrases.

The goal of HPSG is to provide an integrated and logical theory of language. In Pollard and Sag (1994), the principal goal of the study is to propose intelligible analyses of linguistic phenomena. Furthermore, this version of HPSG adopts a policy of ontological parsimony whereby constructs that don’t correspond to ‘observables’ of the empirical domain are not posited. A further condition for linguistic theory suggested first by (Chomsky, 1981) and returned to by GPSG and HPSG is the requirement of decidability: for a considerable portion of candidate expressions for an arbitrary language under study, it must be algorithmically determined whether each candidate expression is assigned a well-formed structure by the theory, and if so, what the structure is.

HPSG was developed as a comprehensive linguistic formalism for work on syntax, semantics, morphology, phonology and pragmatics. In fact, HPSG preaches a concept that is known as radical nonautonomy. This means that no level of grammatical knowledge is privileged with respect to others, and no level is derived from any other. This is in direct contrast to the autonomy of syntax of the Chomskyan transformational theories. In addition, much of HPSG work is devoted to grammatical interfaces where various grammatical levels mutually constrain each other, without any of them in particular being dominant or more important than the others.

HPSG is a monostratal theory of language: there are no derivations transforming one grammatical structure into another. Instead, a grammatical structure is well-formed by virtue of satisfying all constraints that the grammar imposes. Moreover, all constraints are local (limited to one structure at a time). Thus, HPSG has no equivalent of Minimalism’s global constraints which consist of alternative derivations.

HPSG places emphasis on explicitness and precision. As mentioned in the previous section, HPSG analyses are couched in a mathematical formalism with well-defined syntax and model-theoretic semantics. In this sense, HPSG is a prototypical representative of generative grammar. Additionally, HPSG practitioners are usually familiar with mathematical concepts and methods, especially those of logic, set theory and algebra, and are willing to acquire a wide range of technical tools to use in order to clarify their theoretical analyses and proposals. In addition, HPSG is concerned about modularity of design, or the deduction of particular facts from the complex interaction of principles.

HPSG’s powerful mathematical base is its main strength when it comes to the implementation of grammars in Machine Translation for example. Implementability is a consequence of keeping the theoretical framework decidable and theories fully explicit. Due to its explicitness and formality, HPSG has become one of the most popular linguistic formalisms in computational linguistic applications.
CHAPTER 2. THE HPSG FRAMEWORK

Much work in HPSG assumes instead that grammars consist of an interacting collection of simple and general constraints, which, according to Przeiórkowski (2000, pg. 3), “conspire to in accounting for very complex phenomena”. Inspired by Construction Grammar, HPSG avoids the rulebased approach whereby every construction needs its own representation. HPSG thus assumes the existence of a rich hierarchy of grammatical constructions, where more specific constructions inherit the general properties of the less specific constructions but also contribute their own idiosyncratic properties, so for example; one common noun will have essentially the same features as all other common nouns as illustrated above.

Inspired by LFG, HPSG is also highly lexicalist and incorporates a principle of Strong Lexicalism. This implies that:

1. principles of word structure are independent from those governing syntactic structure

2. syntactic operations do not affect the internal structure of words.

Strong lexicalism precludes any analysis where lexical affixes are assigned lexicemic status or undergo syntactic rules. Affix movement operations, assumed in a long tradition from Chomsky in 1955 through to Pollock in 1989, are hence inconsistent with Strong Lexicalism and with HPSG, where words, fully formed, ground the recursive definition of well-formed signs. As previously touched upon, lexical entries are rich in information and are assumed to be organised in lexical hierarchies which permit the encoding of lexical information in a non-redundant fashion in order to prevent the replication of lexical information. Unlike GB, LFG, and directional versions of CG where rules determine the relative order of elements, HPSG follows from the tradition of work in GPSG, “wherein generalizations about the relative order of sister constituents are factored out of the phrase-structure rules and expressed in independent language-specific linear precedence constraints” (Pollard & Sag, 1987, pg. 14). In other words, HPSG phrase structure rules are really immediate dominance rules. Additional lexicalisation of linguistic information, and related further simplification of the grammar, is achieved in HPSG by employing lexical rules. Therefore the theory of HPSG easily caters for important phenomena of natural language such as passivization, causativization and extraposition with the expletive pronoun ‘it’. Lexical rules in HPSG operate upon lexical signs of a given input class, systematically affecting their phonology, syntax and semantics (including, crucially, their SUBCAT list) to provide lexical signs of a certain output class.

HPSG aims to model our knowledge of language. Support for the model proposed by HPSG comes from the fact that it accommodates several empirical facts about human language processing. Firstly, human language processing is incremental i.e. partial interpretations can be generated for partial utterances. Fortunately, HPSG constraints can apply to partial structures as well as complete trees. Secondly, human language processing is integrative. That is to say, linguistic interpretations depend on a large amount of nonlinguistic information (e.g. world knowledge). Thanks to HPSG, the signs used (typed feature structures) can incorporate both linguistic and non-linguistic information using the same formal representation. Thirdly and finally, human language processing is order-independent. That is to say, there is no fixed sequence in which pieces of information are
consulted and incorporated into linguistic interpretation. HPSG is a declarative model, so information can be added in any order.

Some final salient characteristics of HPSG are as follows. It is fully reversible, just like its counterpart constraint-based grammars. This means that it is well-suited as a model of linguistic competence accessed both at production and comprehension. It is also compatible with the fact that the sentences can be interpreted incrementally because words in HPSG have similar structure to whole sentences, that is to say, they contain both phonological and semantic information which can be interpreted before the sentence is completely processed. In addition, HPSG is fractal. This implies that it is structurally uniform as the parts get smaller and that every sign down to the word level (not just the root clause) has features corresponding to phonetic, syntactic and semantic aspects of linguistic structures. Finally Przepiórkowski (2000) claims that it has been proved that HPSG is compatible with what we know about L1 acquisition.

2.4.2 HPSG versus GB

The ultimate goal of HPSG is to characterize human linguistic competence. Therefore, it has been used in developing explanatory analyses of natural language phenomena. There is, therefore, a psychological importance with regard to HPSG analyses. According to Webelhuth, Koenig, and Kathol (1999, pg. 3), what sets HPSG apart from GB or Minimalism is that “its methodological underpinnings require a considerably more careful and complete demonstration of analytical success before one is entitled to the claim of having provided an explanatory analysis”.

GB is almost entirely a theory of syntax. It focuses much less on semantics. Seeing that language exists to convey meaning, it could be argued therefore that GB misses the point of this vital part of language study. HPSG, on the other hand, is an integrated theory of natural language syntax and semantics, which also incorporates information pertinent to phonology, morphology and pragmatics.

Unlike GB, HPSG is non-transformational: attributes of linguistic structure are related by structure sharing - the token-identity between substructures of given structure in accordance with lexical specifications or grammatical principles. It is equivalent to coindexing in GB terms. In HPSG, it is the “central explanatory mechanism” of the formalism (Pollard & Sag, 1994, pg. 19). It is indicated by multiple occurrences of boxed numerals called tags. It occurs when two paths to a node share the same structure as their common value, that is to say, the values of the two paths are unified, a process known in HPSG as type identity. It is unification in this sense of structure sharing that gives its name to the family of unification-based linguistic frameworks, of which HPSG is an exemplar. GB, on the other hand, is transformational. Derivations transforming one grammatical structure into another are relatively common practice. On the other hand, HPSG assumes that a grammatical structure is well-formed if it satisfies all the constraints that the grammar imposes and that there is, therefore, no need for derivational transformations. In GB, transformations apply to phrase structures recursively, thus yielding an undecidable framework. The closest analog to transformation in HPSG is the lexical redundancy rule.
These do not apply recursively and generate a finite lexicon. In addition, not all instances of movement in GB correspond to structure sharing in HPSG, for example, the passive (not treated in the syntax at all but rather by means of a lexical rule) and head movement in subject-auxiliary inversion.

The two theories also differ with respect to the number and nature of structural levels posited, the nature of the theory’s constraints and the theories’ interpretations of tree-configurational commands. All signs in HPSG have the attributes PHON and SYNSEM, and all phrasal signs have the attribute DAUGHTERS, whereas in GB the levels include PF (phonetic form), LF (logical form), s-structure (surface structure) and d-structure (deep structure). Constraints are local in HPSG, whereas Minimalism or GB contains global constraints. Well-formedness is determined completely with reference to a given structure. HPSG sees the tree-configurational commands of GB like government and c-command as linguistically insignificant - instead it adopts a constraint of relative obliqueness that obtains between syntactic dependents of the same head.

HPSG is nonderivational - it employs parallel representations which are mutually constrained by the grammar. GB analyses start with a base generated tree, which is then subject to a variety of transformations (movement, deletion, reanalysis) that produce the desired surface structure. Thus, in GB, distinct levels of syntactic structure are sequentially derived by means of its transformational operations. However, HPSG analyses generate only the surface tree. Rule ordering is impossible in HPSG because there is no notion of sequential derivation.

HPSG prides itself on minimizing spurious features, for example, the feature structure equivalent of ‘functional categories’ like INFL (‘inflection’). Conversely, in GB, some features are required for the sake of the theory although they have little empirical substance. Each feature in HPSG has a distinct purpose.

HPSG is more committed to precise formalization than GB and is better suited than GB to computational implementation. Moreover, the two theories differ with respect to their representation of empty categories, complex categories and constituent structure. HPSG avoids empty category constituents (which are characteristic of GB) because there seems to be no evidence for their presence in syntactic structures and there are, in fact, reasons to doubt their existence. Complex categories in HPSG are more complex than in GB. GB uses atomic categories carrying binary feature specifications. HPSG categories are very elaborated in comparison. GB analyses involve highly complex hierarchical constituent structures with a relatively simple labeling of constituents, whereas HPSG proposes simple constituent structures, labeled with hierarchical feature complexes.

### 2.5 HPSG theory

The need for detailed structures representing sentences was not required in the early days of generative grammars, around the 1950’s. However, as linguistic theories progressed and became more complex, the need for more advanced structures arose and signs evolved as one of these more complex structures. HPSG theory assumes that all linguistic expressions
are signs, as understood in the *Saussurean* sense.\(^5\)

### 2.5.1 Signs

In the prime of generative grammar, the linguistic type most substantially analysed was the sentence, considered as a string of phonetic shapes. Contemporary linguistic formalisms like HPSG, however, demand a great deal more than this. Their linguistic types, called *signs*, include not only sentences but also words and subsentential phrases. There is much more to a sign than simply a phonetic form - they are “structured complexes of phonological, syntactic, semantic, discourse and phrasal-structural information” (Pollard & Sag, 1994, pg. 15).

Undoubtedly, one of the most influential proponents of linguistic conceptualism in this century was the Swiss philologist em Ferdinand de Saussure. He considered linguistics to be a part of social psychology and described language, or ‘*langue*’, as a shared psychological system of elements called *signs* (‘*signes*’). He described these signs as mental associative bonds (‘*liens d’association*’) between two component mental objects called the *signifiant* (signifier) and the *signifié* (signified). The ‘*signifiant*’ he termed as what might be nowadays called a phonological representation image of the sound of a word. The ‘*signifié*’ was thought of as a semantic representation or the psychological concept of a word. This discovery in turn led to HPSG’s sign-based architecture, whose goal is to allow for the interaction between various levels of linguistics representation.

### 2.5.2 Sign-based architecture

In HPSG, formal theories are assumed to consist of a *signature* and a *theory*. The *theory* is simply a set of constraints that all objects in the model must simultaneously satisfy. Hence HPSG can be described as a constraint-based declarative linguistic formalism. The *signature*, on the other hand, makes ontological assumptions explicit - it states what kinds of objects exist and what features they possess e.g. verbs (object) have person (feature) but not case (feature).

All signatures house the type sign, so, in order to represent natural language, HPSG acts as a *system of signs*. But what exactly is meant by this terminology a sign? A sign is a “partial order of types which specifies what types of objects are allowed by the grammar and what attributes might be borne by objects of particular types” (Przepiórkowski, 2000, pg. 5).

Every object of type *sign* has to be either a *word* or a *phrase*, but it cannot be both. *Word* and *phrase* are called the *subtypes* of the type *sign*. The difference between these is that a *word* has a lexical entry, and the *phrase* does not, but it does have an attribute *DAUGHTERS* that must be considered.

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\(^5\)Please note that in all descriptions of HPSG constructs, one should assume here that the *standard* version of HPSG of Pollard and Sag (1994) is the one that is being referred to, unless otherwise stated.
Signs are the principal type of object which are dealt with and they are assumed to have a number of attributes such as PHONOLOGY, abbreviated to (PHON), which represents the phonological features or makeup of the sign and correspond to a ‘list of phoneme strings’, SYNTAX-SEMANTICS (SYNSEM), which corresponds to the syntax and semantics of that sign, and, whenever a phrase is being referred to, DAUGHTHERS (DTRS), whose values represent the immediate constituent structure of the phrase in question. A phrase of type phrase is also called a ‘phrasal sign’ and a phrase of type word is a ‘lexical sign’.

2.5.3 Feature structures

Those traditional linguistic theories based purely on syntax used parse tree structures to describe the syntactic structure of a phrase where each node represented some sort of feature, perhaps a phrasal denotation like VP (verb phrase) or PP (prepositional phrase), or a lexical item like noun or determiner.

Feature structures are used in HPSG to hold all the information about a sign. They do not contain functional nodes, as was the case in traditional parse tree structures, and do not solely constrain themselves to syntactic information as already mentioned. Constituent structure is just one sort of feature information (recorded in the daughters attribute already mentioned).

Feature structures in HPSG are sorted, that is, each node is labelled with a sort symbol that tells what type of object the structure is modelling. There is one sort symbol for each basic type of construct. The finite set of symbols is partially with sort symbols corresponding to more inclusive types lower in the ordering. The sort sign is ordered below the sort phrase or word because signs include both phrases and words.

Feature structures are required to be well-typed - the attributes that can appear in a feature structure are determined by its sort (or ontological category). For example, a feature structure of sort word may have the attribute labels PHON and SYNSEM; a feature structure of sort synsem may have the attribute labels LOC and NONLOC; and a feature structure of sort loc may have the attribute labels category, content and context. Furthermore, the appropriate value sorts for each sort must be stated. For instance, in a feature structure of sort loc the value of the context attribute must be of sort context; in a feature structure of sort noun the value of the CASE attribute must be one of the particular subsorts of the sort case (nominative (nom), accusative (acc), dative (dat) or genitive (gen) for German). Moreover, feature structures are required to be totally well-typed and sort-resolved. A feature structure is totally well-typed if it is well-typed and for each node, every feature that is appropriate for the sort assigned to that node is actually present. Hence, for any node labelled local there must be three outgoing edges for the appropriate feature labels category, content and context. A feature structure is sort-resolved if every node is assigned a sort label that is maximal (most specific) in the sort ordering. For example, a noun node requires a case value of nom, acc, dat or gen; it cannot merely be labelled case.

According to the subsumption relation, since feature structures that are not totally well-typed or sort-resolved can be arranged into a partial ordering relation, any feature structure
can be thought of as partially describing any of the feature structures that it subsumes. More formally, “feature structures can be viewed as representing logical equivalence classes of nondisjunctive formulas in certain feature logics” (Pollard & Sag, 1994, pg. 21).

Pollard and Sag (1994) chose to eliminate this possible source of confusion by using only totally well-typed, sort-resolved feature structures as total models of linguistic entities and AVM diagrams, not feature structures, as descriptions.

### 2.5.4 AVMs

All information in HPSG is encoded by means of attribute-value matrices (AVMs). Descriptions of feature structures can be left underspecified or partial. For such partial features of words the sort given is generally not of type word, but that of the less specific supersort sign. In general the more specific or explicit the description the fewer feature structures that satisfy it.

The expression used to denote the internal structure of the sign is called the signature, and is referred to in the following section. These signatures are described using AVMs, and these same AVMs are used when analysing the data from the chosen language. AVMs are, thus, an informal substitute for feature logic constraints.

### 2.5.5 The Internal Structure of a Sign

The attributes of sign described above each contain values of their own which are also considered to be objects. It is the collection of all these attributes, values and objects that contribute to the internal structure of a sign. The explanation of these objects is best illustrated with the aid of a graphical example. (2.1) highlights, therefore, the minimal amount of attributes needed in a sign object.

\[(2.1) \quad \text{sign} \begin{bmatrix} \text{PHON: } \langle \text{phon} \rangle \\ \text{SYNSEM: } \begin{bmatrix} \text{LOCAL: } \begin{bmatrix} \text{local} \\ \text{CAT: } \text{category} \\ \text{CONT: } \text{content} \\ \text{CONX: } \text{context} \end{bmatrix} \\ \text{NONLOCAL: } \text{nonlocal} \end{bmatrix} \end{bmatrix} \]

The collective information contained in the SYNSEM attribute may possibly be subcategorized for by other signs. Furthermore, in raising constructions, the complement subject and the controller share the SYNSEM information. It is precisely these reasons which vindicate the combined assignment of syntactic and semantic information in HPSG into one single structure.

(2.1) describes just some of the features which exist in HPSG. Looking at the AVM below it is clear that the SYNSEM value can have attributes such as LOCAL and NONLOCAL. The LOC value in turn has attributes CATEGORY (CAT), CONTENT (CONT) and
CONTEXT (CONX) which correspond to the morphosyntax, semantics and semanticopragamatics respectively. Of these three, CAT and CONT are the most relevant to the present study. CONX will not figure as much, as the issue of pragmatics in the context of French clitics is not of real concern presently and might merit further separate study. NONLOC information is crucial in the analysis of unbounded dependency constructions (e.g. topicalization, relativization, cleft constructions, interrogative structures). LOC information is likewise split into features which are combined together as attributes of a single structure due to the fact that they are shared between a trace and its filler in an unbounded dependency. It is within this LOC feature that the bulk of the signs information is found. Incidentally the sub-attributes of LOC and NONLOC can contain other sub-attributes themselves some of which will be dealt with later in this discussion.

2.6 The Linguistic Application of Feature Structures

Feature structures contain further substructures, each of which can in turn have their own linguistic significance. As illustrated above, the indicated sort of a whole feature structure is word. The sort loc is located at the end of the path SYNSEM LOC and has three attributes CATEGORY (CAT), CONTENT (CONT), and CONTEXT (CONX).

2.6.1 The CAT feature

CATEGORY (CAT) corresponds to the syntactic category of the word as well as its grammatical arguments. Roughly speaking, the syntactic category of a HPSG sign is analysed as an assemblage of attribute-value specifications whose syntactic features are specified as head features, binding features or the subcategorization feature, depending on which universal principle constrains their behaviour. Hence, it contains information relating to heads and subcategorization, and hence is divided into the two sub-features HEAD and SUBCAT.

The notion of ‘head’

The notion of the head of a phrase has a very long history. It was first introduced in traditional grammar and now plays a central role in recent and contemporary syntactic frameworks. In HPSG, it is, as the name suggests, of central importance. The underlying idea of a head is basically that each phrase contains a certain word which is centrally important because it determines many of the syntactic properties of the phrase as a whole. This particular word is referred to as the lexical head of the phrase. For a VP the lexical head is a V, for a PP it is a P. Alternatively, the head of a phrase is that daughter (intermediate constituent) of the phrase which either is or contains the phrase’s lexical head. Head features such as part of speech, nouns and inflected forms of verbs are subject to the Head Feature Principle.

In HPSG, the feature HEAD encodes the part of speech of the word and is equivalent to the information contained in an X’ constituent stripped of its bar level information
Appropriate values for HEAD are of two sorts - substantive (\textit{subst}) and functional (\textit{funct}). \textit{Subst} has the subsorts noun, verb, and adjective, preposition whereas \textit{funct} has the subsorts determiner and marker. There may be additional information for each of these parts of speech. If, for instance, the head constituent is a noun then it can will be specified for the feature CASE, or if its a verb it has an attribute VFORM and, in some cases, AUX, indicating that the verb is an auxiliary, or perhaps INV, showing that the verb has been inverted. It follows then that CAT has a SUBCAT feature.

Subcategorization

When one refers to ‘subcategorization’ what do we mean? Lexical heads vary with regard to the number and type of things with which they must combine in order to make complete phrases. Every grammatical category can be split into subcategories, based on the valence of the particular words. For instance, a verb may be classified as \textit{intransitive}, \textit{transitive} or \textit{ditransitive}. An intransitive verb, for example ‘walk’, must combine with, or ‘subcategorize for’, just one subject NP in order to be deemed complete, as in (3.4.2.a). A transitive verb, for example ‘love’ must, however, subcategorize for a subject (3.4.2.b) and an object, and a ditransitive, for example ‘give’ verb must combine with three elements - a subject, an object and a second object (3.4.2.c).

(2.2) a. Kim walks
Kim-SUBJ walks
‘Kim walks’

b. Lee loves Leslie
Lee-SUBJ loves Leslie-OBJ
‘Lee loves Leslie’

c. Kim gives Leslie the book
Kim-SUBJ gives Leslie-OBJ the book-2nd OBJ
‘Kim gives Leslie the book’

The subcategorization of a head is the restriction on which sets of phrases it can combine with. A verb may ‘subcategorize for’ a certain phrase, meaning that it may combine with such a phrase. The valency information is stored in the SUBCAT feature.

Subcategorization (valence or combinatoric potential) is accounted for in HPSG by a Subcategorization Principle (see §2.6.1) and the employment of a SUBCAT feature, a local feature that represents the repository of information about the subcategorization of the sign in question. The specification of the SUBCAT of any sign is a list of the kinds of signs with which the sign in question must combine in order to become saturated or complete. It must therefore provide information about the number and kind of other signs whose values are to be ‘combined’ with the subcategorising element in question e.g. for the intransitive verb \textit{walked}, the SUBCAT specification would be SUBCAT < NP[nom] >. More specifically, the SUBCAT value is a list of synsem objects which correspond to the SYNSEM values of the other signs selected as complements by the sign in questions. In Pollard and Sag (1994)
or HPSG2, the ordering of the SUBCAT is defined in the same way as the version of the
traditional obliqueness hierarchy of grammatical relations where subjects appear leftmost,
followed by the complements in the order primary object, secondary object, oblique PP
and verbal or predicative complements. This ordering does not correspond, however, to
argument order (see §3.4). This notion of obliqueness hierarchy plays a key role in the
HPSG account of numerous linguistic phenomena of diverse sorts.

The Subcategorization Principle is explained in more detail in the section below on
Universal Principles and Rules but, to give a brief account, this principle states that in
any phrasal sign, each complement daughter must satisfy (or more precisely, unify with)
a member of the head daughter’s SUBCAT list, and that the SUBCAT list of the mother
must contain all of those elements on the head daughter’s SUBCAT list that remain to be
satisfied.

2.6.2 The CONT feature

CONTENT is the word’s contribution to the context-independent aspects of the semantic
interpretation of any phrase that contains it. It combines with CONTEXT to give the
semantic interpretation of the sign. There are two sub-features involved in the make up
of the CONT feature when it is applied to an element of an NP. These are INDEX and
RESTR (short for restriction).

For the content of nominals and their phrasal projections, for example, a feature struc-
ture sort called nom-obj is employed. This bears an attribute INDEX (IND) through which
semantic roles are assigned (see section on Semantics in HPSG). It can be thought of as
containing the referential information and is given a number for ease of reference. This
number is unique within the phrase or sentence but not elsewhere. All indices in turn have
three agreement features - PERSON, NUMBER and GENDER. Two nominals are coin-
dexed if they are token-identical or structure-shared. The content of nonexpletive nominals
introduces a semantic restriction on its index which when present is the value of the RE-
STRICTION attribute of the nom-obj. This feature takes as its value a set of parametrized
states-of-affairs (psoas). Nonreferential expletive pronouns have RESTRICTION . A psoa
is represented by a feature structure that specifies the value of the RELATION (RELN)
attribute together with values for the argument roles of that relation that are further rep-
resented by other attributes which can be either referential indices or psoas (which may in
turn contain indices of their own). In general the referential index arguments originate in
the contents of NPs or nonpredicative PPs, and the psoa arguments arise from predicative
phrases e.g. sentential and VP complements, or predicative APs and PPs.

2.6.3 The CONX feature

CONTEXT relates to the context-dependent linguistic information derived from notions
such as indexicality, presupposition and implicature. It has an attribute BACKGROUND
(BACKGR) whose value is a set of psoas, each of which restricts the possible anchors of
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indices. A second attribute CONTEXTUAL-INDICES (C-INDICES) represents information about indexical coordinates such as SPEAKER, ADDRESSEE and other indices of spatiotemporal location.

BACKGR psoas are felicity constraints on the utterance context i.e. they represent conditions on anchors that correspond to presuppositions or conventional implicatures. The psoa below corresponds to the presupposition that the referent of a use of the name Dave be named Dave. The BACKGROUND value of the proper NP John would contain, therefore, the following psoa, shown in (2.3):

(2.3) \[
\begin{array}{l}
\text{RELATION: naming} \\
\text{BEARER: } 1 \\
\text{NAME: John}
\end{array}
\]

Lexical entries have now been dealt with, so the next step is to examine phrasal signs in HPSG.

2.7 Phrasal signs

Phrases in HPSG are described in much the same way as words, the only difference being that they require an extra feature daughters (DTRS). Phrasal signs are the features that link the lexical entries into the sentence, that is to say, they need to link to signs beneath them, hence the obvious requirement of the DTRS feature.

The value of this DTRS attribute is a feature structure of sort constituent-structure (con-struc) representing the immediate constituent structure of the phrase. This sort has various subsorts that correspond to the kinds of daughters that appear in them. Head-structure (head-struc) is the most important of these and it is employed in all headed constructions. Suitable attributes of head-struc include HEAD-DTR (head-daughter), COMP-DTRS (complement-daughter), ADJ-DTR (adjunct-daughter), FILLER-DTR (filler-daughter) and MARKER-DTR (marker-daughter). HEAD-DTR and COMP-DTR are the most relevant for any syntactic study of natural language, however the other attributes are significant in other syntactic contexts and are referred to by more specific subsorts of headstruc. The crucial point is that every headed structure has a unique head daughter, but there may be many (or no) complement daughters, as implied by the feature structure representation for a sign in (2.4).\footnote{It covers subject, which, in syntax, is treated overall as a specific type of complement}

(2.4) \[
\begin{array}{l}
\text{sign} \\
\text{HEAD-DTR: (a sign)} \\
\text{COMP-DTRS: (a list of signs)}
\end{array}
\]

Fig (2.5) depicts, in the most basic manner, the phrase He sleeps. It was taken from Lynch (2000, pg. 13)\footnote{This figure was taken from (Walsh, 2000, pg. 31).}
The HEAD-DTR is the finite verb *sleeps*, which requires only one COMP-DTR, *he*, indicating that *sleeps* is an intransitive verb (only needs one subject). The notation <> represents a list of daughters and it is a one element list in this example. The contents of the HEAD-DTR and COMP-DTR are simplified here but contain the necessary information to represent the phrase. Had this phrasal sign pointers connecting it to lexical signs, the DTRS features would more than likely contain indices as references.

\[
\begin{array}{c}
\text{PHON: } \langle \text{He sleeps} \rangle \\
\text{SYNSEM: S[fin]} \\
\end{array}
\]

\[
\begin{array}{c}
\text{DTRS: } \begin{cases}
\text{HEAD-DTR: } \\
\text{SYNSEM: VP[fin]} \\
\text{PHON: } \langle \text{sleeps} \rangle \\
\end{cases} \\
\text{COMP-DTRS: } \begin{cases}
\text{SYNSEM: NP[pronom]} \\
\text{PHON: } \langle \text{he} \rangle \\
\end{cases}
\end{array}
\]

\[
(2.5)
\]

### 2.8 Universal principles and rules

To account for the phenomena of phrases in language, the distribution of their heads and subcategorization, HPSG assumes a number of *Universal Principles* that distinguish it from other contemporary syntactic formalisms and which are responsible for the well-formed construction of phrases. By constraining the flow or sharing of information between lexical signs and the phrasal signs which they head, they largely determine the syntactic and semantic properties of phrases. They are also very explicitly formulated, thus providing empirical consequences of a very clear nature. Finally, a lot of the information contained in these principles is borrowed from other syntactic theories, the most fundamental of which are the *Head Feature Principle* (HFP) and the *Subcategorization Principle* (of HPSG2). These will be examined firstly, followed by brief discussions on licensing in HPSG and lexical rules in HPSG.

#### 2.8.1 Head Feature Principle (HFP)

The HFP states that:

*The HEAD value of any headed phrase is structure-shared with the HEAD value of the head daughter*

The effect of this principle is to guarantee that headed phrases really are projections of their head daughters. In other words, it ensures that the HEAD feature of a HEAD-DTR is equal to the HEAD feature of its parent. Alternatively, as Przepiórkowski (2000, pg. 14) puts it, “Every phrase has to share its morphosyntactic features with its head daughter”\(^8\).

\(^8\)Not all phrases are deemed to be headed however, for example, coordinate structures
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2.8.2 Subcategorization Principle

The Subcategorization Principle, hence, asserts that:

In a headed phrase (i.e. a phrasal sign whose DTRS value is of sort head-struc), the SUBCAT value of the head daughter is the concatenation of the phrase’s SUBCAT list with the list (in order of increasing obliqueness) of SYNSEM values of the complement daughters.

The ramification of this principle is to ‘cancel off’ the subcategorization requirements of the lexical head as they become satisfied by the complement daughters of its phrasal projections i.e. it ensures that the subcategorization requirements are met - the phrase must take all the complements of its daughters into account. In conjunction with ID principles (see §2.8.3) that license constituent structures, this principle is, in fact, an analog of GB’s Projection Principle.

![Feature Structure](image)

Fig (2.6) presents a feature structure for the English ditransitive verb *give*, as provided by Pollard and Sag (1987, pg. 117). The synsem feature holds the attributes HEAD, which in this case is the verb, and subcat. The subcat feature has three compulsory entries that must be satisfied for the phrase to be realised. Inside the content feature, the relation is stated, RELN: GIVE, which is the verb *give*. If we take the sentence *The dog gave the bone to the girl*, *the dog* is the GIVER of *the bone*, the GIVEN entity, and *the girl* is the receiver. The indexes 1, 2 and 3 refer to the GIVEN, RECEIVER and GIVER respectively, and these indices correspond to the entries in the SUBCAT list.

2.8.3 Licensing in HPSG

As HPSG assumes that structures simply arise from the existence of a suitable phrase structure schema and that the schema in question permits the realisation of all complements, including the subject, as sisters of the lexical head, the art of how various structures are licensed needs to be discussed. The HPSG licensing mechanism is takes the form of a set of Immediate Dominance (ID) schemata and Linear Precedence (LP) constraints.

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9GB’s Projection Principle asserts that a phrasal X-type is projected from a lexical X, satisfying the X’s valence requirements.
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HPSG’s Immediate Dominance Principle (IDP)

These are a set of principles, universally related to the language in question, that describe the phrase structures allowable in that language, or more precisely, the immediate division of phrases. According to Pollard and Sag (1994, pg. 37), they are “principles that in fact serve as templates for permissible local phrase structure trees or configurations of immediate constituency”. They are, thus, similar to X-schemata in GB theory and correspond to rules commonly expressed as

\[
\begin{align*}
S & \rightarrow \text{NP, VP} \\
\text{NP} & \rightarrow \text{DET, NOM} \\
\text{NP} & \rightarrow \text{NP[gen], NOM}
\end{align*}
\]

The disjunction of the ID schemata establishes a universal principle - the Immediate Dominance Principle (IDP). As is the case with many HPSG universal principles, they help to ensure grammaticality. The thought behind their presentation in disjunctive form is that every headed phrase must satisfy exactly one of the ID schemata. Grammatical functions are not of importance in these schemata. Since they are lexically defined in HPSG in terms of their position on the SUBCAT list of lexical heads, ID schemata do not define grammatical functions or dictate their positions. They only constrain how they should be realized configurationally. This allows the notion of, for example ‘subject’, to be questioned, without compromising analysis of the data.

Below are extracts of the version of the Pollard and Sag (1994) IDP. Each extract corresponds to each disjunct schema considered. An informal explanation of that schema is given after each disjunct. Each schema can be given in terms of Heads (H), the principle element of the phrase, and their position in relation to their complements (C). The IDP hence states that the universally available options for a well-formed phrase are:

(Schema 1) a saturated ([SUBCAT <>]) phrase with dtrs value of sort head-comp-struc in which the HEAD-DTR value is a phrasal sign and the COMPS-DTRS value is a list of length one.

This schema, known as the ‘head-subject schema’, licenses saturated phrases with a phrasal head daughter and it allows one other daughter as a complement. This rule incorporates the Subcategorization Principle in that the single element in the SUBCAT list of the head daughter has a SYNSEM value which is token identical to that of the complement daughter, and moreover, the element on the SUBCAT list is the subject of the lexical head. This schema can be used to represent noun phrases consisting of a determiner and a nominal head (NP → Det, N’). As well as serving NPs it can represent sentences such as (S → NP, VP).

---

10In the case of Pollard and Sag (1994) relating to English
11In the following chapter, I will show how the notion of ‘subject’ is undefinable and ultimately how the syntax of French can be analysed accurately without the need to allocate positions to the grammatical functions such as subject and object.
(SCHEMA 2) an almost saturated (SUBCAT list of length one) phrase with DTRS value of sort head-comp-struc in which the HEAD-DTR value is a lexical sign.

Schema 2, ‘head-complement schema’, licenses phrases with a lexical head daughter present and zero or more complement daughters where the complement daughters have satisfied all of their subcategorization requirements except for the most important or oblique one, in this case being the subject. Both the Head Feature Principle and the Subcategorization Principle play an active role in this schema and its general structure would look something like the figure ensuing. This schema would suit phrases such as *Kim gives Sandy Fido*, where gives is the head of the phrase, and *Kim, Sandy and Fido* are the complements or the three daughters where *Sandy* can be referred to as the primary object and *Fido* as the secondary object.

(SCHEMA 3) a saturated ([SUBCAT <>) phrase with DTRS value of sort head-comp-struc in which the HEAD-DTR value is a lexical sign

From the above structure it is evident that both an adjective and a noun create a phrasal nominal and this phrasal head is capable of acting directly as the head in combination with the determiner. Interestingly, English ‘subject-auxiliary inversion’ clauses, analyzed by GB as head movement of the auxiliary from INFL into complementizer position, are also examples of schema 3.

(SCHEMA 4) a phrase with DTRS value of sort head-marker-structure whose marker daughter is a marker whose SPEC value is structure-shared with the SYNSEM value of the head daughter, and whose MARKING value is structure-shared with that of the mother

This schema introduces new features and constructs into this discussion of HPSG theory described up to now. Pollard and Sag (1994) assume that markers resemble heads in as much as they select the phrases that they mark e.g. the complementizer *that* selects either an $S[fin]$ or an $S[base]$. They therefore presume that markers bear the head feature SPECIFIED (SPEC) whose value is of sort synsem. This value is always structure-shared with the synsem value of the (head) sign that the marker combines with to form a phrase. It should also be mentioned that head-marker-structure is a subsort of head-struc which has no complement daughters and that bears an additional attribute MARKER-DTR.

