NOUN-NOUN COMPOUNDS
IN THE GREEK-ENGLISH INTERLANGUAGE

by

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_Noun-Noun Compounds in the Greek-English Interlanguage_

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This dissertation was defended and approved on

To my parents

Ηλίας and Μαρία
ABSTRACT

This thesis investigates the acquisition of English noun-noun root and deverbal compounds by Greek students who have learned the L2 in a formal context. The theoretical framework adopted is Chomsky’s generative model as this has been formulated in his Minimalist Program (1993, 1995). In line with the tenets of this theory we assume that cross-linguistic differences are related with parameterization of formal features and that morphology and syntax are separate modules of the language faculty. Given that English and Greek compounds have a similar underlying structure but differ overtly in a crucial way, we hypothesize that learners may not perceive them as X^0 items. Consequently we test whether the interlanguage forms are biased by L1/L2 parametric differences regarding noun modification in the phrasal domain. Results from the experimental part of this study reveal the following L1 effects:

- The strong (overt) number agreement between the DP members.
- The strong D feature of the functional category P which results in the overt marking of the non-head noun with the genitive case when the head is a root noun.
- The ability of deverbal nominals to assign genitive case to their complement nouns.

Because the L1 effects are exhibited also in the performance of the advanced learners, we assume that parameter resetting of features of formal categories is not feasible in foreign language learning. Still the structure of the interlanguage compounds is compatible with principles of the Universal Grammar. Last, although our data confirm a dissociation between regular and irregular plural noun morphology which does not seem to be input-based, we cannot offer conclusive evidence as to whether connectionist or nativist theories can better account for this dissociation.
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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADV</td>
<td>Advanced</td>
</tr>
<tr>
<td>AG</td>
<td>Adnominal Genitive</td>
</tr>
<tr>
<td>D</td>
<td>Determiner</td>
</tr>
<tr>
<td>DC</td>
<td>Deverbal Compound</td>
</tr>
<tr>
<td>DP</td>
<td>Determiner Phrase</td>
</tr>
<tr>
<td>DRM</td>
<td>Dual Route Mechanism</td>
</tr>
<tr>
<td>EFL</td>
<td>English as a Foreign Language</td>
</tr>
<tr>
<td>F</td>
<td>head of Functional Phrase</td>
</tr>
<tr>
<td>FLA</td>
<td>First Language Acquisition</td>
</tr>
<tr>
<td>FP</td>
<td>Functional Phrase (maximal projection)</td>
</tr>
<tr>
<td>GJT</td>
<td>Grammaticality Judgement Task</td>
</tr>
<tr>
<td>HNs</td>
<td>Head Nouns</td>
</tr>
<tr>
<td>I</td>
<td>Inflection (head of maximal projection)</td>
</tr>
<tr>
<td>INT</td>
<td>Intermediate</td>
</tr>
<tr>
<td>IP</td>
<td>Inflectional Phrase (maximal projection)</td>
</tr>
<tr>
<td>IPNHNs</td>
<td>Irregular Plural Non-Head Nouns</td>
</tr>
<tr>
<td>IT</td>
<td>Interpretation Task</td>
</tr>
<tr>
<td>L1</td>
<td>First Language</td>
</tr>
<tr>
<td>L2</td>
<td>Second Language</td>
</tr>
<tr>
<td>LF</td>
<td>Logical Form</td>
</tr>
<tr>
<td>LOM</td>
<td>Level Ordering Model</td>
</tr>
<tr>
<td>MP</td>
<td>Minimalist Programme</td>
</tr>
<tr>
<td>n</td>
<td>number of items</td>
</tr>
<tr>
<td>N</td>
<td>Number of participants</td>
</tr>
<tr>
<td>NHNs</td>
<td>Non-Head Nouns</td>
</tr>
<tr>
<td>NNC</td>
<td>Noun-Noun Compound</td>
</tr>
<tr>
<td>NS</td>
<td>Native Speakers</td>
</tr>
<tr>
<td>OPT</td>
<td>Oxford Placement Test</td>
</tr>
<tr>
<td>P</td>
<td>Preposition</td>
</tr>
<tr>
<td>p</td>
<td>probability level</td>
</tr>
<tr>
<td>PF</td>
<td>Phonetic Form</td>
</tr>
<tr>
<td>PNT</td>
<td>Picture Naming Task</td>
</tr>
<tr>
<td>PP</td>
<td>Prepositional Phrase</td>
</tr>
<tr>
<td>RC</td>
<td>Root Compound</td>
</tr>
<tr>
<td>RJT</td>
<td>Referentiality Judgement Task</td>
</tr>
<tr>
<td>RPNHNs</td>
<td>Regular Plural Non-Head Nouns</td>
</tr>
<tr>
<td>SD</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>SLA</td>
<td>Second Language Acquisition</td>
</tr>
<tr>
<td>SP</td>
<td>Successful Percentage</td>
</tr>
</tbody>
</table>
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CHAPTER 5: METHODOLOGY AND RESULTS

5.1 Introduction

This chapter deals with the experimental part of the present research. Section 5.2 discusses the selection and the profile of the participants, the nature of the tasks and how responses in the latter were recorded and analyzed. Section 5.3 presents the results and Section 5.4 sums up the main points.

5.2 Methodology

5.2.1 The participants

The experimental group

The experimental group consisted of 56 undergraduate students of the English Department at the Aristotle University of Thessaloniki and 4 learners of English at a private school, six male and fifty-four female. Those were selected out of 350 students as clear cases of either intermediate or advanced level learners, according to their performance in the Oxford Placement Test (OPT) (Allan 1992). The OPT consists of a Listening and a Grammar part, each of which includes 100 items, yielding an overall score of 200. The rank order for Lower to Upper Intermediate is 135-150 and for Advanced from 170 onwards. Learners who demonstrated a highly imbalanced performance between the listening and the grammar part were excluded to ensure that their total scores were not biased by factors such as hearing problems or inattention. Bilinguals were not included either.

All participants had been taught English as a first foreign language mostly through grammar-oriented courses in private and state schools for a period ranging from 4.5-7 years, starting at the age of nine on average. At the time of the study, the vast

192 Note that information about how long the non-native participants had been learning English, or, for the same matter, what kind of English language certificates they held is, in fact, not important. This is because many Greek students stop attending foreign language classes usually at the age of sixteen or about two years before graduating school to prepare for other subjects required for the university entrance exams. So by the time they have become first year university students, their level of English may have dropped, as it was the case with some of them who were classified by the OPT as ‘intermediate’ or even ‘lower intermediate’ learners, while they held advanced level certificates such as the Cambridge Proficiency in English.
majority of the university students were in the middle of their second semester, while the rest had been at the English department for two to three years. Those from the private school had been learning English for about 5 years.

The control group
This group consisted of twenty native speakers (four males and sixteen females) who lived in Greece or visited there at the time of the study. Eleven of them were English, three Scottish, four American, one Canadian and one Irish, all adults. Care was taken that they be linguistically sophisticated in their majority. This was decided mainly because of the third task, which involved referentiality judgements, but also with regard to the grammaticality judgements. For instance, Bongartz (2002) attributed some unanticipated native speaker responses in grammaticality judgements to the fact that those were linguistically naive compared with the non-natives. In the present study, all of the learners had already been through exercises of the type ‘Find the word this pronoun refers to’ and had even been taught the difference between ‘anaphoric’ and ‘cataphoric’ reference. So, in order to control this factor, the native group included two secondary school graduates, three university undergraduates, one with a tertiary education diploma in nursery and fourteen with university degrees. Some of the latter, had also completed postgraduate studies. Thirteen out of the total twenty had done (or were in the middle of doing) studies related with foreign languages or literature. However, none of them was a linguist. Relevant details about the participants are presented in Table 1.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number</th>
<th>Mean Age</th>
<th>Mean Score OPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>20</td>
<td>38.3 (20-55)</td>
<td>-</td>
</tr>
<tr>
<td>ADV</td>
<td>30</td>
<td>18.73 (17-20)</td>
<td>176.3 (170-189)</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>18.16 (14-21)</td>
<td>145.5 (138-153)</td>
</tr>
</tbody>
</table>

Gleitman & Gleitman (1970) investigated the extent to which linguistic competence is the same for all speakers of a language by looking at errors in compound paraphrases. Results showed that level of education had an important effect on the participants’ performance. This holds for the four private school learners too, as their teacher assured me.
5.2.2 Materials and procedure

Ideally, empirical data should come from naturally produced language (Kellerman 1986, a. o.), since “it is in spontaneous, operational speech that the grammatical system of a language is most fully exploited” (Halliday 1985: xxiv). Although not totally ‘spontaneous’, the data is often obtained through interviews. However, such an approach would not yield much of interest in the present study, first because the learners might not produce a satisfactory number of compounds, and second, even if they did, those would probably be lexicalized ones, which are learned as wholes\footnote{See, for example Bongartz (2002) who reports that in interviews and in a story-retelling task the learners did not produce plurals inside the compounds they used, unlike what happened in the picture-naming task.}

Hence, for the purposes of the present investigation, we designed a battery of four tests: a picture naming task, a grammaticality judgement task, a referentiality judgement task and an interpretation task. The first two were constructed having been piloted on thirty learners (15 intermediate and 15 advanced) and ten native speakers. This helped eliminate some weaknesses that would have otherwise been unforeseen. The last two tasks were piloted separately on the same group types but with fewer informants.

5.2.2.1 The picture-naming task (PNT)

Picture-naming tasks have been used widely both in FLA and in SLA. As discussed in Chapter 3, in research related to the acquisition of compounds, those have been employed to elicit the production of novel items. The present PNT\footnote{The PNT in this study is based on similar tasks used by Lardiere (1994) and Bongartz (2000, 2002).} consisted of thirty-seven pictures of combined items, thirty of which aimed at the production of novel, or at least non-usualized compounds (see Table 2, p. 161 and Appendix, pp. 247-248 for examples of pictures)\footnote{Because compounds are very easily coined in English, it is very difficult to be sure that any compound in this language is novel, at least to the native participants. In fact, most (if not all) of the items devised for this research can also be found on the Internet.}. The rest of the pictures, seven in number, corresponded to lexicalized compounds and were used as distractors.

The test design allowed for the examination of the research objectives as follows. Twenty pictures with multiple cues for the NHNs aimed to investigate the production...
of ten regular and ten irregular ± singular forms. Within each category, there was an equal number of root and synthetic compounds. Five pictures had single cues for the NHNs to check for the production of /s/ inside the compounds that might unambiguously stand for a genitive suffix. Five pictures with inverted and six with non-inverted cues were employed to investigate head-directionality in root compounds. Unlike other pictures in the task, it was deemed that those could trigger an unambiguously wrong word order. To clarify this point further, when, for instance one of the nouns is a kind of container, then both readings were probable, e.g. teeth case / case teeth, bulb box / box bulb, ox barn / barn oxen etc.

Some of the items counted twice, as triggers both for genitive and for head directionality. The content of the pictorial cues, in the order those were presented to the participants, together with compounds that could constitute names for them are presented in Table 2. Those intended as distractors are marked by italics.
Table 2. Pictorial cues and targeted compounds in the PNT

<table>
<thead>
<tr>
<th>CUES</th>
<th>COMPOUNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Carrots on two dishes</td>
<td>Carrot dishes</td>
</tr>
<tr>
<td>2. Geese + two people aiming at them with guns</td>
<td>Goose hunters</td>
</tr>
<tr>
<td>3. <em>An apple + a glass with juice</em></td>
<td><em>Apple juice</em></td>
</tr>
<tr>
<td>4. Four mice looking like a family</td>
<td>Mouse family</td>
</tr>
<tr>
<td>5. <em>Lemons + a pie</em></td>
<td><em>Lemon pie</em></td>
</tr>
<tr>
<td>6. A chair + a cushion</td>
<td>Chair cushion</td>
</tr>
<tr>
<td>7. People counting biscuits</td>
<td>Biscuit counters</td>
</tr>
<tr>
<td>8. A face + a towel</td>
<td>Face towel</td>
</tr>
<tr>
<td>9. Geese + feathers</td>
<td>Goose feathers</td>
</tr>
<tr>
<td>10. A man killing mice</td>
<td>Mouse killer</td>
</tr>
<tr>
<td>11. <em>A computer and a desk</em></td>
<td><em>Computer desk</em></td>
</tr>
<tr>
<td>12. A case with teeth in it</td>
<td>Tooth case</td>
</tr>
<tr>
<td>13. People eating carrots</td>
<td>Carrot eaters</td>
</tr>
<tr>
<td>14. A box with eyes painted on it</td>
<td>Eye-box</td>
</tr>
<tr>
<td>15. Someone counting teeth</td>
<td>Tooth counter</td>
</tr>
<tr>
<td>16. A key + a church</td>
<td>Church key</td>
</tr>
<tr>
<td>17. People kissing someone else’s feet</td>
<td>Foot kissers</td>
</tr>
<tr>
<td>18. Rain falling over a desert</td>
<td>Desert rain</td>
</tr>
<tr>
<td>19. <em>A kitchen + chairs</em></td>
<td><em>Kitchen chairs</em></td>
</tr>
<tr>
<td>20. Bulbs + a box</td>
<td>Bulb box</td>
</tr>
<tr>
<td>21. <em>Oranges + a glass of juice</em></td>
<td><em>Orange juice</em></td>
</tr>
<tr>
<td>22. Wind blowing over a rough sea</td>
<td>Sea wind</td>
</tr>
<tr>
<td>23. Someone making paintings of eyes</td>
<td>Eye painter</td>
</tr>
<tr>
<td>24. An apple with a worm coming out of it</td>
<td>Apple worm</td>
</tr>
<tr>
<td>25. Someone licking a bulb and other bulbs around</td>
<td>Bulb licker</td>
</tr>
<tr>
<td>26. A hat + a ribbon</td>
<td>Hat ribbon</td>
</tr>
<tr>
<td>27. Flies + a net</td>
<td>Fly net</td>
</tr>
<tr>
<td>28. A nose pierced with a ring</td>
<td>Nose ring</td>
</tr>
<tr>
<td>29. Three people hugging children</td>
<td>Child huggers</td>
</tr>
<tr>
<td>30. <em>Tomatoes + a bowl of salad</em></td>
<td><em>Tomato salad</em></td>
</tr>
<tr>
<td>31. A sponge + two hands</td>
<td>Hand sponge</td>
</tr>
<tr>
<td>32. <em>Strawberries + jam</em></td>
<td><em>Strawberry jam</em></td>
</tr>
<tr>
<td>33. A barn + two oxen</td>
<td>Ox barn</td>
</tr>
<tr>
<td>34. Someone eating flies</td>
<td>Fly eater</td>
</tr>
<tr>
<td>35. Feet + tubes of cream</td>
<td>Foot cream</td>
</tr>
<tr>
<td>36. An onion + a loaf of bread</td>
<td>Onion bread</td>
</tr>
<tr>
<td>37. Biscuits + tins</td>
<td>Biscuit tins</td>
</tr>
</tbody>
</table>

However, in the coding of the results, the picture with someone licking bulbs did not count as an item for the category of plural NHNs, because, although there were many bulbs around, the person depicted licked one bulb only - as some students commented afterwards. So there were after all 5 triggers for root and 4 for deverbal compounds.
within the regular plural category. Table 3 presents the categorization of the items according to the research points. The numbers correspond to those in Table 2.

Table 3: Classification of pictures according to research points in the PNT

<table>
<thead>
<tr>
<th>PICTURES</th>
<th>N</th>
<th>RESEARCH POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 7, 13, 14, 20, 23, 27, 34, 37</td>
<td>9</td>
<td>regular plural NHNs</td>
</tr>
<tr>
<td>2, 4, 9, 10, 12, 15, 17, 29, 33, 35</td>
<td>10</td>
<td>irregular plural NHNs</td>
</tr>
<tr>
<td>6, 8, 16, 18, 22, 24, 26, 28, 36</td>
<td>9</td>
<td>genitive –s NHNs</td>
</tr>
<tr>
<td>16, 18, 22, 26, 31</td>
<td>5</td>
<td>Word order (root, inverted cues)</td>
</tr>
<tr>
<td>6, 9, 24, 26, 27, 28</td>
<td>6</td>
<td>Word order (root, non-inverted cues)</td>
</tr>
<tr>
<td>2, 7, 10, 13, 15, 17, 23, 25, 29, 34</td>
<td>10</td>
<td>Word order (deverbal)</td>
</tr>
</tbody>
</table>

Participants were told that they would have to give each picture a name for the combination of the things or things and actions depicted. This was exemplified through seven pictures aimed to trigger compounds in which, either the NHN was uncountable\textsuperscript{198}, or the head noun started with /s/. In two of the practice pictures the items were in inverted order. Table 4 presents the cues and the respective compounds.

Table 4: Practice pictures

<table>
<thead>
<tr>
<th>CUES</th>
<th>COMPOUNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mushrooms+a bowl of soup</td>
<td>mushroom soup</td>
</tr>
<tr>
<td>People drinking wine</td>
<td>wine drinkers</td>
</tr>
<tr>
<td>A sandwich + a chicken</td>
<td>chicken sandwich</td>
</tr>
<tr>
<td>Shirts with strawberry designs</td>
<td>strawberry shirts</td>
</tr>
<tr>
<td>A boy sucking his thumb</td>
<td>thumb sucker</td>
</tr>
<tr>
<td>A pair of shoes + a crocodile</td>
<td>crocodile shoes</td>
</tr>
<tr>
<td>People smoking cigars</td>
<td>cigar smokers</td>
</tr>
</tbody>
</table>

Next, they were given a list of the vocabulary items needed for the task and were allowed to go through it at their own pace (see Appendix, p. 249). If they worried about not knowing some of the items, they were told that they could look them up any time they wanted during the task or use synonyms they could remember more easily, as was the case with, for example, ‘pillow’ instead of ‘cushion’, or ‘lamp’ instead of ‘bulb’. All vocabulary was in Greek, followed by the English translation which included the way each noun forms its plural, as, for example, πίτα: pie,-s, πόδι: foot, feet. To facilitate looking up a word, the items were in alphabetical order and the list with the verbs needed to form the synthetic compounds followed that of the nouns.
Next, they were shown one picture at a time and, although they were encouraged to answer spontaneously, there was no time pressure for responses. All answers were recorded on tape and simultaneously coded in written form by the investigator.

