

---

**Palacký University** Olomouc

Ph.D. Thesis in Italian Linguistics  
Dept. of Romance Languages, Faculty of Arts

# Second Language Acquisition: a corpus based approach for a theoretical investigation

MARCO PETOLICCHIO

## Supervisors

DR. LOREM IPSUM  
Palacký University  
Dept. of Romance Languages, Faculty of Arts

PROF. DOLOREM SIT AMET  
University of Lorem  
Dept. of Lorem Ipsum, Faculty of Humanities



## Contents

<b>Preface</b>	<b>ix</b>
Abstract . . . . .	ix
Keywords . . . . .	ix
<b>1 Introduction</b>	<b>1</b>
1.1 Background for the thesis . . . . .	1
1.2 Objectives of the thesis . . . . .	3
1.3 Outline of the thesis . . . . .	5
<b>Backmatter</b>	<b>7</b>
Credits . . . . .	7
About the author . . . . .	7
<b>Bibliography</b>	<b>9</b>



## List of Tables

1.1 Statistics of Italian L2 Corpora . . . . .	3
--	---



## List of Figures

1.1 Structural representation of a simple sentence . . . . .	5
--	---





## Preface

### Abstract

The main topic of this doctoral dissertation is on the analysis of syntactic structures in language acquisition, specifically in the domain of Czech and Slovak learners which acquire the Italian language. In particular, I will focus on the complex noun phrase subdomain, showing the compositionality of the phrase structure and the hierarchical fashion of this component. The analysis is casted in the Minimalist-oriented framework of the Generative Grammar (Chomsky, 1995, 1998, 2013; Hauser et al., 2002) and its application in the field of the second language acquisition (Rothman and Slabakova, 2017; Slabakova et al., 2014).

The usage of an established computational ground to conduct the work, where the data retrieved by fieldwork is stored in a coherent corpus which easily permits to be queried and interpolated for the research purposes, represents a standpoint for this research in its totality, yielding for a data-based approach to the whole process. The annotation schema of the data is standardized in order to adhere to the major point of discussion into the discipline (Clark, 2010; Kuebler and Zinsmeister, 2015; Kurdi, 2016), representing the plus to furnish a data source which is independent to the merely contingent purposes.

This research aims to offer a way to investigate how second language acquisition can be seen grounding on a coherent set of data in terms of annotation schema: it does insist either on the speculative questions both on computational models involved.

### Keywords

- Computational Linguistics
- Syntax
- Second Language Acquisition
- Italian L2
- Corpus Linguistics



The main question of this thesis yields a twofold mindset that is not a corollary of the research but which represents the process in which the work was conducted: how could I investigate a particular area of the language faculty as language acquisition in a way which can gain from the usage of the digital instruments in order to ground the theoretical analysis on actual data?

The idea under this research moves across the motivation to investigate over an empirically-grounded path the strategies shown by the learners during the acquisition of second languages, using an established coherent digital architecture. My task is twofold: on one side this provides for the developing of a theoretically-grounded framework to research in the fields of Second Language Acquisition (SLA), while on the other this necessitates to develop a linguistic corpus which collect in a coherent fashion a wide set of data that represent some spotted linguistic facts in order to give a transparent documentation of the learning path. The usage of the modern tools in developing a linguistic corpus yields for a fully documentable research path, in which is possible to reconstruct the steps and the choices which underlie its development, the methods used in the analysis, the correctness of the outcomes. This kind of research is intimately multidisciplinary in nature, embracing different approaches and areas of interest: digital humanities, corpus and computational linguistics for the development of the linguistic corpus, general and theoretical linguistics, studies on SLA and interlanguage for the theoretical analysis.

This introductory chapter collects a preliminary way to represent the main areas of the research, the methods involved in the analysis and the possible outcomes of such a way to conduct the work.

## **1.1 Background for the thesis**

### **1.1.1 Corpus-based approach: motivations for the thesis**

Corpus based (Biber, 2010)

### 1.1.2 Learner-based corpora of Italian L2: an overview

Here I summarize the most representative Italian L2 learner corpora available online:

- **GranVALICO and VALICO** (Barbera, 2003)  
Learner corpora provided by Turin University. They represent the most valuable sources of Italian L2 corpora. They are composed by written texts composed by the students which have the assignment to describe the vignettes provided by the teachers. The corpora are accessible online with an advanced search that permits to filter the data by different parameters (e.g. learners' L1 and education, assignments etc.).
- **MERLIN** (Abel, 2014)  
The MERLIN Corpus represents a wide-range multilingual documented resource which collects 2.286 texts written by learners of Czech, Italian and German. Started in 2012, the main objective is to show the different levels of acquiring languages by the usage of written texts, relying on the CEFR level schema on L2 acquisition. The Italian-L2 subcorpus contains 813 texts.
- **LIPS** (Vedovelli et al., 2006)  
The corpus contains the transcription of more than 2000 audio files by CILS - Certificazione di Italiano come Lingua Straniera (CILS) at the Università per Stranieri of Siena between the years 1993–2006. With more than 700k of words divided in *monologues* and *dialogues* between the candidate and the examiner, it represents one of the biggest corpus of Italian L2. The corpus is POS annotated using the tool Treetagger (Schmid, 1994).
- **Czech-IT** (Petolicchio and Bolpagni, 2017)  
The Czech-IT corpus contains chat messages, emails, coversations, surveys and assignments by >70 Czech and Slovak learners of Italian language<sup>1</sup>. Started in 2017, it is fully accessible online while the data acquisition continues. The whole dataset is fully interrogable by an interactive interface and released with a Creative Commons license; POS and automatic tagging are in tune.
- **Corpus Italiano scritto L2** (Voghera and Turco, 2010)  
The corpus retains 227 written texts by undergraduate students of different native languages, which study Italian as a foreign language for their courses at the University of Greenwich. Learners' L1 are: albanian, bosniac, chinese, french, greek, english, norwegian, portuguese, spanish, tigrinya.  
The type of texts are: *descriptive*, *narrative* and *argumental*. The texts are syntactically annotated and the tagset is available in xml format.

<sup>1</sup>I am co-founder of the project.

Table 1.1: Statistics of Italian L2 Corpora

Corpus	L1	Texts	Tokens	Lemma	Years
GranVALICO	Various	4.778	784.217	13.057	2002–2007
VALICO	Various	2.502	382.098	6.935	
LIPS	Various	2.198	>700.000		1993–2006
MERLIN	Various	813			2012–?
Czech-IT	cs,sk	298	15.518		2017–present
Corpus Italiano Scritto L2	Various	227	22.931		2010?

## 1.2 Objectives of the thesis

The three main objectives of this thesis are methodological, empirical and theoretical.

### 1. Methodological objectives

To address the decisions and the methods raised by the compilation, the storage and the design of a learner based corpus, exploring the effective procedures for retrieving the relevant features for the analysis;

### 2. Empirical objectives

To explore the previous generalizations of the acquisitional path in SLA literature comparing with the amount of linguistic productions given by different learners;

### 3. Theoretical objectives

To describe the features which are relevant for characterise the language variety effect and the place of interlanguage.

### 1.2.1 Methodological objectives

### 1.2.2 Empirical objectives

Amongst many scholar the role of the native language (L1) has been raised as a factor of possible conditionation in the way which the target language (L2) is acquired during the learning path: an emblematic case is the *transfer* of the knowledge about the structures of the L1 to the target, revealing the intermediate steps of the acquisitional path defined with the term *interlanguage* (Selinker, 1972), that we can refer as to **Interlanguage Hypothesis** (IlH). Different from this hypothesis –which recognizes a central place to the native language in the acquisitional path– is the **Monitor Model** (Krashen, 1981), a multi-focal perspective on language acquisition where different factors are described as involved in the process and where the L1 could not represent that conditionation.

During the last 20 years, a considerable part of linguistic literature is involved in developing some sort of models to think how the faculty of language can work, in its biological (Hauser et al., 2002), computational (Fodor, 2001) and cognitive components in a highly interdisciplinary environment. Studies on SLA is a fertile field, which relies on comparative and contrastive analyses of linguistic phenomena, either both from an applied view (Ellis, 1994) than by theoretically grounded perspective focused on Generative framework (GenSLA) (Guasti, 2002; Hawkins, 2001; Rothman and Slabakova, 2017; Sorace, 2011). In this sense appears that the adoption of a general picture in which analyze the variation in grammar into a *parametric* model (Chomsky, 1995) can be suitable for long-standing researches on SLA and interlanguage.

The dataset used in this thesis aims to display either the different linguistic outcomes in a wide range of communicative situations by the same learner, both than a sociolinguistic grained analysis where the variety of educational or age range can show different linguistic behaviors in the range of learners' variety.