(SCHEMA 5) a phrase with DTRS value of sort head-adjunct structure (head-adj-struc), such that the MOD value of the adjunct daughter is token-identical to the SYNSEM value of the head daughter

Schema 5, the ‘head-adjunct schema’, introduces the head feature MODIFIER into this discussion of HPSG theory up to now. The motivation for the introduction of this feature is to enable an adjunct to select it head i.e. to ensure that the head meets the selectional
requirements imposed by the adjunct: the head’s SYNSEM value must be structure-shared with the adjunct’s MOD value. MOD is, therefore, analogous in purpose to the SPEC feature employed above for markers. head-adjunct-struc is also a subsort of head-struc with the following feature declarations:

\[
\begin{array}{l}
\text{HEAD-DTR: phrase} \\
\text{ADJUNCT-DTR: phrase} \\
\text{COMP-DTRS: \{phrase\}} \\
\end{array}
\]

According to the above figure, taken from Adam P (diss) adjuncts modify only phrases, not words: this is because the HEAD-DTR in head-adjunct-struc is specified as phrase. Since phrases are saturated or almost saturated signs i.e. signs whose SUBCAT list is of length at most one (or in more contemporary terms, whose COMPS list is empty), adjuncts must be attached higher in the syntactic tree than complements, and may be attached higher than the subject (depending on the adjunct’s MOD value). Also, since the value of ADJ-DTR is a single phrase (rather than a list of phrases), adjuncts can be combined with heads one by one. Its COMPS-DTRS value is empty and it bears an additional attribute ADJ-DTR. This schema will then licence an expression such as the N’ black book with ADJ-DTR black and HEAD-DTR book. The SYNSEM value of this N’ is thus given as follows:

\[
\begin{array}{l}
\text{CAT: noun} \\
\text{SUBCAT: \{DetP\}} \\
\text{INDEX: } \mathbb{I} \\
\text{RESTR: \{RELN: book, RELN: red\}} \\
\text{INST: } \mathbb{I} \\
\text{ARG: } \mathbb{I} \\
\end{array}
\]

Pollard and Sag also supply a sixth ID constraint, a ‘head-filler schema’, which deals with filler-gap constructions. Although I don’t consider it relevant to the analysis required in this project, I shall nonetheless quote this schema in order to have fully cited the IDP. It states that:

The daughters value is an object of sort head-adjunct-struc whose HEAD-DTR|SYNSEM value is token-identical to its ADJUNCT-DTR|SYNSEM|LOC|CAT|HEAD|MOD value and whose HEAD-DTR|SYNSEM|NONLOC|TO-BIND|SLASH value is ”, Pollard and Sag (p.403)

Having now defined HPSG’s ID schemata, we have shown how the theory captures phrase-structure. Let us now look at how HPSG licences word order.

**HPSG’s Linear Precedence Rules**

Linear Precedence (LP) rules specify general constraints which determine the word order of the daughters of a phrase. Informally an LP constraint is simply a statement that, for
any phrase in language L, any daughter with property X necessarily linear precedes any of its sisters with property Y, written ‘X h Y’. Adopting the notation where H denotes the head of a phrase and where C denotes the complements of a phrase, Pollard and Sag (1987, p.170) provided three main linear precedence constraints, and they are as follows:

**Linear Precedence Constraint 1 (LP1):**
A lexical head linearly precedes any of its complements.
HEAD [lex +] < C

**Linear Precedence Constraint 2 (LP2):**
A nonlexical head occurs after its complements.
C < HEAD [lex ]

**Linear Precedence Constraint 3 (LP3)**:
The least oblique complement precedes any other complements.
complement <= complement

A second set of LP constraints incorporates *adjuncts*. They specify that a lexical adjunct precedes a head and a nonlexical adjunct follows a head. It should be mentioned that all the constraints are not actually part of the standard theory but they are essentially guidelines which constrain the position of heads in relation to their complements.

Having now looked at licensing in HPSG, the final subsection of this section deals with lexical rules in HPSG.

### 2.8.4 Lexical Rules in HPSG

Recently it has become increasingly important to structure the knowledge in the lexicon and to develop a means of stating generalizations about the lexicon. One such means is Lexical (Redundancy) Rules which have been suggested in various frameworks by various people. Müller (2001) provides a standard example for a lexical rule which accounts for the passive, as illustrated in below\(^{13}\).

\[
\begin{array}{c}
\text{SYNSEM | LOC | CAT:} & \text{HEAD:} \left[ \text{SUBJ: } \left< N\!P[\text{nom}] \right> \right] \\
& \text{SUBCAT: } \left< N\!P[\text{acc}] \oplus \left[ 2 \right] \right>
\end{array}
\]

\[
\rightarrow
\begin{array}{c}
\text{SYNSEM | LOC | CAT:} & \text{HEAD:} \left[ \text{VFORM: } \text{passive-part} \right] \\
& \text{SUBJ: } \left< N\!P[\text{nom}] \left[ 1 \right] \right>
\end{array}
\]

\(^{12}\)This constraint can also be rewritten as: C1 h C2, since the elements of the SUBCAT list are given in order of increasing obliqueness

\(^{13}\)This example was taken from Nash (2000, pg. 47)
This rule relates a lexical entry with a subject, and an accusative object and possibly other complements to another entry that corresponds to a form used in passive sentences. The accusative object in the representation on the left-hand side becomes the subject on the right-hand side. The rule states that whenever there is a lexical entry that corresponds to the left-hand side of the rule, there is also a lexical entry that corresponds to the right-hand side of the rule.

Müller (2001) reiterates that lexical rules can be interpreted as metarules, referred to as Meta Level Lexical Rules (MLR) or as integrated rules, called Descriptive Level Lexical Rules (DLR). In the MLR approach, the boxed numbers in the lexical rules are variables, whereby identical numbers share the same value between structures, and can be understood as structure sharing between several feature structures. In the DLR approach, both structures are part of a larger structure and real structure sharing is understood. The DLR approach allows full integration of lexical rules into the formalism and enables the possibility of generalizations over classes of lexical rules, as well as information inheritance from a supertype. A lexical rule applies to all lexical entities that unify with their lefthand side, and all information that is not explicitly mentioned in a lexical rule is transferred unchanged from the input to the output.

I have now looked at all of the HPSG background and theory that is required for the subsequent analysis of French clitic pronouns. However, before moving on to this, I shall give brief accounts of how HPSG captures more general linguistic phenomena of natural language like semantics, agreement, complementation and binding. The following three sections are devoted to each of these phenomena respectively.

2.9 Semantics in HPSG

HPSG’s primary use lies arguably in the domain of syntax. However, how does it cater for the problem of natural language semantics? Semantics in HPSG is mainly accounted for by the borrowing of Situation Semantics. Discourse Representation Theory, however, plays an added role, but on a smaller and less significant scale.

2.9.1 Situation Semantics (SS)

Pollard and Sag (1987) claim that the world is made up of individuals (David Spollen, the moon), properties (being a cookie, being a horse), relations (hearing, throwing) and situations. They describe situations as “limited parts of the world which consist of individuals having (or not having) properties, or being (or not being) in relations” Pollard and Sag (1987, pg. 4).

Pollard and Sag (1987) hence decided that HPSG theory would adopt for its semantic component the theory of Situation Semantics. According to Situation Semantics, meaning arises from constraints that hold between different kinds of situations e.g. any situation that has smoke in it is part of a situation that has fire in it i.e. smoke means fire. Linguistic meaning, then, is a “relation that holds between types of utterance situations
and the types of things in the world that utterances describe” Pollard and Sag (1987, pg. 4), a view known as the relational theory of meaning.

### 2.9.2 Semantics principle

As noted in the previous sections, CONTENT is the attribute of the LOCAL feature of the SYNSEM of a sign and is itself the feature primarily responsible for encoding the semantic representation of the word in question (along with CONTEXT). The semantic content of a simple declarative sentence is a *circumstance* (type of situation) or a “situation-theoretic object composed of individuals playing roles in a relation” Pollard and Sag (1987, pg. 4). Semantic roles and variables in HPSG are straightforwardly treated as situation-theoretic objects which arise naturally as constituents of the semantic content of the sign in question. Pollard and Sag (1994, p.56) also included a Semantics Principle, which is stated as follows:

In a headed phrase, the CONTENT value is token-identical to that of the adjunct daughter if the DTRS value is of sort head-adj-structure and with that of the head of the daughter otherwise.

This principle is a direct result of HPSG’s Schema 5 of Immediate Dominance that caters for an adjunct’s selection of a head. It thus ensures structure sharing of the mother’s content with that of the adjunct daughter where the kind of contribution an adjunct makes to the phrase in which it occurs is specified in the adjunct’s CONTENT. It should be mentioned however that this is a slightly simplified version of the final principle, which ultimately includes a notion of quantifier ‘storage’ which we shall ignore for present purposes.

### 2.10 Agreement in HPSG

Agreement, the systematic covariation of linguistic forms, is formulated in HPSG2 in terms of static sets of identity conditions. This analysis considers that semantics has an important role to play in agreement and is based on the belief that a purely syntactic account of the treatment of features of number, gender and person is not sufficient because agreement for such features is fundamentally and intrinsically linked to reference. The information relating to the above features is thus encoded in terms of features of indices, which function as the vehicle of reference and coreference in the analysis.

Agreement is more prevalent in some languages than in others. This is the case with French in comparison to English. Nouns, for example, in both languages are specified for person and number, but the main difference is that nouns in French are explicitly specified for gender, thus making the phenomenon of agreement in the language more interesting and more complex. Let’s take three examples of agreement in French to clarify this point. The first one concerns (subject) clitic-predicative adjective agreement and the second has to do with ‘hybrid’ agreement in French.
2.10.1 Clitic-predicative adjective agreement

It is a phenomenon of the French language that predicative adjectives must agree with their subjects, as the following sentences illustrate:

(2.9) a. Il est heureux
   He is happy-MASC
   He is happy

b. *Il est heureuse
   He is happy-FEM
   He is happy

The English counterparts show that there is no change in the form of the adjective, hence showing that the language is in fact less specified for agreement than French with respect to clitic-predicative adjective agreement. (Miller, 1992, pg. 63) claims that noun-adjective agreement of this sort (i.e. between a head and its optional modifier) can be encoded in HPSG only if one is on the SUBCAT list of the other. However, (Pollard & Sag, 1994, pg. 2), take the stance that agreement facts like the above can only be accounted for on the assumption that it is not the adjunct that is in the SUBCAT list of the head but the other way around i.e. the adjunct selects the head. They, therefore, assume that this agreement is encoded in HPSG through MOD attribute.

Unlike a derivation-based transformational approach, the constraint-based approach of HPSG to analysing agreement of this sort requires no pronoun proliferation. The first and second person pronouns are simply left unspecified for gender information, and hence are compatible with either the masculine or feminine gender as specified by the predicative adjective.

2.10.2 Hybrid agreement

Some languages exhibit a mixed or hybrid combination of agreement phenomenon. In French, for example, the following data poses an interesting problem.

(2.10)a. Vous êtes belle
   You are-2nd PERS pl beautiful-FEM SG
   'You are beautiful'

b. Vous êtes belles
   You are-2nd PERS pl beautiful-FEM PL
   'You are beautiful'

Although the verb is second person plural in both sentences, the predicative adjective is singular in (2.10.a) and plural in (2.10.b). This difference in adjectival form corresponds to a difference in interpretation i.e. (2.10.a) can be said only to a female individual with whom the speaker isn’t acquainted or is familiar with on a formal basis. (2.10.b) can be said only
to an group of female individuals with no constraint on the social relationship between the speaker and the addressees. On this basis, if we adopt a treatment of the polite second-person vous, then one could posit a lexical sign for this clitic whose SYNSEM | LOCAL value is shown below in (2.11)

\[
\begin{align*}
\text{CATEGORY:} & \begin{cases} 
\text{HEAD: noun} \\
\text{SUBCAT: } \langle \rangle
\end{cases} \\
\text{CONTENT:} & \begin{cases} 
\text{INDEX: } \begin{cases} 
\text{PER: 2nd} \\
\text{NUM: pl}
\end{cases} \\
\text{C-INDICES: } \begin{cases} 
\text{SPEAKER: 2} \\
\text{ADDRESSEE: 1}
\end{cases} \\
\text{CONTEXT:} & \begin{cases} 
\text{BACKGROUND: } \begin{cases} 
\text{RELATION: honour} \\
\text{HONORER: 2} \\
\text{HONORED: 1}
\end{cases}
\end{cases}
\end{cases}
\end{align*}
\]

It is interesting to note that the sign doesn’t require its [NUM plur] index be anchored to an aggregate. The second-person-plural verb form êtes requires a subject whose index is specified as [PERS 2nd] and [NUM plur], which is compatible with the index of the ‘polite’ vous (as in (2.10.b)), and which accounts for the subject-verb agreement in (2.10.a). But how can the index of belle, presumably defined as [NUM sing], be identified with that of the subject? And how does the feminine plural form belles force an aggregate interpretation on the subject? In French, predicative adjectives have gender specifications on indices but introduce no specifications for the feature NUM. In this way, the index of belle can be token-identical with the second-person-plural index of the subject pronoun in (2.10.a) by introducing a constraint that the anchor of that index be a non-aggregate. Similarly, the index of the plural belles, unspecified for NUM, can be structure-shared with the subject’s index by introducing a constraint that the anchor of the index be an aggregate. The French agreement system thus employs a combination of index features and anchoring conditions.

2.10.3 Pronoun-antecedent agreement

In English, French and many other languages, a pronoun agrees in person, number and, gender with its antecedent noun or noun phrase. This agreement is carried out in HPSG by token-identification of indices, which are the very objects that satisfy agreement information.

Confusion often surrounds the relationship between coindexing and coreference. The connection is that if two expressions are coindexed and one of them refers, then the other expression refers to the same thing. Hence, agreement of antecedents with their pronouns follows immediately given the assumption that person, number and gender are attributes of indices. Variations in the form of pronouns are therefore correlated with differing specifications within the indices.
2.11 Complement structures in HPSG

2.11.1 Equi and raising

Verbs must not only be classified in terms of the syntactic category of the unsaturated complement they take, but also in terms of whether they are equi (or control) or raising verbs. The differences between these two classes of complement-taking structures are well established. Equi verbs assign one more semantic role than their raising counterparts. All subcategorised dependents of equi verbs are assigned a semantic role. However, raising verbs always fail to assign a semantic role to one of the dependents for which they subcategorise. This difference is accounted for in HPSG in their respective CONTENT values.

Raising constructions allow expletives there and it (generally equivalent to the impersonal il in French\textsuperscript{14}) structures as complements, whereas equi constructions do not. These contrasts follow from the theory of indices and role arguments, which declares that indices are classified into three subtypes: ref, there, and it, with only ref bearing semantic roles (there and it are nonreferential, expletive or ‘dummy’ subjects). As equi controllers are assigned semantic roles, their indices are referential, and hence can never be realized as expletives. Raising controllers, on the other hand, are assigned no semantic role in the CONTENT of the raising verb. The SUBCAT list of raising verbs identifies the entire SYNSEM value of the raising controller with that of the unexpressed subject of the unsaturated complement. With equi verbs, however, only the equi controller’s index is identified with that of the unexpressed subject. It is not necessary to stipulate the structure sharing mentioned above for raising verbs in terms of individual lexical items seeing as a single generalization can be adopted, namely the Raising Principle:

**Raising principle (a constraint on lexical entries):**

Let E be a lexical entry whose SUBCAT list L contains an element X not specified as expletive. Then X is lexically assigned no semantic role in the content of E if and only if L also contains a (nonsubject) Y [SUBCAT <X>]

In short, this principle ensures that the relevant synsem objects in the lexical entries for subject and object raising verbs are exactly as illustrated earlier. It also predicts that unassigned arguments can appear on SUBCAT lists only when an unsaturated phrase is also present.

2.11.2 Expletive pronominal constructions

The expletive pronouns, there and it, have an extremely restricted syntactic distribution which follows on semantic grounds. There typically occurs as the subject of the copula i.e. ‘be’, when an additional postcopular indefinite NP also occurs, as in (2.12.a)

\[(2.12)a. \; \text{There were five farmers protesting the new regulations}\]
b. It rained yesterday

c. It is nine o’clock

d. It bothers me that Sandy snores

e. Make it snappy!

f. The band seem completely out of it

It occurs in a number of environments but most frequently as the subject of ‘weather’ verbs (2.12.b), temporal expressions (2.12.c), or verbs and adjectives that also combine with ‘extraposed’ clauses (2.12.d). It can also occur in the primary object or prepositional object position (2.12.e), (2.12.f).

2.12 Binding in HPSG

2.12.1 Binding theory

In general, binding theory is concerned with the classification of referentially dependent elements, such as personal pronouns and reflexive pronouns, according to syntactic constraints on the distribution of their possible antecedents.

In HPSG1, binding features which encode syntactic dependencies of signs that are essentially nonlocal in nature (i.e. not determined by the lexical head of the phrase), such as the presence of ‘gaps’, relative pronouns and interrogative elements, are subject to the Binding Inheritance Principle, which requires that information about such dependencies be transmitted upward through the constituent structure of signs until such a point is reached that the dependency can become ‘bound’ or ‘discharged’ (Pollard & Sag, 1987, pg. 11). HPSG2 proposes an alternative approach to Binding Theory as compared to the approach of GB. The key idea behind their approach is centred upon replacing GB’s configurational notion of c-command with a (local) obliqueness-command (o-command), which is based on the relative obliqueness of grammatical functions.

Since Binding Theory essentially deals with the distribution of NPs, (Pollard & Sag, 1994) redefined them in terms of a sort nominal-object (nom-obj). Such objects, of which there are various sorts, bear indices which have the same role as NP indices in GB, and possess an internal structure of agreement features, namely person, number and gender which is, in turn, assigned to any NP that is coindexed (structure-shared) with the NP in question. The hierarchy of nominal objects is based on the referential properties of the NPs that bear them, and is given in the figure below.\footnote{The code for the formatting of this sortal hierarchy was taken from O’Callaghan (2000)}

At the top of the hierarchy, it can be seen that nominal objects are divided into two subtypes, pronominal objects (pron) and nonpronominal objects (npro). Pronominal objects are further classified into anaphoric pronouns (ana) or personal pronouns (ppro) with anaphoric pronouns being further subdivided into reflexive (refl) and reciprocal (recpr) pronouns. In relation to overt nominals, the three sorts of nominal-objects as defined by
the theory are npro, ana and ppro which correspond to Chomsky’s three-way classification of NPs as R-expressions, anaphors and pronominals (Chomsky, 1981). The theory also assigns the type ppro to the expletive pronouns there and it. It is the lists of synsem objects that form the SUBCAT values of lexical heads that provide the appropriate hierarchical structure for the formulation of the principles of binding theory.

**O-command**

As stated above, HPSG Binding Theory is formulated in terms of the relation called local obliqueness-command (or local o-command) which is defined as follows:

\[
\text{Let } Y \text{ and } Z \text{ be synsem objects with distinct LOCAL values, } Y \text{ referential. Then } \\
Y \text{ locally o-commands } Z \text{ just in case } Y \text{ is less oblique than } Z
\]

A synsem object Y is less oblique than synsem object Z just in case it precedes Z on the SUBCAT list of some lexical head. A synsem object is called referential if it has an index of sort ref. Local o-command is a special instance of the more general relation called simply o-command, which is defined as follows:

\[
\text{Let } Y \text{ and } Z \text{ be synsem objects with distinct LOCAL values, } Y \text{ referential. Then } \\
Y \text{ o-commands } Z \text{ just in case } Y \text{ locally o-commands } X \text{ dominating } Z
\]

Therefore, local o-command is just the special case of o-command where \( X = Z \). The insightful idea behind o-command is that \( Y \) o-commands everything that is, or is contained in, a more oblique complement of the same head; and \( Y \) locally o-commands the more oblique complements of the same head.

**O-binding**

The analog to Chomsky’s A-binding is the notion of o-binding, defined as follows:

\[
Y \text{ (locally) o-binds } Z \text{ just in case } Y \text{ and } Z \text{ are coindexed and } Y \text{ (locally) o-commands } Z. \text{ If } Z \text{ is not (locally) o-bound, then it is said to be (locally) o-free}
\]
2.12.2 HPSG Binding Theory

The HPSG binding theory is composed of three principles: Principles A, B and C, and, effectively, it is based on hierarchical argument structure rather than constituent structure.

- **Principle A**: A locally o-commanded anaphor must be locally o-bound
- **Principle B**: A personal pronoun must be locally o-free
- **Principle C**: A nonpronoun must be o-free

These principles require an anaphor to be coindexed with a less oblique SUBCAT member, if there is such a less oblique coargument. Otherwise, anaphors are free (subject to various discourse and processing considerations) to be bound by appropriate elements in the discourse context.

**ARG-ST and Binding Theory**

The binding theory as developed in HPSG2 refers to o-command, o-binding, o-freeness, etc; these were mnemonics for obliqueness. Manning and Sag (1999), however, have argued for a new list for binding concepts to be defined on, ARGUMENT-STRUCTURE or ARG-ST (see §3.4.3) for short. All the o-’s were thus directly changed to a-’s. Hence, the local definition of ‘a-command’ is as follows:

**Local A-Command**:

Let Y and Z be synsem objects, with distinct LOCAL values, Y referential. Then Y locally a-commands Z just in case either:

i. Y is less oblique than Z; or

ii. Y locally a-commands some X that subcategorizes for Z

Hence, the Binding theory principles were revised accordingly as follows:

- **Principle A**: A locally a-commanded anaphor must be locally a-bound
- **Principle B**: A personal pronoun must be locally a-free
- **Principle C**: A nonpronoun must be a-free

Not all languages consistently maintain the relationship whereby the ARG-ST list is the append of the SUBJ, COMPS, SPR lists, in that order. Rather, in Western Austronesian languages, another ordering is possible, and indeed is unmarked. In this pattern, it is the second core argument of the ARG-ST of a transitive verb that becomes the SUBJ. Such a fact provides strong support for two independent syntactic levels, realized in HPSG3 by the valence lists and ARG-ST, and provides crucial evidence for the argument structure based theory of binding that HPSG provides.
2.13 Conclusion

This chapter covered the basic framework of HPSG necessary for later use in this project. The history of HPSG to date was examined. All of the fundamental constructs of the grammar formalism have been explicated in detail. How the theory captures linguistic phenomena such as semantics, agreement, complement structures and binding has also been thoroughly studied. I feel that I have successfully shown, therefore, that due to its dynamic, efficient and advanced approach to natural language analysis, the use of HPSG in this project more than meets the needs of a cumbersome syntactic analysis of this sort.

It has been shown that HPSG is, first and foremost, an explicitly formalized constraint-based theory of grammatical competence. All of its representations - lexical entries, rules, and even universal principles - are partial descriptions of (i.e. constraints on) feature structures - the fundamental construct used to model linguistic entities. HPSG linguistic descriptions are declarative, order-independent, and reversible, making them ideally suited for the description of linguistic performance, where, as a long tradition of psycholinguistic results has established, linguistic and nonlinguistic constraints are seamlessly integrated with astonishing speed and accuracy.

Linguistic information in HPSG is organized into signs and their components. Current work is entertaining hypotheses about the internal structure of signs. Not only words, but also phrases are treated in terms of such feature structures, whose precise nature is guaranteed by the constraints of the grammar. It is inevitable therefore that HPSG will prove to be very appropriate for the syntactic analysis of French clitics that I will provide. The combined problematic syntactic and semantic nature of these clitics I now feel will not pose a problem to HPSG, whose repository of constructs, as described in this chapter, will more than cater for overcoming these linguistic obstacles.

Furthermore, I have clearly emphasised that HPSG differs from all its counterpart syntactic theories which have influenced its development because it is not at heart simply a theory of syntax. It is concerned with the “interaction among all the forms of information that bear upon the linguistic meaning relation, including both the syntactic information borne by signs (roughly their syntactic category and constituent structure) as well as their semantic content” (Pollard & Sag, 1987, p. 16). In fact I have illustrated that syntactic and semantic aspects of the theory were built up in an integrated way from the start, under the assumption that neither could be well interpreted in isolation from the other. In this respect, HPSG is “much closer in spirit to work in situation semantics than it is to most current syntactic approaches” (Pollard & Sag, 1987, p. 17).

HPSG is, however, not entirely eclectic\(^1\). An important aspect of HPSG is the novel way it combines ideas from different frameworks, such as syntax, semantics, phonetics, phonology, morphology.\(^2\)

\(^1\)Recall that HPSG freely borrows from Categorial Grammar, Discourse Representation Theory, Generalized Phrase Structure Grammar, Government-Binding theory, Lexical-Functional Grammar and Situation Semantics, but proposes various original ideas
\(^2\)HPSG’s interaction with with morphology has not been described in this chapter. This is because I will explain this interaction in Chapter 5 when it comes to reviewing Miller and Sag (1997) and Monachesi’s
A mere introduction to the HPSG formalism has been provided here. However this is sufficient for the forthcoming analysis of clitic constructions in French. HPSG is my chosen linguistic framework for this project due to its capacity to integrate many linguistic traditions such as syntax and semantics. The formalism also provides large scope for the expansion and modification of features which enables the adaptation of the theory to suit various languages. However, having carried out the necessary research, I discovered that perhaps the greatest advantage of HPSG is its versatility as a formalism - many versions can be derived from the standard HPSG theory to suit the needs of the syntactic analysis in question. Hence, my chances of providing more precise syntactic analysis of French clitics are greatly increased. This is in fact the essence of the following chapter where I shall devise what I feel is the most suitable approach to the analysis of French clitics based on the versatility of the formalism. One of the principal advantages of HPSG I discovered is that I can use the framework I have just described in the knowledge that my results will be understandable and appreciated by linguists of another research tradition.
Chapter 3

The chosen approach
CHAPTER 3. THE CHOSEN APPROACH

3.1 Introduction

In this chapter I shall present the background to the approach that I chose to take for the analysis of French clitics. Now that I have presented the HPSG framework, I am in a position whereby I can state why I chose this formalism as opposed to other formalisms. I am also in a position where I need to discover which version of HPSG is the most important and appropriate for the analysis in question. Certain factors will consequently affect this decision, and so, the aim of this chapter is to account for all of these factors, and derive from them the appropriate solution to providing the best HPSG description of French clitic pronouns that I can.

Clitics are accounted for in subcategorization. In addition, given that they have an unascertained syntactic status and undergo various syntactic displacements, which will be illustrated in the following chapter, a clear and precise account of the elements with which they can combine I feel will be of paramount importance if I am to succeed in fulfilling the above goal. Therefore, I also aim to place a lot of emphasis in this chapter on selecting the most suitable approach to subcategorization that is possible in an effort to achieve the most fruitful analysis of clitics possible. Given that grammatical functions are of central importance to subcategorization in particular versions of HPSG, I expect that they will have a significantly large implication in the approach to subcategorization that I choose to take. I will also investigate to a large extent the relationship that clitics have with argument structure, and make an informed decision as to whether or not a suitable representation of this relationship should be included in my analysis.

3.2 The choice of a suitable framework

Different linguists tend to favour particular frameworks and provide a lot of arguments indicating why their frameworks are the most appropriate. Some points in the different frameworks lead to different predictions that can help in deciding between them. A major decision that I had to make when planning and researching this project related to my choice of syntactic formalism.

3.2.1 GB?

HPSG theory was presented in the previous chapter. The conclusion I drew from this chapter was that this framework is highly advanced and extremely comprehensive for its use in the syntactic analysis of language. In the previous chapter I also illustrated the main differences between a theory like HPSG and one like GB. It was clear from this comparison that despite the recognised advantages of GB, those of HPSG are without doubt much greater in number. Therefore, choosing the traditional approach of GB for the purposes of this project would have been a mistake given that there are more contemporary formalisms like HPSG which are more suitable for present purposes. In addition, the prospect of incorporating a modern day computational implementation in this project using GB would
CHAPTER 3. THE CHOSEN APPROACH

not have been equally as rewarding than it would be with HPSG, given HPSG’s suitability to computational implementability. Therefore, the remaining options at my disposal were just HPSG and LFG.

3.2.2 LFG?

As I only have experience with two syntactic formalisms, namely LFG (Lexical-Functional Grammar) and HPSG, it seemed a sensible approach to build on that experience by choosing one of these two frameworks and exploring its advantages further in relation to the problem of clitics. Any linguist working under a particular framework and on a particular phenomenon of language may believe that that framework provides the best approximation at that stage. However, it is worth taking note at the same time of the findings made under other frameworks\(^1\). A particular version of HPSG is the chosen framework for this project but I nonetheless want to illustrate why I discarded the option I had in LFG. In so doing, I considered both the similarities and differences between the two.

Firstly let’s examine the similarities between the two formalisms. Both theories are unification, constraint based non-derivational approaches, as opposed to GB which derives one structure from another by applying operations such as move-a. The non-derivational aspect of LFG and HPSG is related to the fact that there is no feel that the phonological and logical contents are derived from, or some type of interpretation of, the syntactic structures in any way. In both theories empty categories are avoided, whereas they are frequently employed in GB. LFG and particular versions of HPSG also have in common the fact that notions such as subject and object are not defined in terms of positions in a tree. Instead, grammatical functions are formalized in terms of attributes (such as SUBJ and OBJ in LFG and SUBJ (subject), SPR (specifier) and COMPS (complements) in such versions of HPSG).

Moreover, what were the main divergences between these two formalisms that influenced my choice of HPSG over LFG? Firstly, broadly speaking, they have the common goal that is to provide a theory of language structure, including its universal properties. However, they have different focuses on their goals. HPSG views language as a system of knowledge in the mind of the speaker, without focus on the psycholinguistic processing. On the other hand, LFG has a large focus on the processing and psychological reality of language. Secondly, it seems, however, that the major differences between these frameworks are not in their overall goals, but in the way that they pursue their investigation to achieve these goals. From the previous chapter we know that HPSG requires a high level of mathematical precision in its analysis, at the cost of making slower and more conservative claims. In my opinion, the more the emphasis on mathematical precision, the more formal and computationally implementable the formalism, hence the better the formalism for the purposes of this project. Thirdly, HPSG differs from LFG in the number of levels of representations it uses. HPSG has only one level (encoded in a complex sign structure) containing information

\(^1\)Therefore, in a later section, I will briefly examine an LFG analysis of French subject clitics by Grimshaw (1982) and discuss the relevance of the findings in relation to my HPSG analysis
about phonology, morphology\textsuperscript{2}, syntax and semantic interpretation of an expression. It is also in this one level where it is indicated which arguments function as subject and object\textsuperscript{3}, different to LFG which may encode syntactical hierarchical structure in one level, \textbf{c-structure}, and notions of grammatical functions in another, \textbf{f-structure}. LFG thus posits two constructs for its overall representation of linguistic entities. The c-structure is a syntax tree derived from context-free phrase structure rules. Nodes in the c-structure are annotated with 'functional equations'. However, for a sentence to be well-formed in LFG, it must be given an f-structure. The f-structure corresponds to a minimal feature structure, similar to HPSG, that satisfies the functional description of the c-structure. On the other hand, in HPSG there is no direct c-structure equivalent. Constituent structure in HPSG is simply encoded by means of more feature structures.

Here I favoured HPSG over LFG for the reasons that will become apparent in the following paragraph. And finally, as mentioned in §2.13, one of the main attractions to HPSG is its \textit{versatility} as formalism. LFG is not equally as versatile due to its invariable and fundamental \textit{recourse to grammatical functions}, which are considered to be the essence of the grammar. HPSG doesn't exhibit such a dependency, and can be used in different versions according to whether or not the linguist chooses to include the employment of grammatical functions. In the case of this project, I have explicitly chosen to exclude them, the main reason for which is due to the arguments of Keenan (1976) as summarized below.

### 3.2.3 Subcategorization in terms of grammatical functions

If one were to approach subcategorization in HPSG by means of grammatical functions, one would have to ensure that these functions are universally definable. Before answering this question, let’s first of all examine the following two sentences.

\begin{enumerate}
  \item \textbf{a.} There is a book on the table
  \item \textbf{b.} What frightened me was the loudness of the thunder
\end{enumerate}

\begin{enumerate}[\textit{(3.1).}]
  \item \textbf{a.} There is a book on the table
  \item \textbf{b.} What frightened me was the loudness of the thunder
\end{enumerate}

\begin{enumerate}[\textit{(3.1.a)}.]
  \item contains a ‘dummy’ subject, \textit{there}. However, is this constituent really the subject of the sentence? Since this element cannot refer to anything due its expletive nature, if we reinterpret this sentence to mean \textit{The book is on the table?}, should we not consider the NP \textit{the book} to be the subject? What role might our interpretation of the NP \textit{the table} play in choosing the subject? The answers to all of these questions seem to be based on our own \textit{human intuition}. However, when implementing these intuitions with the fully formalized, principled and efficient formalism that it HPSG, is this basis from which we choose to work enough?

\textsuperscript{2}Morphological information contained in the \textit{sign} depends on the particular version of HPSG used. Miller and Sag (1997) and Monachesi (1996) favour inclusion of information relating to the morphological interface

\textsuperscript{3}Furthermore, only some versions of HPSG incorporate grammatical functions, others do not
In (3.1.b), which contains a free relative, if we assume that the head of the sentence is the verb *frighten*, how do we decide which NP corresponds to the subject? *The loudness of the thunder* seems to exhibit an agentive semantic role, and the pronoun *me* seems to exhibit the semantic role of the patient. Two further issues arise if we are to accept this analysis. Firstly, if we are to use the classical method of obliqueness of elements in order to derive which elements possess the most subject-like behaviour, does this analysis fit in with the analysis of this sentence? That is to say, does the element *what* in this sentence behave like the NP that behaves in the most subject like manner? I do not imagine that it does. The second issue that arises relates to the fact that, in a syntactic approach to the definition of ‘subject’, a purely semantic basis on which to syntactically discover which of the sentence’s NPs is the most subject-like does come across as being the most suitable approach. Furthermore, I have only cited two example sentences that show how the problematic nature of approaches made to universally define subject can be. More and more sentences could have been added to further strengthen this argument.

How do we define, therefore, the subject of a sentence? What set of properties or principles exist that enable us to define the subject of a sentence? Do we simply use our own intuition? If so, is this a sufficient and reliable method to adopt if one aims at providing accurate linguistic analyses? Let’s look at the views of Edward Keenan on the universal definition of ‘subject’ before answering the above questions.

### 3.2.4 Keenan on the universal definition of ‘subject’

In his 1976 paper entitled *Towards a universal definition of subject*, Keenan’s goal is to provide a definition of the notion of ‘subject’ which allows the identification of the subject phrase(s) of any sentence in any language. He claims that such a definition is necessary in Universal Grammar (UG) so that many of the universal generalizations that make use of the notion of subject will be well-defined.

His motivation for a universal definition of subject is threefold. Firstly, if we use different criteria to identify subjects in different languages then ‘subject’ could not possibly be termed a universal category. Secondly, and consequently, the universal generalizations that are stated in terms of the notion of subject could not be considered generalizations at all. And finally, absence of identifying criteria for the universal definition of subject makes verification of universal principles extremely difficult.

Given that in many languages, subject NPs are characterised by properties which are not only not universally valid but also peculiar to the particular language in question, Keenan’s proposal is to phrase a universal definition of subject in such a way that different languages can use language specific means to mark subject NPs. He argues that some subjects will have more of these properties than others, so some subjects can be more subject-like than others. Therefore, if we have a sentence with more than one NP in it, we can assume that the NP that displays the highest number of these properties is the subject of the sentence. The important thing to realise is that, according to Keenan, a subject need not have all these properties; he is merely trying to get towards a more comprehensive view of the characteristics that subject exhibit i.e. *towards a universal definition of subject*. 
His first step in doing so involves distinguishing a privileged subset of sentences in any language, which he terms semantically basic sentences, or b-sentences, the subjects of which he calls basic subjects, or b-subjects. Subsequently, he claims, valid criteria can be derived to determine the b-subjects of the particular b-sentences, and once the b-subjects are identified, the full set of properties characteristic of b-subjects in that L can also be established. Finally, once the full complement of b-subject properties is obtained, subjects of non-basic sentences can be defined to be those NPs which exhibit a clear preponderance of the properties characteristic of the b-subjects.