5.2.2.2. The Grammaticality Judgement Task (GJT)

GJTs have been widely employed to investigate learners’ intuitions in the hope that those will provide a window to the nature of interlanguage grammars. Nevertheless, it has been pointed out that certain psychological, cognitive and contextual factors may bias the results (Birdsong 1989; Ellis 1991; Gass 1994; Kellerman 1995 a.o.). On this, Sorace (1996: 378) remarks that “the extra-grammatical factors can be controlled for, at least to a certain extent, by carefully selecting the test sentences, the test design, and the informants”. The attempt to control the last factor has already been touched upon in the discussion about the selection of the participants. More relevant details, as well as how the other two factors were handled are revealed in the ensuing description of the task and in the discussion concerning remarks on the overall administration of the tasks.

The present GJT comprised seventy-two uncontextualized sentences, out of which thirty-six were test items and thirty-six were distractors (see Appendix, p. 251). Among the sentences with the test items, twelve were to investigate for regular plural NHNs, twelve for genitive NHNs and twelve for irregular plural NHNs. Within each dozen, half of the sentences were used as controls. So there were twelve sentences with regular singular NHNs, six of which were controls for plural and six for genitive NHNs. The rest of the control sentences included compounds with singular irregular NHNs. The idea of using uncountable nouns as non-heads in the practice examples comes from Lardiere (1994).

For each category there were three sentences with root and three with deverbal compounds, headed by different determiners (a, the, Ø) pairwise with the only difference that in the genitive category instead of a null determiner, the quantifier ‘many’ was used. Moreover the HNs were plural only in compounds headed by

198 The idea of using uncountable nouns as non-heads in the practice examples comes from Lardiere (1994).
199 Recall that the grammaticality of some of the structures dealt with here is not a given but, rather, the very object of the present investigation. So whenever the terms ‘ungrammatical’ / ‘grammatical’ are used, this is done for convenience. For this reason, it would probably have been more appropriate to use the term ‘acceptability judgements’ (see Birdsong 1989) if it were not for the fact that the participants were asked to judge the ‘correctness’ of the judgements.
‘many’ or the null determiner. The test was manipulated so as to check for possible L1 effect of overt agreement between the DP members. The same was repeated in the control sentences. The pairs of target sentences were identical with their respective controls in terms of syntactic structure but included some different words. The vocabulary consisted of simple terms, presumably known to the learners, and the sentences were kept short (mean length: 6.36 words).

Like in the PNT, all compounds were presumably novel or as little usualized as possible. As regards the distractors, there were nineteen ungrammatical and seventeen grammatical sentences, with some of the latter being the correct counterparts of the former. However, in the scoring of results two distractors were counted out because of their unclear grammaticality status\(^{200}\). Last, there were no compounds in any of them. Tables 5, 6 and 7 present the sentences by category. The compounds are underlined for convenience.

\begin{table}[h]
\centering
\begin{tabular}{|l|}
\hline
\textbf{TEST ITEMS} \\
The children made a bananas bag. \\
Your book is on the towels box. \\
After the party I called a carpets cleaner. \\
The snakes trainer had an accident. \\
Flies nets are very useful in the summer. \\
Jack and Mary are shoes exporters. \\
\hline
\textbf{CONTROL ITEMS} \\
The boys made a potato sack. \\
After the storm I used a window washer. \\
Your wallet is on the tool case. \\
The elephant rider had a problem \\
Pete and Robin are roof menders. \\
Mosquito traps are very useful in the summer. \\
\hline
\end{tabular}
\caption{Regular plural NHN (GJT)}
\end{table}

\(^{200}\)Those were \textit{She is mother of that boy} and \textit{Never does he go to church}, whose acceptance depends heavily on intonation or context.
**Table 6. Genitive NHN (GJT)**

<table>
<thead>
<tr>
<th>TEST ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Our friends are dolls’ importers.</td>
</tr>
<tr>
<td>My sister is a bell’s designer.</td>
</tr>
<tr>
<td>This place is the toys’ museum.</td>
</tr>
<tr>
<td>The cigars’ maker over there is from Cuba.</td>
</tr>
<tr>
<td>There are many trucks’ industries in Chicago.</td>
</tr>
<tr>
<td>Her parents have a hat’s company.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTROL ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Her uncle has a car business.</td>
</tr>
<tr>
<td>My mother is a computer operator.</td>
</tr>
<tr>
<td>This building is the chair factory.</td>
</tr>
<tr>
<td>The dog owner over there is from France.</td>
</tr>
<tr>
<td>There are many bicycle shops in Holland.</td>
</tr>
<tr>
<td>Our visitors are desk manufacturers.</td>
</tr>
</tbody>
</table>

**Table 7. Irregular plural NHN (GJT)**

<table>
<thead>
<tr>
<th>TEST ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helen painted a mice cage.</td>
</tr>
<tr>
<td>My cat is a mice catcher.</td>
</tr>
<tr>
<td>She didn’t pay for the teeth gel.</td>
</tr>
<tr>
<td>The teeth healer is from India.</td>
</tr>
<tr>
<td>In this shop you can buy feet products.</td>
</tr>
<tr>
<td>These boys are feet washers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTROL ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>John watched a mouse cartoon.</td>
</tr>
<tr>
<td>My dog is a mouse hater.</td>
</tr>
<tr>
<td>They didn’t pay for the tooth tattoo.</td>
</tr>
<tr>
<td>The tooth painter is from Amsterdam.</td>
</tr>
<tr>
<td>In this boutique you can find foot jewels.</td>
</tr>
<tr>
<td>These shoes are foot killers.</td>
</tr>
</tbody>
</table>

Among other researchers, Murphy (1997) has shown that whether a task is administered aurally or visually may have an effect on participant’s judgements and therefore she proposes that it is safer to present tasks in both modalities. For this reason the presentation of the GJT was bimodal. Participants read the sentences, each of which was printed on a different sheet, and simultaneously listened to them taped by a native speaker. They had 3 seconds to judge each sentence, which was done in
line with some other studies, because thus restricting the time for responses presumably allows to tap on informants’ language intuitions, rather than their metalinguistic knowledge\textsuperscript{201}.

Tests with binary categorical judgements (right or wrong) on test sentences (for example, Bley-Vroman et al. 1983) have been criticised by Sorace (1996) as being of questionable validity, mainly because, they cannot capture the indeterminacy characterizing interlanguage forms. Moreover, since there is a fifty percent chance to get them right, there is no way to know whether results are due to guessing. Also, Sharwood Smith remarks that “for statistical reasons, a ranking scale is preferred over categorical judgements” (1994: 78). However, as Sorace notes, tests with a three-point scale including an (un)certainty dimension labelled ‘not sure’ or ‘I don’t know’ are problematic too, because informants may feel that if they make this option, they lose face by admitting they are ignorant on the specific subject.

For the above reasons, participants in the present study were asked to judge the sentences on a five-scale response, by ticking a number from –2 (definitely incorrect) to +2 (definitely correct), with 0 being the ‘I’m not sure’ option (White et al. 1998) (see Appendix, p. 250). This was done on sheets of paper, three in total, each of which contained only the numbers of sentences. The number scale with the corresponding explanation was repeated at the top of each page. Before they started, participants were asked to go through the instructions carefully and then they had practice with some sentences unrelated with the object of investigation. Moreover, because the question “what exactly do you mean by ‘correct’?” had been asked from the onset of the experiment, they were told that they were asked for their ‘feel’ for the sentences, to avoid the effect of prescriptive rules. Additionally, it was pointed out that all sentences were assumed to be correct in meaning. This explanation was particularly important in the case of the native speakers, as it was possible that they might judge on the basis of whether a compound sounded ‘weird’ due to various extra-grammatical factors\textsuperscript{202}.

\textsuperscript{201} For a similar methodology, see Bouba (2000) and Al-Hamad et al. (2002) among others.

\textsuperscript{202} As it was later realized, this proved to be the case with the sentence These shoes are foot killers. Namely, when the interview was over, one of the native speakers remarked that she had considered the sentence unacceptable not because she preferred feet killers, but because ‘foot’ was redundant in the specific context. The native speakers may also reject a compound because they are familiar with a more established synonym, as, for example, a hat firm instead of a hat company. In fact, it is extremely difficult to control all these factors. For instance, in the pilot test, only two of the natives, both of whom were American, accepted a sentence containing the bells’ factory. Retrospectively, one of them
5.2.2.3 The Referentiality Judgement Task (RJT)

Recall from the discussion in Chapter 3 that crucial in Bongartz’s (1998) analysis was the extent to which participants distinguished between the (im)possibility of referring separately to the NHN in a compound and to the NHN in a phrase. Testing intuitions in this domain is a difficult task indeed, since an item may be interpreted as referring not to another constituent in the same sentence, but to an implied extra-sentential object. So for instance, the sentence *The truck driver filled it with gas* without indices is completely acceptable, if it is assumed that *it* refers to something else outside the specific sentence, as, for example ‘somebody else’s car’. However, as it proved in a pilot study run for the present research, indexing sentences in the way suggested by Bongartz was not very effective either. Therefore, instead of grammaticality judgements, it was deemed better to use referentiality judgements. After extensive piloting of various tests-forms, the decision was made in favor of a preference task designed as follows. For each question, there were two sentences, both of which had the same pronoun. In one of them, the pronoun referred to the NHN of a compound and, in the other, to a NHN in phrasal noun combination. The participants had three options; namely, they were asked to decide whether the pronoun was *more likely* to refer to the NHN in the compound, to the NHN in the phrase, or to the NHN in either of them. The compounds in the test items were three of the root and three of the deverbal type. The pronouns were presented in bold letter type and the nouns they referred to were underlined. The task consisted of six test items and six distractors (see Appendix, pp. 252-253). The order of administration was not random, namely each question with a test item was followed by a distractor. The participants were given time to deliberate. Table 8 presents the compounds and their phrasal analogues in the task and is followed by an example of the question format.

<table>
<thead>
<tr>
<th>COMPOUNDS</th>
<th>PHRASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>The truck driver</td>
<td>The driver of the truck</td>
</tr>
<tr>
<td>The salad oil</td>
<td>The oil on the salad</td>
</tr>
<tr>
<td>The book writer</td>
<td>The writer of the book</td>
</tr>
<tr>
<td>The radio music</td>
<td>The music on the radio</td>
</tr>
<tr>
<td>The cigar smoker</td>
<td>The smoker of the cigar</td>
</tr>
<tr>
<td>A chocolate cake</td>
<td>A cake with chocolate</td>
</tr>
</tbody>
</table>

Table 8. Compounds and phrases in the RJT

suggested that this happened probably due to the existence of a well-known firm called *The Bells* in the US.
Example from the RJT:

In which of the following sentences is ‘it’ more likely to refer only to ‘truck’?

(a) The \textit{truck} driver filled \textit{it} with gas.
(b) The driver of the \textit{truck} filled \textit{it} with gas.

A. In sentence (a)       B. In sentence (b)       C. No difference

5.2.2.4 The Interpretation Task (IT)

To further investigate the acquisition of word order in compounds, we decided to include an interpretation task as well. This involved novel compounds which were exclusively root singulars and were manipulated so as to bias for a wrong reading as far as head directionality is concerned. Ryder (1994) shows that even native speakers of English may violate the canonical modifier-head rule in their struggle to offer a meaningful interpretation. The best candidates for similar errors proved to be the following. First, compounds in which the NHN and not the HN was a kind of container, as, for example, \textit{sack-bread} instead of \textit{bread sack}. Second, reversals of established analogues, for example, \textit{house tree} instead of \textit{tree house}. Last, compounds whose interpretation was difficult under a right-head reading, for example \textit{sweater car} instead of \textit{car sweater}. A pilot study showed that learners too violate word order under the same circumstances. Hence, the research question here was the extent to which the non-natives would differ from the natives in word-order violation and whether the non-native differences would be affected by proficiency level.

For the purposes of the present study, we employed the following ten compounds, most of which are the same as or adapted from some of those used by Ryder: \textit{lamp jungle, barn dog, sack bread, snake hawk, drawer towel, bottle flower, house tree, bag peas, box wine} and \textit{sweater car}. Participants were asked to give written definitions of the above in phrases or in whole sentences (see Appendix, p. 253). Although they were encouraged to respond spontaneously and provide the first meaning that occurred to them, they were not pressured for time. Before they started, the learners were told to go through the items and check whether some of the constituent words in the compounds were unknown to them, in which case the investigator provided a translation in Greek. Moreover, they were allowed to offer a
definition in their L1, if they preferred to do so, which is what the majority of the learners did.

At this point, some additional information about the procedure is in due order. All tasks were carried out on an individual basis, namely in the presence only of the investigator and one of the participants at a time, mostly in offices of the English Department. In some cases involving native controls, this was done at the investigator’s home or at theirs, while the four non-university students undertook the tasks at their language school.

The learners were unaware of their achievement at the OPT test and were told that some kind of research was carried out for which they were chosen to help on a random basis among other students. Furthermore, all participants were ignorant about the point of the investigation. The above aimed to eliminate factors such as the ‘halo effect’ or ‘subject expectancy’.

Last, besides the tasks presented above, in-between the GJT and the RJT, all participants took an additional task which aimed at checking out whether they had problems with the graphic differentiation between the plural and the genitive affix (see Appendix, p. 254). Results showed that, generally, there was no such an issue.

5.2.3 Scoring of the data and statistical tools

In all tasks, correct and wrong answers were coded as 1 and 0 respectively. In the PNT, sometimes the participants did self-correction by providing a second (or even a third version of a compound), in which case, only the last response was counted in. As regards the GJT, the procedure was as follows. For the ungrammatical answers, -2 and -1 judgements were assigned the score of 1, while +2 and +1 answers were recorded as 0. The opposite was followed in the case of grammatical answers. ‘I’m not sure’ judgements were counted out to avoid possible distortion of the results by the

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203 These are related with participant attitudes who may want to please researchers if they like them (‘halo effect’) or form guesses about the researchers’ expectations, which results in trying to help them (‘subject expectancy’) (J. D. Brown 1988). Note that, although the investigator happens to be a teacher at the same department, she was on a leave during the year the experiment took place, so the vast majority of the participants who were first-year students had not met her before. Also, none of the older learners involved had ever been students of hers.
uncertainty factor and were defined as a missing value. In the RJT, only one answer counted as correct (1) while the other two were coded as 0.

Given that in the present experimental data the dependent variables were quantitative and the independent ones categorial, the statistical tool chosen in all cases was one-way and multiple measures ANOVAs (ANalysis Of VAriance) for between-group and within-group differences respectively, followed by post-hoc Bonferroni tests. According to some views, using a parametric test such as ANOVA presupposes that the samples are large enough to be normally distributed, or else a non-parametric test should be employed for the analysis of the data. For this reason, there has been criticism against SLA researchers who use ANOVA, regardless of the prerequisites mentioned (Nunan 1996). However, more recent research has shown that this criticism is highly questionable and that, in fact, parametric tests are more robust, in the sense that they can withstand various violations better than non-parametric tests. Nevertheless, if the sample is too small, say, less than fifteen, a non-parametric test may be more proper. On this we report that, in the present study, the smallest sample was more than double this number.

5.3 Results

In the computation of means for each variable under examination, when a participant had one missing answer then his/her performance regarding the specific variable was counted out altogether. To provide information about how the total of the participants fared, besides the data involved in the statistical analysis, we also present raw data in separate tables for each category under examination.

The statistical analysis of the data for each category is presented in tables which contain the number of participants (n), the score mean (M) of successful performance, the number of items (N) and standard deviation (SD). Each Table is followed by details about between- and within-group differences presented in terms of the F value. This is a ratio which results from comparing the between-groups estimated variance to the within-groups estimated variance. The numbers separated by commas in the

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204 In other studies too, uncertain judgements were counted out for the same reason (as reported by Lydia White, in personal communication with Ianthi Tsimpili). A comparison between analyses with and without these judgements showed that this factor could indeed make a difference regarding some of the variables here.
parenthesis following F refer to degrees of freedom. Last, instead of specifying each
time whether the probability level (p) is less than 0.05 or 0.01, we give the exact p
value, unless it is more convenient to do it in the former way.

5.3.1 Regular plural NHNs

First we deal with results from responses to pictures with multiple cues for the NHN
in the PNT. The raw data in Table 9 demonstrates participants’ successful
performance at producing compounds without the regular plural affix.

Table 9. Successful performance in regular plural NHN (raw data)

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>DEVERBAL</th>
<th>ROOT</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS(20)</td>
<td>98.75% (79/80)</td>
<td>100%(100/100)</td>
<td>99.44%(179/180)</td>
</tr>
<tr>
<td>ADV(30)</td>
<td>89.91%(107/119)</td>
<td>93.79%(136/145)</td>
<td>92.04%(243/264)</td>
</tr>
<tr>
<td>INT(30)</td>
<td>70%(84/120)</td>
<td>65.33%(98/150)</td>
<td>67.40%(182/270)</td>
</tr>
</tbody>
</table>

Results demonstrate that both learner groups produced regular plural NHNs. Note that
even the NS did so, albeit only once. Moreover, there is a developmental effect, since
the INT fared worse than the ADV. The statistical results are shown in Table 10.