### 1.2.3 Theoretical objectives

From a theoretical viewpoint, the research is inserted in the current theories that rely on the hierarchical functioning of the language faculty, for which the variation among languages are reconducted to a parametrizing of choice amongst the languages (Adger, 2013; Chomsky, 1995, 1998, 2013, 2015; Rizzi, 2013), which are structurally constant, despite of the wideness of the linguistic variation:

We are concerned, then, with states of the language faculty, which we understand to be some array of cognitive traits and capacities, a particular component of the human mind/brain. The language faculty has an initial state, genetically determined; in the normal course of development it passes through a series of states in early childhood, reaching a relatively stable steady state that undergoes little subsequent change, apart from the lexicon. To a good first approximation, the initial state appears to be uniform for the species. (Chomsky, 1995)

This view permits on one side to compare the syntactic structures in a coherent and schematic way, while on the other it concentrates moreover on the hierarchical fashion of the language faculty than on the linear order displayed by the utterances (Kayne, 1994; Moro, 2000). In this perspective is generally assumed that the hierarchical phrase structure plays a central role in syntactic computation, while the *flattening* of such structures into a mono-dimensional workspace is a matter of externalization constraints and interface conditions (e.g. the need to give an ordered array where every item of the sentence is present at one time in order to be spelled out). I will summarize this in a representational way with the usual tree-diagram in Fig.1.1.

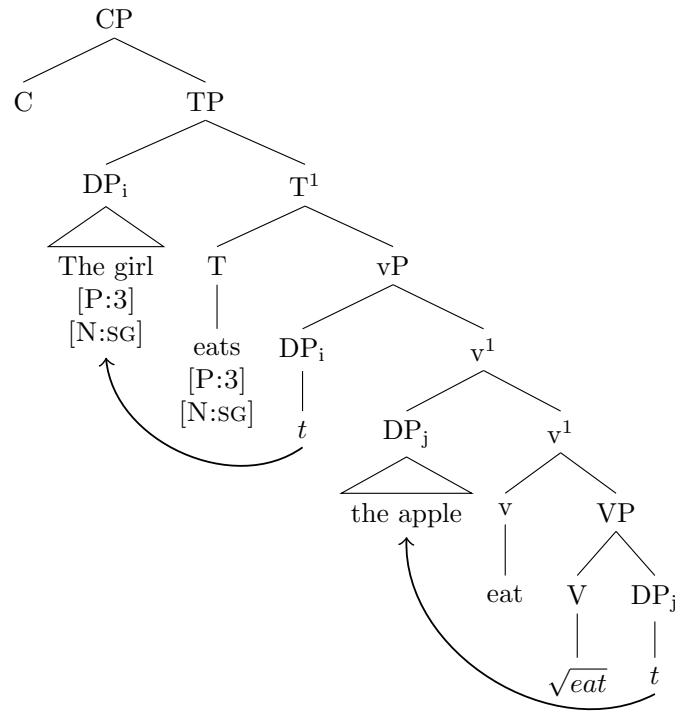


Figure 1.1: Structural representation of a simple sentence

Given this way to proceed, that assures a coherent framework to compare languages in a parametric way, the main theoretical question addressed here concerns the relevance and the potential usage of this perspective in the analysis of a dynamic system as during the acquisitional path and the strategies raised up by learners during the various steps in the interlanguage.

### 1.3 Outline of the thesis

The first year is dedicated to the setting-up of the corpus, with the starting operations to acquire the data and elaborate a coherent way to annotate the texts with a standard schema. During the second year the corpus is planned to grow up for reach a significance level of >15000 words in order to provide quantitative analyses. Third and fourth year will be spent in developing the theoretical analyses and refining the informatic architecture of the project, evolving in a user-friendly and interrogable way to dispense the data. The theoretical outcome constitutes the main topic of the research.

**Chapter 2** introduces ...

**Chapter 3** introduces ...

**Chapter 4** introduces ...

**Chapter 5** introduces ...





### Credits

This project is constituted by files written in Markdown syntax and exported either as a standalone website both as printer-ready product.

This is due to the awesome work of the people behind different libraries:

- Pandoc
- Bookdown
- RMarkdown and R environment.

As well, for the computational infrastructure, a lot of open source tools have been used:

- NLTK

For the typographic setting, the print-ready file is composed on LaTeX with the usage of SCRBOOK class and some custom component. I am aware I can't thank everyone on the web about that. By the way, thank you!

### About the author

I am a Graduate Researcher involved in a Ph.D. Program in Italian Linguistics at the Department of Romance Studies in the Faculty of Philosophy at Palacky University in Olomouc, Czech Republic.