He then proceeds to provide a formal definition of a b-sentence of a language, shown below (Keenan, 1976, pg. 307):

For any language L,

(A) The syntactic structure x is semantically more basic than a syntactic structure y if, and only if, the meaning of y depends on that of x. That is, to understand the meaning of y it is necessary to understand the meaning of x.

(B) A sentence in L is a basic sentence (in L) if, and only if, no (other) complete sentence in L is more basic than it.

Let’s see how Keenan’s definition of a b-sentence applies to the following sentences.

(3.2) a. Fiona is an idiot
b. Dave thinks Fiona is an idiot
c. He kicked him
d. Dave kicked Rory

First of all, using (A), it is evident that (3.2.a) is more basic than (3.2.b), since we cannot understand the meaning of the latter without understanding that of the former. Concerning (B), the b-sentences in any language are defined to be the maximally basic structures having the category ‘sentence’, although the theory does not require that a sentence be in the set of b-sentences if the only other sentences more basic than it are too context dependent for their meaning i.e. they do not express complete thought e.g. in English, therefore, (3.2.c) is more basic than (3.2.d).

Keenan further shows that b-sentences have certain syntactic and semantic properties which facilitate the identification of a large set of them. The syntactic test for b-sentencehood of a given sentence (as opposed to a less basic sentence) is whether or not the sentence has more syntactic ‘potential’ (than the less basic sentence) i.e. whether certain syntactic operations\(^4\) can be unrestrictedly carried out on the sentence e.g. in (3.3) below, (3.3.a) is more basic than (3.3.b).

\(^4\)The ‘syntactic operations’ he cites include embedding, adjoining to other sentences, nominalization, relativization, topicalization, pronominalization
The semantic properties of b-sentences generally require that all b-sentences be structurally unambiguous e.g. the passivization of a sentence generally results in a more ambiguous sentence than its active counterpart because it requires that the referent of the object NP be independently identifiable from that of the agent, and because the patient is more of a topic in the passive than it is in the active. Also, given the addition of adverbials, for example, the passive sentence can be rendered even more ambiguous, e.g. in (3.4), (3.4.b) is more complex, according to Keenan, than (3.4.a).

(3.4) a. The police arrested John willingly (active)
    b. John was arrested by the police willingly (passive - more complex)

Keenan’s SPL

He then provides a structured list of 30 properties of a syntactic, semantic and pragmatic nature, that he claims subjects characteristically possess. He calls this list the ’Subject Property List’ or SPL. This list helps to identify the subject, or lack thereof. Keenan separates these properties into distinct parts, firstly the Autonomy properties, then the Case Marking properties, the Semantic Role of the NP and then the Immediate Dominance property, all of which will be listed and explained briefly here.

Autonomy Properties

1. Independent Existence
   The subject entity must be able to exist independently from the action of the sentence i.e. ‘I am writing this paper’, this paper cannot exist without the act of writing it, but I can, hence I is the subject of this sentence.

2. Indispensability
   A nonsubject, depending on the type of the verb, can often be extracted from the sentence. This works best with the intransitive verb type, i.e. ‘John sleeps (all night)’. Here all night is the nonsubject and without it the sentence is still perfectly grammatical. Whereas if John was extracted *sleeps all night is not grammatical. John is indispensable to the grammaticality of the sentence and is therefore the subject.

3. Autonomous Reference
   This states that NP’s that are subjects should be determinable at the moment of utterance. An NP whose reference is dependent on that of another NP within the sentence is usually not the subject.
4. **Absolute Reference**

When a sentence is true we expect the subject to represent some entity whether it be concrete or abstract. The object on the other hand is not obliged to fulfill such a condition. We could have ‘I want to write a novel’, here *I* refers to an entity, *me*, but *a novel* does not have to, as it hasn’t been written yet. It is harder to suspend the reference of a subject than of any other referential NP. Subjects have wider scope than nonsubjects. They are usually the leftmost occurring NP in the sentence.

**Case Marking Properties**

Usually subjects are not case marked if any of the NP’s are not case marked. Transitive and intransitive subjects, though, are marked but transitive objects are not case marked. The subject can change case to possessor case or nonsubject agent case. For more information on this please refer to Keenan’s 1976 paper.

**Semantic Role**

The subject is usually the agent of the sentence but not when there is no agent involved, when there is no action involved, in sentences of the type ‘John is tall’. The subject usually expresses the addressee. It also normally has the same case marking, position and verb agreements as the causer NP. This property is akin to intuition. A person usually determines the subject from the semantics of the sentence.

**Immediate Dominance**

Keenan says that subjects are immediately dominated by the root node. This is true of English where the subject is the only NP immediately dominated by S but when it comes to Irish, for example, which is a VSO language, there is more than one NP which can be dominated by the root node, i.e. 

\[ S \rightarrow VP, NP, NP \]

Keenan does however contend that this Immediate Dominance property does not hold for VSO languages like Welsh. He also refers to the *Accessibility Hierarchy* which is another feature that he relates to subjects. He asserts that the subject is normally the first NP in the phrase, i.e. the most accessible NP. The further they are down this hierarchy the less likely they are to be the subject. This is not a property in itself but it does give a slight input into the subject position.

‘Towards a universal definition of subject’ is not quite enough

In short, Keenan’s attempts to provide a universal definition of subject went a long way, but eventually they weren’t enough to tackle the problem of whether or not subject is purely universally definable, hence the title *Towards a universal definition of ‘subject’*. The
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notion of subject is based on intuition, and so, clear-cut rules for defining it are impossible. Therefore, one can only assume that the notion of subject (and thus, SUBJ in HPSG) is in fact undefinable, and by comparison, the notion of complement (and thus, COMPS in HPSG), a significantly more complex grammatical function, is also undefinable. Hence, in line with these arguments, LFG would obviously not have been a suitable candidate as my choice of formalism for the analysis of clitics in this project. A particular version of HPSG remained, therefore, the most suitable candidate.

3.3 An evolving HPSG

In Chapter 2, I mentioned that HPSG originated in Stanford University and in the Hewlett-Packard Laboratories in the 1980s as an expansion of GPSG and on account of the work of Ivan Sag and Carl Pollard. Since its creation it has undergone quite an evolution.

3.3.1 HPSG1 (Pollard and Sag, 1987)

The 1987 version of HPSG provided by Pollard and Sag in Information-based Syntax and Semantics, colloquially known in the literature as HPSG1, had its various advantages, as discussed in the previous chapter. However, their focus was placed upon explaining and illustrating foundational issues of the HPSG formalism with a narrow range of linguistic problems considered. Therefore it seemed more appropriate to look at their subsequent work to see if any modifications or improvements were incorporated, with the possibility of using these analyses in my project. The book’s account of subcategorization, I might add, used a ‘flat’ SUBCAT list.

3.3.2 HPSG2 (Pollard and Sag, 1994, Ch.1-8)

Their 1994 book, Head-Driven Phrase Structure Grammar, demonstrates the applicability of the 1987 theory by covering a wider range of empirical problems and, in so doing, it introduces a great deal more detail and complexity into the theory. The account of subcategorization provided in this work also used a ‘flat’ SUBCAT list with no recourse to grammatical functions. A likely option, I therefore carefully examined and researched this framework to find out not only how well it might correlate with the problem posed

5See §3.3.3 and Borsley (1987, 1989, 1990) for more information on the discrimination of SUBJ, COMPS (and SPR)

6It is worth pointing out, for reasons of clarification and simplicity, that the first version of HPSG is commonly referred to as HPSc1 and is that presented in Pollard and Sag (1987). The second version, known generally as ‘standard HPSG’, is also called HPSc2 and was presented in the first eight chapters of Pollard and Sag (1994). Following the arguments and proposals of Robert Borsley in Borsley (1987, 1989, 1990), chapter nine of Pollard and Sag (1994) featured several further revisions, and is typically referred to in the literature as ‘revised HPSG’ or HPSc3

7A ‘flat’ SUBCAT list is one which has no recourse to grammatical functions
by clitics, but also how extensive its coverage might be of the syntactic phenomena of language.

3.3.3 Borsley and HP SG3 (Pollard and Sag, 1994, Ch.9)

Many linguists and syntacticians would consider HPSG2 as the ‘bible’ of HPSG. It would also be regarded by many as the most significant contribution to natural language syntax within the last decade. However, inadequacies in any theory are inevitable and the well-known linguist Robert Borsley noticed certain deficiencies in HPSG2 which he based mainly upon one essential distinction. HPSG1 and HPSG2 both analysed the notion of the subject by identifying the subject of a given head as the first or leftmost member of that HEAD’s SUBCAT list. The SUBCAT list used was ‘flat’ i.e. it had no reference to grammatical functions. However, a lot of other current syntactic theories, including particular versions of HPSG, now posit a distinction between subject and complements in their account of subcategorization. One such theory is the version of HPSG provided by Borsley. This version of HPSG argues for a fundamental distinction between subjects and complements in the most direct way possible by introducing the distinct corresponding features SUBJECT (SUBJ) and COMPLEMENT (COMPS)\(^8\). Borsley contends that, due to its failure to provide such a distinction, HPSG2 fails to account for the analysis of certain important syntactic generalizations. The strength and depth of his arguments encouraged Pollard and Sag to revise the theory by incorporating many of his ideas to form a new version of HPSG referred to in the literature as HPSG3\(^9\).

3.3.4 Borsley’s arguments

Borsley’s critiques of HPSG2 were quite numerous. However, I have chosen to discuss only three of them, as I feel a detailed account of them isn’t ultimately of major contribution to the argumentation provided here in favour of his HPSG3. The three I have chosen to discuss concern nonhead categories, Welsh VSO clauses and the syntactic role of specifiers.

Nonhead categories

One critique made by Borsley addressed the fact that it does not permit a simple characterization of nonhead categories. This is due to its permission of nonheads to be either lexical (e.g. markers), saturated (e.g. S, NP) or almost-saturated (e.g. VP, predicative AP). His SUBJ/COMPS distinction, however, eliminates this complication under which nonheads can be characterised simply as [COMPS <>] phrases. They may still be unsaturated via one of the other valency features.

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\(^8\)Borsley also ultimately created a third valence feature called SPR corresponding to specifiers

\(^9\)HPSG3’s approach to subcategorization is therefore solely based on the use of the three valency lists (SUBJ, COMPS and SPR) combined with the use of SUBCAT as the append of the three. Later versions of HPSG3, such as those proposed by Manning and Sag (1999), renamed SUBCAT as ARG(UMENT)-ST(RUCTURE) (see §3.4.3)
Welsh VSO clauses

His distinction applied to the analysis of Welsh VSO finite clauses also led to alterations in HPSG2, notably the revision of the Schema 3 of Immediate Dominance to introduce a new subsort of headed-structure called head-subject-complement-structure. He uses his alternative HPSG approach with Welsh in his 1989 paper and analyses sentences like the following:

(3.5) Gwelodd Emrys y ddraig
    Saw Emrys-NP 3sg the dragon
    ‘Emrys saw the dragon’

He suggests that, for (3.5), gwelodd would have the following category feature.

\[
(3.6) \begin{array}{l}
\text{CAT:} \\
\text{HEAD: verb[fin]} \\
\text{(SUBJ:} \langle NP \sqcap [3rd,sing] \rangle) \\
\text{COMPS:} \langle NP \sqcap [-pro] \rangle
\end{array}
\]

The HEAD feature in (3.6) contains the usual information about whether the verb is finite or non-finite, in this case it is finite. Instead of one SUBCAT list, there is a SUBJ valency feature and a COMPS valency feature. SUBJ contains the information about what kind of subject the verb can combine with, in this case it is a 3rd person singular NP. COMPS encodes any other complements, and here it is a non-pronominal NP. There is also a separate index referring to these two features, which will single out any subject agreement.

Later in his analysis Borsley found that this approach runs into problems for Welsh - it overgenerated and predicted impossible phenomena. These problems were avoided, however, when he left the SUBJ feature empty and incorporated the subject as just another element on the COMPS list. He realised, therefore, that SUBJ is not the most sensible notion for a VSO language, a realisation which, in turn, also contributed to my reasons for using a flat SUBCAT approach for French\(^\text{10}\). Thus, while he argues for the discrimination of grammatical functions, he argues that only one of them is relevant to Welsh sentence structure.

Specifiers

Borsley also argued for the provision of a third valence feature, SPR, representing specifiers, something to which HPSG2 had no direct reference. Specifiers in GB theory, on the other hand, play a central role in the X-bar schema. Chomsky (1981, 1986) claims that the specified element is the head, and the specifier bears the same grammatical relation (i.e. the SPECIFIER relation) with respect to that element that subjects bear with respect to the finite VP. This relation is configurationally defined by the traditional X-bar schemata below:

\(^\text{10}\)For a full explanation of this point, see Decision time
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\[
X'' \rightarrow Y'', X \\
X' \rightarrow Y'' X^0
\]

Although subjects are not the same thing as specifiers, the above GB rules show that the theory considers them as a kind of specifier. Specifiers differ from subjects in that they lack the potential to be semantic arguments; instead their semantic contribution is more abstract, typically quantificational or degree-denoting in nature. In addition, specifier positions do not seem to be available for obligatory control as subjects are, nor does raising of a specifier to a certain higher predicate exist. In some languages (e.g. German) they can be regarded as heads of their phrase. Borsley’s argument was that one must posit distinct grammatical relations for subject and specifier, namely SUBJ and SPR, given evidence in sentences like in (3.7)\textsuperscript{11} where both appear on the same head.

(3.7) a. (Jo) is [five and a half feet] tall
     b. We consider (Dave) [too] radical

3.4 SUBCAT, ARG-ST, and VALENCE

In this section I give an account of the history of subcategorization in the evolving HPSG. The reason for so doing is to find out which type is the most appropriate for the analysis of this project.

3.4.1 VALENCE

Along with the three distinct valency lists, Borsley (1987) deemed it necessary to posit some kind of valence principle, equivalent to the Subcategorization Principle of HPSG2, to guarantee that specifications for required subjects, complements and specifiers of a given constituent are uniformly removed on the phrasal projections of that head as they become satisfied. Following his proposal, a new principle for HPSG3 called the Valence Principle was devised and it is stated as follows (Pollard & Sag, 1994, pg. 348):

\[
\text{In a headed phrase, for each valence feature } F, \text{ the } F \text{ value of the head daughter is the concatenation of the phrase’s } F \text{ value with the list of SYNSEM values of the } F\text{-DTRS value}
\]

This principle thus governs combinatorial saturation by ‘checking off’ the combinatorial requirements of a lexical head. This new approach hence saw the values of the three valence features being cancelled off in a ‘categorial grammar-like fashion’ as a head projects a phrase. With these modifications taken into account Pollard and Sag looked upon their new HPSG3 as a lexically based X’-theory.

\textsuperscript{11}In these two examples in (3.7), subjects are marked in round brackets and specifiers in square brackets.
3.4.2 SUBCAT

As a consequence of Borsley’s arguments, the three valence features and the new Valence Principle superseded the SUBCAT feature and the Subcategorization Principle of HPSG2. However, the SUBCAT list was not discarded. It was simply decided that it was no longer needed to play any kind of role in the satisfaction of valence requirements. This job was now assigned to SUBJ, SPR and COMPS. Instead, SUBCAT was kept as an attribute of lexical signs with no independent life of its own. Hence, it would no longer propagate up the syntax tree as an attribute of the CAT feature. On the other hand, it would just remain at the lexical level, and in virtue of the various identities between its list members and members of the valence lists, the SUBCAT list’s members became fully specified as the valence list values were identified with actual subjects, complements and specifiers accordingly. Once a complete phrase was constructed, the lexical head’s SUBCAT list would be fully specified and could be used as the locus of Binding Theory. In addition, SUBCAT’s value from now on would simply correspond to the ‘append’ of SUBJ, SPR and COMPS. Such a move was thought to prove advantageous for the following reasons:

1. It provided in HPSG3 an analog of the external/internal argument distinction, as generally adopted in GB
2. It solved certain technical problems, such as, allowing prepositions to take complements rather than things identical in SUBCAT list position to subjects
3. It was allowed recognition of the special features of subjects where grammatical functions were used
4. The preservation of SUBCAT allowed the HPSG binding theory to remain unchanged, rather than having to redefine it over the new valence lists

3.4.3 ARG-ST

In the Manning and Sag (1999) model, they begin their discussion by stating that their approach follows from the approach of HPSG3 where SUBCAT no longer captures ‘surface’ subcategorization, but is an attribute of only lexical signs. In this way, they claim that it summarises that value of a lexical sign and that it can be used to good effect to explain phenomena such as binding, linking, and ‘deep’ subcategorization. Consequently, they argue that SUBCAT has become similar to certain notions of argument structure, and hence chose to rename SUBCAT accordingly. To capture this new intuition, they assumed a new feature called ARGUMENT-STRUCTURE (ARG-ST). They emphasised, however, that ARG-ST is a syntactic representation, just like its predecessor SUBCAT, and that it should not be viewed as a partial semantic representation or some sort of substitute for one. Moreover, they claim that it is “a syntactic level wherein core arguments always outrank oblique arguments and where argument prominence effects are seen only within each of the two classes of core and oblique arguments” (Manning & Sag, 1999, pg. 6)\textsuperscript{12}.

\textsuperscript{12}Their model thus uses both ARG-ST and the three distinct valency lists, SUBJ, SPR and COMPS
Ash Asudeh also carried out some work on ARG-ST. Asudeh (1998) examines the syntactic and semantic properties of anaphors in HPSG with work being carried out in the broader context of ‘binding theory’ and ‘control theory’. The binding and control theories developed in his paper are based on ARG-ST which he claims is construed as an abstract linking representation between the level of lexical semantics (i.e. word meaning) and the level of syntactically relevant grammatical relations. He describes it as a representation of the other expressions that a given word or phrase must combine with in order to be semantically and syntactically saturated. He adds that all syntactically and semantically relevant arguments are present at the level of ARG-ST.

ARG-ST on phrases?

As already mentioned, ARG-ST can live at the lexical level. It is widely accepted, therefore, that it never propagates up the syntax tree. However, certain linguists, namely Müller (2001), Przepiórkowski (1999), Asudeh (1998) and Manning and Sag (1999), are not entirely sure about this and have proposed some interesting alternatives. In his dissertation on case assignment and the complement-adjunct dichotomy, Przepiórkowski (1999) remarks that it is a controversial issue as to whether ARG-ST should in fact be inherited from words or phrases. The proponents of the latter stance, he claims, would argue that certain phenomena are impossible to analyse without assuming ARG-ST on phrases. However, the opponents, he states, would have the opinion that the presence of the argument structure of a lexical item on all projections of this item “endangers the restrictiveness (and hence, explanatory force) of the theory [HPSG]” (Przepiórkowski, 1999, pg. 435).

In other words, if ARG-ST were present on phrases, it would allow for a kind of nonlocal subcategorization thought to be uncharacteristic of natural language e.g. a verb may be lexically specified as subcategorising for an NP whose argument structure may itself contain, for example, a dative NP. Manning and Sag (1999, pg.47-48) also reflects on this problem and suggests making ARG-ST a head feature. Then it would be passed up to projections via the Head Feature Principle. However, he also claims that this would harm the notion of locality standardly assumed in HPSG - since the ARG-ST list contains synsems, and since synsems contain the head feature, constituents will be able to ‘see’ indefinitely far into their complements’ arguments, and then these arguments’ arguments, and so on recursively. For these reasons, Przepiórkowski (1999) sketches a possible revision of his stance on ARG-ST on phrases, upon which the value of ARG-ST is inherited only under certain circumstances. He uses his prior data on case assignment in Polish to illustrate this revision and discovers that only the ARG-ST of semantically empty words (words who do not introduce their own CONTENT value) percolates to their maximal projections. In order to formalize this hypothesis he then claims it is necessary to posit ARG-ST as an attribute of category (and not head as he, Manning (1996) and Manning and Sag (1998) had previously assumed) with an additional constraint setting the value of ARG-ST on a phrase to that of its HEAD-DTR if this HEAD-DTR is semantically empty, and to the empty list, if it is not. Having ARG-ST as a category attribute in turn required that he reformulate many of his own previously proposed constraints. He showed overall that
ARG-ST can be specified at the phrasal level, and furthermore, that this was indeed desired in the analysis of certain Polish constructions. However, it is conventional for any syntactic analysis nowadays to assume that ARG-ST generally lives on lexemes or words, and not on phrases.

**ARG-ST and VALENCE**

Recent work has focussed on the analysis of data that involves dissociations between valency and argument structure more so than just the valence lists being a subset of the ARG-ST list. The ability to dissociate argument structure from valence in this way takes HPSG a certain distance away from the monolevel, monostratal roots of GPSG and early HPSG. Hence Manning and Sag (1999) aimed at better motivating the existence of two independent syntactic notions of valency and argument structure.

Since we generally assume that phrases do not have ARG-ST lists, ARG-ST does not change as a word’s arguments are saturated. In HPSG2 the Subcategorization Principle ensured that the SUBCAT of a headed phrase was the SUBCAT of its head-daughter, minus any SUBCAT elements that had been satisfied by complements to the head-daughter. After the switch from SUBCAT to valence lists, the Valence Principle had the same effect. Thus, in HPSG3, as the various Immediate Dominance schemata put phrasal units together, the argument requirements of the head of the phrase are satisfied and taken off the appropriate valence list. For example, a straightforward transitive verb like *admire* will have one item on its SUBJ list and one on its COMPS list. The head-complement schema combines the verb with its complement, and the valence principle ensures that the resulting VP now has its COMPS list empty, since it is no longer looking for a direct object. Similarly, when the VP combines with a subject, the projection of the VP, which is S, inherits the empty COMPS list, but also has an empty SUBJ list, since that argument has now been found also. However, the kind of argument cancellation ensured by the Valence Principle does not apply to ARG-ST, since the principle was defined to only apply to the valence lists SUBJ, SPR, and COMPS. The idea was that the valence lists encode grammatical relations, while ARG-ST encodes argument structure. This purpose of this ‘division of labour’ is so that grammatical relations encode the syntactically relevant behaviour of arguments, while argument structure represents the underlying arity of a word. Thus, although ARG-ST is still canonically defined as the **append** of the valence lists, there can be other relationships between the valence and ARG-ST lists.

ARG-ST differs from VALENCE in that there may be arguments which are never syntactically realised. For example, *pro*, in so-called ‘pro-drop’ languages such as Spanish, Japanese, Polish, is present on ARG-ST but not on VALENCE. In this way *pro* does not occur anywhere in the syntax tree in accordance with the traditional HPSG aversion to empty syntactic categories. Pro-drop is one of a class of cases, together with unbounded dependencies and **pronominal affixes** where arguments do not appear on this VALENCE list. However, they do appear on the ARG-ST list, which is one of the main claims that
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Miller and Sag (1997) make\textsuperscript{13}. But no configurational realization of them is possible and, according to Przepiórkowski (1999), they are subject to the same general rules of case assignment. Nevertheless, it makes sense to think of the value of ARG-ST of a word as simply the concatenation of values of the valence features SUBJ, SPR and COMPS in that order. Due to this close relationship, ARG-ST and valence weren’t distinguished for the first decade of HPSG. In fact, as mentioned above, Pollard and Sag still define both cancellation of arguments and binding in terms of SUBCAT. In summary, VALENCE represents the link between arguments and their surface realization, whereas the ARG-ST list provides the link between arguments and their semantic interpretation.

Binding and ARG-ST

ARG-ST in HPSG is the locus of Binding Theory. What happens therefore when there is a discrepancy between the append of the valence lists and the ARG-ST lists? The answer is that binding relations are still checked against the ARG-ST list, and not against the valence lists. Thus, the notions of command and binding needed must be stated on ARG-ST. Hence the reason for changing the notions of o-command, o-bound and o-free to a-command, as discussed in §2.12.1. Should our binding constraints therefore mention valence lists at all? By mentioning valence lists, the binding constraints would effectively not be defined solely on argument structure, since they need information regarding grammatical structure as well. In my approach, Binding Theory will be catered for on the flat SUBCAT list that I will be using. The principles of Binding Theory I will adopt are exactly those discussed in chapter 2 of this project.

Now I have fully described the various ways in which the different versions of HPSG cater for subcategorization. In summary, the SUBCAT approach of HPSG1 and HPSG2 uses a flat SUBCAT list which takes as its arguments a list of SYNSEM objects corresponding to the SYNSEM values of the other signs selected as complements\textsuperscript{14} by the sign in question. The HPSG3 approach organized subcategorization into three separate valency lists, SUBJ, SPR and COMPS and the SUBCAT list, the append of these, remained at the lexical level and was not inherited by phrasal signs. And finally, a more recent corollary of HPSG3, motivated by Manning and Sag (1999), kept these three valence lists but adopted ARG-ST instead of SUBCAT, giving ARG-ST the same function as SUBCAT but renaming SUBCAT in order to reflect the role of argument structure of the new feature.

3.5 Decision time

Considering the empirical evidence for the lack of definability of grammatical functions such as subject and complement, it certainly seems to be a step in the right direction to

\textsuperscript{13}I will explore this issue in great detail in §5.4

\textsuperscript{14}When I say ‘complements’, I imply complements in the traditional grammarian sense, thus including subject
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discard an approach to subcategorization by means of grammatical functions. This would mean therefore, disregarding the approaches of both HPSG3 and Manning and Sag (1999).

Therefore, if both SUBJ and COMPS are undefinable, how is subcategorization going to be handled by the chosen HPSG framework? The simple answer to this question is to adopt just one single list for subcategorization, that is, a flat SUBCAT list, identical to that of HPSG2. I expect that this will prove, in turn, to be a far simpler approach than that of the two aforementioned approaches which have to cater simultaneously for three separate valency lists. Why have three separate lists when it is possible to combine them into one?

3.6 Conclusion

This chapter has focused on the background to the approach that I decided to take for the syntactic analysis of French clitic pronouns that I will later provide. The initial decision I had to face being the choice of syntactic formalism, I thus showed how HPSG suits this choice of project better than LFG (and GB, for that matter). Support for this decision was seen in the arguments of Keenan (1976) which proved that it is impossible to provide a universal definition of 'subject'. It was subsequently shown that Borsley thought that the standard version of HPSG was lacking in a small number of areas of its treatment of certain phenomena of natural language as well as in its treatment of subcategorization. Three of his main arguments were then explained, which were based essentially upon the notion of assuming a distinction between SUBJ, SPR and COMPS. The model of Manning and Sag (1999) was then presented, with the aim of discovering whether or not it would be a more suitable approach than that of HPSG2 given its introduction of the new lexical feature of signs called AGR-ST. An account of how AGR-ST can be inherited by phrasal nodes, based on Manning (1996) and Manning and Sag (1999), was then given, describing how appropriate this is for the analysis of natural language in general. ARG-ST’s relationship with valence was then described and I found that, overall, the valence lists represent the link between arguments and their surface realization, whereas the ARG-ST list provides the link between arguments and their semantic interpretation. ARG-ST’s interaction with Binding theory was then examined. I learned that ARG-ST is in fact the locus of HPSG Binding Theory.

Given Keenan’s influential arguments the main conclusion I am making here is that there is no need, in any account of subcategorization, to posit distinct features for these notions. I have chosen, therefore, to categorically disregard HPSG3’s approach to subcategorization. On the other hand, the approach of HPSG2, which adopts a flat SUBCAT list with no reference to grammatical functions and their corresponding valency lists, was therefore chosen as the appropriate framework for the analysis in question in this project.

What are the other properties of the version of HPSG of my chosen approach? SUBCAT and ARG-ST will both be included. Each will have a different function however. SUBCAT, fundamental to any syntactic analysis, will be used exclusively to encode subcategorization information. It will be free to propagate up the syntax tree into phrasal nodes just like in
HPSG2. ARG-ST on the other hand will be entirely devoted to the argument structure or arity of the sign in question. Furthermore, because it has no necessary commitment to grammatical functions, despite the decision of Manning and Sag (1999) to include such a commitment, ARG-ST is fully suited to be included in this version of HPSG. Moreover, given that my project is one which analyses pronouns, the primary role of ARG-ST will ultimately be to enforce the rules Binding Theory on the French clitic system. A challenge I will have to face in my analysis of French clitics will be to discover where exactly ARG-ST resides with respect to French clitics and how they interact with ARG-ST\textsuperscript{15}.

How suitable will the new choice of formalism be for the analysis of clitics in French? Will ARG-ST need to be catered for at phrasal level in the forthcoming analysis of clitics? Will clitics actually be realized on ARG-ST? How much will the role of SUBCAT play in all this? These are all questions that remain unanswered from this chapter but which will be answered in the forthcoming chapters.

From a general point of view, it should be mentioned that different frameworks are more appropriate to account for different empirical evidence. As much as the differences between these frameworks represent different views on language and may lead to significant empirical differences, it is important to note that HPSG (and LFG) is a formal representation of hypotheses on how language works. The keyword here is 'hypotheses'. Language is part of science, and so it is tentative, meaning that it provides approximate explanations for phenomena, which are continuously improved. In other words, the views expressed by neither HPSG nor LFG nor GB etc. represent the ultimate truth. The major task I have to undertake is concerned with applying the HPSG framework, as described in this chapter (and based on the previous chapter), to French clitic pronouns. This, I expect, will enable me to judge how appropriate the chosen version of HPSG is for the syntactic analysis of French clitics.

\textsuperscript{15} Miller and Sag (1997) have already carried out research on this subject and I deal with this directly in the following Chapters 4 and 5. However, I have chosen to try out my own approach outlined above and to test whether or not it will work for the French clitics I choose to analyse.
Chapter 4

French clitic pronouns
4.1 Introduction

Clitics are, to a large extent, undetermined in relation to their exact syntactic status. Their syntactic behaviour has largely contributed to this situation. They are not merely verbal arguments. They can be the arguments of adjectives and nouns. Nouns are quite uniform in terms of their distribution. Their Romance pronominal constituent counterparts, however, exhibit a more noncanonical kind of distribution. The aim of this chapter is to investigate this syntactic mystery, but concentrating specifically on the French clitic system.

Having examined the HPSG framework thoroughly and chosen a version of HPSG to analyse French clitics, this chapter is now devoted to a full description of the French clitic pronouns that I shall later analyse. The pronouns I will concentrate on are those listed in §1.5. I shall begin by giving an overview of the nature of pronominalization in French and discuss briefly the types of pronouns that exist in French. I shall then provide a general discussion on clitics in natural language based on the theories of Arnold Zwicky in Zwicky et al. (1994). I will then constrain the discussion of clitics to French clitics, giving a comprehensive overview of their background and history according to various syntactic frameworks that have been adopted to analyse them. Then I will introduce the problems clitics pose to natural language syntax, with particular reference to French, alongside which I will outline the various phenomena that underlie the clitic system, namely, clitic climbing, clitic doubling, and clitic trapping. Finally, I will give a brief overview of how the French system of clitics compares to that of other languages.

4.2 Pronouns in French

Despite much controversy in grammatical literature over their exact definition, it is generally accepted that pronouns are words that substitute for nouns. In French, there are a lot of different kinds of pronouns. These pronouns are sorted into many different categories according to their particular properties. The French system of pronouns is quite a complex system. It could be argued that the English system is not as complex. The reason the French pronominal system is regarded as being complex is due to its classification of pronouns. One such classification, referred to by Kayne (1975) as ‘weak pronouns’, constitutes the French system of clitic pronouns, a subset of the overall pronominal system. These clitics are, as I shall point out, the cause of much controversy in the linguistics literature, due to the uncertainty that surrounds their status. I shall deal with this subset of pronouns further on in this chapter but, in the first instance, I will give a brief account of the types of French pronominals and give examples for each category. In broad terms, French pronominals are divided into two groups, namely, personal pronouns and impersonal pronouns.
4.2.1 Personal pronouns

The label of ‘personal pronoun’ implies that the pronoun changes according to the grammatical person that it represents. If the personal pronoun is specified for person as first or second person, it denotes a person whose name can be unknown, as the example below indicates.

(4.1) a. C’est toi, Phil? - Oui, souffla-t-il
   Is that **you**-STRESSED, Phil? - Yes, **he**-SUBJ PRO whistled
   ‘Is that you, Phil? ‘Yes’, he whistled’

   b. Anne aimait peu qu’on lui parlât de la guerre
   Anne didn’t like that **we**-SUBJ PRO spoke to **her**-OBJ PRO about the war
   ‘Anne didn’t like that we spoke to her about the war’

   c. C’est bien simple, mais il fallait le trouver
   It’s-EXPL simple, but **it**-EXPL was necessary to **it**-NEUTRAL PRO find
   ‘It’s simple, but it had to be worked’

If the personal pronoun is of third person, it represents a person, a thing or an idea, as (4.1.a), (4.1.b) and (4.1.c)\(^1\) illustrate.

Table (4.1) below presents the entire system of French personal pronouns. It should be mentioned that only columns two, three and four constitute clitics. **Stressed pronouns** are not clitics as they are ‘strong’ and independent in nature (Kayne, 1975). Therefore, they do not feature in the analysis of this project. They will feature, however, in cases of ungrammatical sentences whose main verb wrongly subcategorizes for a clitic, when it should subcategorize for a strong form or stressed (disjunctive or tonic) pronouns.

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**Plural**

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Table 4.1: Conjunctive and disjunctive pronouns (clitics and stressed pronouns)

\(^1\)EXPL here implies ‘expletive’ - it doesn’t refer to anything
CHAPTER 4. FRENCH CLITIC PRONOUNS

The French personal pronouns are not all personal. For example, \textit{tu} (‘you’) is a very specific pronoun because it cannot be thought of outside of a situation where \textit{je} (‘I’) is not involved. This is not the same for \textit{il} (‘he’) and \textit{elle} (‘she’), which are excluded from the \textit{je-tu} relation. As they denote nothing specifically, they express more so the non-personal side of things, that is to say, everything that is not \textit{je} and \textit{tu}.

Due to the strong-weak distinction posited by Kayne (1975), the conclusion can be made that not all of the French personal pronouns really exhibit pronoun status. For instance, if \textit{je} and \textit{tu} function as real pronouns, \textit{moi} (‘me’), on the other hand, acts like a full overt NP, because it exhibits all the functions of the noun, can be accentuated and is predicative. Another interesting remark on the personal pronouns of French concerns the ambiguity of forms like \textit{je}. Semantically, it is a noun but it cannot exist on its own without a verb - an interjective sentence such as \textit{Pierre!} is well-formed, but the sentence \textit{Je!} is not. Moreover, subject pronouns in French cannot normally be separated from their verb by adverbials or parenthetical expressions, as shown in (4.2). In other words, the pronoun \textit{je} is a true clitic pronoun, due to its ‘weak’ nature.

(4.2) a. *Je souvent mange avec Laura
   \textit{cl.(nom)} often \textit{eats with Laura}
   \textit{‘I often eat with Laura’}

b. *Il, semble-t-il, ne prend pas de café
   \textit{cl.(nom), it-EXPL seems, isn’t having coffee}
   \textit{‘He, it seems, isn’t having coffee’}

Many of the problems, it seems, that learners have with French clitics are concerned with a failure in recognising which pronoun the language requires in a particular structure. This is especially true of indirect object clitics. The structure of English and French verbs bearing pronominal clitics is not the same, even when the verbs have similar meanings. This is illustrated in the sentences below.

(4.3) a. Ils ont conseillé à Pierre de partir
   \textit{cl.(nom) lui cl.(dat) ont conseillé de partir}
   \textit{‘Ils lui ont conseille de partir’}

b. They advised Pierre to leave
   \textit{They advised him-OBJ PRO to leave}
   \textit{‘They advised him to leave’}

As can be seen in (4.3.b), \textit{Pierre} is the direct object of \textit{advised}. However, in the French equivalent, (4.3.a), \textit{Pierre} is the indirect object of \textit{conseiller} (‘advise’).