Table 10. Regular plural NHN (PNT) - Score means

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.10</td>
<td>100/100</td>
<td>0.00</td>
</tr>
<tr>
<td>ADV</td>
<td>25</td>
<td>0.93</td>
<td>116/125</td>
<td>0.13</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.64</td>
<td>96/150</td>
<td>0.29</td>
</tr>
<tr>
<td>DEVERBAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.99</td>
<td>79/80</td>
<td>0.06</td>
</tr>
<tr>
<td>ADV</td>
<td>29</td>
<td>0.90</td>
<td>104/116</td>
<td>0.17</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.70</td>
<td>86/120</td>
<td>0.31</td>
</tr>
<tr>
<td>ALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.99</td>
<td>179/180</td>
<td>0.02</td>
</tr>
<tr>
<td>ADV</td>
<td>24</td>
<td>0.92</td>
<td>220/241</td>
<td>0.14</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.67</td>
<td>182/270</td>
<td>0.26</td>
</tr>
</tbody>
</table>

See Bryman & Cramer (2001) and references there.
The analysis of total results in this category reveals a highly significant between-group difference ($F(2,71)=21.892; p=0.000$). As expected, the post-hoc test shows that this concerns the NS-INT and the ADV-INT difference ($p=0.000$); on the other hand, there is no significant NS-ADV difference ($p=0.513$). Furthermore, there are no significant within-group differences at $p<0.05$ with respect to the root/deverbal distinction.

Other responses with ungrammatical compounds not included in the above results were as follows.

- Regular plural NHNs in distractors or in compounds that were not initially aimed for this point of investigation. These are presented in Table 11.

<table>
<thead>
<tr>
<th>PICTURE NAMING TASK</th>
<th>ADV</th>
<th>INT</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>hands sponge</td>
<td>1/23</td>
<td>6/24</td>
<td>-</td>
</tr>
<tr>
<td>bulbs eater</td>
<td>1/30</td>
<td>1/30</td>
<td>-</td>
</tr>
<tr>
<td>strawberries jam</td>
<td>1/30</td>
<td>7/30</td>
<td>-</td>
</tr>
<tr>
<td>tomatoes salad</td>
<td>-</td>
<td>1/30</td>
<td>-</td>
</tr>
<tr>
<td>lemons pie</td>
<td>-</td>
<td>1/30</td>
<td>-</td>
</tr>
</tbody>
</table>

- Compounds with regularized NHNs. There were seven such occurrences in the intermediate group: *gooses hunters, gooses feathers, oxes barns, foots cream, oxes barn, mouses killer, mouses family*.

- Compounds with overregularized NHNs, which counted as irregular plurals. There were nine such cases in the intermediate group (*childrens hugger, oxens barn/farm* (3), *feets cream/shampoo* (2), *geeses feather* (2), *mices killer*) and four in the advanced group (*feets cream* (2), *oxens barns, childrens hug*). However, note that there is no way of knowing whether the /s/ stands for plural or for genitive here.

Recall that the picture showing ‘sponge + hands’ aimed at checking head-directionality. Moreover, it had been decided beforehand that it would not count in the category of plural errors, because, in ‘hand sponge’ there is the chance to confuse between the final segment of the NHN and the initial of the HN. However, in the cases mentioned above, the NHN was clearly plural. Also note that there is no way to know whether /s/ in ‘bulb eater’ stands for plural or for genitive, for reasons already discussed.
In addition, elicited answers with root, instead of the expected deverbal head, or vice versa, e.g. biscuit count (instead of -counting/-er) or fly netting (instead of –net) were not included in the root/deverbal comparison.

Note that previous research has shown that the phonological environment may have an effect on the production of /s/ and other suffixes\textsuperscript{207}. To check whether this was the case here too, a percentage analysis was carried out with respect to the final segment of each plural NHN and the initial segment of the HN elicited by the intermediate group. Results are demonstrated in Table 12.

**Table 12.** Effect of phonological environment on production of /s/ inside compounds

<table>
<thead>
<tr>
<th>Final - initial segment</th>
<th>Item</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vowel-vowel</td>
<td>Flies eater</td>
<td>27%</td>
</tr>
<tr>
<td>Vowel-nasal</td>
<td>Flies net</td>
<td>32%</td>
</tr>
<tr>
<td>Vowel-voiced stop</td>
<td>Eyes box</td>
<td>53%</td>
</tr>
<tr>
<td>Vowel-voiceless stop</td>
<td>Eyes painter</td>
<td>24%</td>
</tr>
<tr>
<td>Voiced stop-voiced stop</td>
<td>Bulbs box</td>
<td>25%</td>
</tr>
<tr>
<td>Voiced stop-sibilant</td>
<td>Hands sponge</td>
<td>25%</td>
</tr>
<tr>
<td>Voiceless stop-voiceless stop</td>
<td>Biscuits count-er/-ing\textsuperscript{208}</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>Biscuits tins</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Carrots plates</td>
<td>23%</td>
</tr>
<tr>
<td>Voiceless stop-voiced stop</td>
<td>Carrots dishes</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Lamps box</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>Biscuits box</td>
<td>47%</td>
</tr>
<tr>
<td>Voiceless stop-vowel</td>
<td>Carrots eater</td>
<td>13%</td>
</tr>
</tbody>
</table>

Apparently no phonological effect is manifested, since

a) compounds in the same category differ a lot as to the number of plurals produced inside them (compare *carrots plates* with *biscuits tins* and *biscuits counters*)

and

b) compounds in different categories had their NHNs pluralized to the same extent (compare *eyes box* with *biscuits tins* and *biscuits box*).

\textsuperscript{207} For example, Young (1991) dealt with the production/omission of the plural /s/ suffix by Chinese learners of English and Adamson et al. (1996) with the English -t/-d deletion of past tense segments by L1 Spanish learners.

\textsuperscript{208} Despite the instructions, some of the NS produced biscuit counting instead of biscuit counters. This is because ‘counter’ normally means “a long narrow table or surface”, which we had not considered in the construction of the task.
Next we turn to results from the GJT. Table 13 sets out raw data from judgements on sentences with regular plural NHNs and their controls.

**Table 13.** Successful performance on regular plural NHN (raw data)

<table>
<thead>
<tr>
<th>GRAMMATICALITY JUDGEMENT TASK</th>
<th>UNGRAMMATICAL</th>
<th>GRAMMATICAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEVELS</td>
<td>ROOT</td>
</tr>
<tr>
<td>NS(20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADV(30)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>INT(30)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Participants in all groups are less successful in grammatical than in ungrammatical sentences. The same phenomenon occurred also in other studies where grammaticality judgement tasks were employed. Bouba (2000) had similar results and she suggests that when participants are uncertain about the grammaticality of a sentence, they tend to accept rather than reject it. Can we assume that the NS are not completely successful at rejecting the ungrammatical sentences because the structures under investigation are not very salient? Bongartz (1998) reports that the native participants in her study accepted one-third of all the sentences containing compounds with regular plural NHNs, which was almost the same as what the non-natives did. To account for this, she suggests that the natives may have overlooked the plural suffix due to their lack of linguistic sophistication or previous training in such tasks, which was not the case with the non-natives. Recall that, in the present study, the majority of the native participants were linguistically sophisticated enough. In addition, compare the overall successful performance between target and distractor sentences in the GJT in Table 14:

---

Table 14. Overall successful performance in the GJT (raw data)\textsuperscript{210}

<table>
<thead>
<tr>
<th>TARGET SENTENCES</th>
<th>Grammatical</th>
<th>Ungrammatical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS(20)</td>
<td>99.16% (238/240)</td>
<td>89.27% (208/233)</td>
</tr>
<tr>
<td>AD(30)</td>
<td>98% (344/355)</td>
<td>64.32% (211/328)</td>
</tr>
<tr>
<td>IN (30)</td>
<td>92.17% (318/345)</td>
<td>40.29% (137/340)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DISTRACTOR SENTENCES</th>
<th>Grammatical</th>
<th>Ungrammatical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS(20)</td>
<td>98.74% (314/318)</td>
<td>89.38% (320/358)</td>
</tr>
<tr>
<td>AD(30)</td>
<td>90.94% (422/464)</td>
<td>78.28% (411/525)</td>
</tr>
<tr>
<td>IN (30)</td>
<td>82.47% (386/468)</td>
<td>65.64% (342/521)</td>
</tr>
</tbody>
</table>

Evidently the NS followed a uniform strategy both in the target and in the distractor sentences. On the other hand, the learners fared better at the ungrammatical distractors than at the ungrammatical target sentences (and did the reverse with the grammatical sentences in the two categories). So if saliency of the specific forms under investigation has an effect, it seems to concern only the learners\textsuperscript{211}. Bouba (2000) remarks that participants may accept more readily sentences they are less certain about, which might explain their lower success in ungrammatical than in grammatical sentences\textsuperscript{212}. However, what is of real importance here is that the NS differ significantly from the learners in this respect.

Going back to regular plural NHNs, we note a task effect, since all groups fared considerably worse in the GJT than in the PNT (cf. Tables 13 and 9). This is not uncommon in SLA studies involving the investigation of a structure through both a production task and a GJT. Moreover, research shows that results from GJTs often differ considerably from those obtained from other types of task too, such as, for example, preference tasks\textsuperscript{213}. Regarding the results here, it is important to note that, while in the PNT the performance of the ADV approximated that of the NS, this is not

\textsuperscript{210} Results from judgements on compounds with irregular plural/singular NHNs are not included here, since those cannot be considered ungrammatical.

\textsuperscript{211} In Bongartz’s (op.cit.) GJT, although not explicitly stated, it seems that all distractor sentences were grammatical, so there is no way to compare results between judgements on ungrammatical distractor and target sentences in this study.

\textsuperscript{212} According to anecdotal evidence, native speakers may even accept sentences they do not like out of courtesy to the non-native researcher, on the assumption that the latter considers those sentences grammatical (Maria Dimitrakopoulou, p. c.).

the case concerning the GJT. Leaving this point for the final chapter, we turn to statistical results concerning judgements on regular plural NHNs.

**Table 15. Regular plural NHN (GJT) - Score means**

<table>
<thead>
<tr>
<th></th>
<th>UNGRAMMATICAL</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROOT COMPONDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVEL</td>
<td>n</td>
<td>Mean</td>
<td>N</td>
<td>SD</td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.88</td>
<td>50/57</td>
<td>0.23</td>
</tr>
<tr>
<td>ADV</td>
<td>22</td>
<td>0.65</td>
<td>43/66</td>
<td>0.36</td>
</tr>
<tr>
<td>INT</td>
<td>26</td>
<td>0.38</td>
<td>30/78</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>DEVERBAL COMPONDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVEL</td>
<td>n</td>
<td>Mean</td>
<td>N</td>
<td>SD</td>
</tr>
<tr>
<td>NS</td>
<td>18</td>
<td>0.87</td>
<td>42/47</td>
<td>0.20</td>
</tr>
<tr>
<td>ADV</td>
<td>27</td>
<td>0.58</td>
<td>47/81</td>
<td>0.31</td>
</tr>
<tr>
<td>INT</td>
<td>25</td>
<td>0.39</td>
<td>29/75</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>ALL</td>
<td>Mean</td>
<td>N</td>
<td>SD</td>
</tr>
<tr>
<td>NS</td>
<td>17</td>
<td>0.87</td>
<td>89/102</td>
<td>0.18</td>
</tr>
<tr>
<td>ADV</td>
<td>20</td>
<td>0.60</td>
<td>71/120</td>
<td>0.31</td>
</tr>
<tr>
<td>INT</td>
<td>22</td>
<td>0.37</td>
<td>49/132</td>
<td>0.27</td>
</tr>
</tbody>
</table>

**GRAMMATICAL**

|          | ROOT COMPONDS |               |               |               |
| LEVEL    | n             | Mean          | N             | SD            |
| NS       | 20            | 1.00          | 60/60         | 0.00          |
| ADV      | 28            | 0.94          | 79/84         | 0.13          |
| INT      | 27            | 0.85          | 69/81         | 0.19          |
|          | DEVERBAL COMPONDS |           |               |               |
| LEVEL    | n             | Mean          | N             | SD            |
| NS       | 18            | 0.98          | 53/54         | 0.08          |
| ADV      | 29            | 0.98          | 85/87         | 0.09          |
| INT      | 25            | 0.89          | 67/75         | 0.23          |
|          | ALL | Mean | N | SD |
| NS | 18 | 0.99 | 107/108 | 0.04 |
| ADV | 27 | 0.96 | 156/162 | 0.07 |
| INT | 24 | 0.89 | 128/144 | 0.14 |

According to the analysis, there is a significant between-group difference (F=(2,56)13.398; \( p=0.000 \)) with respect to judgements on ungrammatical items. The post-hoc test reveals that both learner groups performed significantly worse than the NS and that, in addition they also differ significantly from each other (NS-ADV: \( p=0.008 \), NS-INT: \( p=0.000 \), ADV-INT: \( p=0.020 \)). Moreover, there are no within-group significant differences as regards the root-deverbal distinction at \( p=<0.05 \).
On the other hand, as regards performance on the grammatical items, although the statistical analysis shows that the between-group difference is significant (F(2,66)=6.312; \( p=0.003 \)), the post hoc test reveals that the INT differed significantly from both the other groups, while there was no significant difference between the ADV-INT (NS-INT: \( p=0.004 \), ADV-INT: \( p=0.027 \), NS-ADV: \( p=1000 \)). Last, there were no statistically significant differences at \( p=<0.05 \) with respect to the root/deverbal distinction.

5.3.2 Irregular plural non-head nouns

In this section, first we present results concerning irregular NHNs in compounds elicited in the PNT.

Table 16. Successful performance in irregular plural NHN (raw data)

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>PICTURE NAMING TASK</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROOT</td>
<td>DEVERBAL</td>
<td>ALL</td>
</tr>
<tr>
<td>NS(20)</td>
<td>64.64%(64/99)</td>
<td>48%(48/100)</td>
<td>57.28%(114/199)</td>
</tr>
<tr>
<td>ADV(30)</td>
<td>43.15%(63/146)</td>
<td>28.18%(42/149)</td>
<td>37.62%(111/295)</td>
</tr>
<tr>
<td>INT(30)</td>
<td>44.05%(63/143)</td>
<td>27.27%(39/143)</td>
<td>32.86%(94/286)</td>
</tr>
</tbody>
</table>

As shown, all groups pluralized the irregular NHN to a great extent, and, importantly, so did the NS. Moreover, unlike with regular plural NHNs, here the ADV-INT difference is small. While both learner groups fared worse in irregular than in regular plural NHNs, the ADV did much more so. In addition, note that all groups were more successful in root than in deverbal compounds. This point will be taken up shortly in the discussion of results demonstrated in Table 17.
Table 17. Irregular plural NHN (PNT) – Score means

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>19</td>
<td>0.68</td>
<td>65/95</td>
<td>0.33</td>
</tr>
<tr>
<td>ADV</td>
<td>26</td>
<td>0.41</td>
<td>54/130</td>
<td>0.26</td>
</tr>
<tr>
<td>INT</td>
<td>23</td>
<td>0.36</td>
<td>42/115</td>
<td>0.30</td>
</tr>
<tr>
<td>DEVERBAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.48</td>
<td>48/100</td>
<td>0.31</td>
</tr>
<tr>
<td>ADV</td>
<td>29</td>
<td>0.32</td>
<td>46/145</td>
<td>0.26</td>
</tr>
<tr>
<td>INT</td>
<td>23</td>
<td>0.30</td>
<td>34/115</td>
<td>0.30</td>
</tr>
<tr>
<td>ALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>19</td>
<td>0.60</td>
<td>113/190</td>
<td>0.28</td>
</tr>
<tr>
<td>ADV</td>
<td>25</td>
<td>0.35</td>
<td>89/250</td>
<td>0.22</td>
</tr>
<tr>
<td>INT</td>
<td>19</td>
<td>0.33</td>
<td>63/190</td>
<td>0.30</td>
</tr>
</tbody>
</table>

The statistical analysis reveals that the between-group difference in total results is significant (F=(2,60) 6.188, \( p=0.004 \)). Furthermore, the post-hoc test shows that both learner groups differ significantly from the controls but not from each other (NS-ADV: \( p=0.010 \), NS-INT: \( p=0.009 \), ADV-INT: \( p=1.000 \)). However, the between-group difference is only with respect to the root category (F(2,65)=7.10; \( p=0.002 \)) but not to the deverbal (F(2,69)=2.64; \( p=0.078 \)). This is due to the fact that, although all groups produced significantly more plural NHNs within deverbal than within root compounds (within group difference at \( p=0.000 \) for all levels), the NS did much more so. This occurred most probably (and as some of the NS later commented) because foot cream is rather lexicalized, especially for the NS, while foot kissers is not, so they produced a much larger number of plural NHNs in the latter than in the former, namely 10% and 70% respectively. In addition, one of the five contrasting pairs consisted of items with different words for NHNs, i.e. child for the deverbal and ox for the root category, so a comparison here is not valid, since children occurs much more often than oxen in English.