My interests span across digital humanities, syntax theories and computational linguistics.

Feel free to write me at [marco.petolicchio@gmail.com](mailto:marco.petolicchio@gmail.com) or visit [marcopetolicchio.com](http://marcopetolicchio.com) for the detailed contact list.



## Bibliography

- Abel, A. (2014). A trilingual learner corpus illustrating european reference levels. *RiCOGNIZIONI. Rivista di Lingue e Letterature straniere e Culture moderne*, 1(2):111–126.
- Adger, D. (2013). *A Syntax of Substance*. Linguistic inquiry monographs. MIT Press.
- Barbera, M. e. a. (2003). Valico: Varietà apprendimento lingua italiana corpus online.
- Biber, D. (2010). Corpus-based and corpus-driven analyses of language variation and use. In Heine, B. and Narrog, H., editors, *Oxford Handbook of Linguistic Analysis*, chapter 8, pages 159–191. Oxford University Press.
- Chomsky, N. (1995). *The Minimalist Program*. Current studies in linguistics series. MIT Press.
- Chomsky, N. (1998). *Minimalist Inquiries: The Framework*. MIT occasional papers in linguistics. MIT Working Papers in Linguistics, MIT, Department of Linguistics.
- Chomsky, N. (2013). Problems of projection. *Lingua*, 130:33 – 49. SI: Syntax and cognition: core ideas and results in syntax.
- Chomsky, N. (2015). *Problems of projection: Extensions*, volume 223 of *Linguistic Aktuell*, pages 1–16.
- Clark, A. (2010). *The Handbook of Computational Linguistics and Natural Language Processing*, volume 1.
- Ellis, R. (1994). *The Study of Second Language Acquisition*. Oxford applied linguistics. Oxford University Press.
- Fodor, J. (2001). *The Mind Doesn't Work that Way: The Scope and Limits of Computational Psychology*. Bradford book. MIT Press.
- Guasti, M. T. (2002). *Language Acquisition: The Growth of Grammar*. The MIT Press.
- Hauser, M. D., Chomsky, N., and Fitch, W. T. (2002). The faculty of language: What is it, who has it, and how did it evolve? *Science*, 298:1569–1579.

- Hawkins, R. (2001). *Second language syntax: A generative introduction*. Wiley-Blackwell.
- Kayne, R. S. (1994). *The Antisymmetry of Syntax*. Linguistic inquiry monographs. MIT Press.
- Krashen, S. (1981). *Second language acquisition and second language learning*. Language teaching methodology series. Pergamon Press.
- Kuebler, S. and Zinsmeister, H. (2015). *Corpus Linguistics and Linguistically Annotated Corpora*. Bloomsbury Academic.
- Kurdi, M. (2016). *Natural Language Processing and Computational Linguistics: Speech, Morphology and Syntax*. Wiley-ISTE, 1 edition.
- Moro, A. (2000). Dynamic antisymmetry: Movement as a symmetry-breaking phenomenon. *Studia Linguistica*, 51(1):50–76.
- Petolicchio, M. and Bolpagni, M. (2017). Czech-IT! - Linguistic corpus of native Czech learners acquiring Italian language.
- Rizzi, L. (2013). Introduction: Core computational principles in natural language syntax. *Lingua*, 130(Supplement C):1 – 13. SI: Syntax and cognition: core ideas and results in syntax.
- Rothman, J. and Slabakova, R. (2017). The generative approach to sla and its place in modern second language studies. *Studies in Second Language Acquisition*, page 1–26.
- Schmid, H. (1994). Probabilistic part-of-speech tagging using decision trees. In *Proceedings of International Conference on New Methods in Language Processing*.
- Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics in Language Teaching*, 10(1–4):209–232.
- Slabakova, R., Leal, T. L., and Liskin-Gasparro, J. (2014). We have moved on: Current concepts and positions in generative sla. *Applied Linguistics*, 35(5):601–606.
- Sorace, A. (2011). Pinning down the concept of “interface” in bilingualism. *Linguistic approaches to bilingualism*, 1(1):1–33.
- Vedovelli, M., Pallassini, A., Machetti, S., Barni, M., Bagna, C., Pieroni, S., and Gallina, F. (1993-2006). Corpus lips.
- Voghera, M. and Turco, G. (2010). *From text to lexicon: the annotation of pre-target structures in an Italian learner corpus*, pages 141–173. Firenze University Press.