In French, despite the important agreement features of pronominals (person, number and gender), it is their function (‘fonction’) that is the most crucial thing to understand.

\footnote{See §4.6.1}

\footnote{As can be observed by the English translations in (4.2), they are both grammatical. That is to say, there is no such constraint put on subject pronouns in English, due to their nonclitic-like status.}
about them. Moreover, it is the particular function of clitics that makes them stand apart from one another. In general, the functions of personal pronouns take the form of two types - they are either conjunctive pronouns or disjunctive pronouns. The former type corresponds to all clitics. Conjunctive clitics are joined to the host verb and cannot be accentuated. They are called ‘conjunctive’ because their function forces the pronoun to be closely joined to the verb. The latter type corresponds to all stressed pronouns. They are normally detached from the verb by either a pause or a preposition and are in general accentuated. Stressed pronouns are called ‘disjunctive’ because their function forces them to be disjoined from the verb.

Two different words for ‘you’

There are two different words for ‘you’ in French: \(tu\) and \(vous\)\(^4\). They are not interchangeable, so it is crucial to understand when and why to use each of them. Otherwise, one may inadvertently insult someone by using the wrong ‘you’. \(Tu\) is the familiar ‘you’. It demonstrates a certain closeness and informality. It is used when speaking to a friend, peer/colleague, relative, child, or pet. \(Vous\), on the other hand, is the formal and plural ‘you’. It is used to show respect or maintain a certain distance/formality with any person. In addition, \(vous\) is always used when you are referring to more than one person (or thing). It is used when speaking to someone with whom one is not well acquainted, an older person, a figure of authority, anyone to whom you wish to show respect, and two or more people.

4.2.2 Stressed pronouns

French stressed pronouns, as referred to above, are used to emphasize a noun or pronoun that refers to a person. Whilst they correspond in some ways to their English counterparts, they differ in other ways. There are nine forms in French: \(moi, toi, lui, elle, nous, vous, eux, elles\). On the other hand, due to the fact that the clitic pronouns cannot be stressed, they are referred to in French as \(les pronoms atones\) or \(unaccentuated pronouns\).

4.2.3 ‘Accent tonique’ - French tonic accent

In French, each syllable of a word and each word is pronounced with the same emphasis, except for the final syllable of each rhythmic group. In order to emphasise a specific word in French, the tonic accent must be used. The stressed pronouns of French are almost invariably pronounced with this accent. The weak clitics, as I shall illustrate in §4.6.1 cannot be accentuated in this manner. The French tonic accent generally occurs, therefore, in three different environments:

1. The word to be emphasized is placed at the beginning or end of the sentence, as in (4.4):

\(^4\)There are even verbs for them: \(tutoyer\) means to call someone \(tu\) and \(vouvoyer\) means to call someone ‘vous’
(4.4) a. Luc, je l’aime bien  
   b. Je l’aime bien, Luc  
   c. I like Luc a lot  

2. When emphasizing people, stressed pronouns are used, as in (4.5):  

(4.5) a. Moi, je n’en sais rien  
   b. Je n’en sais rien, moi!  
   c. I don’t know anything about it  

3. The types of sentences in both (4.4) and (4.5) are used together for particularly strong emphasis, as in (4.6):  

(4.6) a. Luc, c’est lui qui l’a fait!  
   b. It’s Luc, he’s the one who did it!  

4.3 Impersonal pronouns  

The label ‘impersonal pronoun’ implies that these pronouns do not change according to grammatical person. Some of them change, however, to agree in gender and number with the noun that they replace.  

1. Adverbials  
   These include y and en. y replaces a+noun, en replaces de+noun. Both of these pronominals are clitics.  

2. Demonstratives  
   These ‘strong’ pronouns refer to a previously mentioned noun - the demonstrative pronouns of the French languages include celui, celle (‘this’), ceux, and celles (‘those’).  

3. Indefinite demonstratives  
   These have no specific antecedent. They include ce, ceci, cela, and ça. The demonstrative ce is analysed in the literature as a clitic.  

4. Indefinites  
   These are unspecific pronouns, such as autre (‘other’), certain (‘certain’), and plusieurs (‘several’).  

5. Interrogatives  
   The interrogative pronouns ask ‘who’, ‘what’, or ‘which one’. In French, they are qui, que, and lequel.  

6. Negatives  
   These negate the noun that they replace e.g. ne...personne, ne...rien. The negatives of the French language are, for the most part, analysed as clitics.
7. **Possessives**
   These replace possessive *adjective+noun* and are *mien, tien, sien*.

8. **Relatives**
   These link clauses *qui, que*, and *dont*.

9. **Indefinite relatives**
   These link clauses but are unspecific *ce qui, ce que*, and *ce dont*.

As mentioned above, the indefinite pronouns of the French language that constitute pronominal clitics are the adverbials, the indefinite demonstratives and the negatives. However, due to my choice to only examine the personal pronominal clitics of the French language, I have chosen not to deal with any of the above categories of pronouns except for the adverbials (*y* and *en*) as to do so would require a substantially more amount of time and research. However, this task suggests itself for future work.

### 4.3.1 ‘*y*’ and ‘*en*’

Given the fact that they are small as words, it might be considered that the application of these two clitics is insignificant, in some way. This, however, is not the case. The clitics *y* and *en* are perhaps the most complex of the entire French clitic system and deserve more attention, in terms of analysis, than all the others. The general properties of both of these clitics are outlined below.

**‘*y*’**

This clitic usually plays the same role in sentences as phrases which follow the verb and are introduced by prepositions like *a* (‘to, in, on, at’), *en* (‘in’), *dans* (‘in’), *sur* (‘on’), *sous* (‘under’) etc. Each occurrence of a clitic in a sentence is, as normal, glossed with this case.\(^7\)

\[(4.7)\] a. Je vais à Paris demain
   b. J’y vais demain
      cl.(nom) cl.(loc) going tomorrow
      ‘I’m going there tomorrow’

\[(4.8)\] a. Elle vit dans une maison

\(^5\)See (4.7) - use of *a*

\(^6\)See (4.8) - use of *dans*

\(^7\)If the case gloss for a clitic, most frequently, *y* or *en*, is left out, this implies that there is no direct equivalent case in English. However In Chapter 5, a HPSG CASE hierarchy created by Miller and Sag (1997) will be discussed whereby specific case markings will be given to phrases that alternate with *y* and those that alternate with a dative NP
b. Elle y vit
cl.(nom) cl.(loc) lives
‘She lives there’

Although y can generally replace any phrase of this type, both concrete and abstract, it is usually limited in its use to non-animate entities, e.g.

(4.9) a. Je pense souvent à la retraite
b. J’ y pense souvent
cl.(nom) cl.(y) often think
‘I often think about it’

(4.10)a. Elle est fidèle ses principles
b. Elle y est fidèle
cl.(nom) cl. is faithful
‘She if faithful to them’

In a number of common constructions, y can be used without very specific meaning attached to it e.g.

(4.11) Pensez-y!
Think about cl.(y)
‘Think about it!’

(4.12) J’y suis, j’y reste
cl.(nom) cl.(y) am, I cl.(y) stay
‘Here I am, here I stay’

(4.13) Ça y est!
‘All done!/That’s it!’

(4.14) Je n’y suis pour rien
cl.(nom) NEG cl.(y) am for nothing
‘It’s nothing to do with me’

The constraints of other verbs ensure that y is used to refer to non-human objects which occur with verbs like penser à (‘think about’) and tenir à (‘stick to’) where à does not introduce an indirect object e.g.

(4.15)a. Je pense à la guerre

Ça y est is a very commonly used expression whose general purpose is to indicate the completion of a task
b. J' y pense
   cl.(nom) cl.(y) think
   ‘I’m thinking of it’

(4.16)a. Je tiens à mes idées
b. J’ y tiens
   cl.(nom) cl.(acc) cl.(en) stuck
   ‘I’m thinking to them’

‘en’

The clitic *en* is used to replace phrases introduced by the preposition *de* which follow the verb. Where these include a noun, *en* can refer to both human and non-human nouns as this sentence illustrates:

(4.17)a. Il a déjà parlé de son idée
b. Il en a déjà parlé
   cl.(nom) cl.(en) has already spoken
   ‘He has already spoken about it’

(4.18)a. Il a empêché Jean-Pierre de travailler
b. Il l’en a empêché
   cl.(nom) cl.(acc) cl.(en) stopped
   ‘He stopped him (from) working’

Verbs such as *permettre* (‘allow’), *défendre* (‘forbid’), and *interdire* (‘forbid’), with a construction *à quelqu’un de faire quelque chose* (e.g. to allow someone to do something), are, however, an exception to the generalization that *en* can replace phrases introduced by *de*. The infinitival clause in these structures is treated as the direct object clitic i.e. the neutral clitic *le* e.g.

(4.19)a. Elle a permis à Jean-Marie d’emprunter sa voiture
b. Elle le lui a permis
   cl.(nom) cl.(acc) cl.(dat) allowed
   ‘She allowed him to do it’

(4.20)a. Il a défendu à Suzanne de sortir ce soir
b. Il le lui a défendu
   cl.(nom) cl.(acc) cl.(en) forbade
   ‘He forbade her to do it’

*en* is also used when numerals and quantifiers stand alone after a verb. It is interesting to note that in English a pronoun is normally absent in these cases, but in French use of *en* is obligatory e.g.
(4.21)a. J’ai acheté une douzaine de roses  
b. J’ en ai acheté une douzaine  
c. (nom) cl.(en) bought a dozen  
‘I bought a dozen’

4.3.2 Intrinsic clitics

There is a small set of verbs in French which involve \textit{y} or \textit{en} as an integral part of their structure. In linguistics, the clitics associated with such verbs are called \textit{intrinsic clitics}. Common examples of verbs bearing intrinsic clitics include:

(4.22) Il y a cl.(nom)-EXPL cl.(y) has  
‘There is/there are’

(4.23) s ‘en aller cl.(refl) cl.(en) to go  
‘to go off/away’

(4.24) en vouloir à cl.(en) to want prep(`a)  
‘to be angry/hold a grudge’

4.3.3 Auxiliary verbs in French

In order to give an account of \textit{clitic climbing}\footnote{Clitic climbing is not only triggered by auxiliary verbs. Cauastives, aspectuals, modals and restructuring verbs also trigger climbing. As already stated, these issues will be dealt with in section (§4.7), but for the moment, it will suffice to just provide a description of auxiliaries for the subsequent analysis of clitic climbing.} in French, primarily, it is necessary to describe the auxiliary verbs of the French language\footnote{I did not provide meanings for the corresponding infinitival derivatives but for infinitives with a re- prefix, this means ‘to do something again’}. An auxiliary verb is a conjugated verb used in front of another verb in compound tenses in order to help form the \textit{mood} and \textit{tense} of the overall verbal structure. In French, the auxiliary verb is either \textit{avoir} or \textit{Être}. All French verbs are classified by which auxiliary verb they take, and they use the same auxiliary verb in all compound tenses. Most French verbs use \textit{avoir}. However, so-called ‘verbs of movement’ are conjugated with \textit{Être} in compound tenses. The following is a list of verbs\footnote{See §4.7.1} (and their derivatives) that require \textit{Être}:

\begin{itemize}
  \item \textit{aller} - to go
  \item \textit{arriver} - to arrive
\end{itemize}
CHAPTER 4. FRENCH CLITIC PRONOUNS

• *descendre* (*redescendre*) - to descend/go downstairs
• *entrer* (*rentrer*) - to enter
• *monter* (*remonter*) - to climb
• *mourir* - to die
• *naitre* (*renaitre*) - to be born
• *partir* (*repartir*) - to leave
• *passer* - to spend time
• *rester* - to stay
• *retourner* - to return
• *sortir* (*ressortir*) - to go out
• *tomber* (*retomber*) - to fall
• *venir* (*devenir, parvenir, revenir*) - to come

These verbs are only conjugated with *être* when they are intransitive. When they are used transitively, *avoir* is the auxiliary.

(4.25)a. Je suis sorti-INTRANS
   I am gone out
   ‘I went out’

   b. J’ai sorti-TRANS la voiture
   I have gone out the car
   ‘I took the car out’

(4.26)a. Il est descendu-INTRANS
   cl.(nom) is came down
   ‘He came down’

   b. Il a descendu la valise
   He has descended-TRANS the car
   ‘He took the suitcase down’

In addition to the verbs above, all pronominal or reflexive verbs use *être* e.g. *se baigner* (‘to bathe (oneself)’), *s’habiller* (‘to dress oneself’). For all verbs conjugated with *être* in all of the compound tenses, the past participle has to agree with the subject in number and gender.
4.4 Clitics from a general point of view - Zwicky (1994)

All languages have elements with properties that are characteristic of independent words and some characteristic of affixes, in particular, inflectional affixes, within words. These elements act like single-word syntactic constituents due to the fact that they function as heads, arguments, or modifiers within phrases, but act like affixes in that they are dependent in some way on adjacent words.

Such a phenomenon can be seen clearly in the variety of examples that exist across certain languages. For example, in the Tagalog language, a substantial range of forms can occur only in position immediately after the first word of a clause.

(4.27)Hindi ko siya nakita ngayon
    Not I him/her have seen today
    ‘I haven’t seen him/her today’

(4.27) is an example of a sentence in Tagalog. It can be seen that the first person singular agent pronominal ko and the third person singular topic pronominal siya cluster together immediately after the clause-initial word hindi (‘not’). Furthermore, in English, a variety of forms of auxiliary verbs have reduced variants that are phonologically dependent on the word immediately preceding them, as in (4.28.a).

(4.28)a. Your friend from Chicago’s going to arrive soon
    b. Your friend from Chicago is going to arrive soon

Here the /z/ (or ’s) variant of is is attached to Chicago. Also, the possessive marker /z/ combines with an entire NP, though it is phonologically dependent on the last word of this NP i.e. your friend from Chicago’s arrival. Finally, unaccented object pronouns her, him and them have reduced versions, consisting only of a syllabic sonorant, which are phonologically dependent on an immediately preceding verb or preposition, as in

(4.29)We gave ’em to ’er

In French, as illustrated above, pronouns occur in weak (or ‘clitic’) versions that obligatorily precede the verb of their clause, whereas the corresponding strong phrases do not occur in that position. For example, in (4.30), the weak pronoun en immediately precedes the verb remplit (‘fills’), though a full PP such as, for example, de ce vin (‘with this wine’), would follow the direct object phrase (in this case un verre). All of these elements, and many more similar to them, in hundreds of other languages, have been labelled clitics, because they ‘lean’ on an adjacent word.

(4.30)Il en remplit un verre
    cl.(nom) cl.(en) fills a glass
    ‘He fills a glass with it’
4.4.1 ‘Clitic’ as an umbrella term

Zwicky et al. (1994) argue that the term ‘clitic’ should be understood in a broad fashion as an umbrella term and not as a genuine category in grammatical theory. He bases this argument on the intuition that umbrella terms correspond to problems or phenomena that present mixed properties and which do not embrace unified classes of phenomena or correspond to theoretical constructs. He points out that this does not imply that there are no constructs of theoretical interest under the umbrella of clitics. There are at least two such constructs - bound words (for example, the Tagalog second-position items in (4.27) above) and phrasal affixes. Due to the fact that there is almost nothing shared by all of the things that have been referred to as clitics, a lot of writers have posited a continuum between the two poles of independent word and inflectional affix.

4.4.2 Clitics and the Components of Grammar

Zwicky’s argument is that there are many paths between independent word and inflectional affix that wend their way through different components of grammar such as phonology, morphology, and syntax. In the 1960s it was the morphological peculiarities of clitics, in particular their being subject to template conditions on their combinatoric potential and ordering, that brought them to the attention of theoretical linguists. However, more recent theoretical work has tended to concentrate on the syntactic idiosyncrasies of clitics, including their occurrence in the ‘Wackernagel’ position (second within the clause), their connection to other syntactic phenomena (as in ‘clitic climbing’), and their interaction with agreement (as in ‘clitic doubling’).

Zwicky et al. (1994) assert that, currently, there are two main treatments of clitics by theorists which recognise them as having some special syntax plus further grammatical abnormality derived from either phonology or morphology. The first claims that the single nonsyntactic peculiarity of a clitic as its being phonologically dependent and thus obligatorily adjoined to some adjacent constituent in a prosodic domain. The second asserts that what characterises clitics is their playing a part in both syntactic and morphological structures. Miller (1992), Miller and Sag (1997), Monachesi (1993, 1998, 1996, 1999, 2000) are at the forefront of both of these ‘domains’ of analysis, which will be examined in more detail below.

4.4.3 A few common types of clitics

Zwicky et al. (1994) contends that a variety of phenomena have appeared under the clitic umbrella that have marked properties in one or more components of a grammar. He posits a distinction between those clitics which have marked properties in the lexicon, morphology and syntax and those which have marked phonological properties. Based on this distinction,
he further posits an inventory of types of clitics which I will briefly describe here

Those syntactic words which belong to the lexical/morphological/syntactic category include:

- **Grammatical category lexemes** (e.g. preposition ‘by’ - expresses grammatical categories rather than more concrete meanings)
- **Marginal category members** (e.g. articles ‘a’, ‘the’ and infinitival ‘to’ - not easily assigned to a syntactic category)
- **Invariables** (e.g. modal ‘must’, infinitival ‘to’ - don’t show overt inflectional morphology)
- **Loners** (e.g. inverted auxiliaries [*Really must you go], particles contiguous to their transitive verbs [*We gave right up the fight], degree modifier ‘enough’ [*This is small much enough to lift] - don’t allow phrasal modifiers or arguments)
- **Syntactic dependents** (e.g. direct objects in English are located with respect to their head verbs [*We passed quickly the other racers] - are distributed with respect to some companion element)

Those syntactic words which belong to the phonological category include:

- **Idiosyncratic Sandhi targets** (e.g. article ‘a’ - subject to alternations in shape (a/an))
- **Obligatory leaners** (e.g. articles ‘a’, ‘the’ and infinitival ‘to’ - no-free standing shapes, cannot form phonological domains on their own, must lean phonologically on an adjacent word)
- **Accentless words** (e.g. English personal pronouns - prosodically defective, unable to receive accent)
- **Phonologically located words** (e.g. Hausa emphatic fa - distribution is accounted for by virtue of them having to satisfy a condition on their prosodic organisation)

### 4.4.4 Items that are special to both syntax and morphology

Zwicky et al. (1994) conclude their global discussion of clitics with a classification of two types of words which are special to both the domain of syntax and that of morphology, namely, **bound words** and **phrasal affixes**.

**Bound words**, he contends, are items that seem to be words in syntax but which also function as parts of a special type of composite lexeme in morphology. That is, they are clitics *par excellence*. For example, the second-position elements of Tagalog have a number of word-like traits but also exhibit a special kind of syntax whereby this syntactic peculiarity is linked to morphological peculiarity. These clitic groups are like compound
lexemes but they do not behave syntactically like words. Instead, they are similar to inflected forms. He claims that their syntactic peculiarity predicts their morphological peculiarity and vice-versa.

*Phrasal affixes*, he adds, are items that behave like inflectional features, exhibiting properties of entire syntactic phrases. When they are morphologically special (located in an extra, outer layer of inflectional morphology) then we have a *phrasal affix* e.g. the English possessive suffix in *the person with that cat’s judgement*. He argues that there is a special link between a syntactic peculiarity (inflectional feature and not a syntactic formative) and a morphological peculiarity (location in outer layer of inflection, combining with an already inflected word e.g. *the person who played’s judgments*).

### 4.4.5 Zwicky’s conclusions on clitics

Zwicky’s concluding reflections on clitics are thus as follows. Every language has a number of elements that are, to some extent, dependent (syntactically, morphologically and morphonologically) on adjacent material. Generally speaking, these elements are words, and their special characteristics are simply marked options in the grammars of languages. In some cases, dependent elements are inflectional affixes, which appears to be the appropriate analysis of pronominal clitics for some colloquial varieties of modern Romance languages. Investigating the shadow cast over the status of clitics in French is thus one of the primary concerns of this project. To begin, below is a brief historical account of the syntactic analysis of clitics and their recognised syntactic status throughout the years.

### 4.5 The status of clitics: a brief historical review

Because clitics have a status which is neither obviously that of an independent word, nor that of an affix, the issue relating to the status of clitics is one which has been, and still is, open to huge discussion in the linguistics literature throughout the years.

Within early works in generative grammar, such as that of Kayne (1975), the assumption that clitics are syntactically independent elements is not questioned. More generally, the problematic status of clitics with respect to the interaction of syntax, morphology, and phonology was to a large extent neglected. It was only with the additions of Zwicky (1977) that clitics were looked upon from a broader perspective and that a classification of clitic types which took into account their various syntactic, phonological and morphological properties was proposed. In his typology, Zwicky et al. (1994) distinguishes two classes of clitics, *simple clitics*, which are syntactically normal elements that are phonologically dependent on an adjacent word, and *special clitics*, which are elements whose placement cannot be accounted for by the normal processes of syntax and for which specific rules must be stipulated.

Klavans (1985) developed this view further and proposed a typology of clitics based on three different parameters along which cliticization operations are defined: *dominance* (de-
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terminates whether a clitic adjoins to the final or initial constituent of a phrase), precedence (determines whether the clitic attaches in relation to the relevant host) and phonological liaison (states the direction of phonological attachment of the clitic). She asserts that cliticization is actually phrasal affixation but that Romance clitics are an exception since they attach to a head, namely the verb. She concludes that clitics represent verbal features and that they are becoming affixes since they have insertion requirements which resemble those of other verbal affixes.

If Klavans (1985) is correct, and Romance clitics are to be considered as affixes, then one must ask oneself what kind of affixes. Miller (1992), based on Zwicky and Pullum (1983) who try to distinguish between clitics and affixes, reaches the conclusion that French clitics should be analysed as lexically attached inflectional pronominal affixes.14

4.6 The analysis of French clitics: a selective historical review

The clitic pronouns of the French language have been explored in great detail by a wide range of linguists and syntacticians who used different syntactic frameworks and formalisms to carry out their analysis.15 This section presents a review of the more important contributions to the field of French clitic syntactic analysis and which are relevant to this project. Due to my prior knowledge of GB and LFG, I chose to include accounts of clitic analyses within these frameworks so that I would be able to compare them in terms of efficiency with my HPSG approach. Within the generative literature16, however, two kinds of approaches have been competing in accounting for the special position of Romance clitics - a movement approach and a base generation approach. The first person to propose a movement approach for French was Kayne (1975).

4.6.1 Kayne (1975)

Kayne begins his discussion by positing a distinction between two types of forms of pronouns in French, strong and weak pronouns. Strong pronouns, he claims, include:

\[ \text{eux} \] ('them' - any plural number of males optionally including females)

14 This will prove to also be the particular approach that I choose to take

15 Please note that I chose to only give a report of the more relevant analyses of French clitics as a fully detailed report of their history and analysis I considered to be both beyond the detail required for this project.

16 This literature refers to the Chomskyan transformational grammar theory. Briefly, transformational grammar is based on the theory that grammatical sentences have both a ‘deep structure’ and a ‘surface structure’ associated with them. Mappings between deep and surface structures are affected by rules known as ‘transformations’. Deep structures are generated by a combination of ‘phrase structure rules’ and ‘lexical insertion rules’. The lexical insertion rules insert lexical items into the ‘phrase markers’ that are generated by the phrase structure rules. Various movement operations or transformations then result in the surface structure, which represents sentences humans would actually utter.
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nous (‘us’)

moi (‘me’)

toi (‘you’ - singular)

lui (‘him’)

elle (‘her’)

vous (‘you’ - formal singular, ‘you’ - informal plural)

elles (‘them’ - all females)

They occur in environments where full lexical NPs are allowed e.g.

(4.31)a. Isabelle n’aime que mes amis
b. ‘Isabelle only likes my friends’
c. Isabelle n’aime qu’eux
d. ‘Isabelle only likes them’

They occur in environments where full lexical NPs are allowed e.g.

(4.32)a. Mes parents n’auraient pas fait ça
b. ‘My parents would not have done that’
c. Eux\textsuperscript{17} n’auraient pas fait ça
d. ‘They would not have done that’

The ‘weak’ pronouns, on the other hand, are preposed to the verb i.e. they are ‘preverbal pronouns’, and are otherwise known in French as clitics. The direct object clitics that correspond to the above strong clitics include:

les (‘them’)

nous (‘us’)

me\textsuperscript{18} (‘me’)

\begin{footnotesize}
\begin{itemize}
\item [\textsuperscript{17}] ‘Eux’, as previously noted, is a strong object clitic. If one was to translate the English sentence *They would not have done that* into French, one would prefer the use of the subject clitic *Ils* over this use of the strong counterpart *eux*. Kayne’s portrayal of *eux* here, in this fully-fledged ‘subject’ position, illustrates the actual strength of this pronoun. If, on the other hand, one was to translate the French version of this sentence, one might do so by the introduction of a resumptive pronoun, as in ‘*Them, they wouldn’t have done that*’, to convey the fact that it is still a strong clitic that is really in question and not an actual subject clitic.
\item [\textsuperscript{18}] In positive imperatives, however, *me* and *te*, whether accusative or dative, appear as their strong counterparts *moi* and *toi*.
\end{itemize}
\end{footnotesize}
te (‘you’ - singular)
le (‘him’)
la (‘her’)
vous (‘you’ - formal singular, you - informal plural)
les (‘them’ - all females)

The weak pronouns do not pattern at all like full lexical NPs, as shown in (4.33.a) and (4.33.b). Neither do full lexical NPs act like clitics, as illustrated in (4.33.c) and (4.33.d).

(4.33)a. *Isabelle n’aime que\(^{19}\) les
   b. *‘Isabelle only likes them’
   c. *Isabelle mes amis aime
   d. *‘Isabelle my friends like’

The French pronominal paradigm, according to Kayne, therefore consists of at least two parts: the NP-like strong forms, and the non-NP-like direct object clitics. There are, one might add, more clitics that are distinguishable parallel to direct object clitics. These are the indirect object clitics and the dative clitics. They are, in the order corresponding to the forms already listed, as below.

leur (‘to them’)
nous (‘to us’)
me (‘to me’)
te (‘to you’ - singular)
le (‘to him’)
la (to her)
vous (to you - formal singular, you - informal plural)
les (to them - all females)

It should be noted also that both sets of pronouns exist with an element of morphological overlapping. It is thus clear that both direct and indirect object pronouns are in complementary distribution with full NPs and therefore also in complementary distribution with the NP-like strong forms, as (4.34) illustrates.

\(^{19}\)The negation here, as discussed in §4.3.6, has been analysed in the literature as a clitic. The clitic in question here in *ne...que* (‘only’). It has been analysed as a clitic by Abeillé and Godard (1996) for exactly the same reasons as Zwicky and Pullum (1983) gave in §4.4
Overall, what Kayne is saying is that if we were to assume that pronouns are introduced as an expansion of NP, we could generate in a straightforward manner those sentences containing strong pronouns. The weak clitics, on the other hand, appear uniquely in positions that cannot be filled by an NP, and hence, sentences containing them cannot be generated without resorting to additional syntactic mechanisms. One such syntactic mechanism Kayne alludes to is the *Clitic Placement transformation* (Cl-Pl). This operation moves direct and indirect object clitic pronouns to preverbal position under certain necessary conditions. The source position of the clitic is then analysed as a trace. Kayne believes that a theory with this particular transformation is far superior to one in which sentences of the form *subject + object clitic + verb* are simply generated in the base. Alongside his Cl-Pl transformation, Kayne put forth certain properties of clitics, that distinguish them from their strong counterparts: firstly, he claimed that nothing can intervene between the clitic and its host verb. Secondly, clitics cannot be modified. Thirdly, they cannot be contrastively stressed. That is, one cannot utter in French a sentence such as (4.35).

(4.35)*Jean LA préfère
   John cl.(acc)-ACCENT TONIQUE prefers
   ‘John prefers HER’
Instead, you would have to say something like in (4.36):

\[(4.36)\text{C'est ELLE que Jean préfère}\]

'It's fem-sg-TONIC-PRO that John prefers'

'It's HER that John prefers''

Overall, the two main points to be retained from Kayne analysis are as follows. Firstly, clitics satisfy the subcategorization requirements of verbs and, secondly, that they are in complementary distribution with the NP or PP complements to which they correspond. However, a potential problem for an analysis such as Kayne’s is posed by languages which exhibit clitic doubling\(^20\) (see below), as in the following Spanish example:

\[(4.37)\text{Lo vimos a Juan}\]

\[
\begin{align*}
\text{cl.(acc) see to Juan} \\
\text{‘We see Juan’}
\end{align*}
\]

In (4.37), there is a clitic attached to the verb and a full NP in the argument position which is coindexed with it. The existence of this phenomenon has led to the formulation of base generation analyses of clitics. Under this view, a clitic is base generated in its surface position, while the argument position is filled by the relevant NP. This discovery led to analyses like those put forth by Sportiche (1993).

4.6.2 Sportiche (1993)

Also adopting the GB framework, in Sportiche (1993) an attempt is made to reconcile the movement and base generation approaches, by assuming that clitics are base generated in pre-existing slots, namely they are the X\(^0\) which head their own projections, and that clitic constructions may also involve movement. In particular, he suggests that this process should be decomposed into a first step which has properties of XP-movement, while the second step should be considered head movement. He argues for this type of analysis on the basis of motivations related to blocking effects of intervening subjects on clitic placement, past participle agreement and the similarity of long NP movement and clitic climbing in restructuring environments. Under this view, in clitic doubling languages, the XP which moves is overt, while in non-clitic doubling languages it is covert. Therefore, Sportiche (1993) claims that his analysis can capture the advantages of both the movement and base generation analyses while providing a uniform treatment of cliticization.\(^21\).

4.6.3 Grimshaw (1982)

Within LFG clitics have generally been represented as syntactically transparent entities, that is as independent terminal nodes. There have been two versions of this approach which differ only in the c-structure labeling of the node dominating the clitic. Firstly, Grimshaw

\(^{20}\) As we shall see in §4.7.2 and in the following chapter, French does not exhibit clitic doubling.

\(^{21}\) For similar approaches such as this, see Sportiche (1992, 1997, 1998).
(1982) and some more recent LFG representations of clitics such as Bresnan (2001) and Schwarze (2001) treat Romance pronominal clitics as daughters of a ‘CL node’. Secondly, clitics are analysed as being dominated by nodes representing categories that reflect their varied grammatical functions. However, the approach of Grimshaw (1982) is the one I shall concentrate on here. It provides an LFG analysis of French pronominal clitics22.

Grimshaw (1982) takes the simplified set of phrase structure rules below and creates an analysis, based on the VP phrase structure rule (Grimshaw, 1982, pg. 89).

\[
\begin{align*}
S & \rightarrow NP \ VP \\
VP & \rightarrow V'(NP) \left( \left\{ NP \ AP \right\} \right) (PP) \\
PP & \rightarrow P \ NP
\end{align*}
\]

She notes that the VP rule allows for two NP positions. The first is the position of the direct object NP, and the second the position of predicate nominals. She adds that the two can cooccur, rather rarely in French, as the example in (4.38) shows:

(4.38) Nous avons élu Jean président
   cl.(nom) have elected John president
   ‘We elected Jean president’

In addition, Kayne (1975, pg. 63) contends that noun phrase and adjective phrase predications, structured similarly to the above sentence, also occur in cases like (4.39).

(4.39) Marie a rendu Jean fou
       Mary has rendered John crazy
       ‘Mary made John crazy’

Putting this all into LFG, she assigns each of the NP nodes of the phrase structure rules a grammatical function - either SUBJ (subject), OBJ (object), NCOMP (for predicate nominals), À-OBJ (for objects of the preposition ) or ACOMP (for adjective phrases) depending on the constituent in question. This is illustrated in the phrase structure rules (annotated with functional equations) below:

\[
\begin{align*}
S & \rightarrow NP \ VP \\
(VP & \rightarrow V'(NP) \left( \left\{ NP \ AP \right\} \right) (PP) \\
PP & \rightarrow P \ NP
\end{align*}
\]

\[
\begin{align*}
& (\uparrow \text{SUBJ}) = \downarrow \\
& (\uparrow \text{OBJ}) = \downarrow \\
& (\uparrow \text{NCOMP}) = \downarrow \\
& (\uparrow \text{ACOMP}) = \downarrow
\end{align*}
\]

22For a summary of ?, please see Abeillé (1993)
However, in this very simplified version, she was yet to add information about the fixed ordering of the clitics. Hence, ignoring *y* and *en*, she assumes another phrase structure rule to account for this phenomenon.

\[ V' \rightarrow (\text{CL})_1 (\text{CL})_2 (\text{CL})_3 (\text{AUX}) V \]

It can be seen from the above rule that, in this analysis, all clitics precede the first auxiliary verb, if there is one present. She proceeds to assume that all the CL nodes are assigned grammatical functions. Object clitics can occur in positions 1 and 2 and indirect objects in 1 and 3. Information about person is expressed by constraints on the values of the feature PERS. Finally, she posits constraints on CASE in order to distinguish le and la from lui, les and leur. They ensure that only dative clitics occur in CL3 and accusatives in CL2. Hence, the equivalent LFG annotated functional equation is shown below.

\[ V' \rightarrow (\text{CL})_1 (\text{CL})_2 (\text{CL})_3 (\text{AUX}) V \]

\[
\begin{align*}
& (\uparrow \text{OBJ}) = \downarrow \\
& (\uparrow \text{A-OBJ}) = \downarrow \\
& (\uparrow \text{PERS}) = 1,2 \\
& (\uparrow \text{CASE}) = \text{acc} \quad (\uparrow \text{CASE}) = \text{dat}
\end{align*}
\]

Grimshaw’s analysis here accounts for the distribution of clitics quite well. Overall, however, it lacks the power of analysis which other accounts that I shall present possess. It only considers a narrow range of clitics and data, has a recourse to grammatical functions due to its LFG implementation and the fundamental constructs that it posits, the CL node, has its own drawbacks and limitations - it implies that all clitics can be grouped together within a single syntactic category. However, since clitics include, in addition to pronominals, elements as disparate as negational elements\(^\text{23}\), auxiliaries, discourse particles and grammatical particles, it is impossible to sustain a unified syntactic category corresponding to such a CL node. Nonetheless, as I mentioned in Chapter 3, it was still advantageous to include an analysis of clitics under a different framework such as LFG because it has given me further insight into the benefits and limitations of the formalism in its model of clitics. In addition, it has lead me to the conclusion that the HPSG accounts that I shall review, and indeed my own account yet to be stipulated, will prove to be quite superior in their overall treatment of the problem that clitics pose to syntactic analysis.

4.6.4 Monachesi (1996)

Monachesi (1996) proposes a lexical account of cliticization which shares some of the insights of Sportiche (1993) and the pure base generation analyses mentioned above, in particular, that the cliticized verb form is created in the lexicon. Given the affixal nature of Italian clitics, she doesn’t consider them as lexical items which are located in a specific position by the rules of syntax. Instead, she argues for an approach which analyses Italian clitics as featural information which is provided in the lexicon and used in morphology and

\(^{23}\text{for more on the French negation as a clitic, see Abeillé and Godard (1997)}\)
phonology for the realization of the cliticized verb form. In this way, she claims that clitics exist only in the phonology, as ‘spell outs’ of certain features.