Next we turn to results from the GJT in Table 18.
Chapter 5  Methodology and results

| Table 18. Successful performance in irregular plural NHN (raw data) - GJT |
|-----------------|-----------------|-----------------|-----------------|
| LEVELS | ROOT | DEVERBAL | ALL |
| NS(20) | 58.62% (34/58) | 51% (25/49) | 55.14% (59/107) |
| ADV(30) | 21.17% (18/85) | 17.07% (14/82) | 19.16% (32/167) |
| INT(30) | 14.60% (13/89) | 18.39% (16/87) | 22.15% (39/176) |

IRREGULAR PLURAL NHN CONTROLS

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>ROOT</th>
<th>DEVERBAL</th>
<th>ALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS(20)</td>
<td>96.42% (54/56)</td>
<td>93.22% (55/59)</td>
<td>94.78% (109/115)</td>
</tr>
<tr>
<td>ADV(30)</td>
<td>89.15% (74/83)</td>
<td>88.23% (75/85)</td>
<td>88.69% (149/168)</td>
</tr>
<tr>
<td>INT(30)</td>
<td>85.05% (74/87)</td>
<td>85.39% (76/89)</td>
<td>85.22% (150/176)</td>
</tr>
</tbody>
</table>

If we compare the results here with those obtained in the PNT (Table 16), we observe that the NS have a similar total rate of success across the two tasks (57.58%:55.14%) but the learners did worse in the GJT than in the PNT. Moreover, unlike in the PNT, here the difference in performance between root and deverbal compounds is small and not unidirectional across groups. With regard to control sentences, judgements are less successful here than in the case of controls for regular plural NHNs, for all groups. Now we turn to statistical results\(^{214}\).

| Table 19. Successful performance in irregular plural NHN (GJT) – Score means |
|-----------------|-----------------|-----------------|-----------------|
| TEST ITEMS | LEVEL | n | Mean | N | SD |
| ROOT | NS | 18 | 0.59 | 32/54 | 0.25 |
| | ADV | 25 | 0.19 | 14/75 | 0.29 |
| | INT | 29 | 0.15 | 13/87 | 0.29 |
| DEVERBAL | NS | 12 | 0.56 | 20/36 | 0.27 |
| | ADV | 24 | 0.18 | 13/72 | 0.26 |
| | INT | 27 | 0.20 | 16/81 | 0.26 |
| ALL | NS | 12 | 0.61 | 44/72 | 0.23 |
| | ADV | 21 | 0.17 | 21/126 | 0.24 |
| | INT | 27 | 0.17 | 30/162 | 0.24 |

\(^{214}\) As stated before, the (un)grammaticality of irregular plural NHNs in compounds is under investigation, so regarding this category, ‘ungrammatical sentences’ and ‘grammatical sentences’ is substituted by ‘test items’ and ‘control items’ respectively.
Table 19a. Successful performance in irregular plural NHN (GJT) – Score means

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>17</td>
<td>0.96</td>
<td>49/51</td>
<td>0.08</td>
</tr>
<tr>
<td>ADV</td>
<td>23</td>
<td>0.95</td>
<td>66/69</td>
<td>0.12</td>
</tr>
<tr>
<td>INT</td>
<td>27</td>
<td>0.88</td>
<td>71/81</td>
<td>0.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>19</td>
<td>0.93</td>
<td>53/57</td>
<td>0.14</td>
</tr>
<tr>
<td>ADV</td>
<td>25</td>
<td>0.89</td>
<td>67/75</td>
<td>0.21</td>
</tr>
<tr>
<td>INT</td>
<td>29</td>
<td>0.85</td>
<td>74/87</td>
<td>0.29</td>
</tr>
</tbody>
</table>

The analysis shows that the between-group difference with respect to performance in irregular plural NHNs is significant (F(2,57)=17.475; p=0.000). The post-hoc test reveals that both learner groups differ significantly from the controls at $p<0.01$, but not from each other (ADV-INT: $p=1.000$), which is consonant with results obtained from the PNT as regards the same category under examination. However, unlike in the PNT, here the root/deverbal factor had no effect at $p<0.01$. This confirms our claim that the root/deverbal discrepancy in the PNT was a matter of frequency of appearance of the specific items used. Moreover, the nature of between-group differences in this category is dissimilar to that pertaining to regular plural NHNs. While the two learner groups are set apart in the latter, they fare about the same in irregular plural NHNs.

Concerning the sentences which contained singular irregular NHNs, as in the case of controls for other categories, the NS fared better than the AD who fared better from the INT. However, here the between-group difference is small and not statistically significant (F(2,61)=1.298, $p=0.281$). The root/deverbal distinction had no significant effect either.
5.3.3 Genitive non-head nouns

In this section we focus on production/acceptance of genitive NHN in compounds. Recall that all test items here were root compounds and that cues for the NHN were singular. Table 20 demonstrates the relevant raw data from responses in the PNT.

Table 20. Successful performance in genitive NHN (raw data)

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>PICTURE NAMING TASK</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS(20)</td>
<td>100%(180/180)</td>
</tr>
<tr>
<td>ADV(30)</td>
<td>100%(269/269)</td>
</tr>
<tr>
<td>INT(30)</td>
<td>94.05%(253/269)</td>
</tr>
</tbody>
</table>

We can see that only the INT were not totally successful. Still, they performed in a near-native-like manner. Now let us turn to the statistical results.

Table 21. Successful performance in genitive NHN – Score means

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
<th>SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>20</td>
<td>1.00</td>
<td>0.00</td>
<td>100%(180/180)</td>
</tr>
<tr>
<td>ADV</td>
<td>29</td>
<td>1.00</td>
<td>0.00</td>
<td>100%(261/261)</td>
</tr>
<tr>
<td>INT</td>
<td>29</td>
<td>0.94</td>
<td>0.13</td>
<td>93.86%(245/261)</td>
</tr>
</tbody>
</table>

The statistical analysis reveals a between-group significant difference ($F=(2,74)5.789; p=0.005$). According to the post-hoc test the INT differed from the NS at $p=0.025$ and from the ADV at $p=0.010$. It must be noted here that genitive NHNs were produced by six intermediate participants, four of whom also produced an /s/ inside compounds with irregular plural NHNs, for example *oxen’s barn* or *feet’s shampoo*, as well as in distractors, for example *kitchen’s chair*.

Next we deal with judgements on genitive NHN in Table 22.
Table 22. Successful performance on genitive NHN (raw data)

<table>
<thead>
<tr>
<th>GRAMMATICALITY JUDGEMENT TASK</th>
<th>TEST ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVELS</strong></td>
<td><strong>ROOT</strong></td>
</tr>
<tr>
<td>NS(20)</td>
<td>93.22% (55/59)</td>
</tr>
<tr>
<td>ADV(30)</td>
<td>75.30% (61/81)</td>
</tr>
<tr>
<td>INT(30)</td>
<td>40.23% (35/87)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CONTROL ITEMS</strong></th>
<th><strong>LEVELS</strong></th>
<th><strong>ROOT</strong></th>
<th><strong>DEVERBAL</strong></th>
<th><strong>ALL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>NS(20)</td>
<td>100% (60/60)</td>
<td>99.33% (59/60)</td>
<td>99.16% (119/120)</td>
<td></td>
</tr>
<tr>
<td>ADV(30)</td>
<td>94.12% (80/85)</td>
<td>96.63% (86/89)</td>
<td>95.40% (166/174)</td>
<td></td>
</tr>
<tr>
<td>INT(30)</td>
<td>77.64% (66/85)</td>
<td>96.59% (85/88)</td>
<td>87.28% (151/173)</td>
<td></td>
</tr>
</tbody>
</table>

Results here contrast sharply with those obtained from the PNT, since all groups differ considerably from each other. Similar to what happened with regular plural NHNs, there is a task effect with respect to genitive NHNs as well. Leaving aside task-related differences to be discussed in the final Chapter, we can observe that all groups were slightly less successful in deverbal than in root compounds and that this difference is more pronounced in the ADV. We tentatively assume that this is because possession is associated with the semantic concept of animacy, although here it is linked with the possessum and not with the possessor. Nevertheless, it seems that a bell’s designer sounds and/or looks better than a hat’s company.

On the other hand, as regards judgements on control sentences, note that both learner groups performed the same as the NS in deverbal compounds but were worse than the NS in root compounds. This results from the relatively high number of rejections concerning mainly one sentence, which was This building is the chair factory, the only one rejected by one native speaker too. The specific participant, as well as another native speaker who had accepted it reluctantly, commented later that on an uncontextualized basis, they would have expected the indefinite article instead. So it could be that the learners rejected it for the same reason.

However, this is not very likely, since, in contrast, they were not very successful in some of the distractors which involved ungrammatical use of the article. Moreover, note that the respective target sentence This place is the toys’ museum had a high acceptance rate (17/29) by the INT, while, in the ADV group, nine accepted it and five were uncertain about it. Therefore may be the learners would have preferred a genitive NHN, that is, the chair’s factory. Besides this, judgements from all groups were glaringly more successful in the control sentences than in those containing
genitive NHNs. Last, there is a developmental effect which is more pronounced in the case of judgements on genitive NHNs than in those on their controls.

Let us now turn to the statistical results.

**Table 23. Successful performance in genitive NHN**

<table>
<thead>
<tr>
<th>GRAMMATICALITY JUDGEMENT TASK</th>
<th>TEST ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROOT</td>
</tr>
<tr>
<td>LEVEL</td>
<td>LEVEL</td>
</tr>
<tr>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>NS</td>
<td>19</td>
</tr>
<tr>
<td>ADV</td>
<td>22</td>
</tr>
<tr>
<td>INT</td>
<td>27</td>
</tr>
</tbody>
</table>

<p>| LEVEL                        | DEVERBAL |</p>
<table>
<thead>
<tr>
<th>n</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>19</td>
<td>0.89</td>
<td>51/57</td>
<td>0.27</td>
</tr>
<tr>
<td>ADV</td>
<td>22</td>
<td>0.65</td>
<td>43/66</td>
<td>0.40</td>
</tr>
<tr>
<td>INT</td>
<td>23</td>
<td>0.33</td>
<td>23/69</td>
<td>0.31</td>
</tr>
</tbody>
</table>

<p>| LEVEL                        | ALL       |</p>
<table>
<thead>
<tr>
<th>n</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>19</td>
<td>0.93</td>
<td>106/114</td>
<td>0.18</td>
</tr>
<tr>
<td>ADV</td>
<td>20</td>
<td>0.73</td>
<td>88/120</td>
<td>0.30</td>
</tr>
<tr>
<td>INT</td>
<td>22</td>
<td>0.38</td>
<td>51/132</td>
<td>0.29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTROL ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRAMMATICALITY JUDGEMENT TASK</th>
<th>TEST ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ROOT</td>
</tr>
<tr>
<td>LEVEL</td>
<td>LEVEL</td>
</tr>
<tr>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
</tr>
<tr>
<td>ADV</td>
<td>25</td>
</tr>
<tr>
<td>INT</td>
<td>25</td>
</tr>
</tbody>
</table>

<p>| LEVEL                        | DEVERBAL |</p>
<table>
<thead>
<tr>
<th>n</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>20</td>
<td>0.98</td>
<td>59/60</td>
<td>0.07</td>
</tr>
<tr>
<td>ADV</td>
<td>29</td>
<td>0.97</td>
<td>84/87</td>
<td>0.10</td>
</tr>
<tr>
<td>INT</td>
<td>28</td>
<td>0.96</td>
<td>81/84</td>
<td>0.14</td>
</tr>
</tbody>
</table>

<p>| LEVEL                        | ALL       |</p>
<table>
<thead>
<tr>
<th>n</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>20</td>
<td>0.99</td>
<td>179/180</td>
<td>0.04</td>
</tr>
<tr>
<td>ADV</td>
<td>25</td>
<td>0.96</td>
<td>144/150</td>
<td>0.09</td>
</tr>
<tr>
<td>INT</td>
<td>25</td>
<td>0.87</td>
<td>130/150</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Analysis of total results show a significant between-group difference with respect to this category (F (2,58)=21.144; p=0.000). The post hoc test revealed no NS-ADV difference (p=0.318) but the INT differed from both other groups at p=0.000. However, a separate analysis with respect to the root/deverbal distinction revealed that while the INT differ from the NS in both categories at p=0.000, the ADV do so
only as regards genitive in deverbal compounds (NS-ADV: \( p=0.046 \) for deverbal and \( p=0.118 \) for root compounds). Also, the within-group difference for the ADV in this area is at a near-significant level (\( p=0.057 \)).

As regards judgements on control sentences, the between-group difference is significant too (F(2,69)=9.292; \( p=0.000 \)), due to the performance of the INT who differ from both the NS and the ADV at \( p<0.01 \), according to the post-hoc test. On the other hand, there is no NS-ADV significant difference (\( p=0.925 \)). Moreover, the discrepancy in judgements between root and deverbal compounds in control sentences discussed above is significant as a within-group difference for the INT (F(1,24) =18.520; \( p=0.000 \)). Namely, they fared worse in root than in deverbal compounds. Regardless of this, it seems that in total, and similar to what happens in the case of regular plural NHNs, the learners may not dislike genitive NHNs much, but they prefer non-genitive ones.

5.3.4 Number and definiteness agreement between the DP members

Now let us see whether the participants’ judgements were affected by the type of determiner and/or by the type of HN in the compounds under examination, starting with the items having a regular plural NHN\(^{215} \).

Table 24: Agreement effect on successful performance in regular plural NHN (raw data)

<table>
<thead>
<tr>
<th>DETERMINER</th>
<th>NS (20)</th>
<th>ADV (30)</th>
<th>INT (30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>94.87% (37/39)</td>
<td>70.37% (38/54)</td>
<td>57.40% (31/54)</td>
</tr>
<tr>
<td>THE</td>
<td>77.5% (31/40)</td>
<td>57.89% (33/57)</td>
<td>42.37% (25/59)</td>
</tr>
<tr>
<td>Ø</td>
<td>89.47% (34/38)</td>
<td>52.63% (30/57)</td>
<td>20.68% (12/58)</td>
</tr>
</tbody>
</table>

The above results indicate a tendency in the ADV and the INT to prefer regular plural NHN more in compounds preceded by THE than by A, and even more in bare plural compounds. On the other hand, the NS were less successful as concerns compounds preceded by THE. Results from the statistical analysis are demonstrated in Table 25.

\(^{215}\) Recall that in all categories compounds preceded by the definite article had singular HNs, therefore only those with a null determiner had plural HNs.
Table 25: Score means of successful performance in regular plural NHNs
- Agreement effect

<table>
<thead>
<tr>
<th>DETERMINER</th>
<th>levels</th>
<th>n</th>
<th>mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NS</td>
<td>19</td>
<td>0.95</td>
<td>36/38</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>24</td>
<td>0.76</td>
<td>36/48</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>25</td>
<td>0.57</td>
<td>28/50</td>
<td>0.40</td>
</tr>
<tr>
<td>THE</td>
<td>NS</td>
<td>20</td>
<td>0.78</td>
<td>31/40</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>27</td>
<td>0.57</td>
<td>31/54</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>29</td>
<td>0.43</td>
<td>25/58</td>
<td>0.37</td>
</tr>
<tr>
<td>Ø</td>
<td>NS</td>
<td>18</td>
<td>0.97</td>
<td>33/36</td>
<td>0.19</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>27</td>
<td>0.52</td>
<td>28/54</td>
<td>0.38</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>28</td>
<td>0.20</td>
<td>11/56</td>
<td>0.34</td>
</tr>
</tbody>
</table>

The statistical analysis shows that, as regards between-group differences, the number agreement effect was as follows. First, the NS-ADV and the ADV-INT difference was significant only with respect to judgements on bare plural compounds at $p<0.001$, but not in judgements on the rest of the categories. Moreover, there was a within-group difference in the INT between judgements on compounds headed by A and those that were bare plurals. Let us now look at results in this respect from irregular plural NHNs:

Table 26: Agreement effect on successful performance in irregular plural NHN (raw data)

<table>
<thead>
<tr>
<th>DETERMINER</th>
<th>NS (20)</th>
<th>ADV (30)</th>
<th>INT (30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>58.33%  (21/36)</td>
<td>26.41% (14/53)</td>
<td>22.41% (13/58)</td>
</tr>
<tr>
<td>THE</td>
<td>52.94% (18/34)</td>
<td>16% (9/56)</td>
<td>16.66% (10/60)</td>
</tr>
<tr>
<td>Ø</td>
<td>52.63% (20/38)</td>
<td>17.85% (10/56)</td>
<td>10.34% (6/58)</td>
</tr>
</tbody>
</table>
Table 27: Score means of successful performance in irregular plural NHNs
- Agreement effect

<table>
<thead>
<tr>
<th>DETERMINER</th>
<th>levels</th>
<th>n</th>
<th>mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NS</td>
<td>16</td>
<td>0.63</td>
<td>20/32</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>24</td>
<td>0.27</td>
<td>13/48</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>28</td>
<td>0.21</td>
<td>12/56</td>
<td>0.32</td>
</tr>
<tr>
<td>THE</td>
<td>NS</td>
<td>14</td>
<td>0.54</td>
<td>15/28</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>28</td>
<td>0.16</td>
<td>9/56</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>30</td>
<td>0.17</td>
<td>10/60</td>
<td>0.30</td>
</tr>
<tr>
<td>Ø</td>
<td>NS</td>
<td>18</td>
<td>0.50</td>
<td>18/36</td>
<td>0.34</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>27</td>
<td>0.19</td>
<td>10/54</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>29</td>
<td>0.10</td>
<td>6/58</td>
<td>0.25</td>
</tr>
</tbody>
</table>

The statistical analysis showed neither between- nor within-group significant differences in terms of article effect.

No number agreement effect was noted in results from the PNT, that is, the learners pluralized the NHN irrespective of the plurality of the HN. However, note that all participants produced also singular HNs in responses to multiple cues. For example, they said “carrot dish” while there were two dishes in the picture shown to them. This occurred at a rate of 21% for the NS, 23% for the ADV and 31% for the INT. Next we deal with judgements on genitive NHNs displayed in Table 28.

Table 28: Agreement effect on successful performance in genitive NHN (raw data)

<table>
<thead>
<tr>
<th>DETERMINER</th>
<th>NS (20)</th>
<th>ADV (30)</th>
<th>INT (30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% (36/40)</td>
<td>75.86% (44/58)</td>
<td>56.14% (32/57)</td>
</tr>
<tr>
<td>THE</td>
<td>94.87% (37/39)</td>
<td>58.82% (30/51)</td>
<td>36.84% (21/57)</td>
</tr>
<tr>
<td>MANY, Ø</td>
<td>89.47% (34/38)</td>
<td>68.62% (35/51)</td>
<td>28.57% (16/56)</td>
</tr>
</tbody>
</table>

We observe that while the NS judgements do not seem to be influenced much by type of determiner, the ADV like compounds with the definite article more than the rest, while the INT present a gradience in their judgements similar to the one exhibited in the case of regular plural NHN. Now let us turn to Table 29.
Table 29: Score means of successful judgements on genitive NHNs – Agreement effect

<table>
<thead>
<tr>
<th>DETERM.</th>
<th>levels</th>
<th>n</th>
<th>mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NS</td>
<td>20</td>
<td>0.90</td>
<td>36/40</td>
<td>0.26</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>28</td>
<td>0.75</td>
<td>42/56</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>27</td>
<td>0.54</td>
<td>28/54</td>
<td>0.41</td>
</tr>
<tr>
<td>THE</td>
<td>NS</td>
<td>19</td>
<td>0.95</td>
<td>36/38</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>23</td>
<td>0.63</td>
<td>29/46</td>
<td>0.40</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>27</td>
<td>0.39</td>
<td>21/54</td>
<td>0.32</td>
</tr>
<tr>
<td>MANY, Ø</td>
<td>NS</td>
<td>19</td>
<td>0.89</td>
<td>34/38</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>ADV</td>
<td>24</td>
<td>0.73</td>
<td>35/48</td>
<td>0.36</td>
</tr>
<tr>
<td></td>
<td>INT</td>
<td>26</td>
<td>0.29</td>
<td>15/52</td>
<td>0.38</td>
</tr>
</tbody>
</table>

The statistical analysis revealed the following. First, the INT differ from the NS with respect to all categories and from the ADV only in judgements on compounds with the definite article \((p=0.029)\). Second, the ADV differ from the NS only as regards compounds with the definite article \((p=0.00)\).

5.3.5 Referentiality judgements

According to our hypotheses, if learners produced/accepted regular plural NHNs and genitive NHNs this would have meant that transfer does not take place from the L1 compounds to the L2 ones, since no such forms are allowed in Greek compounds. We further assumed that if the above occurs, the learners view compounds as complex DPs and support for or against this hypothesis could be provided from evidence on whether the learners deem possible for a pronoun to refer separately to the NHN in a compound. So let us now turn to results from the referentiality judgement task (RJT), which are demonstrated in Table 30\(^{216}\).

\(^{216}\) Raw data is not presented here because there were no missing answers.
Table 30. Score means of successful performance in the RJT

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROOT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.88</td>
<td>53/60</td>
<td>0.20</td>
</tr>
<tr>
<td>ADV</td>
<td>30</td>
<td>0.67</td>
<td>60/90</td>
<td>0.35</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.61</td>
<td>55/90</td>
<td>0.29</td>
</tr>
<tr>
<td>DEVERBAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.75</td>
<td>45/60</td>
<td>0.31</td>
</tr>
<tr>
<td>ADV</td>
<td>30</td>
<td>0.56</td>
<td>50/90</td>
<td>0.40</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.40</td>
<td>36/90</td>
<td>0.30</td>
</tr>
</tbody>
</table>

The statistical analysis shows a significant between-group difference ((F(2,77)=7.805; p=0.001) in total results. According to the post-hoc test, both learner groups differ significantly from the NS but not from each other (NS-ADV: p=0.033, NS-INT: p=0.001, ADV-INT: p=0.417). Note that, although not significant, there is a developmental effect here too. Moreover, there was an effect exerted by compound type, since all groups fared better at judgements on root than on deverbal compounds. Also, the NS-ADV difference was significant only as regards the latter category (NS-ADV: p=175 for root and p=0.040 for deverbal compounds) and the within-group difference in this respect was significant for the INT (p=0.003). However, the root/deverbal discrepancy in the results is due to unsuccessful judgements mainly on the first target item in the test, which happened to contain a deverbal NHN (See Appendix, p. 253) and we may assume that the effect was triggered by the order of presentation. Namely, it is probable that once the participants became more familiar with the task, their performance improved.

It could be claimed that the NS fared better because they were more linguistically sophisticated than the learners. Results from judgements on the distractor sentences displayed in Table 31 bear on this point.
Table 31. Successful performance in the RJT – Distractor sentences.

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SP</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>20</td>
<td>0.91</td>
<td>0.18</td>
<td>91%(91/100)</td>
</tr>
<tr>
<td>ADV</td>
<td>30</td>
<td>0.90</td>
<td>0.13</td>
<td>90%(115/150)</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.88</td>
<td>0.15</td>
<td>88%(132/150)</td>
</tr>
</tbody>
</table>

Unlike with the target items, results here show that all three groups were successful almost to the same degree. The statistical analysis shows that there is no between-group difference (F(2,77)=0.277; \( p=0.759 \)), an indication that the participants’ linguistic sophistication in this domain was about equal in all groups.

5.3.6 Head-directionality in interlanguage compounds

Table 32 presents the relevant raw data from the PNT.

Table 32. Successful performance in PNT (raw data)

<table>
<thead>
<tr>
<th>WORD ORDER</th>
<th>LEVELS</th>
<th>NS (20)</th>
<th>ADV(30)</th>
<th>INT(30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INVERTED CUES</td>
<td>98%(98/100)</td>
<td>80.68(117/145)</td>
<td>70.46%(105/149)</td>
<td></td>
</tr>
<tr>
<td>NON-INV.CUES</td>
<td>100%(120/120)</td>
<td>88.88%(160/180)</td>
<td>82.22%(148/180)</td>
<td></td>
</tr>
<tr>
<td>ALL ROOT</td>
<td>99.09%(218/220)</td>
<td>85.23%(277/325)</td>
<td>76.89%(253/329)</td>
<td></td>
</tr>
<tr>
<td>DEVERBAL</td>
<td>100%(200/200)</td>
<td>99.33%(297/299)</td>
<td>98.32%(294/299)</td>
<td></td>
</tr>
</tbody>
</table>

We can see that, although the learners fare almost like the NS with respect to deverbal compounds, they differ from them regarding root compounds. Moreover, it seems that the order of presentation of visual cues in the PNT affects the learners’ performance. Tables 33 and 33a display the statistical results.

Table 33. Score means of successful performance in PNT

<table>
<thead>
<tr>
<th>WORD ORDER</th>
<th>LEVELS</th>
<th>ROOT COMPOUNDS (INVERTED CUES)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEVEL</td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.98</td>
<td>98/100</td>
</tr>
<tr>
<td>ADV</td>
<td>26</td>
<td>0.86</td>
<td>106/130</td>
</tr>
<tr>
<td>INT</td>
<td>29</td>
<td>0.70</td>
<td>102/145</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WORD ORDER</th>
<th>LEVELS</th>
<th>ROOT COMPOUNDS (NON-INVERTED CUES)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEVEL</td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>1.00</td>
<td>120/120</td>
</tr>
<tr>
<td>ADV</td>
<td>30</td>
<td>0.89</td>
<td>160/180</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
<td>0.82</td>
<td>148/180</td>
</tr>
</tbody>
</table>
Table 33a. Score means of successful performance in PNT

<table>
<thead>
<tr>
<th>WORD ORDER</th>
<th>ALL ROOT COMPOUNDS</th>
<th>DEVERBAL COMPOUNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>0.99</td>
</tr>
<tr>
<td>ADV</td>
<td>26</td>
<td>0.86</td>
</tr>
<tr>
<td>INT</td>
<td>29</td>
<td>0.77</td>
</tr>
</tbody>
</table>

Results show that, while there is no between-group difference as regards word order in deverbal compounds (F(2,75)=0.926; p=0.400), the difference is highly significant with respect to the root category in total results (F=(2,71)16.888; p=0.000) and concerns differences between all groups (NS-ADV: p=0.004, NS-INT: p=0.000, ADV-INT: p=0.032). The order of presentation in the two subgroups within the root category had the following effect. The ADV-INT difference was near significant in items with non-inverted cues (p=0.064) and not significant in items with inverted cues (p=0.254). Furthermore there was a significant within-group effect in this area for the INT (F=(1,27)5.733; p=0.024) and a near-significant one for the ADV (F=(1,25)3.512; p=0.073). In other words, both learner groups fared much worse at pictures with inverted cues, while the NS responses were almost unaffected by the order in which cues were presented. Next we turn to results from the interpretation task (IT).

Table 34. Successful performance in the IT – Raw data

<table>
<thead>
<tr>
<th>WORD ORDER</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVELS</td>
<td>n</td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
</tr>
<tr>
<td>ADV</td>
<td>30</td>
</tr>
<tr>
<td>INT</td>
<td>30</td>
</tr>
</tbody>
</table>

The table above demonstrates that all groups differ from each other to a considerable extend. The statistical results are displayed in Table 35.
Table 35. Score means of successful performance in the IT

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>n</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>16</td>
<td>0.96</td>
<td>154/160</td>
<td>0.08</td>
</tr>
<tr>
<td>ADV</td>
<td>28</td>
<td>0.66</td>
<td>186/280</td>
<td>0.31</td>
</tr>
<tr>
<td>INT</td>
<td>27</td>
<td>0.33</td>
<td>89/270</td>
<td>0.21</td>
</tr>
</tbody>
</table>

The analysis shows a significant between-group difference ($F(2,68)=36.414; \ p=0.000$) and the post-hoc test reveals that all groups differ significantly from each other at $p<0.001$.

5.3.7 Degree of certainty in judgements

Recall that in the GJT there were two minus and two plus judgements which were later lumped as 1 and 0 (respectively), depending on whether they represented responses to correct or incorrect sentences. Also recall that all ‘I’m not sure’ responses were counted out for the reasons explained. In this section, we present some details about the extent to which the participant groups differ from each other with respect to ‘definitely correct/incorrect’ judgements as well as to the ‘I don’t know’ ones, as regards compounds with a plural regular/irregular NHN or a genitive NHN. Percentage results of successful performance concerning exclusively ‘definite’ judgements as well as to the ‘I don’t know’ ones, as regards compounds with a plural regular/irregular NHN or a genitive NHN. Percentage results of successful performance concerning exclusively ‘definite’ judgements across all categories are illustrated in Figure 1. We also include Figure 2 which demonstrates the sum of ‘definite’ + ‘rather’ judgements discussed in previous paragraphs to facilitate a comparison.
Results from responses expressing certainty, as compared with those representing the sum of the positive/negative responses, show a bigger NS-ADV and a smaller ADV-INT difference as regards judgements on regular plural NHN and, especially, on genitive NHN. On the other hand, both the NS-ADV and the NS-INT difference decreases with respect to certain judgements on irregular plural NHN. In other words, the ADV seem to be less certain in their judgements both from the NS and the INT concerning compounds with a plural or a genitive affix inside them and the NS exhibit the higher degree of uncertainty in the case of irregular plural NHNs.

Now let us turn to ‘I don’t know’ answers. Percentage results for all groups and categories are shown in Figure 3.
The emerging picture is congruent with the discussion in the previous paragraph. Namely the NS are the least agnostic of all the groups regarding the plural and the genitive affix inside compounds but they provide more ‘I don’t know’ answers than the ADV or the INT concerning irregular plural NHNs. Aside from this, the two learner groups differ from each other in that the INT express the same amount of ignorance about either regular plural NHNs or genitive NHNs, while the ADV opt for ‘I don’t know’ mostly in responses regarding genitive NHNs.

5.4 Summary

In brief, the experimental results reveal that the learners differ significantly from the NS as to the following.

- Production/acceptance of regular and irregular plural NHN.
- Production/acceptance of genitive NHN.
- Knowledge about the possibility of independent reference of the NHN.
- Word order in compounds.
- The role of cues in the PNT.

In addition, the learners’ judgements are affected by the type of article preceding the NHN, the number (i.e. +/-singular) of the HN and the root/deverbal distinction. Moreover, there is developmental and task-effect. These points are born out by the following.

- With respect to production of regular plural NHNs in compounds, the ADV fared almost the same as the NS but the INT differed significantly from both other groups. Regarding judgements on regular plural NHNs the NS-INT difference is significant concerning all of the test items but the NS-ADV and the ADV-INT difference is significant concerning only compounds with plural NHNs and plural HNs, which were also preceded by a null determiner.
- As to genitive NHNs in compounds, the ADV fared almost the same as the NS and were significantly better than the INT in the PNT. In the GJT there was an NS-ADV difference in this domain which is statistically significant concerning performance only on deverbal compounds. On the other hand the INT fared
significantly worse than the NS regarding genitive NHNs in both compound types. Moreover, in terms of definiteness agreement effect, there are significant differences between all groups concerning judgements on genitive NHNs only in compounds preceded by the definite article.

- As regards word order in compounds, there are significant differences between all groups regarding results from both related tasks. However this concerns only root compounds.

On the other hand, both learner groups differ from the NS but not from each other with respect to their performance on irregular plural NHNs and concerning the referential potential of the NHN in a compound. Last the learners’ performance resembles that of the NS as to a) the dissociation between regular and irregular morphology concerning plural NHNs and b) as to lack of distinction between root and deverbal constructions with respect to regular/irregular plural NHNs. We attempt to account for these facts in the next chapter.
CHAPTER 1: AIMS, LANGUAGE ACQUISITION AND LINGUISTIC THEORY

1.1 Introduction

This dissertation pertains to the acquisition of English noun-noun root and deverbal compounds (e.g. lemon pie and shoe makers respectively) by L1 Greek adults. Specifically, it investigates the following points:

a) the possibility of regular plural non-head nouns (e.g. *shoes makers)
b) the dissociation between regular and irregular plural non-head nouns (e.g. *claws marks cf. teeth marks)
c) the possibility of genitive non-head nouns (e.g. *trucks’ industry)
d) word order in compounds (e.g. *maker shoes, *pie lemon).

The theoretical framework adopted is Chomsky’s generative framework and, in particular, his more recent hypothesis about language, known as the Minimalist Program (MP) (1993,1995).

This chapter starts with an outline of theories regarding First Language Acquisition and some basic concepts of the generative linguistic framework. Next it surveys Second Language Acquisition theories and then it discusses some of the basic tenets of MP. Subsequently it presents certain hypotheses concerning the nominal and the clausal structure, which have been employed also in analyses of compound formation. Last it sketches out views about the relationship between morphology and syntax.

1.2 First Language Acquisition

In behaviourism (Skinner 1957), a prominent theory in the 40’s and 50’s, language learning is like most other kinds of human learning, that is, a matter of habit formation, which takes place through imitation, practice, and positive or negative feedback on success or lack of it respectively. Accordingly, children learn language by hearing utterances they repeat; should they make any errors, they are corrected by adults until they get them right.
Chomsky (1959) falsified behaviourism by showing that it cannot account for the immense creativity of language\(^1\). Namely most of the sentences we hear, produce and read are novel, so knowing what they mean or been able to utter them cannot result from having become accustomed to them through practice. Even more important, all normal children produce novel grammatical utterances and acquire the basic syntax of their mother tongue from a very young age. This is an enormously difficult task, as it entails parsing the linguistic input into word (and morpheme) boundaries and categories (e.g. Verb, Noun etc.) in order to work out their relations within sentences. In addition, unlike behaviourist claims, children accomplish this task without any systematic correction by their elders, that is, there is no ‘negative evidence’ as to what is an ungrammatical utterance. Thus, children’s knowledge of ungrammaticality constitutes the ‘poverty of the stimulus argument’. This is called ‘Plato’s problem’ by Chomsky (1986) and poses the logical problem of language acquisition: “With so little evidence, how come we know so much?”.

In view of the above, according to the ‘nativist’ theory, since the task of language acquisition is underdetermined by the input, besides input, there must exist some kind of innate knowledge shared by all humans, which contributes to the accomplishment of such a highly complex task. Moreover, this knowledge is assumed to be independent from other cognitive capacities such as, for example, reasoning and general intelligence\(^2\), and is linked with a kind of separate module in the brain, called Language Acquisition Device (LAD) or Language Faculty, which contains a Universal Grammar (UG). This “mental organ” constrains the number of the possible hypotheses about the structure of a language one is exposed to, thus facilitating its learning.

Within the generative framework developed in the 80’s by Chomsky, the Language Faculty consists of four levels of representation and a set of finite principles. The former are D(eep)-structure, S(urface)-structure, L(ogical) F(orm) and P(honetic) F(orm). With regard to principles let us mention only the following:

---

\(^1\) Lyons (1970: 37) remarks that other scholars, like Humboldt and Saussure among others, had made a point on this long before Chomsky.

\(^2\) According to the ’principle of modularity’ (Chomsky 1981; Fodor 1983) “the operations of an autonomous module have no access to operations internal to any other module” (Beard 1995: 16). For
X-bar Theory: it defines the hierarchical configuration of linguistic structures

the Projection Principle: lexical information should be presented at all levels of representation

the Extended Projection Principle: every clause must have a subject.

Differences between languages are defined by an also finite set of Parameters with a (usually) binary set of values; for instance, there is parameterization with respect to whether a language canonically has an overt (phonologically realized) word as a subject, as in English, or not, as in Greek. Because all children opt for null subjects, the related default (unmarked) parameter has a [+ ] value. So in this respect, Greek is a [+ ] null subject language while English is [-] null subject and the related parameter distinguishes between ‘pro(noun)-drop’ and ‘non-pro(noun)-drop’ languages respectively.

In the more recent Minimalist framework (Chomsky 1993, 1995), parameterization is linked with variation associated with features of lexical items. Lexical items are of two types:

- substantive categories, e.g. N(oun), (V)erb, (A)djective
- functional categories, e.g. (C)omplementizer, (I)nflation, (D)eterminer

Cross-linguistic variation is associated with the properties (features) of lexical items in functional categories and with respect to the [+/-] strength values of those features. In this theory, the acquisition of a grammar consists mainly in the acquisition of features of functional categories and their strength settings in this grammar. Moreover, there are only two levels of representation. We explain this further in Section 1.4.