4.6.5 Miller and Sag (1997)

The analysis of French clitics proposed by Miller and Sag (1997) is based on the idea that clitics are lexically generated, and thus cannot be dealt with by means of syntactic rules. They present an analysis of French pronominal affixes which ensures that some elements in the ARG-ST list do not surface in the syntax. This is achieved by means of an inflectional process which reduces the verbal subcategorization structure while adding a pronominal affixes to the verb.

I have chosen to only give synopsised accounts of the Monachesi (1996) and Miller and Sag (1997) as they will feature heavily in the preceding two chapters when it comes to the path I chose to take to the actual analysis of French clitics.

4.7 Clitic phenomena

Clitics, given their inherent dubious syntactic status and fascinating idiosyncrasies, also exhibit certain phenomena, which make their analysis all the more interesting. These phenomena include clitic climbing, clitic doubling and clitic trapping. I shall now describe each one in turn. However, I will not illustrate how they interact with HPSG until the analysis stage in Chapter 7.

4.7.1 Clitic climbing

What is clitic climbing? Based on the rigorous application of the Zwicky and Pullum (1983) criteria, Miller (1992) has shown convincingly that French clitics bear much more resemblance to lexical affixes than to true postlexical clitics, and that they should best be derived in the lexical component. Still, the placement of these elements is not strictly local in that they may attach to a host of which they are not directly an argument. As Sportiche (1997, pg. 219) puts it, ‘the clitic appears on a verb to which it bears no lexical relation’. Such a ‘movement’ or redistribution of the clitic is called clitic climbing (also ‘clitic raising’). (4.40) illustrates this phenomenon.

(4.40)Marie l’a vu
Mary cl.(acc) has seen
‘Mary has seen him’

Here, the clitic le is replacing, as the English translation demonstrates, an animate object of the verb voir (‘see’). However, due to the intervention of the auxiliary verb, avoir, this

---

24 The auxiliary verb can also be referred to as the ‘upstairs’ or ‘matrix’ verb
26 See (§4.3.3) for more information on the French auxiliaries
clitic is in fact redistributed so as to fulfill its grammatical role in cliticization. Although the clitic is actually an object of voir\textsuperscript{27}, and, according to the theory of subcategorization should attach to it, it attaches itself instead, non-locally, to the auxiliary. It is a property of the French language that all direct object clitics ‘climb’ in this fashion in order to be ‘redistributed’ to their ‘rightful’ position in the sentence, as a result of cliticization. The key idea is that the clitic has moved from a local canonical position into a non-local position.

It is not only auxiliary verbs, however, which trigger clitic climbing in French. So-called ‘restructuring’ verbs, causative verbs, perceptual verbs, modal verbs, aspectual verbs and verbs of motion can all give rise to clitic climbing. (4.41) illustrates how the French causative construction accounts for clitic climbing.

\begin{equation}
\text{(4.41) Marie le\textsuperscript{28} fait lire à Paul} \\
\text{Mary cl.(acc) makes to read to Paul} \\
\text{‘Marie is making Paul read it’}
\end{equation}

Similar to (4.40), the complement of the verb lire (‘read’) here is the clitic le and this is replacing, presumably, an inanimate object like ‘a book’ (‘un livre’) or ‘a newspaper’ (un journal) for instance. Bearing no lexical relation to the causative verb faire, le still climbs up to attach the conjugated form of this verb. A third example of clitic climbing is where nonlocal pronominal affixes are the (syntactic and semantic) arguments of predicative complements. The sentences below, the first three, French, and the last, Italian, clearly illustrate this.

\begin{equation}
\text{(4.42) Pierre lui reste fidèle} \\
\text{Pierre cl.(dat) remains faithful} \\
\text{‘Pierre remains faithful to her/him’}
\end{equation}

\begin{equation}
\text{(4.43) Pierre en est président} \\
\text{Pierre cl.(en) is president} \\
\text{‘Pierre is president of it’}
\end{equation}

\begin{equation}
\text{(4.44) Pierre leur sera présenté par Marie} \\
\text{Pierre cl.(dat) will be presented by Mary} \\
\text{‘Pierre will be presented to them by Marie’}
\end{equation}

\begin{equation}
\text{(4.45) Martina lo vuole poter leggere} \\
\text{Martina cl.(acc) wants to be able to read} \\
\text{‘Martina wants to be able to read it’}
\end{equation}

In (4.42), (4.43), and (4.44) the clitics lui, en and leur are respectively arguments of fidèle (‘faithful’), président (‘president’) and présenté (‘presented’), as shown in the translations.

\textsuperscript{27}voir in this case can also be referred to as ‘the downstairs verb’
The Italian example in (4.45), on the other hand, contains a restructuring verb, in this case _vuole_ (‘wants’). The effect of this verb’s presence is to force the clitic lo to climb to the pre-modal-verb-position in order to ‘slot’ into its proper place in the sentence after cliticization. Moreover, the clitics in (4.42), (4.43), (4.44), and (4.45) have each climbed to a nonlocal position, following the theory of clitic climbing.

**Monachesi (1996) on clitic climbing**

Sportiche (1993) claimed that clitic climbing is incompatible with a lexical analysis of cliticization because in this construction the clitic bears no lexical relationship to the main verb it is attached to, but instead it is lexically related to the embedded verb. However, Monachesi (1996) challenges such a claim by showing that a lexical analysis of clitic climbing is indeed possible and is desirable. Miller and Sag (1997), as I will show below, also support this claim. Similar to Miller and Sag (1997), Monachesi bases her claim around the idea of argument composition, according to which the subcategorization requirements of the embedded verb are passed up to the clitic climbing ‘trigger’ verb. She focuses mainly on cases of clitic climbing which are triggered by so-called ‘restructuring’ verbs, a classification proposed by Rizzi (1982), but also deals with the influence of auxiliary verbs on clitic climbing. Although clitic climbing occurs also with causative and perceptual verbs in Italian, Monachesi (1996) only deals with the aforementioned two types of verbs. Furthermore, she shows that a lexical approach to clitic climbing properly accounts for the variation represented by certain southern dialects of Italy like Napoletano and Salentino.

Monachesi (1996) states that Rizzi (1982) identifies three classes of restructuring verbs in Italian - modal verbs (e.g. potere ‘can’, dovere ‘must’, volere ‘want’), temporal aspectual verbs (cominciare ‘begin’, finire ‘finish’, continuare ‘continue’) and pure motion verbs (venire ‘come’, andare ‘go’, tornare ‘come back’). She adds however that according to Rizzi (1982), the judgement as to whether a particular verb is restructuring or not varies from speaker to speaker, implying that membership of the class of restructuring verbs is more so idiosyncratic than anything else, especially when dialects are taken into account. Monachesi (1996) claims that restructuring verbs trigger clitic climbing, namely a clitic which originates as dependent of a complement verb can climb and attach to the trigger verb, as illustrated in (4.45) (Monachesi, 1996, pg. 165).

Monachesi (1996) claims that it is evident that clitics are, therefore, involved in a kind of nonlocal or unbounded dependency. Monachesi (1993) hence suggests that one could handle this problem in terms of the Nonlocal Feature Principle of HPSG2 where lexical rules are used to update the subcategorization requirements of the verbal head and of nonlocal features to encode the information that a clitic can appear at some point in the tree. Briefly, this approach involved splitting the nonlocal dependency into the three parts - a bottom, middle and a top. The bottom is where the dependency is introduced, the middle is where it is successively passed from daughter to mother up the tree and the top is where the dependency is discharged. However, she decided not to take this approach in Monachesi (1996) because it doesn’t adequately account for clitic climbing, as it overgenerated to allow for ‘non-trigger-like clitic climbing verbs’ to give rise to clitic
climbing. Thus, it doesn’t naturally capture the fact that only a specific class of verbs trigger it. Her alternative approach, as we shall see below, provides a more satisfactory treatment of the phenomena just discussed since it naturally accounts for the intermediate distance character of this type of construction.

### 4.7.2 Clitic doubling

Clitic doubling arises in language when the clitic that is replacing a given full (overt) phrase cooccurs in the same sentence with that full phrase. In other words, it is analogous to the resumptiveness of pronouns. In standard French, however, clitic doubling does not exist. This is due to the language’s characteristic of pronoun-full phrase complementary distribution, which was exploited in detail in Kayne (1975) - you can have only one of these elements in any given sentence. The following example illustrates French’s intolerance to this phenomenon.

\[(4.46)\]
\[
\begin{align*}
\text{a. Marie connaît Louis} \\
\text{Mary knows Louis} \\
\text{‘Marie knows Louis’}
\end{align*}
\]

\[
\begin{align*}
\text{b. Marie le connaît} \\
\text{Mary cl.(acc) knows} \\
\text{‘Mary knows him’}
\end{align*}
\]

\[(4.47)\]
\[
\begin{align*}
\text{*Marie le connaît (à) Louis} \\
\text{Mary cl.(acc) knows (to) Louis} \\
\text{*‘Marie knows him Louis’}
\end{align*}
\]

Given the pro-drop nature of Spanish, it does, however, allow for clitic doubling. Sportiche (1995, p.33) remarks that “clitic doubling may arise in a language if the clitic encodes no (relevant) property that the doubling phrase expresses”. It should nevertheless be noted in passing that certain varieties of French do allow for clitic doubling. On this point, almost all the authors challenging Kayne’s proposal have done it on the basis of the existence of clitic doubling constructions as are found in varieties of French, as shown in Roberge (1990). Overall, clitic doubling in a given language implies a lack of such a complementary distribution in that language. In clitic doubling constructions, both the clitic and the full phrase - the doubled phrase - seem to compete for the same grammatical function. In itself, this observation does not pose any particular challenge to Kayne’s proposal.

Interestingly, Sportiche (1997) analyses the complex inversion of pronominal subjects in interrogatives in French as clitic doubling, ”...it appears that a pronominal copy of the subject may cooccur with a full DP subject, making complex inversion a construction with two subjects” Sportiche (1997, p.1). He thus sees the resumptive clitic as evidence of pure clitic climbing and not doubling, as in (4.48). However, I shall look at this in more detail in Chapter 6.
Nevertheless, clitic doubling is a fascinating phenomenon of natural language syntax and a problem very much incompletely resolved.

### 4.7.3 Clitic trapping

In French there is a distinction between argument clitics and intrinsic clitics. The former clitics are those that have been presented so far. They are the clitics that replace full complements. The latter clitics differ in nature to the former clitics - they are in built, inherent, or intrinsic clitics\(^{29}\). For example, the French idiom ‘en vouloir quelqu’un’ means ‘to be angry with someone’. The clitic en in this infinitive is a classic example of an intrinsic clitic - it does not alternate with any full NP arguments.

The causative construction (\(\text{faire} \ (\text{‘do’} + \text{infinitive})\)) in French provides a further challenge to the analysis of clitic phenomena. In general, upstairs realization of pronominal arguments is obligatory (as shown in 4.49), unless the downstairs verb specifies any intrinsic clitics on its argument structure. In this case, no raised dependent can be expressed by a pronominal affix on the causative verb (as shown in 8.a), but instead affixal realization has to apply on the downstairs verb (as shown in 8.c), a phenomenon referred to as clitic trapping. Hence, the phenomenon of clitic trapping is to ensure that the clitic in question is relocated in its appropriate argument position after cliticization\(^{30}\).

\[(4.49)\]
\[
a. \text{Marie le fait lire à Paul} \\
   \text{Marie cl.(acc) makes read to Paul} \\
   \text{‘Marie is making Paul read it’}
\]
\[
b. \text{Jean y fait aller Paul} \\
   \text{Jean cl.(loc) makes to go Paul} \\
   \text{‘Jean makes Paul go there’}
\]

\[(4.50)\]
\[
a. \ast \text{Tout leur [en fait vouloir] à Paul} \\
   \text{Everything cl.(dat) cl.(en) makes to want to Paul} \\
   \ast \text{‘Everything makes them angry at Paul’}
\]
\[
b. \text{Tout leur fait [en vouloir] à Paul} \\
   \text{Everything cl.(dat) makes cl.(en) to want to Paul} \\
   \text{‘Everything makes them angry at Paul’}
\]
\[
c. \text{Tout leur fait lui [en vouloir]} \\
   \text{Everything cl.(dat) makes cl.(dat) cl.(en) to want} \\
   \text{‘Everything makes them angry at him’}.
\]

\(^{29}\)See §4.3.2
\(^{30}\)The examples below are taken from (Miller and Sag, 1997, p.610)
In (4.50.a), the fact that the causative is placed between *vouloir* and *en* ultimately renders this sentence ungrammatical because this is splitting up the infinitival verb *vouloir* from its intrinsic clitic *en*. Overall, due to the fact that clitic trapping is linked to the phenomenon of causative verbs, which, as mentioned above, are one of the types of verbs that trigger clitic climbing, it can be said that clitic trapping is a feature of clitic climbing.

### 4.8 The clitics of Italian

Clitics are a feature of all languages. Whether they take the form of pronominal items, negations or reduced-verbal realizations, they are all considered to come under the category of clitic. In this section I shall give a brief account of the clitics of Italian, primarily studied by Paola Monachesi.

Clitics in Italian, in particular, pronominal clitics, have been primarily studied by Paola Monachesi through HPSG, are very similar to those of the French language in terms of the properties they exhibit. Italian distinguishes accusative, dative, partitive, and locative clitics, as shown below in Table 5.1. These clitics attach to a verb and precede it (*proclitics*) if the verb is finite. They follow it (*enclitics*) if it is non-finite or imperative. For example, (4.51) below illustrates an example of proclisis in Italian. As we shall see in §5.2.2, Monachesi (1996) argues that Italian clitics behave as affixes on the basis of several tests proposed by Zwicky and Pullum (1983).

(4.51)\text{Martina} \ lo \ \text{legge} \\
Martina cl.(acc) reads \\
‘Martina reads it’

<table>
<thead>
<tr>
<th></th>
<th>1 sg</th>
<th>2 sg</th>
<th>3 sg</th>
<th>1 pl</th>
<th>2pl</th>
<th>3pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAT</td>
<td>mi</td>
<td>ti</td>
<td>gli (m)</td>
<td>ci</td>
<td>vi</td>
<td>loro/gli</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>le (f)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACC</td>
<td>mi</td>
<td>ti</td>
<td>lo (m)</td>
<td>ci</td>
<td>vi</td>
<td>li (m)</td>
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<td></td>
<td></td>
<td></td>
<td>la (f)</td>
<td></td>
<td></td>
<td>le (f)</td>
</tr>
<tr>
<td>REFL</td>
<td>mi</td>
<td>ti</td>
<td>si</td>
<td>ci</td>
<td>vi</td>
<td>si</td>
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<tr>
<td>PART</td>
<td></td>
<td></td>
<td></td>
<td>nc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOC</td>
<td></td>
<td></td>
<td></td>
<td>ci/vi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: The pronominal clitics of Italian

### 4.9 Conclusion

In this chapter, I have provided an insight into the linguistic phenomena of French clitic pronouns. I began by giving a general account of clitics based on Zwicky et al. (1994). I
then concentrated specifically on French clitics. After having studied their history and the various approaches taken to their analysis, I have concluded that clitics are special words which have received considerable attention in linguistic research because of their particular properties: they have a fixed position in the sentence, they usually appear attached to a word, and generally, they cannot be stressed or accentuated. I shall examine these particular properties in greater detail in Chapter 6.

The considerable attention that clitics have received shows itself in the great variety of languages of which they are intrinsic. Prime linguists in the field of clitics and the Romance language with which they are affiliated have produced extremely differing approaches to clitics. This diversification of approach, in turn, is exhibited in the wide range of syntactic formalisms that have been use to account for them. In this chapter, as mentioned above, I have only examined certain approaches that are relevant to my particular project. These included Kayne (1975) and Sportiche (1993) through GB, Grimshaw (1982) through LFG, and Monachesi and Miller and Sag through HPSG. Evidently, the last two accounts are the most relevant to the particular account I shall provide, and so I intend, in the following Chapter to exploit them in greater detail. A brief account of the pronominal clitics of Italian was given.

To conclude, I have provided substantial historical evidence for the basic claim that clitics are features of certain languages whose status is dubious. Overall, it is accepted that languages with a large inventory of clitics provide considerable evidence that clitics do not have the status of autonomous elements that are inserted into syntactic structures and manipulated by rules of syntax. I have also discovered that clitic pronouns exhibit syntactic inertness whose effects are recoverable in clitic doubling languages. However, given the fact that standard French does not account for clitic doubling, that is not to say that the languages’ clitics do not exhibit such inertness - in fact, they do, and this will become apparent in Chapter 6 when I talk about the particular properties of French clitic pronouns.

I have learned that clitic climbing is a phenomenon that manifests itself in many areas of the syntax of the French language. Auxiliary verbs are almost inevitably always used in everyday speech to infer temporal information. Pronouns are used equally as frequently, so that the information conveyed by a speaker in conversation doesn’t sound redundant, as it would if pronouns were left out in speech. Hence, these two ‘ingredients’ necessary for clitic climbing ensure that it is a phenomenon of natural language syntax whose effects are fully reflected in human speech, as well as in written texts. As I will also illustrate in Chapter 6, it is a characteristic of spoken French to have an abundance of pronominalization occurring in the midst of conversation. The complex, highly ordered and rigorous fixed nature of the French pronominal system ensures that their use in speech require an in-depth knowledge of their particular functions as discussed in §4.2. The pronoun le, for instance, can not only replace animate and inanimate objects of masculine gender, singular number and third person, but also propositions and even adjectives describing states or attributes of a person. This ‘multifunctional’ pronoun is, in essence, characteristic of the importance of the function of French clitic pronouns. This theme will again be taken up in Chapter 6, when it comes to analyzing the data.

Overall, the French language exhibits a complex system of clitic pronouns which have
been thoroughly studied throughout linguistic history and whose use in everyday speech is paramount to the communication of information. Exploring the diversity and colour of their usage, through the analysis of data sentences in which they occur is the theme of Chapter 6. However, before I carry out the analysis, it is necessary to describe the path to the analysis that I wish to take. This is the theme of the following chapter.
Chapter 5

The path to be taken
5.1 Introduction

Monachesi (1996) and subsequent papers of hers explore in some detail the role of morphology within HPSG. One such subsequent paper of Monachesi’s, called ‘HPSG and the interfaces’, shows that there are two main approaches to morphology in HPSG - word-syntactic approaches and realizational approaches. She reports that analyses inspired by the word-syntactic view of morphology consider that morphemes have the status of signs and they combine with their stems by means of morphological principles which are similar to those that operate in syntax. However, under the realizational view, she contends that morphemes do not exist as signs. They simply represent the phonological realization of certain morphosyntactic properties of the host with which they combine.

The question of how morphology interacts with syntax and phonology is an area still under debate within HPSG. Different proposals have been made on how morphological information should be formalized. The idea of accounting for the distribution of clitics within morphology is not new. So-called ‘template morphology’ is concerned with the idea that morphological approaches to clitic cluster formation rely on the notion of a ‘template’ introduced by Perlmutter (1971) in order to account for clitic ordering. Template morphology involves the construction of a flat morphological template i.e. a structure which comprises slots that are filled by specific morphemes. A crucial feature of template morphology is the notion of position classes. Furthermore, it is characterized by being a word formation process which doesn’t make reference to the notion of head and where the absence of information (zero morphemes) can play a meaningful role.

Simpson and Withgott (1986) argue that pronominal clitic clusters constitute a clear case of template morphology. In fact, clitic clusters form a flat structure where elements belong to different slots and where it is not evident which element should be considered the head. In addition, the phonological form of clitics might depend on other clitics which appear in the cluster. They also notice that there are arbitrary gaps in the combinations of clitics and mention the constraint that applies to French clitics whereby first and second person accusative clitics cannot be followed by dative clitics:

\[(5.1) *\text{Je te lui présenterai} \]
\[I \text{ cl.(acc) cl.(dat) will present} \]
\[\text{‘I will present him to you’ or ‘I will present you to him’}\]

However, if one of the clitics represents an ethical dative, the same sequence is acceptable:

\[(5.2) \text{Je te lui ai écrit une note} \]
\[I \text{ cl.(dat) cl.(dat) have written a note} \]
\[\text{‘I wrote a note to him’}\]

From this data they note that the phenomena of position class and case are relevant in clitic cluster formation. Furthermore, in order to account for these examples, it is possible to formulate a restriction in terms of morphological features. They also point out an additional property of morphological templates, namely the possibility of metathesis. To...
this purpose they mention a case of metathesis which occurred in Middle French, where first and second person proclitics moved in front of accusative ones. They suggest that this is due to a class of morphemes which are reordering and that it should be taken as evidence of a flat morphological template. The notion of position of class is crucial to an account of clitics in terms of template morphology. It also plays a central role in the analysis of languages like French and Italian where affixes are rigidly ordered, making the correlation between affixes and clitics more evident.

Template morphological approaches to clitic analysis represent an advantage with respect to syntactic approaches since they can provide the answer to the presence of synthetic clusters and the cooccurrence restrictions exhibited by certain clitics. Further evidence against a syntactic approach comes from Bonet (1991). She noticed that, in some languages, there exists great dialectal variation with respect to clitic order, while this variation doesn’t seem to correlate with significant differences in syntax. She adds that it is often the case that certain clitics occupy a specific position within the cluster regardless of their syntactic function. Therefore, these facts seem to constitute evidence in favour of a morphological approach to clitic cluster formation over a syntactic one.

Therefore, overall, it appears that any attempt to express certain generalizations about the distribution of French clitics should make reference to a combination of phonological, morphological, semantic and syntactic information. Still, even in this way, one would be far from expressing clear generalizations which are free from the counterexamples and exceptions. It seems that the most appropriate way to characterize the distribution of French clitics is by making reference to the descriptive notion of a position class. And the best way to do this is through template morphology.

Hence, in this chapter I shall outline the path I wish to take to the analysis of French clitics in this project. I shall firstly review two past approaches to cliticization that adopt this ‘template morphology’ or ‘morphological realization’ approach. These are Monachesi (1996) and Miller and Sag (1997). In papers subsequent to Monachesi (1996) and Miller and Sag (1997), Monachesi reviewed her analysis of cliticization to preclude the use of template morphology but it shall be shown, however, in this chapter that the role of template morphology in the analysis of French clitics is of paramount importance and should not be discarded. I shall show that Miller and Sag (1997) is the most contemporary approach to French cliticization and how I shall use their approach to formulate my own approach to examining French clitics. I shall reformulate their approach by modifying their account of subcategorization in terms of grammatical functions. Instead I shall adopt a flat SUBCAT list. Given the importance of Binding Theory in relation to pronominal clitic distribution, ARG-ST will also be used. However, a constraint on the location of ARG-ST will be posited, based completely on the results of a random analysis of how verbal forms bearing pronominal clitics interact with ARG-ST. These two reformulations shall constitute the overall novel contribution that my project provides to the field of clitic theory. I also hope that, in light of my new approach, the analysis in the following chapter might bring about new revelations about the syntactic properties of clitics.
5.2 Clitics and realizational morphology - two past relevant approaches

As mentioned in the previous chapter, there are two prior approaches to the analysis of clitics that stand out in terms of relevance in relation to this project. The first is the account of pronominal affixation in French as proposed by Miller and Sag (1997). The second is the approach is that of Monachesi (1996), and certain subsequent works, on Italian clitics. In this section, I shall compare and contrast the two approaches in an effort to derive the most suitable approach to my own analysis.

5.2.1 Miller and Sag (1997)

Miller and Sag (1997) provide, first and foremost, a lexicalist account of French clitics that treats clitics as pronominal affixes whose ordering is ‘templatic’ in nature i.e. order is independent of the general properties of syntactic structures. The lexicalist nature of their account is thus fully in tune with the principle of Strong Lexicalism that is characteristic of HPSG.

They treat cliticized words as valence-reduced realizations of verbal lexemes that enter the syntax fully inflected. They call the entities under discussion ‘pronominal affixes’ rather than pronominal ‘clitics’ in order to make clear that in the analysis which they defend, there is no sense in which these affixal elements function as independent syntactic entities, which, they claim, is what the term clitic has come to mean in generative studies.

Verb forms bearing lexically-attached pronominal affixes

Miller and Sag profess that, for the last quarter of a century, Romance pronominal affixes have posed a major predicament for generative grammar. They see this predicament to be essentially revolving around the fact that verb forms bearing pronominal affixes are single words, yet their syntactic distribution differs systematically from that of their uncliticized counterpart verbs. The presence of a pronominal affix thus causes a systematic change in the verb’s combinatoric potential and hence a change in the verb’s VALENCE. *Footnote: Miller and Sag here make use of the category attribute VALENCE which is a feature structure that encodes the relevant valency information corresponding to the particular instantiations of SUBJ, SPR and COMPS. The following sentences, taken from Miller and Sag (1997, p.2) demonstrate this phenomenon.

(5.3) a. Marie voit Jean
   Mary sees John
   ‘Mary sees John’

1 ‘Templatic’ implies template morphology as described in §5.1
2 This is the same phenomenon as described by Kayne (1975) in §22.
b. Marie le voit
   Mary cl.(acc) sees
   ‘Mary sees him’

c. *Marie le voit Jean
   Mary cl.(acc) sees John
   ‘Mary sees John’

Hence, it can be seen that, in standard French, there is a complementary distribution between sentences containing cliticized verb forms and those containing uncliticized verb forms.

As already discussed, in the earliest proposals, like that of Kayne (1975), pronominal affixes were analysed in terms of syntactic movement - they were regarded as full NPs in their usual argument position in deep structure and then transformationally attached to the verb. Certain later proposals of Rivas and Jaeggli were so-called ‘base generated’ analyses of pronominal affixes (e.g. 1977, 1982), whereas Kayne continues to argue for a movement-based approach. In this paper, therefore, Miller and Sag (1997) tackle these issues related to pronominal affixes by taking up the challenge set out by Sportiche (1996) against strictly ‘base generated’ approaches, and by providing an analysis which explains both the facts that have been argued to be in favour of a movement analysis, and those in favor of a base generated analysis, within a strictly lexicalist theory, where the verbal forms in question are constructed entirely in the lexicon.

The affixal status of French bound pronouns

Miller and Sag (1997) put forth several properties of pronominal affixes in French that they claim imply that pronominal affixes should be analysed as lexically attached inflections to the verb. They emphasize that they should not, however, be analysed as postlexical clitics i.e. "autonomous syntactic words which are prosodically deficient and hence postlexically (and postsyntactically) attached to a neighbouring word, forming a new prosodic word domain" (Miller and Sag, 1997, p.4). They do not claim that pronominal affixes are agreement markers in French but instead are affixal, incorporated pronouns, the evidence to support which lies in the fact that there is an absence of systematic doubling. The properties they provided thus include:

1. **Degree of selection with respect to host:**
   French pronominal affixes are selective with respect to the host with which they combine, which is always the verb. As the following examples show, French pronominal clitics are not VP-initial clitics: where the VP is not verb initial, the affixes (e.g. lui in (5.4.a) appear on the verb, the head of the VP, as is typical for inflection, and not on other VP-initial items, like in between the negation constituent ne...rien (‘nothing’) as in (5.4.a). They attach to the head element. Furthermore, similar to inflectional

---

3All example sentences given here are taken from Miller and Sag (1997), Section 1
affixes, they do not affect the lexical category of their hosts. (5.4)\(^4\) illustrates this point.

(5.4) a. Il faut ne rien lui dire
   ‘It is necessary to tell her/him nothing’

b. *Il faut ne lui rien dire
   ‘It is necessary to tell her/him nothing’

c. Tout lui donner serait une erreur
   ‘To give her everything would be a mistake’

d. *Lui tout donner serait une erreur
   ‘To give her everything would be a mistake’

2. Arbitrary gaps in the set of combinations:
   Zwicky and Pullum (1983) point out that arbitrary gaps can occur occasionally in inflectional paradigms. Arbitrary gaps are also present in the case of clitics; they can occur both when clitics combine with each other and when they cliticize to the verb. An instance of the former case can be seen in the fact that in French, like other Romance languages, doesn’t allow the combination of a first or second person clitic together with a dative one - an arbitrary gaps relating to pronominal affix incompatibility e.g. the impossibility of (5.5.b), whose only grammatical realization is (5.5.c) as opposed to (5.5.a), constitute clear cases of gaps in the paradigm.

(5.5) a. Il le lui a présenté
   ‘He presented him to her’

b. *Il me t’/lui a présenté
   ‘He presented me to you or him/her’

c. Il m’a présenté à toi/elle
   ‘He presented me to you/her’

Miller and Sag also contend that, for most verbs there is no acceptable form for the inverted first person singular pronominal affix je, as opposed to other persons. They claim that the contrast between (5.6.b) and paraphrases such as Je sors?/Je chante? and Est-ce que je sors?/Est-ce que je chante? shows that this is not a semantic or pragmatic problem, but a purely morphological one.

\(^4\)A better translation for (5.4.a) would be You don’t have to tell him/her anything
(5.6) a. Sors-tu?
   'Are you going out?'
Chantes-tu?
   'Are you singing?'

b. *Sors-je?
   'Am I going out?'
*Chantes-je? 5
   'Am I singing?'

Given the fact that, for (5.5), the strong form pronoun alternates are well-formed and that, for (5.6), some other verbs and all other persons allow inversion, Miller and Sag claim that because these kind of arbitrary gaps it is very difficult to imagine a principled syntactic account of such data and hence one of their aims in writing their paper was to endeavour to provide such an account.

3. Morphophonological idiosyncrasies:
The phonological shape of an affix is often affected by the phonology of the stem or of other affixes with which they combine. Zwicky and Pullum (1983) notice that morphophonological idiosyncrasies are rather common for inflectional paradigms; their examples include forms like oxen or dice for the plural affix, slept or went for the past tense affix, best or worse for the superlative. Morphophonological idiosyncrasies also occur in French pronominal affixes. Hence a third property Miller and Sag (1997) suggest is that "the combinations of pronominal affixes with verbal stems involve numerous morphophonological idiosyncrasies, which are not explainable in terms of productive phonological rules" (Miller and Sag, 1997, p.6).

Here they cite two such examples: the idiosyncratic realization of y as φ in front of the future stem ir- of aller (‘to go’), as illustrated in (5.7), and the idiosyncratic realizations of [je suis] ‘I am’ as [chuis]7 and [je sais] ‘I know’ as [chais].

5 Miller and Sag note, however, that for -er verbs, there is an archaic form chanté-je but it is obsolete even in writing. Furthermore, they state that the exact list of verbs for which inverted first person forms are acceptable (e.g. devoir: dois-je) varies from speaker to speaker, as is to be expected of a morphological phenomenon such as this

6 Miller and Sag add that the precise repertory of idiosyncrasies exhibits geographical variation, although they clearly appear in all varieties of spoken French

7 This is only possible for the verb être, and not for the homophonous form of suivre ‘follow’ as in je suis ‘I follow’. Miller and Sag deduce that chuis cannot therefore be derived by productive phonological rules
(5.7) a. Pierre *(y) va
   Pierre cl.(loc) goes
   ‘Pierre is going there’

b. Pierre (*y) ira
   Pierre cl.(loc) goes
   ‘Pierre is going there’

The notation used on and above can appear confusing. In , *(y) implies that it is ungrammatical for y to be optional in this sentence i.e. y is obligatorily used when replacing a locative NP in the present tense. In , (*y) implies that clitics are allowable in this position but that y is forbidden i.e. y, again replacing a locative NP, cannot be used before a future (or conditional) tense realization of the verb aller.

4. Rigid and idiosyncratic ordering:

French pronominal affixes exhibit rigid and idiosyncratic ordering, typical of affixation, rather than of cliticization. This is, in fact, the most crucial piece of evidence in favour of the affixal status of French pronominal affixes. It is well known that their position in the clitic cluster is, in general, fixed. For instance, Miller and Sag give the example that the ordering of dative and accusative pronominal affixes in standard French depends on the persons of the affixes involved. They state, however, that, more generally, dialects that are otherwise very similar can exhibit variation in affix ordering, which confirms the idea that the ordering is not explainable in terms of deep syntactic properties. Hence, in (5.8.a) it can be seen that the dative clitic me, which represents the indirect object in this case, precedes the accusative clitic le, which corresponds to the direct object clitic. This is not the usual order, however, if a full phrase is present, as in (5.8.b), and the order differs also when that full phrase is cliticized, as in (5.8.c). This sentence illustrates that the direct object precedes the indirect object. In general, however, there is no clear relation between the order of the full complements within a sentence and that of the clitics which represent the same complements.

(5.8) a. Marie me le donne
       Marie cl.(dat) cl.(acc) gives
       ‘Marie gives it to me’

b. Marie donne le livre à Jean
   Marie gives cl.(acc) to John
   ‘Marie gives the book to Jean’

c. Marie le lui donne
   Marie cl.(acc) cl.(dat) gives
   ‘Marie gives it to her’

In fact, French clitics are rigidly ordered (in an affirmative sentence) according to the following template (5.1):
CHAPTER 5. THE PATH TO BE TAKEN

Table 5.1: The rigid order of French pronominal clitics (in an affirmative sentence)

<table>
<thead>
<tr>
<th>Negation</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ni...ni</td>
<td>neither...nor</td>
</tr>
<tr>
<td>guère</td>
<td>hardly/scarcely</td>
</tr>
<tr>
<td>pas</td>
<td>not</td>
</tr>
<tr>
<td>point</td>
<td>(firm) not</td>
</tr>
<tr>
<td>aucun</td>
<td>not at all</td>
</tr>
<tr>
<td>rien</td>
<td>nothing</td>
</tr>
</tbody>
</table>

In an imperative sentence, they are also rigidly and idiosyncratically ordered, but the ordering is slightly different to that in (5.2).

Table 5.2: The rigid order of French pronominal clitics (in an imperative sentence)

This fact provides additional evidence for the affixal status of clitics and for dealing with their ordering in morphology, as will be discussed later on in §5.2.1. On the other hand, under the view that clitics represent syntactically independent elements, their order should be dealt with within syntax. However, given the idiosyncrasies which underlie clitic ordering and the fact that there is no full correspondence between the order of clitics and that of their related full complements, it is not possible to derive the sequencing of clitics from general principles of syntax. However, as will become apparent later in this chapter, the assumption that clitics are affixes allows for a simpler account of the syntax-morphology interface.

5. Pronominal affixes undergo lexical phonological rules:

Clitics are linked to morphology, as just briefly discussed. However, they have an affiliation with phonology. A fifth property that Miller and Sag (1997) state of pronominal affixes is that the affix+stem units in which they occur undergo certain lexical phonological rules such as, for example, obligatory liaison of nasal consonants as illustrated in (5.9)\(^8\) lending further evidence that the bound pronouns are lex-

\(^8\)A liaison in French occurs where an extra sound arises between two words that are, by definition,
CHAPTER 5. THE PATH TO BE TAKEN

ically attached affixes.

(5.9) Marie en-a
Mary cl.(part) has
‘Marie has some’

6. **Object affixes cannot have a wide scope over coordination:**
The penultimate property provided by Miller and Sag is that object affixes cannot have wide scope over coordination of hosts, as illustrated in (10a). First discovered by Kayne (1975), if two verbs are coordinated and share the same clitic, this clitic has to be repeated within each conjunct (10.b)

(5.10)*Pierre les voit et écoute
Pierre cl.(acc) sees and hears
‘Pierre sees and hears them’

(5.11)Pierre les voit et les écoute
Pierre cl.(acc) sees and cl.(acc) hears
‘Pierre sees and hears them’

Miller (1992) argues that this is strong evidence for the lexically attached status of these elements and against clitic status.

7. **Syntactic explanations for clitic ordering have failed:**
The final piece of evidence supporting Miller and Sag’s pronominal affix approach lies in the fact that past syntactic accounts of the ordering of pronominal affixes have encountered severe difficulties e.g. Sportiche (1992) and other attempts to provide a principled syntactically based explanation of pronominal affix ordering, e.g. that of Fiengo and Gitterman (1978), have also failed, as has been shown in considerable detail by Morin (1979).

From this body of evidence, they conclude therefore that verb forms bearing pronominal affixes should be formed in the lexicon, not in the syntax, as is frequently assumed.

**Miller and Sag’s theoretical background**
The version of HPSG that Miller and Sag (1997) use is that of HPSCG3. They do include, however, a use of ARG-ST, thus lending from the approach of Manning and Sag (1999) as outlined in Chapters 2 and 3. Haven chosen their theoretical base they then proceeded to introduce certain type hierarchies and features they considered necessary for the analysis of French pronominal affixes. I shall now briefly summarise these, before moving on to my particular approach to the problem.
New introductions to the HPSG theory

Miller and Sag (1997) assume that each inflected word must belong simultaneously to three compatible types:

1. a (CLITIC-) REALIZATION (REALZN) type - either plain-word (pl-wd) or cliticized-word (cl-wd); see sec. 3.1. cl-wd is further divided into the two subtypes su(bject)-cl-wd and n(on)s(ubject)-cl-wd

2. an INFLECTIONAL (INFLN) type, e.g. 3sg-pres-indic-vb, that specifies an inflectional form for a given lexeme; and

3. a LEXEME type that specifies the morphological stem, part of speech, argument structure (ARG-ST), and meaning common to a family of inflected forms. The lexeme types here relate to verbs\(^9\) and they are hierarchically organized, each one corresponding to what is normally regarded as a lexical entry e.g. LAVER, VOULOIR and so on.

The hierarchy of words is thus as partially described in terms of the three partitions indicated in 5.1.

To give demonstrate how Miller and Sag’s approach works, let’s look at an example. Let’s take the verb laver (‘wash’). It’s lexeme type is as illustrated in (5.12.a). Notice that the AVM provides only certain necessary specifications. The MORPH (morphology) attribute contains a STEM feature, whose value is the lexemic stem of the verb in question. The CAT value specifies the HEAD and ARG-ST information, and the CONT value specifies the meaning related to the verb. Given the lexemic information relating to this verb, we can then apply the constraints of the INFLN type to it, to yield an AVM containing more information. For example, let’s apply this first person plural indicative to the verb laver - the resulting AVM is shown in (5.12.b)

\(^9\)Because the elements in question are verbal forms bearing pronominal affixes
As can be seen from the above diagram, the inflectional information requires that the MORPH feature include a new attribute, I-FORM, to encode information relating to the inflected form of the verb in question - in this case, lavons. The value of the I-FORM of a pl-wd, for instance, will just be the same as the value of its FORM, because no inflections have occurred. The other necessary modifications to the lexeme entry are made, such as the marking of agreement on the first argument of the ARG-ST to account for the fact that the person and number of the subject of this verb must match those of the verb itself. The word em lave thus inherits semantically-determined ARG-ST properties from the lexeme LAVER shown just above. The CONT feature is also modified to include temporal information by introducing a LOCATION feature that encodes, in this case, the tense of the verb. Miller and Sag assume that inflectional information always combines in this monotonic fashion. How the REALZN type interacts with the above two types will be dealt with below.

Perhaps the most important introduction that Miller and Sag make to the theory is that which concerns how the arguments of the considered cliticized verbs forms are actually realized. Languages vary in this respect, the most notable variations being linked to argument drop (so called ‘PRO drop’), extraction, and, of course, pronominal affixation. In the version of HPSG they assume, this is treated by distinguishing ARG-ST from the valence features (SUBJ, COMPS, SPR) that will specify which arguments a given head combines with locally. The canonical relation among these is shown below, in terms of Argument Conservation, where ⊕ designates list concatenation or the ‘append’ relation.
The crucial point here is that Miller and Sag analyse argument drop, extraction, and pronominal affixation all in terms of arguments (ARG-ST members) that are absent from any valence list (VALENCE). In other words, they deem pronominal affixes to be elements that do not have any part to play in constituent structure (i.e. the syntax), but which do, on the other hand, have a role to play in the argument structure (ARG-ST) of the verbal element on which they depend.

subsubsection The Grammar of ‘cliticized’ verb forms In general, the more recent approaches taken to the analysis of clitics have been of two types - a syntax/morphology one or a syntax/phonology one. Miller and Sag’s approach here is of the former type. They posit a grammar for verbs bearing pronominal affixes in two essential steps. Firstly, they deal primarily with the syntax point of view, by defining the relevant types, type hierarchies, and various ‘rules’, using HPSG to provide the necessary tools ”to deal systematically with the full distributional complexity of French verbs bearing pronominal affixes without violating their lexical integrity” (Miller and Sag, 1997, p.3). They then deal with the morphological aspect to the approach, the central mechanism they use to do so the introduction of their HPSG based function $F_{PRAF}$.

Two types of verbal realization

As already mentioned, Miller and Sag proposed to handle the syntactic core of cliticization (a kind of extended lexical affixation or inflection) in terms of a distinction between the two types of verbal realization already mentioned. The first type, plain-word, ”requires each element of a verb’s ARG-ST list to correspond to an overt phrase that combines with the verb syntactically (i.e. locally in a head complement or head-subject structure), and hence also to be present on the verb’s SUBJ or COMPS list” (Miller and Sag, 1997, p.13). Words of the second type, cliticized-word, are ”verbs that have at least one argument that is realized affixally, rather than syntactically” (Miller and Sag, 1997, p.13). Therefore, this argument (the pronominal affix) is not present on any of the VALENCE lists, but is present on ARG-ST. Verbal lexemes in French are thus characteristic of both kinds of inflected word and, consequently, there is a systematic absence of overtly realized complement NPs in the presence of the corresponding pronominal affixes.

So as to guarantee the presence of the appropriate affixes in the phonological form of cl-words, Miller and Sag assume that synsem objects are further classified into subtypes according to their degree of canonicity or affixality as shown in the type hierarchy in 5.2. The regular canonical synsem type, canon, is the type associated with all signs (i.e. this type is given to structures which are deemed to be in ‘canonical’ position in the sentence). noncan, on the other hand, corresponds to an ARG-ST position that is not realized as a
local syntactic dependent of the head. Affixes and gaps (in UDCs\textsuperscript{10}), therefore, fit into this category type and hence noncan is divided into the subtypes aff and gap. It is the presence of elements of type aff on a verb’s ARG-ST list that triggers the morphological realization of the corresponding pronominal affixes (see section below on Morphological realization). The type non-aff provides a cross-cutting classification, subsuming all types of synsem other than aff. To be more explicit, if the synsem type is non-aff then the structure represented is either a canonical structure (canon) or a gapping structure (gap). In addition, if the synsem type is noncan then the structure represented is either a gapping structure or a pronominal affix.

**pl-wd**

The first type of verbal realization, pl-wd, is subject to the following constraints, as shown below:

\[
\text{pl-wd} \rightarrow \begin{bmatrix}
\text{MORPH:} & \begin{bmatrix}
\text{FORM:} & 0 \\
\text{I-FORM:} & 0 \\
\end{bmatrix} \\
\text{SYNSEM:} & \begin{bmatrix}
\text{LOC | CAT:} & \begin{bmatrix}
\text{VAL:} & \begin{bmatrix}
\text{SUBJ:} & \{2\} \\
\text{COMPS:} & \{3\} \\
\end{bmatrix} \\
\text{ARG-ST:} & \{2\} \oplus \{3\} \\
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\]

The above constraints guarantee that pl-wds have an argument structure list corresponding to the simple concatenation of the values of the valence features SUBJ and COMPS. Furthermore, the SUBJ list must contain exactly one element. Most importantly, since the SUBJ and COMPS values get cancelled as a head combines with its overt complements and subject (all of type canon) to become saturated, this constraint has the effect of ensuring that the arguments of a pl-wd are in general realized syntactically and not affixally i.e. they are part of the constituent structure, unlike affixes. Neither the SUBJ nor the COMPS value here is explicitly constrained to contain only non-aff elements, however, because certain pl-wds (e.g. infinitives and past participles) may share arguments with other verbs, through raising or composition. Although Miller and Sag allow the first

\textsuperscript{10}UDC stands for unbounded dependency construction
argument and the SUBJ of a finite \( pl-wd \) to be of type \( \text{aff} \) here in order to deal with raising, for example, \( pl-wds \) so specified are harmlessly impotent, as they have no other syntactic combinatoric potential: they can never combine with an overt subject; they cannot terminate an extraction dependency; they cannot appear in control constructions, nor can they function as independent clauses.

\( \text{cl-wd} \)

The type \( cl-wd \) is subject to the constraints shown below:

\[
\begin{array}{c}
\text{MORPH:} \\
\text{FORM: } F_{\text{PRAF}}([0,\ldots]) \\
\text{I-FORM: } [0] \\
\text{SYNSEM:} \\
\text{LOC | CAT:} \\
\text{HEAD: } \text{verb} \\
\text{VAL:} \\
\text{SUBJ: } [2] \\
\text{COMPS: } [3] \text{list(non-aff)} \\
\text{ARG-ST: } ([2] \oplus [3]) \circ \text{nelist(aff)}
\end{array}
\]

Since we are always concerned with verbs (bearing pronominal affixes) here, and that verbs cannot have specifiers (SPR), Miller and Sag systematically omit this feature from consideration. In addition, the above constraints require that all the members of the COMPS list be of type \( \text{non-aff} \). This ensures that these complements are either be gaps or canons (overt complements). So as to comply with Argument Conservation, the constraints also guarantee that the SUBJ and COMPS lists add up to be the ARG-ST list, except that one or more ARG-ST elements of type \( \text{aff} \) must be absent from the SUBJ or COMPS list, i.e. the pronominal affix is ‘shuffled in’ to constitute the ARG-ST list. It is clear therefore that it is here where Miller and Sag’s approach to the analysis of pronominal affixes becomes apparent through their HPSG representation of the problem. That is to say, whenever an argument is of type \( \text{aff} \), it thus cannot belong to either the SUBJ or COMPS lists, and so the cliticized verb is realized with the appropriate pronominal affixation. This effect, obtained via the function \( F_{\text{PRAF}} \), will be explained in the section below on Morphological Realization.

\( pl-wds \) have a FORM value that is simply identified with their I-FORM value. I-FORM is an ‘inflected form’ that is constrained in terms of both the grammatical category (CAT value) and the STEM value supplied by the lexeme type of the \( pl-wd \). The phonology of \( cl-wds \), on the other hand, is determined by the function \( F_{\text{PRAF}} \), which requires that the FORM value be related to the I-FORM value via the appropriate pronominal affixation. Whereas the COMPS list of a \( pl-wd \) is unrestricted, all members of the COMPS list of a

\footnote{Miller and Sag (1997, p.15) state that “‘List (type)’designates a list of objects, all of which are of type \( \text{type} \); ‘nelist’ stands for ‘nonempty list’. Here designates the ‘shuffle’ operation employed initially by Reape and Kathol. The formal definition of the shuffle (or ‘sequence union’) operation is as follows: given a list \( A \) of length \( m \) and a list \( B \) (disjoint from \( A \)) of length \( n \), then \( A \circ B \) designates the family of lists of length \( m + n \) such that (1) the members of \( A \circ B \) are the set union of the members of \( A \) and the members of \( B \), and (2) if \( X \) precedes \( Y \) in \( A \) or in \( B \), then \( X \) precedes \( Y \) in \( A \circ B \)”}

\footnote{See section () below on Morphological Realization}
cl-wd must be non-aff and hence must correspond to overt complements or gaps, rather than pronominal affixes of that verb’s ARG-ST list.

The two subtypes of cl-type, su-cl-wd and ns-cl-wd, are subject to the following further constraints:

\[
\begin{align*}
su-cl-wd & \rightarrow \left[ \text{SYNSEM} \mid \text{LOC} \mid \text{CAT}: \left[ \begin{array}{c} \text{VAL} \mid \text{SUBJ}: \left\langle \right\rangle \\
\text{ARG-ST}: \left\langle \text{aff,nom}, \ldots \right\rangle \end{array} \right] \right] \\
ns-cl-wd & \rightarrow \left[ \text{SYNSEM} \mid \text{LOC} \mid \text{CAT}: \left[ \begin{array}{c} \text{VAL} \mid \text{SUBJ}: \left\langle 1 \right\rangle \\
\text{ARG-ST}: \left\langle 1 \right\rangle \end{array} \right] \right]
\end{align*}
\]

These constraints guarantee that a su-cl-wd (e.g. je-lave or je-le-lave etc.) must have an empty SUBJ list and a first argument that is a nominative NP[aff], thus allowing for the possibility that other arguments are also of type aff. The first argument of a ns-cl-wd (e.g. le-lave), however, must appear on the SUBJ list. If this argument is an aff, it will be impotent (as described above); it may be a canon element that combines with a subject syntactically; alternatively, it is a gap and corresponds to an instance of subject extraction. In addition, there must be an aff elsewhere in its ARG-ST list (because the ARG-ST list of all cl-wds must include at least one aff element that is not on any valence list).

The various subtypes of aff (e.g. 3sgm-acc-aff, de1-aff...) are all further classified as either anaphor-affix (a-aff) or personal-pronominal-aff (p-aff) and are constrained to bear specifications that would be appropriate for overt anaphors or pronouns. However, these affixal synsems are never associated with an overt pronoun. Syntactically independent ‘strong’13 pronouns are signs and hence always have a SYNSEM value of type canon. The noncanonical subtypes of aff (which must be enumerated and associated with appropriate constraints, just as all types are) serve to distinguish various kinds of ARG-ST lists. These diverse list values in turn trigger particular inflectional realizations of the verb, as sketched below. The following examples are typical of the words allowed by Miller and Sag’s analysis. The first example, (5.13), is of the plain-word donne, and the second, (5.25), is of the clitic-word lui-donnera and are taken from Miller and Sag (1994, p.17).

\[
\text{(5.13)}
\text{\begin{tabular}{|c|c|c|c|}
\hline
\text{MORPH} & \text{FORM: donne} & \text{I-FORM: donne} \\
\text{HEAD} & \text{VERB: indic} \\
\text{SS} & \text{LOC} & \text{CAT:} \\
\text{VAL} & \text{COMPS:} & \text{ARG-ST:} \\
\text{NP[3sg]} & \text{NP[acc]} & \text{NP[3]} \text{NP[\text{a}]} \\
\hline
\end{tabular}}
\]

\[\text{13See §4.2.2 or Kayne (1975) for a discussion on weak versus strong clitics}\]
As can be seen in both examples, we can see that, obligatorily, each inflected verbal form simultaneously satisfies all of the three types mentioned above - REALZN, LEXEME and INLFN. The REALZN is $cl$-$wd$ in 5.25 and $pl$-$wd$ in 5.13. The LEXEME is donner in both cases, and the INFLN is $3sg$-$pres$-$indic$-$vb$ in 5.13 and $3sg$-$fut$-$indic$-$vb$ in 5.25.

Miller and Sag argue that both examples illustrate that the words have the appropriate valency-reduced distribution (COMPS list shortened) just in case their ARG-ST contains an aff element that will give rise to the appropriate affixal morphology. Their analysis thus immediately accounts for the familiar complementary distributional properties of standard varieties of French, as discussed above in §5.2.1.

### Binding theory and Miller and Sag (1997)

This analysis provides a straightforward basis for a principled account of the binding properties of French pronominal affixes. The various subtypes of aff (because they are a variety of synsem) contain all the information required to represent the internal structure of the sign (see Chapter 2), which includes distinctions relevant to binding theory via ARG-ST. Thus, when reflexive morphology is present, one of the members of the argument structure list is an anaphor or a-aff element according this system. Consequently, the ARG-ST-based formulation of Principle A of Binding Theory\(^\text{14}\) can now apply to any verb whose ARG-ST list contains an a-aff element, guaranteeing that two relevant semantic role arguments are linked. However, French, like many other languages, imposes the more restrictive parameterization of Principle A, according to which a-affs must be coindexed with a subject\(^\text{15}\), hence the grammaticality of (5.15.a) and the ungrammaticality of (5.15.b).

\[(5.15) a. \quad \text{Dave} \, \text{cl.(refl)} \, \text{lave.} \quad \text{Dave washes himself}\]

\[(5.15) b. \quad *\text{Marie} \, \text{cl.(refl) lave les cheveux} \quad *\text{Mary washes herself her hair}\]

\(^\text{14}\)See §3.4.2, Manning and Sag’s revised approach to binding on ARG-ST

\(^\text{15}\)This more restrictive parameterization of Principle A does not, however, apply to canonical anaphors like l’un (à) l’autre (‘each other’)
The following example, (5.16), taken from Miller and Sag (1997, p.20) illustrates these intuitions.

(5.16)

Likewise, verbs bearing non-reflexive pronominal affixes have ARG-ST members (of type p-aff) that must comply with Principle B, i.e. they must NOT be coindexed with less oblique elements. (5.17) exemplifies this.

(5.17)

Morphological realization

Having assumed the necessary tools for the representation of pronominal affixes, Miller and Sag then sought to deal with clitic morphological realization. The constraint above on the cl-wd type was left unspecified in terms of how the function $F_{PRAF}$ actually constrains the FORM value of the verb. Miller and Sag argue that only HEAD and ARG-ST information are relevant to the realization of pronominal affixation and thus assume that $F_{PRAF}$ is a three argument function that constrains words as illustrated below:

$$cl-wd \rightarrow \begin{cases}
  \text{MORPH: } [\text{FORM: } F_{PRAF}(\text{\text{\[\text\ ]}}, \text{\text{\[\text\ ]}}, \text{\text{\[\text\ ]}})] \\
  \text{SYNSEM: } [\text{LOC | CAT: } [\text{HEAD: } \text{\text{\[\text\ ]}}, \text{ARG-ST: } \text{\text{\[\text\ ]}}]]
\end{cases}$$
So the important question to ask here is how exactly do Miller and Sag actually capture the essence of pronominal affixation in HPSG? As can be seen from the above constraint, the first argument of $F_{PRAF}$ is the I-FORM value provided by the inflectional type of the verb. The second argument of is the verb’s HEAD value, and the third argument is the word’s ARG-ST value. These three ‘parameters’ are then fed into the function $F_{PRAF}$, the evaluation of which corresponds to the verb form bearing the pronominal affix in question. This calculation is in turn assigned to the verb’s FORM value and is defined by $F_{PRAF}$ to be a structured object of the type clitic-form (cl-fm), where this has the two subtypes proclitic-form (procl-fm) and enclitic form (encl-fm). The ordering of base and affixes is left to distinct constraints on the types procl-fm and encl-fm. These constraints state simply that the affixes of a procl-fm appear in order before the base and that those of an encl-fm appear in order following the base. These feature structures specify information in terms of the features BASE, whose value is an inflected form (I-FORM value) and seven slot features whose values are pronominal affixes (or else the empty string):

\[
\begin{array}{l}
\text{cl-fm} \\
\text{BASE: } \text{infl-form} \\
\text{SL-1: } \{ \text{je, tu, il, elle, on, nous, vous, ils, elles, } [ ] \} \\
\text{SL-2: } \{ \text{me, te, nous, vous, se, } [ ] \} \\
\text{SL-3: } \{ \text{le, la, les, } [ ] \} \\
\text{SL-4: } \{ \text{lui, leur, } [ ] \} \\
\text{SL-5: } \{ \text{moi, toi, nous, vous, } [ ] \} \\
\text{SL-6: } \{ \text{y, zy, } [ ] \} \\
\text{SL-2: } \{ \text{en, zen, } [ ] \}
\end{array}
\]

The function $F_{PRAF}$ may now be defined as follows, where $X$ is an inflected form, $Y$ is a HEAD value, and $Z$ is an ARG-ST list:

\[
F_{PRAF} (X, Y, Z) = W, \text{ where } W
\]

\[
\begin{align*}
(1) & = X, \quad \text{if } Y = \left[ \text{VFORM: past-p} \right] \\
(2) & = \left[ \text{encl-fm} \\
& \quad \text{BASE: } X \right], \quad \text{if } \left[ \text{VFORM: imp} \\
& \quad \text{NEG: } - \right] \\
(3) & = \left[ \text{procl-fm} \\
& \quad \text{BASE: } X \right]
\end{align*}
\]

The above definition interacts with a number of further constraints on $W$. The constraints that determine the form of subject affixes in SL-1 are given below:

$W$’s value for the feature $F$ is $v$, just in case $Z$ contains $\alpha$ and $Y$ satisfies $H$, where:
<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th>v</th>
<th>α</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1a</td>
<td>SL-1</td>
<td>je</td>
<td>[p-aff, 1sg, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1b</td>
<td>SL-1</td>
<td>tu</td>
<td>[p-aff, 2sg, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1c</td>
<td>SL-1</td>
<td>ils</td>
<td>[p-aff, 3sgm, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1d</td>
<td>SL-1</td>
<td>elle</td>
<td>[p-aff, 3sgf, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1e</td>
<td>SL-1</td>
<td>on</td>
<td>[p-aff, 3sgm, nom,...]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1f</td>
<td>SL-1</td>
<td>nous</td>
<td>[p-aff, 1pl, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1g</td>
<td>SL-1</td>
<td>vous</td>
<td>[p-aff, 2pl, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1h</td>
<td>SL-1</td>
<td>ils</td>
<td>[p-aff, 3plm, nom]</td>
<td>tensed</td>
</tr>
<tr>
<td>C1i</td>
<td>SL-1</td>
<td>elles</td>
<td>[p-aff, 3plf, nom]</td>
<td>tensed</td>
</tr>
</tbody>
</table>

Table 5.3: Constraints that determine the form of French subject affixes

For example, C1a should be understood as guaranteeing that the SL-1 value of the F_{PRAF} output W is je, just in case (i) the argument structure Z contains an element of type p-aff that is also specified as [PER sg], [NUM 1], and [CASE nom] and (ii) the cl-wd in question is specified as [VFORM tensed] (indicative or subjunctive). These constraints, taken together with those on the type su-cl-wd, thus guarantee that pronominal subject affixes can appear only when the verb’s first argument is a 1sg nominative subject. Via the interaction with relevant ordering constraints, the basic principle behind the ‘rigid ordering’ French pronominal affixes is also ensured here, that is to say that, subject affixes precede all others.

Nonsubject affixes, on the other hand, are subject to the following further constraints on (figure number of F_{PRAF} definition):

W’s value for the feature F is v, just in case Z contains α and W satisfies ω,
where:

To take one example, C2a makes sure that the SL-2 value is me just in case the argument structure Z contains an element of type aff that is also first person singular with CASE obj as long as the further condition is met that W is a proclitic form (i.e. W is not the realization of a positive imperative.). Other constraints in (5.4) are similar.

Miller and Sag (1997, p.25) add that ”the constraints just given function without reference to any default constraint requiring feature SL-i to take the empty string as its value. The distribution of the empty string follows directly from the fact that we know the space

---

Miller and Sag posit CASE hierarchies along with their types hierarchies. They assume that ă₁ is the dative case for ă-phrases and that ă₂ is the case for ă-phrases alternating with y. obj is the supertype of ă₁ and ă₂. This distinction allows us to refer to NP[acc] and NP[ă₁] as the ‘natural’ class NP[obj]. Similarly, they introduce direct (dir) as the supertype for the CASE values acc and nom. NP[dir] hence picks out the natural class of NP[acc] and NP[nom]. A final distinction is made between de₁ and de₂, whose common supertype is de, in order to account for the difference between the relatives dont (‘whose’) and d’où (‘(from) where’).
CHAPTER 5. THE PATH TO BE TAKEN

Table 5.4: Constraints that determine the form of French nonsubject affixes

<table>
<thead>
<tr>
<th>F</th>
<th>v</th>
<th>α</th>
<th>ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2a</td>
<td>SL-2</td>
<td>me</td>
<td>{aff, 1sg, obj}</td>
</tr>
<tr>
<td>C2b</td>
<td>SL-2</td>
<td>te</td>
<td>{aff, 2sg, obj}</td>
</tr>
<tr>
<td>C2c</td>
<td>SL-2</td>
<td>nous</td>
<td>{aff, 1pl, obj}</td>
</tr>
<tr>
<td>C2d</td>
<td>SL-2</td>
<td>nous</td>
<td>{aff, 2pl, obj}</td>
</tr>
<tr>
<td>C2e</td>
<td>SL-2</td>
<td>se</td>
<td>{a-aff, 3, obj}</td>
</tr>
<tr>
<td>C3a</td>
<td>SL-3</td>
<td>la</td>
<td>{p-aff, 3sgf, acc}</td>
</tr>
<tr>
<td>C3b</td>
<td>SL-3</td>
<td>le</td>
<td>{p-aff, 3sgm, acc} or {p-aff, +PRED}</td>
</tr>
<tr>
<td>C3c</td>
<td>SL-3</td>
<td>les</td>
<td>{p-aff, 3pl, acc}</td>
</tr>
<tr>
<td>C4a</td>
<td>SL-4</td>
<td>lui</td>
<td>{p-aff, 3sg, à1}</td>
</tr>
<tr>
<td>C4b</td>
<td>SL-4</td>
<td>leur</td>
<td>{p-aff, 3pl, à1}</td>
</tr>
<tr>
<td>C5a</td>
<td>SL-5</td>
<td>moi</td>
<td>{aff, 1sg, obj}</td>
</tr>
<tr>
<td>C5b</td>
<td>SL-5</td>
<td>toi</td>
<td>{aff, 2sg, obj}</td>
</tr>
<tr>
<td>C5c</td>
<td>SL-5</td>
<td>nous</td>
<td>{aff, 1pl, obj}</td>
</tr>
<tr>
<td>C5d</td>
<td>SL-5</td>
<td>vous</td>
<td>{aff, 2pl, obj}</td>
</tr>
<tr>
<td>C6a</td>
<td>SL-6</td>
<td>y</td>
<td>{p-aff, à2}</td>
</tr>
<tr>
<td>C6b</td>
<td>SL-6</td>
<td>zy</td>
<td>{p-aff, à2}</td>
</tr>
<tr>
<td>C7a</td>
<td>SL-7</td>
<td>en</td>
<td>{p-aff, de}</td>
</tr>
<tr>
<td>C7b</td>
<td>SL-7</td>
<td>zen</td>
<td>{p-aff, de}</td>
</tr>
</tbody>
</table>

of values for each SL-i. Because the value space for each feature is finite we can infer the fact that the empty string occurs elsewhere from the fact that every other value is covered by some ‘just in case’ condition. Whenever none of the various conditions is met, the only other option for the value of the relevant SL-i is the empty string”.

In light of the various constraints just described, \( F_{PRAF} \), through its interaction with the relevant ordering principles, expresses the central generalizations about the morphological realization of French pronominal affixes. For example, it guarantees that:

1. *me, te* (objective) *nous* and *vous*, and *se* precede all other nonsubject affixes
2. *le, la*, and *les* precede all affixes other than the SL-1 and SL-2 affixes
3. *lui* and *leur* always precede *y* and *en*
4. affixal *moi* and *toi* occur only in positive imperatives
5. *y* precedes *en* and that
6. no affixes appear except under the indicated conditions
In addition, $F_{PRAFT}$ ensures that only one affix can be realized in each slot within a given word. This provides a principled account for the deviance of a host of wayward, redundant outputs such as (see Miller and Sag (1997, p.25)):

\[(5.19)\]

\begin{itemize}
  \item a. *Il me vous présente
    \hspace{1cm} cl.(nom) cl.(acc) cl.(à) presents
    \hspace{1cm} ‘He presents me to you’ or ‘He presents you to me’
  \item b. *Ils se vous présentent.
    \hspace{1cm} cl.(nom) cl.(refl) cl.(à) present
    \hspace{1cm} ‘They present themselves to you’ or ‘They present you to themselves’
  \item c. *Tu lui leur sembles fidèle
    \hspace{1cm} cl.(nom) cl.(à) cl.(à) seem faithful
    \hspace{1cm} ‘You seem to him to be faithful to them’ or ‘You seem to them to be faithful to him’
  \item d. *Elle y y pensait
    \hspace{1cm} cl.(nom) cl.(à) cl.(loc) was thinking
    \hspace{1cm} ‘She was thinking about it there’
\end{itemize}

Finally, Miller and Sag emphasise that certain exceptional properties of clitic morphology (as discussed in §5.2.1 can be described in terms of constraints that make reference to specific lexemes and that these forms take priority over any general morphological rules. Moreover, this is precisely as expected given their assumption that ‘cliticization’ is, in fact, entirely a matter morphological realization.

### 5.2.2 Monachesi’s approaches

Monachesi (1996) and subsequent papers of hers explore the role of morphology within HPSG. As previously mentioned, one such subsequent paper of hers, called ‘HPSG and the interfaces\textsuperscript{17}, shows that there are two main approaches to morphology in HPSG - word syntax approaches and realizational approaches. She looks at both approaches in detail but favours the latter approach in relation to the case study on clitics she presents. In this case study she reveals two quite similar, but yet different approaches to cliticization. The first approach is an approach of her own with respect to cliticization in Italian and the second approach is a review of Miller and Sag (1997).

**Realizational morphology and Italian clitics - Monachesi’s analysis**

For the analysis of Italian clitics, Monachesi assumes that cliticization is a lexical operation, which has both a syntactic/semantic effect and a morphophonological one. The latter effect is that verbs which have undergone this operation are enriched with the relevant featural

\textsuperscript{17}I could not find a specific reference for this .pdf file. However it is obtainable at the following URL - http://www.let.uu.nl/ Paola.Monachesi/personal/parisslides/les1phd-pr.pdf
information of the clitic (as provided in the lexicon), which is used in morphology and phonology for the realization of the cliticized verb form (which is created in the lexicon). In this way, clitics exist only in the phonology, as the spell out of certain morphosyntactic features of the verb. Hence, clitics, according to Monachesi, operate primarily in three levels of linguistic analysis, namely, syntax, morphology, and phonology. The former effect is reflected in the fact that clitics also exhibit certain properties typical of independent words since they must satisfy the subcategorization requirements of the verb of which they are a semantic argument. In so doing, they reduce the subcategorization requirements of the verb they attach to, hence the ungrammaticality of the sentence below:

\[(5.20)^*\text{Martina lo legge il libro}\]

\[\text{Martina cl.(acc) reads the book}\]

\[\text{‘Martina reads it the book’}\]

This sentence illustrates the point that Italian clitics, just like French clitics, are in complementary distribution with the full complements that they replace, and therefore both elements cannot appear in the one sentence, hence the ungrammaticality of \((5.20)^*\). However, it should be noted that if the full complement is left or right dislocated, its cooccurrence with a clitic pronoun is possible, as this is simply resumption of the pronoun. Therefore, Monachesi deems it necessary to provide a mechanism which can account for this phenomenon of complementary distribution of clitics and full complements so as to provide, in turn, the required featural representation. Within a lexically-based theory of grammar such as HPSG, she does this by positing a lexical rule called the **Complement Cliticization Lexical Rule (CCLR)**:

\[
\begin{align*}
\text{[word} & \\
\text{HEAD: verb} & \\
\text{VAL} & \mid \text{COMPS: } 1 \circ 2 \\
\text{CLTS: elist} & \rightarrow \left[ \text{VAL} \mid \text{COMPS: } 1 \right] \text{list(cl-ss)}
\end{align*}
\]

The rule applies to verbal forms that subcategorize for complements and its side effect is that of removing one complement at a time from the COMPS list of the verb and add this information as a value of the CLTS feature, which acts as the interface to morphology. In addition, this rule will have the side effect that the element in ARG-ST corresponding to the clitic will register the information associated with the clitic, as a consequence of structure sharing, a process which is in turn relevant to Binding Theory. Moreover, appropriate constraints relate the information contained in the CLTS list to the actual phonological realization of the pronominal clitic (see ‘The realization of the clitics’).

**The signature**

Following Bird and Klein (1994) and most of the work concerned with morphology in HPSG, Monachesi suggests that words have more structure than proposed in Pollard and Sag (1994). She thus revises the structure of the sign to include certain new relevant featural information for the morphological realizational approach that she wishes to take.
She assumes that the type word has MORPH as additional attribute with value *morph*. It is further partitioned into two subtypes, which are *complex-morph* and *basic-morph*. The attribute STEM is defined as appropriate for *morph* and it is inherited by both of its subtypes. *stemorword*, the value of the feature STEM, is also a subtype of sign. *Complex-morph* has an additional attribute associated with it, which is AFFIX. In addition, in the case of inflection, the attribute STEM has *stem* as value, while in the case of cliticization its value is *word*. Monachesi has thus followed Zwicky (1990) in assuming that stems constitute the input for inflectional processes while cliticization has an inflected word as stem and produces another inflected word. Cliticization, she reflects, constitutes thus an outer layer of inflectional morphology.

**Phonology**

She distinguishes affixes between prefixes and suffixes. The only appropriate attribute for affix, she adds, is PHON. She further contends that since affixes (and pronominal clitics) have only phonological information associated with them, it follows that they are not considered signs. Overall, her approach assumes that morphemes do not exist as lexical entries, but only as realization of certain morphosyntactic properties of the host. However, she employs the feature PHON to spell out the phonological information, as opposed to a function like in the approach of Miller and Sag (1997). Using this feature, it is thus possible to encode the prosodic properties of clitics and affixes and the prosodic hierarchy such as that proposed by Nespor and Vogel (1986). However, in order to do this, Monachesi deems it necessary to give more structure to the PHON value. Hence, again following Bird and Klein (1994), she assumes that *phon* has certain appropriate features, shown in (5.21), which are necessary to distinguish the segmental structure.

\[
\begin{align*}
\text{phon} & \left[ \text{SKEL: list of segments} \right] \\
\text{CONS: list of consonants} & \\
\text{VOW: list of vowels} & 
\end{align*}
\]

(5.21)

The realization of the clitics

Monachesi creates the link between the information contained in the CLTS list and the actual phonological realization of the clitic by means of appropriate constraints such as the one below:

\[
\begin{align*}
\text{complex-morph} & \left[ \text{STEM} \mid \text{SS} \mid \text{LOC} \mid \text{CAT} \mid \text{CLTS: } \langle NP[dat]\_3\_msg \rangle \right] \rightarrow \left[ \text{AFFIX: } \langle \text{affix} \rangle \right] \\
\text{PHON} & \left[ \text{SKEL: } \langle gl\_i \rangle \right]
\end{align*}
\]

(5.22)

This constraint states that if there is a STEM with a CLTS list with one element which is a third person singular, masculine, dative NP, it must be realized as a clitic whose phonological form is _gli_. Fortunately, certain generalizations can be expressed with respect to the position of the clitic e.g. if the verb is finite, the clitics precede it. The approach
can also be employed if more than one clitic is present. Furthermore, it can deal with the morphophonological idiosyncrasies and the arbitrary gaps which are typical of cliticization. Adopting to Monachesi’s approach, a cliticized verb form like *gli spedisce* ‘He sends him’ is associated with the following description:

```
word
PHON: \(pw\)
SKEL: \(\langle gli \rangle \oplus \langle spedisce \rangle\)
complex-morph
PHON: \(pw\)
SKEL: \(\langle spedisce \rangle\)
MORPH: \[\text{complex-morph}\]

[\text{Affix:}] prefix
PHON: \(\text{syl}\)
SKEL: \(\langle gli \rangle\)
SYNSEM: \[\text{Affix:}\]
```

### 5.2.3 Comparison between the two approaches

Given that two very relevant approaches suggest themselves for use in my analysis, I wanted to discover the major differences between the two so as to choose one in particular to either use or modify for use. Certain similarities and differences indeed arose upon inspection of the two approaches.