A third theory that emerged mainly in the late 80’s, called ‘connectionism’, proposes that there is no such a thing as an innate module for language acquisition and that linguistic input contains all the necessary information to trigger the learning of a language. In this approach, through continuous exposure to various linguistic structures, one makes ‘connections’ between elements and gradually gets to know their grammatical relations. For example, after having repeatedly heard utterances in which the third person singular is followed by a verb ending in the -s suffix in an empirical validation of this theory, see Smith & Tsimpli (1991, 1995) about the extraordinary case
English, children establish this connection and generalize it over other verbs. Studies employing connectionist approaches to explain phenomena related with the acquisition of compounds are discussed in Chapters 4 and 6.

1.3 Second language acquisition

1.3.1 From behaviourism to UG

Under behaviourist beliefs, non-native-like performance in SLA was considered to derive from interference of old (L1) habits in the formation of new (L2) ones. Therefore it was deemed that the situation could be remedied by predicting the areas of difficulty through a contrast between the source and the target language structures, followed by focusing on the differences between the two languages via instruction. This was the so-called Contrastive Analysis Hypothesis (Lado 1957; Valdman 1966). However, its validity was questioned due to evidence indicating that difference did not necessarily cause difficulty. Moreover, it was shown that certain L2 structures were resistant to acquisition as concerns learners from typologically different L1 backgrounds\(^3\). Consequently, it seemed that analyzing errors would be more fruitful than predicting them, which led to the ‘Error Analysis’ studies. The differentiation between CA and EA went deeper than their ‘a priori’ and ‘a posteriori’ character respectively; namely in EA “errors…are best not regarded as the persistence of old habits, but rather as signs that the learner is investigating the system of the new language” (Corder 1967: 27). Notwithstanding some of its weaknesses\(^4\), EA contributed to viewing learner language not as a corrupt form of the target language, but as a system in its own right, separate from both L1 and L2. This system was labelled ‘interlanguage’\(^5\) (Selinker 1972).

After the demise of the behaviourist theory and under the influence of the generative model, there was a shift towards discovering similarities rather than differences between FLA and SLA. In this vein, some studies revealed that in SLA learners from

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\(^4\) Namely Error Analysis was often mainly descriptive and did not provide answers as to the sources of errors (Lightbown & Spada 1999: 75). Furthermore, as pointed out by Schachter (1974) it neglected the phenomenon of avoidance of structures which learners find difficult to handle.
different L1s go through similar developmental stages concerning the acquisition order of morphemes, negation, questions, relative clauses and reference to past time, as it also happens in FLA\(^6\). Those findings spurred an adherence to the belief that UG is operant in SLA too and at the same time they made some researchers deny the existence of L1 transfer\(^7\). Nevertheless, regardless of one’s standpoint concerning the question of UG or no UG in SLA, impressive evidence confirms that there is such a thing as L1 transfer. Aside from this, some adopted the term ‘cross-linguistic influence’ instead of ‘transfer’ (Kellerman & Sharwood Smith 1986; Odlin 1989) both because the conceptualization of L1 influence as ‘transfer’ was associated with behaviourism and, most importantly, because the new term was considered a more precise description of interlanguage forms\(^8\). Still, nowadays the two terms are used interchangeably.

1.3.2 Theories within the UG framework

Within the generative field, while there is a consensus about FLA being guided by UG, the role of UG in SLA is not an agreed upon matter. Those maintaining that UG is not operant in SLA (Clahsen 1988; Bley-Vroman 1989; Clahsen & Muysken 1989; Meisel 1997,1997a; Schachter 1996 a.o.) have been called the proponents of ‘The fundamental difference hypothesis’ because they believe that SLA differs from FLA in certain important respects, the main of which are summarized next.

First, the final stage of attainment (‘end state’) in SLA is characterized by optionality; namely in the learners’ language there is often a variation between the correct and an incorrect form of the same L2 structure. Moreover, this happens even in the case of near-native speakers of an L2, as shown by grammaticality judgement tasks (for example, Coppieters 1987). For this reason, it is suggested that in SLA the ‘end state’ is not steady, unlike in FLA (for instance, Birdsong to appear). Second, in SLA even highly proficient learners seem to reach a kind of ‘plateau’ with respect to the

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\(^5\) Other labels for learner language have been ‘transitional competence’ (Corder 1967: 25) and ‘approximative systems’ (Nemser 1971: 55). Richards & Sampson (1974: 5) mention also the terms ‘idiosyncratic dialect’ and ‘l’état de dialecte’.

\(^6\) These studies involve the acquisition order of morphemes, negation, questions, relative clauses, and reference to past time. See, for example, Dulay & Burt (1974, 1974a), Meisel, Clahsen, & Pienemann (1981) and Pavesi (1986); for an overview, see Lightbown & Spada (1999).

\(^7\) See the Dulay & Burt studies cited above, as well as Dulay, Burt & Krashen (1982).

acquisition of certain structures which do not become native-like despite long-term exposure to the L2, a phenomenon labelled ‘fossilization’ by Selinker (1972).

An argument in favour of ‘the fundamental difference hypothesis’ seems to be the ‘Critical Period Hypothesis’ (CPH). According to this, the LAD stops functioning after a certain age (around pre-puberty or even earlier), in the same way other bodily organs (e.g. the optical nerve) atrophy, unless triggered until a certain period (Lenneberg 1967). ‘Natural experiments’ involving feral children as well as hearing children of deaf parents indicate that this is true for FLA. Importantly, results from controlled experiments show that this may be true also in SLA (Patkowski 1980; Johnson & Newport 1987; but cf. Snow & Hoefnagel-Höhle 1978). Therefore, it is possible that what guides SLA is not UG, but ‘general problem solving strategies’ (Clahsen & Muysken op. cit.). At this point let us quote the following:

“What about second language? That’s harder. Like other kinds of growth, language acquisition happens easily at a certain age, by not later. There comes a time when the system doesn’t work anymore. There are individual differences…but for most people, after adolescence, it becomes very hard. The system is just not working for some reason, so, you have to teach the language as something strange” (Chomsky 1997: 128, cited in Meisel 1998).

On the other hand, those who suggest that UG is still operant in SLA argue that native-like attainment is irrelevant in this respect. Instead, the proof for or against relevant claims lies in showing whether learner data conforms to or violates UG principles (White 1991). This would entail interlanguage structures that do not exist in any known human languages (hence called ‘wild grammars’). An argument in favour of the claim that UG is operant in SLA is evidence that learners’ knowledge about the L2 cannot be accounted for by exposure to input. Such evidence exists. For example, Felix (1988) shows that L2 learners have access to UG principles such as Superiority Effects and Parasitic Gaps “which are neither learnable on positive evidence nor transferable from corresponding structures of the learner’s mother tongue” (: 286-7). Similarly, Kanno (1997, 1998) demonstrates that L1 English learners of Japanese

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9 See, for instance, Lightbown & Spada (1999) and references there.
10 As reported by Möhring (2001), De Houwer (1995) distinguishes between Bilingual First Language Acquisition (for children who learn two languages from birth) and Bilingual Second Language Acquisition (for those who start after the age of 2). In his view, there are differences between the two groups. However, while Hylenstam & Abrahamsson’s (2002) empirical data supports De Houwer’s theory, Möhring (op. cit.) shows that children exposed to an L2 between 2;10 and 3;7 behave more than children who are bilingual from birth than like children who acquire the L2 after the age of 6.
acquire the constraint against a bound variable interpretation of overt pronouns in this language, although it is underdetermined by the input\textsuperscript{11}. On this White (1989: 45, cited in Schwartz & Sprouse 2000: 157) remarks: “When one considers the L2 acquisition task and the assumed complexity of the grammar attained by successful L2 learners, this grammar appears to go far beyond the input, suggesting that there must be something like UG guiding L2 acquisition”.

Moreover, the existence of similar L2 developmental patterns shows a kind of interlanguage systematicity that cannot be accounted for by general problem solving mechanisms, unless we assume that all L2 learners from various cultures have the same learning styles and strategies, which has been disproved by relevant studies (Oxford 1990 a.o.). Finally, even the FLA/SLA dichotomy pertaining to ‘steadiness’ of the ‘end state’ is not so robust, as revealed by research on first language attrition (Sorace 1998; Tsimpli, Sorace, Heycock, Filiaci & Bouba 2003; Tsimpli 2003).

Aside from this, among researchers who believe that the same domain-specific module guides both FLA and SLA (the ‘null’ hypothesis), there is a variety of theories concerning the nature of the L2 initial state and the kind of L1 effect on the L2 development. To start with the so-called ‘weak continuity’ views, according to Vainikka & Young-Scholten’s (1994, 1996, 1996a) ‘Minimal Trees’ model, only the L1 properties of lexical categories are initially present in SLA, while those of the functional categories develop through exposure to the L2. On the other hand, Eubank’s (1993/4, 1994a, 1996) model of ‘Valueless Features’ suggests that L1 lexical and functional categories are present from the beginning but only the features of the former are fully specified, while those of functional categories start as ‘inert’ and the specifications of the L2 values are acquired developmentally.

Turning to the ‘strong continuity’ views, Schwartz & Sprouse (1994,1996) propose that the initial state of SLA is the entire learners’ L1 syntax and this hypothesis is therefore called the ‘Full Transfer/Full Access’ (read: access to UG). On the other hand, Epstein, Flynn & Martohadjono (1996, 1998) contend that L2 learners start off with a fully specified syntax, but that this is provided directly from UG.

It is important to note that the ‘weak continuity’ views limit the possibility of cross-linguistic influence considerably; if either of them is adopted, then problems in the interlanguage should not be associated with L1/L2 differences regarding feature

\textsuperscript{11} But cf. Kellerman & Yoshioka (1999), as well as Sheen (2000), for a different interpretation of
specification of functional categories. However there is proof to the contrary. For instance, Schwartz (1998) discusses results in some studies where there are clear indications for the existence of functional categories from a very early stage of SLA; furthermore, those categories have fully specified values. Evidence for this is, for example, the occurrence of phrases like ‘finish no’ in the very early Turkish/English interlanguage of a young child. In Schwartz’s report, Haznedar (1997) suggests that such phrases attest to the existence of the functional category for Negation which is L1-like. Moreover, the facts about adjective-noun order in various adult interlanguages imply a cross-linguistic effect related with the L1 feature specification of the functional category Number (Parodi, Schwartz & Clahsen 1997).

Other crucial points in which the various SLA theories differ from each other are the following. Simplifying, while V & YS and Eubank assume that the indication for fully-fledged functional categories is target-like morphology, S & S and Epstein et al. contend that non-target-like L2 forms may be due to performance constraints or incomplete knowledge of morphology, phonology and lexical items, and so they do not constitute proof for lack of native-like abstract knowledge. For example, according to S & S, lack of the -s suffix on the verb does not necessarily mean that Subject-Verb agreement has not been acquired. On the other hand, in V & Y-S’s model this would imply that the functional category of Agreement is non-existent while in Eubank’s model this functional category would be taken as inert. Last, omitting details, Lardiere (1998a, 1998b, 2000) and Prevost & White (2000) propose that adult language learners can attain L2 native-like representations and that persistent problems in L2 mature grammars may be of a ‘surface’ kind. Namely they derive from inability to map syntactic knowledge (which is assumed to be native-like) onto morpho(phono)logical form.

Abstracting away from differences, all of the above models which support that SLA is UG-constrained maintain that, one way or another, the learners eventually acquire all syntactic properties of the target language. Nevertheless, research indicates that this does not hold in some cases. For instance, Tsimpli & Roussou (1991) and Tsimpli (1997) tested the acquisition of the properties subsumed under the pro-drop parameter by Greek learners of English. Their results show that even advanced learners have not reset the parameter from the L1 plus value to the L2 minus value. In the investigators’
view, this is due to L1/L2 differences with respect to properties of the Agreement functional category in the verbal clause, such as resumptive elements, which are “the phonological manifestation of formal, nominal features of non-nominal X_0^{max},” (Tsimpli 1997: 230). Tsimpli (2002a, to appear) discusses naturalistic data from Georgian and Russian informants who have had long exposure to Greek. The difference between the informants’ L1s and Greek is that only the latter has a fully developed determiner system and, in addition, the Greek definite article has expletive functions, in the sense that it is used to carry out grammatical operations and it is therefore semantically empty (see Chapter 3). Omitting details, Tsimpli shows that while the L2ers are native-like regarding the use of the indefinite article, as well as 1st and 2nd person clitics, they omit the definite article and 3rd person clitics. Importantly, only the omitted items have non-interpretable features\(^{12}\) (see Section 1.3.1). So it seems that the Slavic-Greek data lends further support to the interpretation of the Greek-English interlanguage, namely that there is no parameter resetting when the acquisitional task involves non-interpretable features of functional categories.

However, according to the analysis offered in both studies, the discussed interlanguage forms are structured in ways that conform to UG principles. A different account for non-native-like attainment is developed by Hawkins & Chan (1997)\(^{13}\). In this, adult learners cannot acquire non-interpretable features of the L2, if those are not instantiated in L1 and is hence called the ‘Failed Features Hypothesis’. For instance, H & C compare the performance of L1 Chinese to the performance of L1 French learners in judgements on ungrammatical English resumptive pronouns in restrictive relative clauses and the fact that the former fare significantly worse than the latter is explained as follows. Unlike in English and in French, in Chinese there is no movement of wh-words/operators, which means that “the feature [wh] is absent from Chinese predicative C(omplementizer)” according to Hawkins (2001: 161). In this view, because [wh] is a formal non-interpretable feature not existing in the L1, it cannot be acquired at the pristine state of UG. Franceschina (2001, 2002) shows that learners in whose L1 there is overt gender agreement between nouns and adjectives fare significantly better in the respective L2 domain than those whose language does not have the same property. In line with H & C’s theory, she assumes that because

\(^{12}\) Based on FLA data and a theoretical proposal, Tsimpli assumes that there is a relation between the development of determiners and clitic pronouns.
gender agreement is a non-interpretable phi-feature it cannot be acquired in SLA if it
is not part of the L1 stock\textsuperscript{14}. Last, according to Beck’s (1997, 1998) ‘Local
Impairment Hypothesis’, maturation of the linguistic faculty may prevent the adult
acquisition of the proper L2 feature specification related with strength of inflection,
resulting in (permanently) optional V\textsuperscript{0}-raising.

From this brief overview, it follows that the main questions in SLA are the following:

- Is adult language acquisition guided by UG?
- What is the nature of the L2 initial state?
- Is there such a thing as ‘transfer’? If yes,
  - what is transferred?
  - what can it be attributed to?
  - what are the predictions for the end state?

1.4 The Minimalist Program

In the recently developed model of generative theory, namely Chomsky’s (1993,
1995) Minimalist Program (MP), the language faculty consists of a lexicon and a
computational system (C_{HL}). C_{HL} links the lexicon with the Logical Form (LF), which
is the interface with conceptual-intentional (C-I) knowledge, and with the Phonetic
Form (PF), which is the interface with articulatory-perceptual (A-P) knowledge. This
is schematized in Figure 1, adapted from Wakabaya (1997).

(2002), among others.

\textsuperscript{14} Moreover, within the same theoretical framework, Franceschina (2002a) challenges the ‘surface
structure’ hypotheses in Lardiere and in Prevost & White, both on the theoretical and on the empirical
plane.
Items belonging to the lexicon are of different categories, namely words, stems and affixes and consist of bundles of phonological, semantic and formal properties, which bear the conventional term of ‘features’. Through the operation Select the computational system takes an array of items (the Numeration) from the Lexicon and inserts them in the derivation through the operations Merge and Move. Merge takes two syntactic objects and combines them into a single one. Move takes place only for feature checking (hence called Move F), which either reorders the constituents of a structure or it does not. We return to this shortly. At a point of the derivation called Spell-Out all phonological material is removed and continues its way to PF, whereas the rest of the material reaches LF. After Spell-Out no further material can be inserted. Operations taking place before Spell-Out are ‘overt’, while those taking place after Spell-Out are ‘covert’ in the sense that they are irrelevant to PF, since “Covert operations are pure feature raising” (Chomsky 1995: 270) and covert movement is preferred to overt movement as more economical (the Principle of Procrastinate). The derivation yields a pair of representations \((\pi, \lambda)\) (\(\pi\) is a PF representation and \(\lambda\) is a LF representation) and it ‘converges’ or receives a ‘Full Interpretation’ at PF and at LF if it contains items legitimate for each of those levels respectively, or else it ‘crashes’. For example, a feature such as [+sibilant] is legitimate only at PF, while items related with syntactic well-formedness are legitimate only at LF.

Features come in a variety of types. A first categorization is shown below.
a. phonological features, e.g. [+/-voiced]
b. semantic features, e.g. [+/-animate]
c. formal features, e.g. [+/-accusative]

Of the above, only formal features are accessible in the course of syntactic computation.

Also, features maybe intrinsic or optional. For example, in the sentence She likes pies the intrinsic features of both She and pies are the categorial feature [nominal] and the agreement features (written as phi- or \( \phi \)-features) of person (number) and gender\(^{15} \). In likes intrinsic features are the categorial feature [Verb] and the [assign Case] feature. Optional features of the nominals are [nominative] or [accusative] (the Case feature) and [plural] (the number feature) for pies, while in likes the optional features are [present] (the tense feature), and [3rd person singular] (the \( \phi \)-feature).

Features are further distinguished with respect to whether they are [+/-interpretable] at LF. For instance, the feature [number] on nouns is [+interpretable], while the same feature marked on verbs through inflection is [–interpretable], since it merely indicates an agreement relation. Also, [gender] is [+interpretable] for nouns, but [–interpretable] for adjectives. Thus [–interpretable] means ‘without a semantic content’.