Monachesi’s analysis of cliticization indeed shares some insights with that which Miller and Sag (1997) have proposed for French. In both proposals, clitics are considered lexically attached inflectional affixes that satisfy the subcategorization requirements of the verb of which they are an argument. In addition, both approaches take the morphophonological aspect of cliticization into consideration where it plays a relevant role. The two approaches, however, differ significantly in their HPSG formalization of these basic insights.

In Monachesi’s approach, a lexical rule is used while constraints on types are employed in the analysis of Miller and Sag, except in the treatment of the clitic *en*. Miller and Sag assume a distinction between plain and cliticized words in French. However, Monachesi refutes such a distinction for the language on the grounds that it is not a natural one since only verbs can be cliticized in French. She claims that her approach using the lexical rule captures this property as well as the fact that cliticized verbs and uncliticized ones differ only in the way they have their complements realized. In Miller and Sag’s approach, the relevant information which plays a role in the realization of the clitics is encoded in ARG-ST while in Monachesi’s it is encoded in CLTS. I disagree with Monachesi’s argument here. It might seem ‘unnatural’ to posit a distinction between plain and cliticized words in French, but it seems that in the context of the approach, this assumption is perfectly
suitable (at least when the very good results of their analysis are taken into account) and
indeed desirable. If we are to talk about cliticized verbal forms, and posit a category for
them, one has to posit also some kind of reference category, namely plain word.

The approach that Miller and Sag adopt with respect to clitic ordering is inspired
by template morphology since clitics belong to different slots. Monachesi claims that a
shortcoming of this treatment is that it predicts the possibility to have several clitics
attached to the verb and maintains that this is not the case. It was for this reason,
she added, that she didn’t adopt a templatic approach. Furthermore, Miller and Sag do
not mention how their templatic approach could be extended to deal with the kind of
morphophonological idiosyncrasies that Monachesi discusses in the case of Italian clitics.
However, I disagree with Monachesi’s argument here because it is a completely natural
situation in French to have a cluster of clitics preceding a particular verb. Hence, the
template morphology described in (Introduction) is, in my opinion, a perfectly suitable
and natural approach to take.

In Miller and Sag’s treatment the relation between morphology and phonology is not
spelled out. The \( F_{PRAF} \) function should determine the phonology of clitic words, however
it seems to Monachesi that this function determines the morphological form and not the
phonological one.

Finally, in Miller and Sag’s approach, matters of enclisis and proclisis are treated as a
morphological effect while, according to Monachesi, this is usually considered as a phono-
logical property of clitics.

5.3 Review of my approach

As touched upon in Chapter 1, there are certain underlying theoretical issues to this
project whose influence surfaces in many aspects of the project. The main underlying
issue that I have assumed in my project concerns subcategorization. As stated throughout
the preceding chapters, I have chosen to define my SUBCAT list in terms of a flat structure.
Moreover, I have explicitly stated that I am not adopting an HPSG3-like or an LFG-like
approach to subcategorization in terms of grammatical functions. My reasons for this are
several, but the most important reason has stemmed from the failed efforts of Edward
Keenan to get towards a universal definition of subject, as a grammatical function. His
efforts only got him ‘towards’ such a definition. He concluded that defining the subject of
a sentence is based on human intuition and it has been clearly illustrated during the course
of this project through the analysis of certain sentences that his arguments are completely
justified.

My approach to subcategorization, therefore, uses a flat SUBCAT list. When I say
‘flat’, I mean that the SUBCAT list has no commitment to grammatical functions. It is
exactly the type of SUBCAT list adopted by Pollard and Sag’s HPSG2 that I am referring
to here. It shall be thus adopted for the analysis of French clitics in the forthcoming
chapter.
5.4 The novel contribution

As outlined in Chapter 1, the primary aim of this project is to provide a novel contribution to the clitic theory. Clitics have been explored to such an extent in the literature that, upon commencing this project, it seemed that it would be difficult to come up with such a novel contribution but I have, nonetheless, found a fresh, unique and innovative approach to the analysis of French clitics. This contribution is two-fold:

1. Revision of Miller and Sag (1997) to comply with my chosen approach
2. Diagnostic principle of verb-ARG-ST interaction

5.4.1 Revision of Miller and Sag (1997)

I propose, firstly, to revise the Miller and Sag (1997) framework to fit in with my chosen approach to subcategorization as described above. Their approach to subcategorization is that of HPSG3. They thus posit a valence feature, VALENCE, which is a HEAD feature whose attributes are the valency lists SUBJ, SPR and COMPS respectively. However, this is the only modification I shall make to their framework. I shall inherit all their new introductions (features, type and synsem hierarchies, $F_{PRAF}$) into my chosen framework as I deem them to be of extreme benefit to my analysis.

Diagnostic principle of verb-ARG-ST interaction

Secondly, I shall posit a diagnostic principle on verbs that cliticize to see how they interact with ARG-ST. The main goal of this investigative aspect to my approach is to discover if ARG-ST should be included in my AVM representations as a sister to SYNSEM or as a HEAD or CAT feature. Before I come to the actual condition itself, I shall define the key terms that appear in the definition of the condition.

Argument type

The arguments of a verb can be of animate or inanimate type. For example, in the sentence, *Mary loves John*, the object NP, *John*, is the object of Mary’s love and is an animate (‘living’) argument of the verb *loves*. On the other hand, in the sentence *Mary loves pens*, the object NP *pens* is an inanimate argument of the verb *loves*.

Pronominal type

As we know from Chapter 2, nominals can take the form of regular canonical overt NPs (referred to in Chomsky’s three-way classification as R-expressions or referential expressions e.g. *John*). However, when it comes to their pronominalization, they can become either reflexive or nonreflexive pronouns, depending on the properties they exhibit. For example, in the sentence, *John hit him*, we can tell a number of things. Firstly, the pronoun *him*
is replacing a person because it takes an animate form him as opposed to it. Secondly, we know that John and him are not the same person because they are not coindexed in this particular discourse. Moreover, they could not be the same person anyway because the pronoun him is nonreflexive and cannot refer back to John. However, in the sentence, John loves himself, we know that John and himself are the same entity because himself is a reflexive pronoun and it refers to the entity John - it is an anaphor.

**Verb arity**

Verb arity refers to the number of arguments that a verb takes. For example, the verb *snore* is of arity 1 because it only ever has one argument, namely it’s subject NP. The verb *hit* is of arity 2 because it selects for two arguments, namely, its subject NP and its object NP. The verb *give*, on the other hand, is of arity 3 because it takes three arguments, namely, its nominative subject NP, its accusative object NP and its dative object NP. Arity can also be referred to in terms of ‘place relations’ i.e. a verb of arity 1 is called a one-place relation, a verb of arity 2 is called a two-place relation, and so on. Each argument of a verb has a particular argument type i.e. animate or inanimate. Furthermore, if a verb’s argument is a pronoun, then it will also bear a specification for a specific pronominal type.

**The interaction between verb and ARG-ST**

One of the areas of HPSG theory that hasn’t received a lot of attention is question mark that surrounds the exact location of ARG-ST. In the previous chapter I mentioned that Asudeh (1998), Manning (1996), Müller (2001) and (Przepiórkowski, 1999) had made efforts to examine the possibilities of locations of ARG-ST according to various factors such as the target language in question, the type of syntactic phenomena considered and, primarily, how ARG-ST can interact with both the lexical and phrasal levels of syntax trees. According to their various findings, they noticed that ARG-ST is quite unrestricted in its potential to be perfectly suited to just one location in the internal structure of a sign. Although its classical location is as a CAT feature and remaining at the lexeme level, others have suggested that it can be a HEAD feature (thus propagating up the syntax tree) or a feature that is a sister to the outer features of the sign such as SYNSEM and MORPH. Based on works of the aforementioned linguists, I have derived the following diagnostic principle that I propose determines the proper location of ARG-ST for the analysis of French clitics:

*If, on the basis of argument type (whether animate or inanimate), one finds a difference in capacity to utilise pronouns (whether reflexive or nonreflexive) that are relevant to ARG-ST, depending on the verb arity and whether that verb is acting as V0, V’ or a V” (that is, given the architecture of HPSG discussed so far, that each of these verbal categories is at a different depth in a phrase structure analysis of an utterance), then this constitutes direct evidence that ARG-ST should propagate up the syntax tree. Furthermore, if the difference*
varies on the basis of predicate types and the arguments that these different predicates expect to combine with, this is further evidence of the role of ARG-ST being separate from the valency lists in the verb. If, on the other hand, there is no such difference, this implies that ARG-ST should remain at the lexeme level as a feature only of lexical signs.

Based on the analysis of cliticization in an array of data sentences that I shall consider below, this principle will allow me to see if any interaction occurs between verb and ARG-ST.

5.4.2 Data sentences

The aim of this section is to determine the appropriate location of ARG-ST within the structure of the sign for the analysis of clitics. When analysing the data sentences the above diagnostic principle in addition to certain syntactic factors will enable me to derive the desired location for ARG-ST. These factors include clitic climbing, clitic doubling, clitic placement/order, and the strong/weak pronoun distinction.\(^\text{18}\)

First of all, let’s apply the diagnostic principle to the following arity-2 verbs. The first group of arity-2 verbs are verbs that take a direct object and which, therefore, cliticize with an accusative clitic, i.e. either *le* or *la*. The second group of arity-2 verbs are verbs which take an indirect object, and which, therefore, cliticize with a either *lui* or *y*.

It is visible from the above examples that there is no difference in capacity to analyse the various pronominals of French with respect to the arity-2 verbs examined. Clitic climbing tests were also carried out on these verbs and the overall distribution of the pronominals considered didn’t differ from one example to the next. Now, let’s consider arity-3 verbs.

It is clear from the tests on arity-3 verbs in 5.7, therefore, that there is not a difference in capacity to utilise pronominals relevant to ARG-ST. Now let’s examine the clitic doubling factor, as illustrated in (5.23).

\[\text{(5.23)}\]

\[\begin{align*}
\text{(5.23)a.} & \quad \text{Marie donne le livre à Jean} \\
& \quad \text{Marie le lui donne} \\
& \quad \text{‘Mary gives it to him’} \\
\text{b.} & \quad \text{*Marie lui donne un livre à Anne} \\
& \quad \text{Marie le lui donne un livre} \\
& \quad \text{‘Mary gives it to him a book’}
\end{align*}\]

In relation to clitic doubling, we know that it is not accounted for in French, hence the ungrammaticality of (5.23.b) above. In relation to clitic ordering, it is shown in table 5.1 above that ordering of the French affixes is so rigid that any deviance from the norms of ordering will inevitably result in an ungrammatical sentence. Finally, in relation to

\(^{18}\)Please note that ‘?’ placed in front of a sentence implies that this sentence is deemed ‘marginal’ in terms of how interpretable it is. I have not, however, used this notation in this project to imply that a particular sentence is ill-formed.
### Table 5.5: Distribution of clitics in arity-2 verbs whose 2nd argument is a direct object

<table>
<thead>
<tr>
<th>Verb</th>
<th>Uncliticized</th>
<th>Cliticized</th>
</tr>
</thead>
<tbody>
<tr>
<td>aimer</td>
<td>Jean aime Marie</td>
<td>Jean l’aime</td>
</tr>
<tr>
<td></td>
<td>Jean aime le chocolat</td>
<td>Jean l’aime</td>
</tr>
<tr>
<td></td>
<td>Jean a aimé Marie</td>
<td>Jean l’a aimée</td>
</tr>
<tr>
<td></td>
<td>Jean a aimé le chocolat</td>
<td>Jean l’a aimé</td>
</tr>
<tr>
<td>regarder</td>
<td>Jean regarde Marie</td>
<td>Jean la regarde</td>
</tr>
<tr>
<td></td>
<td>Jean regarde le match de foot</td>
<td>Jean le regarde</td>
</tr>
<tr>
<td></td>
<td>Jean a regardé Marie</td>
<td>Jean l’a regardée</td>
</tr>
<tr>
<td></td>
<td>Jean a regardé le match de foot</td>
<td>Jean l’a regardé</td>
</tr>
<tr>
<td>finir</td>
<td>*Jean a fini Marie</td>
<td>*Jean l’a finie</td>
</tr>
<tr>
<td>tuer</td>
<td>Jean a fini ses devoirs</td>
<td>Jean les a finis</td>
</tr>
<tr>
<td></td>
<td>*Jean a tué Marie</td>
<td>*Jean l’a tuée</td>
</tr>
<tr>
<td></td>
<td>*Jean a tué le livre</td>
<td>*Jean l’a tué</td>
</tr>
<tr>
<td>interrompre</td>
<td>?Jean a interrompu Marie</td>
<td>?Jean l’a interrompue</td>
</tr>
<tr>
<td>conduire</td>
<td>?Jean a conduit Marie</td>
<td>?Jean l’a conduite</td>
</tr>
<tr>
<td>monte</td>
<td>*Jean a monté Marie</td>
<td>*Jean l’a montée</td>
</tr>
<tr>
<td></td>
<td>Jean a monté l’escalier</td>
<td>Jean l’a monté</td>
</tr>
<tr>
<td>vouloir</td>
<td>Jean a voulu Marie</td>
<td>Jean l’a voulu</td>
</tr>
<tr>
<td></td>
<td>Jean a voulu la pomme</td>
<td>Jean l’a voulu</td>
</tr>
</tbody>
</table>

The strong/weak distinction, it was shown in §4.2.2 that, for the most part, strong form pronouns replace full lexical NPs and are much more independent than the weak forms. However, it was also shown that many of the differences that occur between the strong and weak forms are due to arbitrary gaps. Nonetheless the strong-weak distinction should still be examined to see if any significant difference in predicate type ensues. The particular comparison of *donner* and *présenter* is used.

(5.24)a.  
Il m’a présenté à Jean  
Il m’a présenté à lui  
‘He presented me to him’  

b.  *Il m’a donné à Jean  
Il m’e lui a donné  
‘He gave me to John’
Table 5.6: Distribution of clitics in arity-2 verbs whose 2nd argument is an indirect object

<table>
<thead>
<tr>
<th>Verb</th>
<th>Uncliticized</th>
<th>Cliticized</th>
</tr>
</thead>
<tbody>
<tr>
<td>téléphoner</td>
<td>Jean a téléphoné à Marie</td>
<td>Jean lui a téléphoné</td>
</tr>
<tr>
<td></td>
<td>*Jean a téléphoné au livre</td>
<td>*Jean lui a téléphoné</td>
</tr>
<tr>
<td>parler</td>
<td>Jean a parlé à Marie</td>
<td>Jean lui a parlé</td>
</tr>
<tr>
<td></td>
<td>?Jean a parlé au livre</td>
<td>?Jean lui a parlé</td>
</tr>
<tr>
<td>penser</td>
<td>Jean a pensé à Marie</td>
<td>Jean y a pensé</td>
</tr>
<tr>
<td></td>
<td>Jean a pensé au livre</td>
<td>Jean y a pensé</td>
</tr>
<tr>
<td>aller</td>
<td>*Jean est allé à Marie</td>
<td>*Jean y est allé</td>
</tr>
<tr>
<td></td>
<td>Jean est allé au magasin</td>
<td>Jean y est allé</td>
</tr>
<tr>
<td></td>
<td>*Jean est allé au livre</td>
<td>*Jean y est allé</td>
</tr>
<tr>
<td>avoir besoin de</td>
<td>Jean a besoin de Marie</td>
<td>Jean a besoin d’elle</td>
</tr>
<tr>
<td></td>
<td>Jean a besoin du livre</td>
<td>Jean en a besoin</td>
</tr>
<tr>
<td>avoir marre de</td>
<td>Jean a marre de Marie</td>
<td>Jean a marre d’elle</td>
</tr>
<tr>
<td></td>
<td>Jean a marre du livre</td>
<td>Jean en a marre</td>
</tr>
</tbody>
</table>

5.5 Putting it all together - an example

Having defined the two-fold novel contribution, I am now in able to give an example of how my analysis in the following chapter will work. Let’s take the sentence *Jean lui donnera le livre* from (5.25) above. The resultant AVM under the Miller and Sag (1997) framework would appear as follows:

(5.25)

As can be seen, the representation of this sentence includes a feature structure value for the VAL(ENCE) feature, which is that the SUBJ of the sentence be structure-shared with NP[3sg] synsem on ARG-ST. Similarly for COMPS, its value is structure-shared with the NP[acc] on ARG-ST. And as for the pronominal affix, it does not, of course, appear in VAL (constituent structure or syntax), but it does however have slot on ARG-ST.

Reformulating this representation to comply with my chosen approach, we get the AVM in 5.26:
Table 5.7: Distribution of clitics in arity-3 verbs with both a direct and an indirect object

<table>
<thead>
<tr>
<th>Verb</th>
<th>Uncliticized</th>
<th>Cliticized</th>
</tr>
</thead>
<tbody>
<tr>
<td>donner</td>
<td>*Jean a donné Marie à Pierre</td>
<td>*Jean la lui a donnée</td>
</tr>
<tr>
<td></td>
<td>Jean a donné le livre à Pierre</td>
<td>Jean le lui a donné</td>
</tr>
<tr>
<td>offrir</td>
<td>*Jean a offert Marie à Pierre</td>
<td>*Jean la lui a offert</td>
</tr>
<tr>
<td></td>
<td>Jean a offert le cadeau à Pierre</td>
<td>Jean le lui a offert</td>
</tr>
<tr>
<td>présenter</td>
<td>Jean a présenté Marie à Pierre</td>
<td>Jean la lui a présenté</td>
</tr>
<tr>
<td></td>
<td>Jean a présenté le livre à Pierre</td>
<td>Jean le lui a présenté</td>
</tr>
<tr>
<td>permettre</td>
<td>Jean a présenté un livre à Pierre</td>
<td>*Jean lui le a présenté</td>
</tr>
<tr>
<td></td>
<td>Jean a permis à Marie de sortir</td>
<td>Jean lui permis de sortir</td>
</tr>
<tr>
<td>interdire</td>
<td>Jean a interdit à Marie de sortir</td>
<td>Jean lui a interdit</td>
</tr>
<tr>
<td></td>
<td>Jean a interdit au livre de sortir</td>
<td>*Jean lui a interdit</td>
</tr>
</tbody>
</table>

As can be seen, I have discarded all reference to the VALENCE feature and its inherent grammatical function valency lists, namely SUBJ, COMPS and SPR. Instead, we have just the one valence feature, SUBCAT, and it is a flat list containing the information relating to the elements that are involved in subcategorization i.e. the NP Jean and the NP le livre. The pronominal affix, lui, is absent from valency or subcategorization, but present on ARG-ST.

5.6 ARG-ST alternatives

There are certain alternative locations for ARG-ST within the sign in HPSG to the one chosen for my analysis. This section reviews these alternative approaches and, for each alternative, explains why it was not chosen for the analysis of clitics in this project.

5.6.1 ARG-ST as a sister of SYNSEM

ARG-ST was initially treated as a sister feature to the outermost features of the sign such as SYNSEM, MORPH or PHON. However, if I was to adopt this approach for the analysis
of clitics in this project, a separate principle would be required in order to capture the fact the relationship between SUBCAT and ARG-ST as illustrated in the above AVM. Moreover, such an approach would be inconsistent with the fact that subcategorization (SUBCAT) selects synsem values and not full signs. Thus, nothing could select for a synsem on the basis of its ARG-ST.

5.6.2 ARG-ST and a special purpose feature for clitic clusters

A second possibility is a special purpose feature for clitic clusters and accompanying principles that determine their interaction with linear order, constituent structure, and propagation. This approach is similar to that of Monachesi (1996) where an AFFIX features is proposed to account for the affixal information associated with clitics.

5.6.3 ARG-ST as a HEAD feature

The only other alternative is to raise the ARG-ST through the tree. The easiest way to do this is to make it a HEAD feature, because the Head Feature Principle already propagates the feature up the spine of the phrase structure tree. However, this is inconsistent with the needs of Binding Theory to both propagate the value, and increase its contents on the way up. Overall, given that selection for the ARG-ST value is desirable, the Miller and Sag (1997) approach seems to be the best on offer for the analysis of clitics, try as we might to find something else.

5.7 Conclusion

In this chapter, I have outlined the path I wish to take to the forthcoming analysis of clitics in French. In choosing such a path, I considered two past approaches to clitic analysis - Miller and Sag (1997) and Monachesi (1996) along with a subsequent paper of hers on ‘HPSG and the interfaces’. I found that both approaches place strong emphasis on the overlapping that occurs between syntax, phonology and morphology, when studying Romance pronominal clitics. Clitics incorporate all of these levels of linguistic analysis, something which makes their study highly interesting. I reviewed both approaches and presented some similarities and differences between the two approaches. I then decided to take the Miller and Sag (1997) approach and modify it according to the chosen path of subcategorization that I stated I would be using throughout this project. I then provided a diagnostic principle relating to the interaction between verbs that cliticize and ARG-ST in order to find out where the best location for ARG-ST would be in the AVMs I would be using in my analysis. Based on the data analysed and having refuted alternative approaches to the location of ARG-ST, it was concluded that ARG-ST should be analysed as a CATEGORY feature (thus, inside SYNSEM) so that it won’t propagate up the syntax tree. Finally I provided an example putting all of the above together to show how my
proposed analysis will work in the following chapter when it comes to analysing all the system of French clitics as a whole.

Overall, this chapter has illustrated that despite the numerous different approaches to French clitic analysis, only some of which were outlined in (4.6), there are, however, as I have illustrated in (5.4), still novel contributions that can be made to this field of analysis. My proposed analysis, although based on the Miller and Sag (1997) framework, still offers new insights into clitic theory, the most promising of which appears to be the suggestion made regarding ARG-ST’s propagation up the tree to account primarily for clitic climbing (§5.6.3). Although it is not a primary aim of my analysis to discover new insights into the properties of French clitics, it would be nonetheless a fortunate result if such new insights were to ensue from the analysis. Moreover, it is a primary aim of this project to have made a novel contribution to this very specific area of syntactic analysis and through the use of a framework such as the one I have suggested, I feel that I have achieved this goal. However, the following chapter, the analysis, will put this framework into practice in order to find out if it will prove to be suitable for French clitic analysis.
Chapter 6

The analysis
6.1 Introduction

In this chapter I shall provide an HPSG analysis of French clitic pronouns. I shall use the revised approach outlined in Chapter 5 to carry out this task. I also aspire to investigate the phenomena of clitic theory as outlined in Chapter 4.

6.2 The analysis

In this section I provide my HPSG analysis of French clitics. The main goal of this chapter is to demonstrate the efficacy of my proposed approach. In order to do so, I shall consider each individual clitic in turn, with the secondary aim of discovering new insights into the properites of that clitic.

Although it is an optional decision, I have chosen to include all agreement and case features relating to the constituents selected for on ARG-ST. If it is the case that these ARG-ST elements are required to be represented on SUBCAT, then the appropriate structure-sharing is made. The CAT information is of most relevance in this analysis, and so, all AVMs are slightly underspecified so as to only include the more relevant information relating to the cliticization process. The following are the sentences I have selected to analyse:

**Subject pronouns:**

*Je* – Je lave ma voiture  
*Tu* – Tu aimeras les chiens  
*Il* – Il habitait à Paris  
*Elle* – Elle parle l’italien  
*On* – On renverra cet étudiant  
*Nous* – Nous faisions le ménage  
*Vous* – Vous le tuerez  
*Ils* – Ils la voient  
*Elles* – Elles portent des jupes

**Nonsubject pronouns:**

*me* – Il me détèste  
*te* – Je t’aime  
*se* – Robert s’habillera  
*nous* – Carl nous apprend la linguistique computationnelle  
*vous* – Je vous le donnerai  
*se* – Elles se maquillent  
*le* – Je l’aidais  
*la* – Tu la manges  
*les* – Nous les avons vus  
*lui* – Jean lui ressemblait  
*leur* – Dave leur a raconté une histoire
y – Les garçons y tiennent
en – Dave en vient

### 6.2.1 Subject pronoun analysis

In this section I carry out the HPSG analysis of the French subject clitics je, tu, il, elle, on, nous, vous, ils, elles examining each one in turn.

#### Je

The clitic *Je* is the first person singular clitic, and it corresponds to *I* in English. The sentence I chose to analyse is *Je lave ma voiture*. The corresponding glossed sentence and AVM are shown below in (6.1) and (6.2) respectively.

\[
\begin{align*}
&\text{(6.1)} \quad \text{Je} \quad \text{lave} \quad \text{ma} \quad \text{voiture} \\
&\quad \text{cl.(nom) wash my car} \\
&\quad \text{‘I wash my car’}
\end{align*}
\]

\[
\begin{align*}
&\text{(6.2)} \quad \text{MORPH:} \quad \left[\begin{array}{c}
\text{FORM: je-lave} \\
\text{I-FORM: lave}
\end{array}\right] \\
&\quad \text{SS | LOC | CAT:} \quad \left[\begin{array}{c}
\text{HEAD:} \quad \left[\begin{array}{c}
\text{verb} \\
\text{VFORM: indic}
\end{array}\right]
\end{array}\right] \\
&\quad \text{SUBCAT:} \quad \langle \mathbb{2} \rangle \\
&\quad \text{ARG-ST:} \quad \langle \mathbb{2} NP[\text{acc}, \mathbb{1} NP[p-aff,1sg,nom]] \rangle
\end{align*}
\]

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of *je* is *su-cl-wd*. The LEXEME type is LAVER and the INFLN information is *1sg-pres-indic-vb*. Hence, in the MORPH feature, the FORM of the *su-cl-wd* is *je-lave* and the I-FORM *lave*. The only element that can be realized on SUBCAT is the object NP, *ma voiture*. This is because this constituent is a ‘full’ or ‘overt’ NP. It is not a pronominal affix. *Je*, on the other hand, is such an affix, and thus it must be represented on ARG-ST, but has no place on SUBCAT. *ma voiture* must also be accounted for on ARG-ST as it is one of the verb *laver*’s arguments. In this case, its agreement features are as mentioned above and its CASE is accusative.

#### Tu

The clitic *Tu* is the second person singular clitic, and it corresponds to *You* in English. The sentence I chose to analyse is *Tu aimeras les chiens*. The corresponding glossed sentence and AVM are shown below in (6.3) and (6.4) respectively.

\[
\begin{align*}
&\text{(6.3)} \quad \text{Tu} \quad \text{aimer} \quad \text{les chiens} \\
&\quad \text{cl.(nom) love dogs} \\
&\quad \text{‘You will love dogs’}
\end{align*}
\]

\[
\begin{align*}
&\text{(6.4)} \quad \text{MORPH:} \quad \left[\begin{array}{c}
\text{FORM: tu-aimer} \\
\text{I-FORM: aimer}
\end{array}\right] \\
&\quad \text{SS | LOC | CAT:} \quad \left[\begin{array}{c}
\text{HEAD:} \quad \left[\begin{array}{c}
\text{verb} \\
\text{VFORM: indic}
\end{array}\right]
\end{array}\right] \\
&\quad \text{ARG-ST:} \quad \langle \mathbb{1} NP[p-aff,1sg,nom], \mathbb{2} NP[1sg,nom] \rangle
\end{align*}
\]
Tu aimeras les chiens
cl.(nom) will like the dogs
‘You will like the dogs’

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of the clitic is su-cl-wd. The LEXEME type is AIMER and the INFLN information is 2sg-fut-indic-vb. Hence, in the MORPH feature, the FORM of the su-cl-wd is tu-aimeras and the I-FORM aimeras. The only element that can be realized on SUBCAT is the object NP, les chiens. This is because this constituent is a ‘full’ or ‘overt’ NP. It is not a pronominal affix. Tu, on the other hand, is such an affix, and thus it must be represented on ARG-ST, but has no place on SUBCAT. les chiens must also be accounted for on ARG-ST as it is one of the verb laver’s arguments. In this case, its agreement features are as mentioned above and its CASE is acc.

Il
The clitic Il is a third person singular clitic, and it corresponds to He in English. The sentence I chose to analyse is Il habitait à Paris. The corresponding glossed sentence and AVM are shown below in (6.5) and (6.6) respectively.

Il habitait à Paris
cl.(nom) used to live in Paris
‘He used to live in Paris’

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of the clitic is su-cl-wd. The LEXEME type is HABITER and the INFLN information is 3sg-impf-indic-vb. Hence, in the MORPH feature, the FORM of the su-cl-wd is il-habitait and
the I-FORM *habitaît*. The only element that can be realized on SUBCAT is the indirect object NP, *à Paris*. This is because this constituent is a ‘full’ or ‘overt’ NP. It is not a pronominal affix. *Il*, on the other hand, is such an affix, and thus it must be represented on ARG-ST, but has no place on SUBCAT. *à Paris* must also be accounted for on ARG-ST as it is one of the verb *habiter*’s arguments. In this case, its agreement features are as mentioned above and its CASE is *à*.

**Elle**

The clitic *Elle* is a third person singular clitic, and it corresponds to *She* in English. The sentence I chose to analyse is *Elle parle l’italien*. The corresponding glossed sentence and AVM are shown below in (6.7) and (6.8) respectively.

(6.7) Elle parle l’italien

cl.(nom) speaks Italian

‘She speaks Italian’

\[
\text{MORPH: } \begin{bmatrix}
\text{FORM: elle-parle} \\
\text{I-FORM: parle}
\end{bmatrix}
\]

(6.8)

\[
\begin{bmatrix}
\text{SS} | \text{LOC} | \text{CAT}: \\
\text{HEAD: } \begin{bmatrix}
\text{verb} \\
\text{VFORM: indic}
\end{bmatrix}
\end{bmatrix}
\]

\[
\begin{bmatrix}
\text{SUBCAT: } \langle [2] \rangle \\
\text{ARG-ST: } \langle [2] \text{NP[acc]}, [1] \text{NP[p-aff,3sg,nom]} \rangle
\end{bmatrix}
\]

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of the clitic is *su-cl-wd*. The LEXEME type is PARLER and the INFLN information is *3sg-pres-indic-vb*. Hence, in the MORPH feature, the FORM of the *su-cl-wd* is *elle-parle* and the I-FORM *parle*. The only element that can be realized on SUBCAT is the direct object NP, *l’italien*. This is because this constituent is a ‘full’ or ‘overt’ NP. It is not a pronominal affix. *Elle*, on the other hand, is an affix, and therefore must be represented on ARG-ST, but can never appear on SUBCAT. *l’italien* must also be accounted for on ARG-ST as it is one of the verb *parler*’s arguments. In this case, its agreement features are as mentioned above and its CASE is *acc*.

**On**

The clitic *On* is a third person singular clitic, and it corresponds to *One* in English\(^1\). The sentence I chose to analyse is *On renverra cet étudiant*. The corresponding glossed sentence

\(^1\) *On* is used very freely in French, and thus it has quite a lot of meanings depending on the context in which it is employed. It can be used, for example, in a sentence such as *On s’est bien amusé* to mean *We enjoyed ourselves* or in a sentence such as *On va au cinéma ce soir!* to mean *Let’s go to the cinema this evening*. This great variety of possible meanings of *on* makes the use of this clitic very interesting syntactically. Perhaps the most popular use of *On*, however, is its employment as an alternative to the passive in French. (6.9) illustrates this phenomenon
and AVM are shown below in (6.9) and (6.10) respectively.

(6.9) On renverra cet étudiant cl.(nom) will send back this student
‘This student will be expelled’

(6.10) \[
\begin{align*}
\text{MORPH:} & \quad \begin{bmatrix}
\text{FORM: } & \text{on-renverra} \\
\text{I-FORM: } & \text{renverra}
\end{bmatrix} \\
\text{HEAD:} & \quad \begin{bmatrix}
\text{verb} & \text{VFORM: indic}
\end{bmatrix} \\
\text{SUBCAT:} & \quad \langle \text{2} \rangle \\
\text{ARG-ST:} & \quad \langle \text{2} \rangle \text{NP[acc]}, \langle \text{2} \rangle \text{NP[3sg,acc]}\end{align*}
\]

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of the clitic is su-cl-wd. The LEXEME type is PARLER and the INFLN information is 3sg-futur-indic-vb. Hence, in the MORPH feature, the FORM of the su-cl-wd is on-renverra and the I-FORM renverra. The only element that can be realized on SUBCAT is the direct object NP, cet étudiant. This is because this constituent is a ‘full’ or ‘overt’ NP. It is not a pronominal affix. Elle, on the other hand, is an affix, and therefore must be represented on ARG-ST, but can never appear on SUBCAT. cet étudiant must also be accounted for on ARG-ST as it is one of the verb renvoyer’s arguments. In this case, its agreement features are as mentioned above and its CASE is acc.

Nous

The clitic Nous is a first person plural clitic, and it corresponds to We in English. The sentence I chose to analyse is Nous faisions le ménage. The corresponding glossed sentence and AVM are shown below in (6.11) and (6.12) respectively.

(6.11) Nous faisions le ménage cl.(nom) used to do the housework
‘We used to do the housework’

(6.12) \[
\begin{align*}
\text{MORPH:} & \quad \begin{bmatrix}
\text{FORM: } & \text{nous-faisions} \\
\text{I-FORM: } & \text{faisions}
\end{bmatrix} \\
\text{HEAD:} & \quad \begin{bmatrix}
\text{verb} & \text{VFORM: indic}
\end{bmatrix} \\
\text{SUBCAT:} & \quad \langle \text{1} \rangle \\
\text{ARG-ST:} & \quad \langle \text{2} \rangle \text{NP[acc]}, \langle \text{2} \rangle \text{NP[1pl,3sg,acc]}\end{align*}
\]
CHAPTER 6. THE ANALYSIS

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of the clitic is su-cl-wd. The LEXEME type is FAIRE and the INFLN information is 1pl-imp-indic-vb. Hence, in the MORPH feature, the FORM of the su-cl-wd is nous-faisions and the I-FORM faisions. The only element that can be realized on SUBCAT is the direct object NP, le ménage. This is because this constituent is a ‘full’ or ‘overt’ NP. It is not a pronominal affix. Nous, on the other hand, is an affix, and therefore must be represented on ARG-ST, but can never be present on SUBCAT. le ménage must also be accounted for on ARG-ST as it is one of the verb faire’s arguments. In this case, its agreement features are highlighted above and its CASE is acc.

Vous

The clitic Vous is a second person plural clitic, and it corresponds to You (plural) in English. The sentence I chose to analyse is Vous le tuerez. The corresponding glossed sentence and AVM are shown below in (6.13) and (6.14) respectively.

(6.13)
Vous le tuerez
cl.(nom) cl.(acc) tuerez
‘You will kill him/it’

(6.14)

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of the clitic is su-cl-wd. The LEXEME type is TUER and the INFLN information is 2pl-fut-indic-vb. Hence, in the MORPH feature, the FORM of the su-cl-wd is vous-le-tuerez and the I-FORM tuerez. It is interesting to note that no elements of this sentence are realized on SUBCAT. This is because no constituents of the sentence constitute ‘full’ or ‘overt’ NPs - the verb TUER doesn’t subcategorize for any overt NPs in this case. It does, however, subcategorize for two pronominal affixes - one being the subject affix, vous, the other being the object (nonsubject) affix le. Although it is unstated in the context of the sentence, it is deducible that this object NP is of CASE acc. It is not, however, deducible as to whether this object is animate or inanimate. One might assume, initially that it is animate, as one would have a tendency to believe that one can only kill an animate object. On the other hand, the object could be inanimate, if, for instance one was referring to ‘le sentiment’ (the masculine noun in French for ‘feeling’). It should also be mentioned that in this example, there are no elements realized in the syntax i.e. SUBCAT is empty. This is because both of the arguments of the verb tuér are pronominal affixes, which only appear on ARG-ST.
Ils

The clitic *Ils* is the third person plural clitic, and it corresponds to *They* in English. The sentence I chose to analyse is *Ils la voient*. The corresponding glossed sentence and AVM are shown below in (6.15) and (6.16) respectively.