Last, features of nonsubstantive categories may be ‘strong’ or ‘weak’. The [+/-strong] property is restricted as follows.

If F is strong, then F is a feature of a nonsubstantive category and F is checked by a categorial feature (Chomsky 1995: 232).

Both strong and weak features are introduced into the derivation by the two operations ‘Select’ and ‘Merge’. Next, feature checking takes place. If a feature of a functional category is strong, it triggers the whole set of phonological, semantic and formal features of a substantive category which must be matched with it (overt movement). On the other hand, if a feature of a functional category is weak, only the formal features of a substantive category raise to it, so the phonological form of the sentence

\(^{15} \)Wherever this applies. For instance, in the equivalent Greek sentence of This woman is clever, there is overt gender agreement between woman and clever, but the gender feature is inherent only to the noun.
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is not affected (covert movement). In this case, feature checking is alternatively viewed as carried out by feature ‘attraction’. After checking, [–interpretable] features get ‘erased’, namely they cannot be accessed by the CHL and are invisible at LF, since they have no semantic content.

Languages differ parametrically with respect to whether features of functional categories are weak or strong. For example, I(nflection) in Greek has a strong feature so a finite V can raise to I overtly, while in English where the respective feature is weak, movement is considered to take place only covertly. Another example is parameterization regarding the strength of D(eterminer), which results either in overt or covert N\textsuperscript{0} to D\textsuperscript{0} movement (Longobardi (1994)). As it will be shown later, this has an important role in the present study, so it is presented in detail next.

1.5 The Determiner Phrase hypothesis and Longobardi’s (1994) theory

Until the mid 80’s, it was assumed that the Noun (N) directly refers to individual entities in the world and so it was considered as the most important part of the Noun Phrase (NP). In the structural representation of the NP, a determiner was hosted in its specifier position, and adjectives were adjuncts of an intermediate N (N’) node between the determiner and the noun position:

(1) The red balls

\[
\text{NP} \quad \begin{array}{c}
\text{D} \\
\text{the} \\
\text{AP} \\
\text{red} \\
\text{N'} \\
\text{N} \\
\text{balls}
\end{array}
\]

In more recent analyses, it is held that the most important element in the NP is not the noun, but the determiner. Thus it is postulated that the topmost category of the noun phrase is the maximal projection of the determiner (D), the Determiner Phrase (DP), and that the NP is the complement of D\textsuperscript{16}:

\[\text{DP hypothesis}\]

\[\text{Abney (1987)}\]

\[\text{Radford (1997: 152)}\]

\[\text{Longobardi (1994)}\]

13

\[\text{Horrocks & Stavrou (1986, 1987)}\]

\[\text{Greek.}\]

\[\text{Greek.}\]
(2) The red balls

\[
\text{DP} \\
\leftarrow \text{D'} \\
\text{D} \quad \text{NP} \\
\text{the/Ø} \\
\text{AP} \quad \text{N'} \\
\text{red} \\
\text{N} \\
\text{balls}
\]

On this approach, all nominal expressions are projections of the category D\(^{17}\). Longobardi (1994) provides arguments in favour of the DP hypothesis, which involve also cross-linguistic parameterization with respect to the strength of the referential feature of D. To start with, he observes the following. First, in Italian and in English, singular countable nouns in argument position must be preceded by a determiner\(^{18}\):

(3) a. *(Un/Il) amico di Maria mi ha telefonato.
   b. *(A/The) friend of Maria called me up.

(4) a. Ho incontrato *(uni/il) amico di Maria.
   b. I met *(a/the) friend of Maria.

The same is true of mass and plural nouns in subject position, albeit only in Italian:

(5) a. *Acqua viene giù dalle colline.
   b. Water comes down from the hills

(6) a. *Castori costruiscono dighe.
   b. Beavers build dams

Second, proper names in argument position may appear with or without an article in Italian; however, this is not possible in English:\(^{19}\).

\(^{17}\)This is also true of pronominals, e.g. ‘we’ in the subject position of a VP. Furthermore, nominals are considered D-projections only when they are in argument position (see Section 2.4) and vice versa: “A nominal expression is an argument only if it is introduced by a category D (Longobardi 1994: 620).

\(^{18}\)Most of the examples are adapted from Longobardi (op. cit. & 2001).

\(^{19}\)Except in cases of restrictive modification, e.g. The John I used to know where the name has a partitive meaning (Quirk et al. 1973).
(7) a. (Il) Gianni mi ha telefonato.
    b. (*The) John called me up.

Moreover, in Italian, a proper name can precede its modifier adjective, only when it is without the definite article:

(8) L’ antica Roma / *Antica Roma / Roma antica ‘(The) ancient Rome’

This is not possible in English, with or without an article:

(9) (The) Ancient Rome / *Rome Ancient / *The Rome ancient

Based on the above, Longobardi proposes that apparently determinerless arguments are always governed by a D which must be lexically filled. In addition, he suggests that N raises to D overtly in Italian but covertly in English. In the latter language, where proper names are overtly determinerless, the D position is not empty because the N is assumed to have moved to it at LF leaving a trace behind. So at LF the structure of (10a) is the one in (10b), which is the same as the surface structure of the corresponding Italian sentence in (11):

(10) a. Ancient Rome
    b. [Rome [ancient e]]

(11) Roma antica

Longobardi also observes that common nouns do not exhibit the same behaviour with proper names:

(12) Ci sono belle ragazze
    ‘there are pretty girls’

(12) demonstrates that the lack of article forces only the proper name to move to D. Nevertheless, on this approach, also kind-referring nouns can raise to D in languages where N-to-D movement is allowed. The difference between the two categories of nouns is that proper names raise to D by ‘substitution’ in the sense that they ‘exhaustively’ occupy this position. On the other hand, common nouns raise in the sense that they ‘adjoin’ to the article, which ‘preserves the independent content of the
landing position” (: 640). Now mass and plural count nouns can occur without an article in object position in both languages under consideration:

(13) a. Bevo sempre vino  
    b. I always drink wine  
(14) a. Ogni giorno mangia patate.  
    b. Every day he eats potatoes

Longobardi remarks that in the examples above the nouns may be bare but this does not mean they are not bound by a determiner. Rather, the empty D position is ascribed an existential interpretation since ‘vino’ and ‘patate’ in (13) and (14) respectively do not refer to the whole class of the entity each of them denotes. Given also the mentioned restrictions on bare nouns in Italian, and the N-to-D movement parameter, Longobardi (: 641) proposes the following universal principles:

(15) \[ \text{[D } e \text{]} = \text{default existential interpretation} \]

(16) an empty head must be lexically governed\textsuperscript{20}

In his words, (15) “amounts to saying that a D devoid of overt lexical content is always translated into the formula above as a pure existential operator, perhaps the semantically unmarked option” and (16) “…is likely to be just one consequence of the general proper government condition requiring a lexical or coindexed head governor for every nonpronominal empty category” (ibid.). Longobardi points out that proper names differ from generic nouns in that the former refer uniquely to an entity. As regards English, this is proved by the fact that if a proper name occurs in the plural it loses its unique reference and gets a generic or an existential reading:

\textsuperscript{20} According to Chomsky’s (1981) Government and Binding theory, Government is defined as follows.

Government : \( a \) governs \( \beta \) if and only if
(i) \( a \) is a head
(ii) \( a \) m-commands \( \beta \).

(\( a \) m-commands \( \beta \) if and only if, for all \( \gamma \), \( \gamma \) a maximal Projection that dominates \( a \), \( \gamma \) dominates \( \beta \).)

Thus, in the abbreviated X’ schema below, X governs Y.

\[
\begin{array}{c}
X' \\
/ \\
\text{X} \\
/ \\
\text{Y}
\end{array}
\]
(17) Davids make good husbands.
(18) There are not many Davids in Greece.

Now in Italian a bare proper name in the plural has an existential reading (19). In order to be interpreted generically it needs the definite article (20):

(19) Ho incontrato Marie dappertutto.
I met Marias everywhere
(20) Le Marie di solito sono brave ragazze.
Marias usually are good girls.

Additionally, generic plural nouns in subject position are introduced by the definite article in Italian but not in English:

(21) a. I cani grossi son (spesso) difficili da allevare.
the large dogs are (often) hard to raise
b. Large dogs are (often) hard to raise.

Longobardi states that determinerless proper names get their definite specific reading via the raising of “the head noun to D at some level of representation and leaving the foot of the chain uninterpreted” (: 648). Thus they “directly designate the individual object the name it refers to” (: 648-649). As regards generic nouns, “they also create a chain at LF between D and N, but only the latter is interpreted. The argument status of such expressions requires a DP…but the semantic content of the latter amounts just to the designation of the kind referred to by the noun” (: 649). When generic nouns or proper names are preceded by a definite article, this is ‘expletive’, that is, without semantic content (see Vergnaud and Zubizarreta 1990). Longobardi suggests that “an expletive determiner is licensed by the need to spell out some abstract morphological content, for instance gender or number features present in D as a result of (optional) agreement with the head noun” (: 654). In minimalist terms Longobardi (: 659) makes the following assumptions:

(22) All D positions are universally generated with an abstract feature ±R (suggesting “referential”), which must be checked with respect to at least one of its values.
(23) This ±R feature is strong in Romance and weak in Germanic.
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(23) is related with the N-to-D movement parameter: in Romance the strong feature R of D triggers overt N-to-D movement, violating ‘Procrastinate’. In languages whose D has a weak R feature, this movement is postponed after Spell-out. Before closing this section we would like to underscore that determineless argumental nominals are assumed to have a null D with certain features. Consider the following (adapted from Radford 1997: 153-154).

(24) a. I’ve had enough sardines.
    b. I’ve had enough ouzo.
    c. *I’ve had enough sardine.

(25) a. I love Ø sardines.
    b. I love Ø ouzo.
    c. *I love Ø sardine.

Like the overt D enough, the null D Ø can select as its complement a plural count noun (sardines) and a mass noun (ouzo), but not a singular count noun (sardine). Importantly, the DP layer is assumed to project also in languages without audible articles as, for example, in Serbo-Croatian (Progovac 1998) and in Finnish (Vangsnes 2001).

Because a D node is assumed to head all argumental nominals, if there is no overt article, D is essentially an ‘empty’ category. Empty categories play a crucial role in the linguistic theory adopted here and they have been employed also in the analysis of compounds. For this reason the next section will make a brief reference to the ones which interest us in the present thesis.

1.6 Empty categories

Besides D, there are other elements that may be covert. Consider the following:

(26) We want you to sleep.
(27) We want to sleep.

---

21 Chomsky (1998, 1999) abandons the terminological distinction between ‘overt’ and ‘covert’ movement. Feature checking (Agree) between a non-interpretable feature of a functional category and its target is viewed instead as carried out either via the further operation of ‘Merge’ between the attractor and the attractee or via long-distance agreement, in which case the attractee remains in situ.
22 See also Longobardi (2000).
While in (26) the subject of *to sleep* is *you*, in (27) the subject of the same verbal item is only implied and is considered an empty caseless pronoun, the subject of a non-finite clause, labelled PRO. PRO refers back to the subject of the main verb like *we* in (27) and hence it is ‘controlled’ by this antecedent item.

Another empty category mentioned before is the understood subject of a finite clause. This is illustrated below with examples from Shakespearean English provided by Radford (1997: 227, 524):

(28) Wilt come?
(29) Lives, sir.

The implied subject in each of the above sentences (*you/thou* and *he* in (28) and (29) respectively) stands for a nominative case pronoun referred to as *pro*. This differs from PRO importantly in that “rather than being assigned reference through control or receiving an arbitrary interpretation …it has a definite specific reference (when not pleonastic)” (Harbert 1995: 221).

Depending on how rich the inflectional system a language has, its V may encode morphological information about tense, aspect, mood, person, number or even gender. Moreover, within the same language some elements, as, for example, an auxiliary verb in English may or may not be part of a sentence. Now to account for the structure of sentences cross-linguistically (and intra-linguistically) in a uniform way, besides D, the X-bar schema includes some functional categories which are not necessarily filled with lexical material, such as, for example, C(complementizer), I(nflection), T(ense), which head the analogous phrases CP, IP, TP respectively. Here we will focus on IP because this has been proposed to constitute part of the compound structure too. Omitting details, the Spec(ifier) position of IP is assumed to host the subject of the V while its head may be empty or hosts an auxiliary verb. In case there is a non-finite verb form, the spec of IP following the VP hosts the null subject PRO, as shown in the X-bar schema in (30):

---

23 The discussion in this section is based on Radford (1997), unless otherwise specified.
24 As, for example, in Arabic.
25 C(complementizer) can be the items *that*, *for*, *if* and *wh-* words which introduce clauses. In interrogative clauses as well as in cases of left-dislocation the CP category can host auxiliary verbs as well as wh-items not introducing clauses.
Chomsky (1981) suggested that the Inflection node harbours the inflectional suffixes of V which lower to it by a rule of affix movement (“Rule R”). Now in languages with a rich inflectional system like, say, Spanish or Greek, besides nominative case features, I carries phi-features (person and number features) which license a pro. Put differently, pro can occur only when its content is recoverable from the syntactic environment. More recently, it has been proposed that pro is recovered through coindexation with the content of a rich AGR(eement) functional category (Rizzi 1986), as illustrated next.

For a more recent and extensive discussion about pro in null-subject languages see, for instance, Cardinaletti in Haegeman (1997), as well as other relevant contributions there.
The fact that *pro* is assumed to exist in Spanish and Italian but not in English (the latter having only PRO) and the categories of Inflection and Agreement have been used to account for cross-linguistic differences with respect to the compound structure, as it will be discussed later.

The next section closes this chapter with an outline of proposals concerning the relation between morphology and syntax, as well as our standpoint about the kind of this relation.

1.7 Preliminaries on the interface between morphology and syntax

According to Chomsky’s (1995) Minimalist Program\(^{27}\), there is a clear distinction between morphology and syntax:

Morphology deals only with \(X^0\) categories and their features (\(\vdots\) 319).

The operation Select takes ready-made lexical items, that is, with their intrinsic and optional features fully specified and inserts them into terminal syntactic nodes, where checking of their features takes place. So, for example, the DP *We students* is grammatical because the N has the number feature [+plural], which can be checked against the number feature [+plural] of its D. On the other hand, in the DP *I students*, the number feature [+plural] of the N cannot be checked against the number feature [-plural] of the D and so the derivation crashes, that is, it yields an ungrammatical structure.

Adherents to the view that morphology and syntax are autonomous components of the language faculty may differ with respect to certain assumptions\(^{28}\). According to what has been called the ‘strong lexicalist’ hypothesis, words have their own kind of syntax, different from the syntax of phrases (for instance, Selkirk 1982, Di Sciullo & Williams 1987). In a different approach, the formation of morphological objects is carried out by operations similar to or the same as those governing syntactic operations (Baker 1988 and Ackema 1999 among others).

Other researchers contend that morphological and syntactic objects are formed within the same component (for instance, Drijkoningen 1994; Bok-Bennema 1994; Bok-

---

\(^{27}\) As well as his earlier theory. See Chomsky (1965, 1970).

\(^{28}\) The present outline is an oversimplification of the existing theoretical proposals, since there is further differentiation within each camp. However, this will not concern us here.
Bennema & Kampers-Manhe 1997, reported in Ackema 1991: 1). Being in this camp, Lieber (1992) states that “there is no separate morphology in the grammar” (: 1) and that “the parameters of X-bar theory and related modules of the grammar are neither purely syntactic nor purely morphological; they are general principles that determine structural configurations both above and below the word level” (: 75). On the other hand, Perlmutter (1988) proposes that derivation is handled in the lexicon but inflection by syntax (the ‘split morphology’ hypothesis)\textsuperscript{29}. Last, Halle & Marantz (1993) suggest that morphology is separate from syntax but is distributed throughout the grammar, while according to Beard (1995) there is a third module, called ‘the base’ which feeds both the lexicon and the syntax.

In this thesis we adhere to the strict modularization hypothesis mentioned above and we consider compounds morphological units of the $X^0$ level. Furthermore, we assume that whatever operations and principles may account for their formation, those cannot be syntactic, at least not in the narrow sense. In particular, we maintain that operations involving features of functional categories belong to the syntactic domain and cannot have a role in the formation of $X^0$ categories. These points are taken up in the next chapters.

\textsuperscript{29} See also Anderson (1992).
As?

Eeltraps, lobsterpots, fishingrods, ... steelyard, grindstone, lodcrusher, swatheturner, carriagesack, telescope ladder, 10 tooth rake, ... haytedder, tumbling rake, billhook, paintpot, ... and so on.

(from *Ulysses* by James Joyce)

CHAPTER 2: COMPOUNDS

2.1 Introduction

Compounds are said to be distinct from adjective+noun phrases in terms of their stress pattern; in the former, the non-head noun (NHN) bears the primary stress; in the latter, either the primary stress is on the head noun (HN) or there are two primary stresses:

(1) alárm clòck cf. big clóck / big clóck.

However, this rule is problematic in view of its many exceptions. Consider the examples below:

(2) a. ápple câke but àpple pie
    b. éxercise shòes but rùbber shòes

Marchant (1969: 25) claims that a more permanent relation is implied between the constituents of forestressed compounds than between the constituents of equivalent combinations stressed otherwise, as in, e.g. *Christmas trèe* cf. *Christmas tráffic*. Nevertheless, Bauer (1978: 91) finds this claim unsubstantiated. In view of the problems involved in defining compounds on phonological criteria, Jespersen (1961: 137) offers the following definition:

“...we may perhaps say that we have a compound if the meaning of the whole cannot be logically deduced from the meaning of the elements separately...”