(6.15)

\[
\text{Ils la voient} \\
\text{cl.(nom) cl.(acc) see} \\
\text{‘They see it’}
\]

MORPH: 
\[
\begin{cases}
\text{su-cl-wd} \& \text{VOIR} \& 3\text{pl-pres-indic-vb} \\
\text{FORM: ils-la-voient} \\
\text{I-FORM: voient}
\end{cases}
\]

CAT: 
\[
\begin{cases}
\text{HEAD: [verb vb(indic)]} \\
\text{VFORM: indic} \\
\text{SUBCAT: \{\}} \\
\text{ARG-ST: \{NP[p-aff,3pl,nom], NP[p-aff,3sg,acc]\}}
\end{cases}
\]

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of *ils* is *su-cl-wd*. The LEXEME type is VOIR and the INFLN information is *3pl-pres-indic-vb*. Hence, in the MORPH feature, the FORM of the *su-cl-wd* is *ils-la-voient* and the I-FORM *voient*. No elements of this sentence are realized on SUBCAT. This is because no constituents of the sentence constitute canonical NPs - the verb VOIR doesn’t subcategorize for any overt NPs in this case. It does, however, subcategorize for two pronominal affixes - one being the subject affix, *ils*, the other being the object (nonsubject) affix *la*. Although it is unstated in the context of the sentence, it is foreseeable that this object NP is of CASE acc. It is not, however, evident from the context of the sentence whether this object is animate or inanimate. It can conceivably be both as the following example, (6.17) demonstrates.

(6.17)

a. *Ils la voient*

b. *Ils voient Sandrine-ANIMATE*

*Ils voient la pomme-INANIMATE*

‘They see (fem obj)’

It should also be mentioned that in this example, there are no elements realized in the syntax i.e. SUBCAT is empty. This is because both of the arguments of the verb *tuer* are pronominal affixes, which only appear on ARG-ST.

Elles

The clitic *Elles* is the third person plural clitic, and it corresponds to *They* in English, where the group of people in question are all females. The sentence I chose to analyse is *Elles portent des jupes*. The corresponding glossed sentence and AVM are shown below in (6.18) and (6.19) respectively.
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(6.18) Elles portent des jupes
cl.(nom) wear dresses
‘They are wearing dresses’

(6.19)

\[
\begin{aligned}
\text{MORPH: } & \left[ \begin{array}{c}
\text{FORM: } \text{elles-portent} \\
\text{I-FORM: } \text{portent}
\end{array} \right] \\
\text{HEAD: } & \left[ \begin{array}{c}
\text{verb} \\
\text{VFORM: } \text{indic}
\end{array} \right] \\
\text{SUBCAT: } & \left< \begin{array}{c}
\text{NP[acc]}, \text{NP[p-aff,3pl,nom]}
\end{array} \right>
\end{aligned}
\]

There are a few points worth discussing based on this AVM. Firstly, the REALZN type of \textit{elles} is \textit{su-cl-wd}. The LEXEME type is \textit{PORTER} and the INFLN information is \textit{3pl-pres-indic-vb}. Hence, in the MORPH feature, the FORM of the \textit{su-cl-wd} is \textit{elles-portent} and the I-FORM \textit{portent}. The only element that can be realized on SUBCAT is the object NP, \textit{des jupes}. This is because this constituent is a regular lexical NP and not a clitic. \textit{Elle}, on the other hand, is such a clitic, and thus it must be represented on ARG-ST, but has no place on SUBCAT. \textit{des jupes} must also be accounted for on ARG-ST as it is one of the verb \textit{porter}’s arguments. In this case, its agreement features are as mentioned above and its CASE is \textit{acc}.

6.2.2 Nonsubject pronoun analysis

In this section, I use my framework to analyse the nonsubject pronominal clitics of the French language. To reiterate, the point of this analysis is more focussed on applying the framework to the data, without much emphasis being placed on discovering new information on the particular clitics. On the other hand, it is my aim to simply put my framework into practice and demonstrate the efficiency of its application to the data. Therefore, my actual analysis will not be long, but it will however be sufficient to achieve the above goals.

\textit{me}

The sentence I chose to analyse is \textit{Il me déteste}. In this example, \textit{me} is a direct object of the verb \textit{détester}. \textit{me} is of course also an indirect and a reflexive clitic relating to a first person singular entity.

The structure of this sentence is given below in (6.20).

(6.20) Il me déteste
cl.(nom) cl.(acc) hates
‘He hates me’

The AVM for this sentence, (6.21), is as follows:
It can be seen from the AVM that nothing is realized syntactically in this sentence as the two arguments of the verb are both pronominal affixes, hence the empty SUBCAT list and the large ARG-ST list.

The sentence I chose to analyse is *Je t'aime*. In this example, *te* is a direct object of the verb *aimer*. *te* is of course also an indirect and a reflexive clitic relating to a second person singular entity. The structure of this sentence is given below in (6.22).

(6.22)

\[
\begin{array}{c}
\text{Je t’aime} \\
\text{cl.(nom) cl.(acc) loves} \\
\text{‘I love you’}
\end{array}
\]

The AVM for this sentence, (6.23), is as follows:

(6.23)

\[
\begin{array}{c}
su-cl-wd \otimes AIMER \otimes 1sg-pres-indic-vb \\
\text{MORPH: [FORM: je-t-aime]} \\
\text{I-FORM: aime} \\
\text{HEAD: [verb VFORM: indic]} \\
\text{SUBCAT: } \\
\text{ARG-ST: } NP[p-aff,1sg,nom], NP[p-aff,1sg,acc]
\end{array}
\]

It can be seen from the AVM that nothing is realized syntactically in this sentence as the two arguments of the verb are both pronominal affixes, hence the empty SUBCAT list and the large ARG-ST list.

The sentence I chose to analyse is *Robert s’habillera*. In this example, *se* is a direct object of the verb *s’habiller* and also the reflexive clitic referring to the third person singular object *Robert*. The structure of this sentence is given below in (6.24).

(6.24)

\[
\begin{array}{c}
su-cl-wd \otimes s’habiller \otimes 3sg-pres-indic-vb \\
\text{MORPH: [FORM: se-chaque]} \\
\text{I-FORM: habiller} \\
\text{HEAD: [verb VFORM: indic]} \\
\text{SUBCAT: } \\
\text{ARG-ST: } NP[p-aff,2sg,nom], NP[p-aff,2sg,acc]
\end{array}
\]

This *se* is the singular form, its plural form is exactly the same clitic orthographically.
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(6.24) Robert s’ habillera
Robert cl.(refl) dresses
‘Robert is dressing himself’

The AVM for this sentence, (6.25), is as follows:

$$
\begin{align*}
\text{FORM: } s\text{-habillera} \\
\text{I-FORM: } habillera \\
\text{HEAD: } \verb|verb| \\
\text{VFORM: } indic \\
\text{SUBCAT: } \langle \Box \rangle \\
\text{ARG-ST: } \langle \Box NP[3sg,nom], \Box NP[3sg,acc], NP[p-aff,1pl,à]\rangle
\end{align*}
$$

What is interesting about this example is that it demonstrates how HPSG caters for Binding Theory. The NP Robert is overt and thus forms part of the verb’s valence. The reflexive clitic se, however, cannot form part of the valency of the sentence because it is a pronominal affix and, thus, the only location where it can reside is on ARG-ST. Via structure-sharing of the [ ] tag, the overt NP also appears on ARG-ST, being an argument of the head verb s’habiller. Furthermore, it is on ARG-ST, as mentioned in Chapter 3, that Binding Theory in HPSG takes place. It is evident from (6.25) that coindexing occurs between the two elements on ARG-ST, thus ensuring that proper reference is made between the reflexive clitic and the canonical NP to which it refers.

nous

The sentence I chose to analyse is Carl nous apprend la linguistique computationnelle. In this example, nous is a indirect object of the verb apprendre à (‘teach’). nous is of course also a direct and a reflexive clitic relating to a first person plural entity. The structure of this sentence is given below in (6.26).

(6.26) Carl nous apprend la linguistique computationnelle
Carl cl.(à1) teaches computational linguistics
‘Carl teaches us computational linguistics’

The AVM for this sentence, (6.27), is as follows:

$$
\begin{align*}
\text{FORM: } nous\text{-apprend} \\
\text{I-FORM: } append \\
\text{HEAD: } \verb|verb| \\
\text{VFORM: } indic \\
\text{SUBCAT: } \langle \Box, \Box \rangle \\
\text{ARG-ST: } \langle \Box NP[3sg,nom], \Box NP[3sg,acc], NP[p-aff,1pl,à]\rangle
\end{align*}
$$
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This AVM tells us that there are two arguments of the verb *apprendre* in this sentence that would be realized in the constituent structure of the sentence. Both the elements are, of course, canonical in terms of *synsem*. Via their structure-sharing, they are also present on ARG-ST, along with the pronominal affix of this sentence, the dative clitic *nous*. This clitic, alternating with an à-dative phrase, is thus assigned the CASE \( \acute{a}_1 \).

**vous**

The sentence I chose to analyse is *Je vous le donnerai*. In this example, *vous* is an indirect object of the verb *donner*. *vous* is of course also a direct and a reflexive clitic relating to a second person singular or plural entity (see §4.2.1). The structure of this sentence is given below in (6.28).

\[
\text{(6.28) } \text{Je vous le donnerai} \\
\text{cl.(nom) cl.}(\acute{a}_1) \text{ cl.(acc) will give} \\
\text{'}I \text{ will give it to you'}
\]

The AVM for this sentence, (6.29), is as follows:

\[
\text{(6.29) } \begin{array}{c}
\text{su-cl-wd } \& \text{ DONNER } \& 1\textsg-fut-indic-vb} \\
\text{MORPH: } \begin{bmatrix}
\text{FORM: je-vous-le-donnerai} \\
\text{I-FORM: donnerai}
\end{bmatrix}
\end{array}
\begin{array}{c}
\text{SS } | \text{ LOC } | \text{ CAT: } \begin{bmatrix}
\text{HEAD: } \begin{bmatrix}
\text{verb} \\
\text{VFORM: indic}
\end{bmatrix}
\end{array}
\text{SUBCAT: } \langle \rangle \\
\text{ARG-ST: } \langle NP[1\textsg,nom], NP[p-aff,3\textsg,acc], NP[p-aff,2\textpl,\acute{a}_1]\rangle
\end{array}
\]

It is evident from the above AVM that there are no elements in this sentence that should be realized syntactically. Since they are all pronominal affixes the only place where they can be realized is on ARG-ST.

**se**

The sentence I chose to analyse is *Elles se maquillent*. In this example, *se* is a direct object of the verb *se maquiller*. *se* is of course also the reflexive clitic relating to a third person plural entity *elles*. The structure of this sentence is given below in (6.30)\(^3\).

\[
\text{(6.30) } \text{Elles se maquillent} \\
\text{Robert cl.(refl) dresses} \\
\text{’Robert is dressing himself'}
\]

The AVM for this sentence, (6.31), is as follows:

\(^3\)This *se* is the plural form
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This sentence also is an example of Binding Theory. No elements of the sentence are on SUBCAT as each one is a clitic. The use of the anaphor affix type a-aff explains that the reflexive se is an anaphor clitic, which is coindexed with, and corefers with, the nominative clitic Elle.

le

The sentence I chose to analyse is Je l’aidais. In this example, e is a direct object of the verb aider. The structure of this sentence is given below in (6.32).

The AVM for this sentence, (6.33), is as follows:

It can be seen from the AVM that nothing is realized syntactically in this sentence as the two arguments of the verb are both pronominal affixes, hence the empty SUBCAT list and the large ARG-ST list. In the context of this sentence, the object NP of the verb aider is the animate masculine singular accusative clitic, le.

la

The sentence I chose to analyse is Tu la mange. In this example, la is a direct object of the verb manger. The structure of this sentence is given below in (6.34).
The AVM for this sentence, (6.35), is as follows:

\[
\begin{align*}
\text{su-cl-wd} & \in \text{MANGER} \in 2sg\text{-}pres\text{-}indic\text{-}vb \\
\text{MORPH:} & \quad \begin{cases}
\text{FORM:} \quad tu\text{-}la\text{-}manges \\
\text{I-FORM:} \quad mange
\end{cases} \\
\text{SS | LOC | CAT:} & \quad \begin{cases}
\text{HEAD:} \quad \begin{cases}
\text{verb} & \quad \text{VFORM:} \quad indic \\
\text{ARG-ST:} & \quad \begin{cases}
\text{NP}[p\text{-}aff,2sg,nom], \text{NP}[p\text{-}aff,3sg,acc]
\end{cases}
\end{cases}
\end{cases}
\end{align*}
\]

It can be seen from the AVM that nothing is realized syntactically in this sentence as the two arguments of the verb are both pronominal affixes, hence the empty SUBCAT list and the large ARG-ST list. In the context of this sentence, the object NP of the verb manger is the inanimate feminine singular accusative clitic, la.

**les**

The sentence I chose to analyse is *Nous les avons vus*. In this example, les is a direct object of the verb voir. The structure of this sentence is given below in (6.36).

\[
\begin{align*}
\text{Nous les avons vus} \\
\text{cl.(nom) cl.(acc) have seen} \\
\text{‘We have seen it’}
\end{align*}
\]

The AVM for this sentence, (6.37), is as follows:

\[
\begin{align*}
\text{su-cl-wd} & \in \text{AVOIR} \in 1pl\text{-}pres\text{-}indic\text{-}vb \\
\text{MORPH:} & \quad \begin{cases}
\text{FORM:} \quad nous\text{-}les\text{-}avons \\
\text{I-FORM:} \quad avons
\end{cases} \\
\text{SS | LOC | CAT:} & \quad \begin{cases}
\text{V-AUX:} \quad avoir \\
\text{VOIR & past-p} \\
\text{VFORM:} \quad past-p \\
\text{ARG-ST:} & \quad \begin{cases}
\text{NP}[p\text{-}aff,1pl,nom], \text{NP}[p\text{-}aff,3pl,acc]
\end{cases}
\end{cases}
\end{align*}
\]

As we have seen, in French clitics undergo clitic climbing. Therefore, they do not attach to the verb that subcategorises for them but to a higher verb. Auxiliaries, among other verbs, trigger such a phenomenon. Following Miller and Sag (1997), my analysis accounts for clitic climbing through **argument composition**. In this sense, a functor, the auxiliary verb, inherits the ARG-ST requirements of its argument, the participle. In other words,
the ARG-ST requirements of the embedded verb are passed up to the trigger verb so that no clitic climbing actually occurs. This functor thus first combines with an 'unsaturated' argument and then with that argument’s arguments.

This is an example of clitic climbing, triggered by the auxiliary verb *avoir*. It is shown in (6.27) that there is one element that appears on the SUBCAT of the main verb of this AVM, *avoir*, the past-participle, in this case *vus*. Via structure-sharing, this participle also appears on ARG-ST. The past-participle itself has an ARG-ST, according to which it selects both the subject affix *nous* and the object affix *les*. The auxiliary, on the other hand, selects for both of the above affixes and the past-participle. It can be deduced from this AVM that Miller and Sag’s approach to clitic climbing is to send ARG-ST up the syntax tree, but instead of its arity remaining constant, it actually increases as one progresses up the syntax tree. This is a clever approach to clitic climbing and one that I decided to adopt as opposed to the alternative approaches outlined in §5.6.

**lui**

The sentence I chose to analyse is *Jean lui ressemblait*. In this example, *lui* is an indirect object of the verb *ressembler*. The structure of this sentence is given below in (6.38).

(6.38) Jean lui ressemblait  
cl.(nom) cl.(â1) eat  
‘You are eating it’

The AVM for this sentence, (6.39), is as follows:

\[
\begin{array}{l}
\text{MORPH: } \begin{bmatrix}
\text{FORM: lui-ressemblait} \\
\text{I-FORM: ressemblait}
\end{bmatrix}
\end{array}
\]

\[
\begin{array}{l}
\text{ARG-ST: } \begin{bmatrix}
\text{VERB: indic} \\
\text{SUBCAT: } \begin{bmatrix}
\{\text{NP[3sg.nom]}, \text{NP[p-aff,3sg.â1]}\}
\end{bmatrix}
\end{array}
\end{array}
\]

It can be seen from the AVM that only one element is realized syntactically in this sentence, the *canon* Jean.

**leur**

The sentence I chose to analyse is *Dave leur a raconté une histoire*. In this example, *leur* is an indirect object of the verb *raconter*. The structure of this sentence is given below in (6.40).

(6.40) Dave leur a raconté une histoire  
Dave cl.(â1) has told a story  
‘Dave told them a story’
The AVM for this sentence, (6.41), is as follows:

\[
\begin{align*}
&\text{ns-cl-wd} \& \text{AVOIR} \& 3\text{sg-pres-indic-vb} \\
&\text{MORPH:} \begin{cases}
\text{FORM: leur-a} \\
\text{I-FORM: a}
\end{cases} \\
&\text{HEAD:} \begin{cases}
\text{V-AUX: avoir} \\
\text{RACONTER} \& \text{past-p}
\end{cases} \\
\text{VFORM: past-p} \\
\text{V-AUX: avoir} \\
\text{CONT:} \begin{cases}
\end{cases} \\
\text{ARG-ST:} \begin{cases}
\end{cases} \\
\text{ARG-STAT:} \begin{cases}
\end{cases} \\
\text{CONT:} \begin{cases}
\end{cases}
\end{align*}
\]

This sentence also illustrates clitic climbing. See the commentary on (6.37) for a full description.

\textit{y}

The sentence I chose to analyse is \textit{Les garçons y tiennent}. In this example, \textit{y} is an indirect object of the verb \textit{tenir}. The structure of this sentence is given below in (6.42).

\begin{align*}
&\text{(6.42) Les garçons y tiennent} \\
&\text{The boys cl.(à)} \text{ hold} \\
&\text{‘The boys are sticking to them’}
\end{align*}

The AVM for this sentence, (6.43), is as follows:

\[
\begin{align*}
&\text{ns-cl-wd} \& \text{TENIR} \& 3\text{pl-pres-indic-vb} \\
&\text{MORPH:} \begin{cases}
\text{FORM: y-tiennent} \\
\text{I-FORM: tiennent}
\end{cases} \\
&\text{HEAD:} \begin{cases}
\text{VFORM: indic}
\end{cases} \\
\text{VFORM: indic} \\
\text{ARG-ST:} \begin{cases}
\end{cases} \\
\text{ARG-STAT:} \begin{cases}
\end{cases} \\
\end{align*}
\]

It can be seen from the AVM that only the overy NP \textit{les garçons} is realized syntactically in this sentence as the other argument of the verb is a pronominal affix.
The sentence I chose to analyse is *Dave en vient*. In this example, *en* is a indirect object of the verb *venir*. The structure of this sentence is given below in (6.44).

(6.44)Dave en vient  
Dave cl.(en) comes  
‘Dave comes from there’

The AVM for this sentence, (6.45), is as follows:

```
ns-cl-wd & VENIR & 3pl-pres-indic-vb
MORPH: [FORM: en-vient, I-FORM: vient]
HEAD: verb
VFORM: [indic]
SUBCAT: [NP[3sg,nom], NP[p-aff,3sg,de2]]
ARG-ST: [les garcons]
```

It can be seen from the AVM that only the overy NP *les garcons* is realized syntactically in this sentence as the other argument of the verb is a pronominal affix.

### 6.3 Clitic doubling and clitic trapping

Because clitic doubling does not occur in French, it was not included as part of this analysis. An account of clitic trapping, on the other hand, is given in Miller and Sag (1997). They posit features and rules for the causative verb *faire* in French, which is the classical example of a trigger of clitic trapping in French. I feel that their particular analysis is quite efficient and that I have nothing to contribute towards it. I therefore chose to omit any analysis of clitic trapping here. However, please refer to Miller and Sag (1997) for more on this topic.

### 6.4 Conclusion

A brief look at the data presented above reveals that French clitics seem to be ordered in a way that doesn’t have a straightforward connection with syntactic, semantic or phonological information. On the other hand, their order appears to be completely idiosyncratic. While for Spanish, for example, the notion of grammatical person plays a role in the linearization of clitics, this information doesn’t seem to be crucial for the ordering of French clitics. Furthermore, Wanner (1987) discovered that for Spanish the notion of case seems to play an important role in clitic distribution, unlike in French where case doesn’t appear

---

to be relevant in this respect. The possibility that clitics are also ordered according to their phonological shape is also rejected by Zwicky et al. (1994). Monachesi (1996) also illustrates that the order of clitics in Italian is not related to that of full complements. In fact, she shows that dative clitics in Italian precede accusative clitics while the opposite holds in the case of full complements. In addition, she demonstrates that clitics which have different functions occur generally in the same position, as in the case of dative and locative $ci$.

I found in this chapter that all the properties I had amassed on French clitics (such as their ordering, climbing, function and relevance to SUBCAT and ARG-ST) were revealed to be in accordance with my framework. Hence, nothing new from the point of view of data has been found in this chapter. The emphasis was not placed on this. The emphasis was placed however on the application of my framework to French clitics and I feel I have shown with clarity and in quite a lot of detail that this is the case.

A recourse to grammatical functions, I have learned, is not essential in any account of subcategorization. As I mentioned in Chapter 3, why have three valency lists when one suffices? I feel that my revision of Miller and Sag (1997) to assume only one valency list, that is, a flat SUBCAT list, has worked extremely well for the desired analysis of clitics here. Furthermore, my decision to adopt the approach of Miller and Sag (1997) in relation to clitic climbing has also proved to have worked well.
Chapter 7

Conclusion
7.1 Introduction

This chapter is the conclusion to the project. It discusses what has been achieved in the project, how my framework can be used in future studies and how the project could have been improved. The achievements of the project will be assessed to see if the main aims were followed through and to find out if a successful conclusion was reached having carried out the analysis on clitics. The main results and findings of the analysis and the research as a whole are highlighted. Future work is also suggested.

7.2 Main results

Clitics represent a challenge for linguistic theory because they appear to be independent words at the syntactic level, whereas they are simply part of words at the phonological and morphological level. Therefore, an appropriate account of cliticization has to take into account not only the syntactic properties of clitics, but also their morphological and phonological properties. In this respect, clitics are crucial for the understanding of the interaction between these different modules of grammar.

In this dissertation, I have presented a fresh approach to pronominal cliticization in French in terms of HPSG. My approach took the above properties of clitics into consideration. I have shown, based on the account of Italian cliticization by Monachesi (1996), that a template morphological approach to clitics is very suitable for the analysis of French clitics. I have revised the Miller and Sag (1997) framework in order to account for subcategorization in terms of a flat SUBCAT list so that those complements of HEAD elements which occur in the syntax of the sentence can be realized. I rejected the approaches of many HPSG syntacticians, in particular Robert Borsley, who argue for a subcategorization in terms of three separate valency lists based on the discrimination of the grammatical functions SUBJ, SPR and COMPS respectively into each valency list. This decision to reject this approach was aided by Keenan (1975) who could only get towards a universal definition of subject. Based on this, I concluded that SUBJ is undefinable and hence COMPS and SPR similarly. In addition, my framework made use of ARG-ST whose function in the analysis was two-fold. It catered for Binding Theory and it also provided a location for the realization of the clitics analysed.

Given the affixal status of French pronominal clitics, I have proposed a lexical analysis of cliticization to account for their behaviour. My approach is based primarily on Miller and Sag (1997). Their framework, as well as all their assumptions and properties in relation to French clitics, were inherited because I consider their synsem and CASE hierarchies, along with their plain versus cliticized word distinction, to be a highly efficient and straightforward approach to the analysis of French clitics in HPSG. That is to say, these sort hierarchies allow for the lexical information associated with clitics to be organised so that those properties which are common to specific word types can be factored out. On the other hand, Monachesi’s approach, using a lexical rule, accounts for groups of words whose specific information contents are related according to a recurrent pattern. I consider Miller
and Sag’s approach to provide a clearer specification of the morphology-syntax interface in the case of cliticization; hence their approach was chosen over that of Monachesi’s for the representation of French clitics in HPSG. Upon inheriting these features, I also decided to adopt my own approach to subcategorization. I also attempted to find the most suitable location within the sign for ARG-ST. This was done by carrying out certain tests of French data and by the assumption of a diagnostic principle whose purpose was to identify any interaction between verb and ARG-ST based on differences between verbs that cliticize and those that don’t (predicate type) according to their particular arity, the type of objects selected for, the type of pronoun they assume. It was found that ARG-ST is best analysed as a CAT feature for the analysis of French clitics. This approach was thus preferred to those of other linguists carrying out research in different areas to clitic theory who consider that ARG-ST can propagate up the syntax tree as a HEAD feature.

As we have seen, in French clitics undergo clitic climbing. Therefore, they do not attach to the verb that subcategorises for them but to a higher verb. In the analysis in the preceding chapter, I demonstrated that auxiliaries trigger such a phenomenon. Following Miller and Sag (1997), my analysis accounts for clitic climbing through argument composition. In this sense, a functor, the auxiliary verb, inherits the ARG-ST requirements of its argument, the participle. In other words, the ARG-ST requirements of the embedded verb are passed up to the trigger verb so that no clitic climbing actually occurs. This functor thus first combines with an ‘unsaturated’ argument and then with that argument’s arguments.

7.3 Knowledge gained

This project has furthered my knowledge of many issues. When beginning the project, my knowledge of the HPSG framework had diminished because I hadn’t used HPSG in two years. Upon completion of this project, however, I feel that I have a far superior knowledge of HPSG than I did before. I have discovered that HPSG is an extremely versatile formalism. It can be manipulated and modified to suit the particular analysis in which it is to be used. In my particular case, I manipulated HPSG to derive my own particular framework.

Furthermore, before I began to write this project, my knowledge of clitics was quite little. I had only studied clitics in small detail when in Paris on my Erasmus year. Upon completion of this project, I believe that I know a great deal more about clitic theory and its representation in HPSG and other frameworks such as LFG and GB. I find that French clitics are best analysed in HPSG as pronominal affixes or lexically-attached inflections to the verb which hosts them. Moreover, I feel that Miller and Sag’s approach to clitic analysis is the best one.

I feel that I have also furthered my knowledge of the French language in general. More particularly, I believe that my knowledge of the pronominal system of the French language has greatly increased. I expect that this will in turn be of much benefit for future standard of French. As pronouns in French encompass many other aspects of grammar such as
agreement, verb conjugation, negation and verb complementation, I feel that my overall knowledge of French grammar has increased. In addition, due to frequent allusion to the works of Monachesi on Italian clitics and HPSG, I feel that I have learned a great deal about the Italian clitic system. Furthermore, I believe that I have acquired a much wider scope of knowledge of clitic theory given the fact that I didn’t restrict my research to just French clitics.

I have also acquired certain skills thanks to this project. Before this project, my knowledge of how to write a linguistic dissertation wasn’t very great. I now feel competent in this area, which I expect will be of major benefit to me when it comes to writing more future papers. In addition, I have also gained experience using the LaTeX text editor which also proved to be difficult at times but produced satisfactory results with regard to the HPSG structures and the overall presentation of this project. LaTeX’s elegant representation of AVM structures, its repository of tools for the glossing and enumeration of example sentences and its very efficient manner of creating bibliographies were the major benefits of the editor with regard to my project.

However, it is also necessary to discuss what could be done to extend and improve the analysis so that its full potential can be realised.

7.4 Future work

7.4.1 Extension of Analysis

One of the main aims of this project was to develop a theory that allowed the most systematic analysis of French clitics as possible. It could be investigated as to whether the core of this theory could be adapted to other types of clitic structures, such as negation in French. Also, the adaptation of this theory could be extended to cover a wider range of languages such as Spanish, more detail into Italian or even Romanian. The analysis could also be extended by considering different versions of HPSG in which to couch the clitic data. LFG and GB data analyses could also be carried out to see how they differ in their results to those of the HPSG analyses. Finally, the location of ARG-ST could be varied (to a HEAD feature as previously suggested) to see if any major benefits or revelations are linked to such a change.

A project of this nature is never completely finished. There is always more that can be added in to further refine or improve matters. Certain factors ultimately restrict the amount of improvement that can be made to the project. Firstly and most importantly, a project such as this, which aims at providing novel contributions to an already substantially researched field of linguistics, demands more time. For instance, this project could equally have carried out as a master’s thesis. In general, there is almost always more data that can be considered to further consolidate an argument or generalisation. Furthermore, more phenomena can almost inevitably be examined in order to create further insights into the entity or entities being analysed. Overall, I have derived a lexical analysis of cliticization in HPSG. One of the advantages of this framework is that is provides the basis not only
CHAPTER 7. CONCLUSION

for theoretical linguistic work, but also for computational linguistic implementations.

7.4.2 LKB System

An original aim of this project was to develop a HPSG grammar to display the results of my analysis of French clitics using the LKB (Linguistic Knowledge Building) system, which was developed in Stanford University, California and commented on by Ann Copestake in her book Implementing Typed Feature Structure Grammars. LKB is designed for the implementation of grammars based on typed feature structures, but since every formally specifiable grammar can be cast in this format, it can be used for arbitrary grammars. I attended tutorial sessions on LKB provided by Hannes Riese and Andy Luecking of Bielefeld University. The tutorial was aimed at familiarising the learner with the components of the system, its architecture and its coverage. Overall I found that the system was very useful. It comes with a number of in-built basic grammars and which may be modified to suit ones own purposes. Therefore, I initially wanted to use this tool as a computational linguistic aspect to my project. Unfortunately, due to the complexity that surrounds HPSG, the analysis and theory modifications that I had to carry out during the course of this project, I discovered nearer the deadline that this would be too great a task. Future project work could be to implement a grammar using the LKB system, using the analysis done in this paper. This task would be very much suited to a student who is more interested in implementation rather than the theoretical side of computational linguistics.

7.4.3 Larger array of pronouns considered

Due to my motivations to only examine the personal pronominal clitics of the French language, I chose not to deal with any of the above categories of pronouns as to do so would require a substantially more amount of time and research. However, this task also suggests itself for future work. As suggested to me by Paola Monachesi, covering in much greater detail the strong versus weak pronoun distinction would be an intriguing task. Examining in greater detail the impersonal pronouns of the French language also suggests itself for possible future work.

7.4.4 Alternative ways to contribute fresh data

Collecting new data on French clitics was not an easy task. As discussed throughout this project, the field has been very well studied in the literature. From the outset, it was an aim of mine to try to contribute new data concerning French clitics via introspection or informal data gathering with native standard French informants. However, as I progressed further and further into my research I realised that it was wasn’t actually possible to come up with significant new results or properties pertaining to French clitics. I therefore chose to provide a novel contribution to the field of clitic theory via deriving a new framework of my own in which to analyse them. This idea was, of course, in line with the beneficial versatility of HPSG as discussed above. Nonetheless, if I had chosen to try to contribute
fresh data of some sort, three possible ways of proceeding occurred to me that I felt could provide interesting results.

1. Doing detailed sociolinguistic studies of the actual usage of a group or a set of groups of French speakers and trying to see what variation there is in their usage of clitics, and especially trying to see if there are correlations among different variants, for example, people who use pattern X also always use pattern Y, people who use pattern X never use pattern Y, etc.

2. Doing detailed corpus studies on large French corpora to find what clitic sequences are actually used and with what frequencies (I’m not sure that this hasn't been done though).

3. Working on a specific dialect of French, which differs from standard French in its clitic patterns. Philip Miller suggested I carry out an HPSG analysis of clitic trapping in Gascon, a French dialect.

Certain problems arise, however, with these approaches. The main difficulty is that all of these are large-scale enterprises (especially 1 and 3 which inevitably require field work and complicated data collection procedures, that will need to be well thought out with someone who is competent in sociolinguistic methods). Also, 3 involves learning a bit more generally about the dialect in question, and this is no easy task (when I say dialect, I imply regional languages). Finally, most dialects in France are really dying out, so there are problems finding informants. It is still possible in some cases, however, for example, in Belgium, it is still possible to find native speakers of various Walloon dialects, and the clitics in these dialects have never, to my knowledge, been studied in detail.

7.5 Concluding remarks

In this final chapter, the achievements of the project were discussed. The aim of the project was achieved, and I hope that the considerable effort that was put into the project was reflected throughout the project and in the final outcome. It is obvious that a project of this nature can never be completely finished. This chapter mentioned some suggestions for extending the work done in this project; perhaps these will be carried outcome time in the future. The motivation behind this project was the achievement of a better understanding of the issues involved in pronominal clitics in the French language and a novel model of their representation in terms of HPSG. While this project was challenging and the comprehension of HPSG was often trying, it has being a rewarding experience. I have learnt a great deal about French clitics and HPSG. I would thoroughly recommend a project similar to mine to anyone with an interest in computational linguistics and the HPSG grammar framework. This project required much hard work, but proved a rewarding and thought inspiring experience.
Bibliography


BIBLIOGRAPHY


Appendix A

Including Code
This appendix demonstrates how to use part of the extended verbatim facilities in \verbtext.sty

To \LaTeX\ the thesis as a whole, one \LaTeX\es main.tex, the file which declares formatting. Below, essay1.tex is provided – it formats just one chapter of the thesis as a separate essay.

\% Cognitive Science Conference
\% \LaTeX\ Paper Submission Format
\%
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\input{newcommands}
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\newcommand{\setsequ}[2]{$\{#1, \ldots, #2\}$}
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\newcommand{\fun}[2]{\mbox{ {\bf #1}($#2$)}}
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\newcommand{\notes}[1]{}
APPENDIX A. INCLUDING CODE

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\newcommand{\nots}{\[1\]{#1\! \! \! \! \! \! \! / \,}}
\newcommand{\implink}{\[3\]{\mbox{$#1 \stackrel{#2}{\leadsto} #3$}}}
\newcommand{\ambimplink}{\[3\]{\mbox{$#1 \stackrel{?}{\leadsto} #3$}}}
\newcommand{\nimplink}{\[3\]{\mbox{$#1 \stackrel{#2}{\nots\leadsto} #3$}}}
\newcommand{\Nimplink}{\[3\]{\mbox{$#1 \stackrel{#2}{\leadsto}\! \! \! \! \! \! \! \! \circ\,$}}
\newcommand{\Ndlink}{\[2\]{\mbox{$#1 \Nlink #2$}}}
\newcommand{\sittype}{\[3\]{\mbox{[$\bf #1$ $\mid$ in $\bf #1$: at $\bf #2$: #3$]}}
\newcommand{\infon}{\[2\]{\mbox{$\langle\langle #1; #2 \rangle\rangle$}}
\newcommand{\prop}{\[2\]{\hbox{$#1 \models$ #2}}
\newcommand{\tuple}{\[1\]{\mbox{$\langle #1 \rangle$}}
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\newcommand{\rscott}{\[\hspace*{-.5mm} \]$}}
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\newcommand{\gr}{\[2\]{\mbox{$\textsc{#1} \rightarrow \textsc{#2}$}}
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\title{A Dynamic Semantics for Novel Metaphor}
\author{\it Carl Vogel}\thanks{Thanks to Judith Tonhauser, Catherine Collin, Ulrike Hahn, Josef Genabith and Tony Veale for considerable feedback on this material.} \thanks{O'Reilly Institute} \thanks{Computational Linguistics Laboratory} \thanks{Trinity College} \thanks{University of Dublin} \thanks{Dublin 2} \thanks{Ireland}
APPENDIX A. INCLUDING CODE

\% \addtolength{\baselineskip}{-.6\baselineskip}
\bibliography{bibliography}
\end{document}
Appendix B

Parser Code
program