30 Stress pattern differentiates also between A+N compounds and A+N phrases, as in, e.g. *blàckbird* cf. *blàck bírd*. In addition, note that the same expression may be interpreted differently depending on its stress pattern. For example, a *toy factory* may be a factory where toys are made, but *a toy factory* is a factory which is also a toy (along with all sorts of other toys, such as *toy gun, toy boat*, and so on)” (Spencer 2001).

31 Moreover, note that, although orthography cannot be a serious factor in linguistic discussions, spelling conventions further complicate matters here, since an English compound may be spelled as two words (with or without hyphenation) or as one word, on criteria that are far from clear. This point is also made by Jespersen (op. cit.) and by Ryder (1994).
However, the same is true of idiomatic phrases. Similarly, a ‘morphological’
definition such as the one below

“When two or more words are combined into a morphological unit we speak of a
compound” (Marchant 1955: §1.1, cited in Bauer: 49)

is not precise because the compound constituents may not have a word status, as will
be discussed later. So we consider the next definition more accurate:

“When two (or more) elements which could potentially be used as stems are
combined to form another stem, the form is said to be a compound” (Bauer: 28).

Compounds are formed mainly for the purpose of naming new entities\textsuperscript{32} or for
pragmatic reasons we discuss later. They seem to be omnipresent cross-linguistically,
except in the Eskimo languages, in Coos, and (arguably) in the Papuan language
Kalam (Sadock 1998). However, they are less productive in the Romance than in the
Germanic languages, or less so in English than in German (Marchant 1969). Another
cross-linguistic difference concerns possible combinatorial patterns. The table below
illustrates this point\textsuperscript{33}:

Table 1: Compound types in some languages

<table>
<thead>
<tr>
<th>Type</th>
<th>English</th>
<th>Greek</th>
<th>French</th>
<th>Turkish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun+Noun</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Adjective+Noun</td>
<td>+</td>
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<td>-</td>
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</tr>
<tr>
<td>Noun+Adjective</td>
<td>+</td>
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</tr>
<tr>
<td>Adjective+Adjective</td>
<td>+</td>
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<tr>
<td>Noun+Verb</td>
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</tr>
<tr>
<td>Verb+Noun</td>
<td>+</td>
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<tr>
<td>Verb+Verb</td>
<td>-</td>
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<tr>
<td>Verb+Adjective</td>
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<tr>
<td>Adverb+Verb</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Furthermore, some of the above types are of low productivity within the same
language, like, for instance, V+N compounds in English and Greek compared with the
N+V category. On syntactic criteria, compounds may be divided into two categories:
a) those in which one of the members is the head of the whole expression bearing the

\textsuperscript{32} Raftopoulou (2000: 9) reports that Aristotle said "οι δ’ ἄνθρωποι τοις διπλοῖς (=συνθέτοις ονόμασιν)
χρώνται ὅταν ἁνόνυμον η’ (Ρητορική, 1406a, 35) = ‘people use compound names for something
anonymous’ (our translation).

\textsuperscript{33} Facts about Turkish and English, Greek, and French compounds are based on Spencer (1991), Ralli
(1992) and Di Sciullo & Williams (1987) respectively. The table does not include all possible
compound types, since an exhaustive account is beyond the purposes of the present study.
derivation and inflectional suffix (e.g. shoe exporters, redskins) and b) those in which neither of the members constitutes a head (e.g. producers-directors). On semantic criteria, compounds may be categorized as follows:

a) ‘endocentric’, in which “the compound is the hyponym of the grammatical head” (Bauer 1983: 30), e.g. bluebird, tomato salad

b) ‘exocentric’ or ‘bahuvrihi’, in which “the compound is not the hyponym of the grammatical head” (Bauer ibid.), and which usually have a metaphorical meaning, e.g. egg-head (=an arrogant person), ladyfinger (=a type of pastry or okra).

c) ‘appositional’ or ‘dvandva’: those which constitute hyponyms of both of their members (Bauer ibid.), e.g. secretary-treasurer, producer-director.

2.2 Scope restriction

The present thesis deals with endocentric noun-noun compounds (NNCs), which are generally right-headed in English. These are further subdivided into the so-called ‘root’ and ‘deverbal’ categories. The former category includes combinations of two underived nouns, e.g. motor oil, while the latter involves formations in which the head noun is a verbal derivative bearing the suffixes -er, -ing, -ment, -tion, -age or -ance, e.g. lion-hunter, tree-pruning, self-development, overseas distribution, garage-storage, home maintenance. The focus of this thesis is on root and -er deverbal compounds.

A deverbal compound with the suffix -er or -ing may be termed ‘synthetic’ (Lardiere 1994, Bongartz 2002 a.o.), provided that its members are in a complement-head relation (3a,b).

Synthetic compounds

(3)  a. clam baking < bake clams
    b. carpet cleaner < clean carpets

Now in some analyses compounds whose members have an adjunct-head relation are considered ‘root’ compounds, regardless of whether their head is a deverbal derivative or not, as in (4a-c).

34 The rest are not dealt with here, mainly because in most of them the heads are abstract nouns, which makes them difficult to test, especially through picture naming tasks.
(4) a. gun fighting < fight with guns  
   b. garage storage < store in the garage  
   c. banana cake < cake made from/with bananas

However, in other researchers’ view, only compounds in which there is a 
complement-head relation between their members and whose HN is a gerundive 
nominal are ‘synthetic’ compounds (for instance, Grimshaw 1990). This is based on 
Chomsky’s (1970) distinction between gerundive nominals, which can be 
considered the result of generative transformation rules, and the rest of the derived 
nominals, which cannot be considered as resulting from such rules. In this 
approach, for example, The enemy’s destroying the city is derived 
transformationally from The enemy destroyed the city. On the other hand, in The 
enemy’s destruction of the city, ‘destruction’ is “morphologically rather than 
transformationally derived” (Webelhuth 1995: 20). Justification for this comes from 
the following points made by Chomsky (from Webelhuth: 20-23). 
First, there are differences in productivity between the two categories. Namely, 
unsystematic lexical gaps concern only derived nominals:

(5) a. John is easy (difficult) to please  
   b. John’s being easy (difficult) to please  
   c. *John’s easiness (difficulty) to please

Second, unlike with gerundive nominals, the meaning of derived nominals may 
not be predicted from the meaning of its morphologically related base:

(6) a. revolve, revolving, revolution  
   b. try, trying, trial

Third, unlike gerundives, derived nominals have the internal structure of basic 
NPs, that is, they can appear with articles, with adjectival modifiers, with the 
plural affix. This is not so with gerundives:

(7) a. the book  
   b. the proof of the theorem  
   c. *the proving of the theorem
(8)  a. her yellow hat  
     b. her unmotivated criticism of the book  
     c. *her unmotivated criticizing the book  
(9)  a. the three books  
     b. her three proofs of the theorem  
     c. *her three provings of the theorem  

Now consider (10a,b).

(10)  a. John enjoys clam baking.  
     b. John enjoys clam bakings.

Grimshaw (1990: 70-71) reports Roeper’s (1987) observation that in (10a) there is control between John and one of the arguments of baking, that is, the understood subject (the PRO) of the non-finite ‘baking’ is John, while in (10b) there is no such control. Hence clam-baking is a synthetic compound and clam-bakings is a root compound. Moreover, according to Grimshaw, unlike gerunds, nouns are defective in terms of argument taking and theta-marking, and can theta-mark only through identifying with an argument via prepositions35. In this approach, only compounds with singular gerundive HNs are synthetic compounds and all the rest are root compounds. Still, in other studies, compounds headed by derived -er nouns are lumped together with ‘true’ synthetic compounds and set apart from the rest of the compound types. This is because, as already mentioned, the HN and the NHN can be in a head-complement relation in both categories.

As concerns the deverbal category, since this thesis limits its scope to compounds whose HN is a nominal with an -er suffix, we will adopt the term ‘deverbal’, while by ‘root’ we will be referring to compounds consisting by two underived nouns. Moreover, we deal only with -er deverbal compounds in which the NHN is the complement of the HN, as in shoe exporters, leaving aside deverbal compounds in which the NHN is an adjunct, as in gun fighters.

35 See also Higginbotham (1985) and Li (1990) cited in Grimshaw.
2.3 Noun+noun combination in compounds and in phrases

In English phrases, a noun modifies another noun as follows.

a) in a noun-noun compound (NNC): language skills, a divorce lawyer
b) in an adnominal genitive (AG): the decade’s events, a nation’s resources
c) in a Prepositional Phrase (PP): the handle of the door, a box with books

Sometimes, the same nouns can combine in two or even three ways:

(11) a. the beach house, the house on the beach
    b. the world economy / the economy of the world / the world’s economy

However, there are some important differences between these types of noun combination. Leaving aside AGs form for later discussion, a NNC is a single determiner phrase in which the head is generally the rightmost member, while a DP+PP+DP construction consist of two determiner phrases and it is left-headed. Their structural representations, simplified for the present purposes, are shown in (12) and (13) respectively.

(12) NNC, e.g. the world economy

(13) DP+PP+DP, e.g. the economy of the world
Furthermore, in a NNC the semantic relation between the two nouns is often vague, which is not the case in a DP+PP+DP construction. This is because, “More distinctions can be made in post- than premodification generally” (Quirk et al. 1972: 1276). See, for example, (14) and its possible DP+PP+DP paraphrases:

(14) paper case
   a. ‘a case of paper’
   b. ‘a case from paper’ (when its material is not obviously paper)
   c. ‘a case for paper(s)’

From a functional perspective, the choice between a NNC and a DP+PP+DP construction is often dictated by discourse type. For instance, in newspaper language, and especially in headlines, a compound would be preferable mainly on considerations of brevity. In what they call ‘journalesse’ jargon, Crystal & Davy (1969: 187) note that “there is a greater inventiveness in compounding than is normally seen in English”, where “phrases tend to be used as words”. Indeed, a cursory look at The New York Times (7/11/2002) yielded many examples like the ones in (15a,b). The extreme but attested example in (15c) is from Pinker (1999: 179).

(15) a. World business briefing: Europe
   b. Witness in Milosevits war crime case is named
   c. Mobile Phone Radiation Mice Tumor Link Much Stronger Than Expected

This is true of scientific and technical discourse too, which is characterized by lexical density and where compounds are suitable for various taxonomic labels (Halliday & Martin 1993), as exemplified in (16a,b).

(16) a. crack rate growth
   b. borderline personality disorder

The creation of a new compound usually presupposes that its members do not already co-occur in a fixed DP+PP+DP structure. So the compounds in (17a) are unacceptable because of the established equivalent phrases in (17b).

36 A justification for the DP status of the NHN in these phrases is offered in Section 2.5.
37 At least by our English native informants.
38 But cf. point of view and viewpoint which co-exist in current English.
Chapter 2  Compounds

(17) a. *life aspect, *taste matter
    b. aspect of life, matter of taste

Nevertheless this restriction does not hold if the compound differs in meaning from the respective phrase:

(18) a. life change: restructuring one’s life
    b. change of life: the menopause
(19) a. love nest: a place for people having an affair
    b. nest of love: a loving place
(20) a. house man: a male employed for cleaning and maintaining a house or a hotel.
    b. man of the house: the chief male in a household

Finally, there are limitations to creating compounds related to pragmatic considerations. Namely, horse apartment is implausible because, normally, there are no apartments for horses, and egg-bird is not ‘nameworthy’, since all birds come from eggs (see Downing 1977 and Ryder 1994 a. o.).

To turn to another matter, otherwise meaningless novel compounds make perfect sense in the right context, as, for example, dream dream in the sentence I dreamed I was dreaming, and of course I had to wake up from my dream dream, and that woke me out of my dream too (Bolinger 1975: 292). Moreover, a nonce compound such as apple juice seat is immediately comprehended in a situation where one uses it in a deictic way to refer to a seat in front of which a glass of apple-juice has been placed (Downing 1977: 818).

2.4 Some properties of the non-head noun

In Chapter 1 we discussed Longobardi’s DP hypothesis according to which all D positions are universally generated with an abstract ±R (referential) feature. In this section we will elaborate on the meaning of ‘referential’, as well as on some semantic features of nouns, our focus being on NHNs in NNCs and in complex DPs. So far the DP status of the NHN in phrasal noun combination has been taken for granted.

39 The same restriction, called ‘blocking’, holds in derivation too. As Katamba (1993: 73) remarks, the –er suffix cannot be attached to the verb steal to create stealer, because of the existence of the word thief which has exactly the same meaning.
However, the generalization that nouns are D-projections regardless of whether the D position is lexically filled does not always hold. Longobardi (1994: 612) observes that while a singular countable noun in Italian must always occur with an overt article, this is not so when the same noun is found in “nonargument function, as in vocative, predicative, or exclamatory contexts”. This can be illustrated with the English examples below provided by Radford (1997: 156), where the cases under discussion are italicized:

(21) a. Do all syntacticians suffer from asteriskitis, doctor?
    b. Dick Head is head of department.
    c. Poor fool! He thought he’d passed the syntax exam.

Let us now turn to the two structures under consideration exemplified by exporters of shoes and shoe exporters. The NHN in the NNC is an N and not an NP since it is the whole compound that constitutes a word, and not part of it. On the other hand, the NHN in exporters of shoes is an NP. Consider the following:

(22) They are exporters of [Italian shoes].
(23) a. They are [[Italian [shoe exporters]]
    b. They are [[Italian shoes] exporters]]

In (22) the added adjective modifies shoes but in (23a) it normally attributes a characteristic to the whole compound and not to its first (or second) member independently. If it qualifies shoes, it is often disambiguated through the pluralization of the NHN (23b) (Bauer 1978, Gordon 1996 a. o.). The next question is whether it is also a DP. We claim that it is, because it is not found in any of the non-argument positions mentioned above. Moreover, deverbal nominals are assumed to inherit the argument structure of the verbs they derive from. In this sense, shoes is the internal argument of exporters. Turning now to the properties of its D, let us start from the fact that this is [-definite]. Moreover it is [-specific]. The latter is not a concomitant of the former, since indefinite nouns can be [+specific]:

(24) a. I bought the dress.
    b. I bought a car.
    c. Pass me a book.
The dress is [+def/+specif] and has a unique reference in the sense that both the speaker and the listener can identify the referent (for instance, Vangsnes 2001). By a car, the speaker refers to a specific car and in this sense it is [-def/+specif]. A book does not refer to a particular book neither from the speaker’s nor from the hearer’s viewpoint, and is therefore [-def/-specif]. Likewise, the NHN in exporters of shoes is [-def/-specif]. Now consider the following:

(25) a. A lion has four legs.
    b. The lion has four legs.
    c. Lions have four legs.

The subject DPs in (25a-c) describe a class of items, each of which has the same characteristics with any other member of the same class. A lion, the lion and lions are all kind-denoting, alias ‘generic’. In this sense, the NHN in exporter of shoes is generic, since it is kind-denoting, having escaped the default existential reading of determinerless nouns by moving covertly to D. As regards the NHN shoe in the NNC this is generic too because it describes a class of items. Now with respect to the R feature of D, Longobardi (: 659) proposes the following:

(i)  +R is universally checked iff the D is interpreted as being in a chain/CHAIN containing an object-referring expression.
(ii) -R is universally checked iff the D is interpreted as being in a chain/CHAIN not containing an object-referring expression.

In this theory ‘object-referring expressions’ are only pronouns and proper names and thus common nouns are non-referential (-R). However, as we will see, the NHN in phrasal noun combination is often called ‘referential’, either because its DP status is taken for granted, or because it can be referred to independently, as opposed to the HN in NNCs which is called ‘non-referential’ because it is an N and because it cannot be referred to independently. This said, let us repeat that we consider the NHN in exporters of shoes a generic and [-specific] DP, and its counterpart in shoe exporters is a generic N.
2.5 Generative-semantic analyses of compounds

Unlike descriptive treatments, which focus on already existing compounds and lack in adequately generalizing rules, in the early 60’s, there evolved attempts to analyze compounding within a generative framework. Lees (1960) suggests that the underlying structure of a compound is a sentence in which the syntactic relations between the members of the compound can be specified by a limited set of words. These can be verbs, e.g. BE, when there is a subject-predicate relation, CAUSE, in a subject-object relation etc., or prepositions, e.g. OF, FROM etc. in an object-prepositional object relation:

GIRLFRIEND the girl is a friend
HAY FEVER hay causing fever
APPLE SAUCE sauce from apple

The compound is derived by a transformational rule whereby constituents of the kernel sentence are reordered and the underlying verb or preposition gets deleted. However, as Ryder (1994: 21-22) remarks, this model suffers from arbitrariness of the suggested underlying structures. Indeed, a compound such as ‘banana bed’ can have a number of different interpretations, as, e.g. “a bed shaped like a banana”, “a bed with (drawings of) bananas on it”, or even “a bed where one sits to eat bananas”. In such cases, the semantics of the underlying material cannot get recovered after Lee’s deletion rules.

Within a similar framework, Levi (1978) proposes that compounds derive from relative clauses through a deletion transformation rule of their predicates. These so-called ‘recoverably deletable predicates’ (RDPs) constitute a small class of members, some of which are displayed in Table 2.

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40 In the Minimalist Program (Chomsky 1993, 1995) ‘chain’ refers to the chain formed between an overtly moved item and its trace and ‘CHAIN’ refers to the chain formed in case of feature movement (which is covert).
41 See mainly Jespersen and Marchant (op. cit.)
42 These definitions were given by native and non-native informants in an interpretation task we made some time ago.
43 Lees (1970) reformulated his model into a more improved one. However this too was criticized on the same grounds with the 1960 model. See Downing (1977: 811-812) and references there.
44 This analysis also comprised non-predicating adjectives+nouns, as in solar generator and linguistic scholar which, according to Levi, belong to the same category with NNCs, that of ‘complex nominals’.
Table 2: Examples from Levi’s RDPs

<table>
<thead>
<tr>
<th>RDP</th>
<th>N₁ &lt; direct object of relative clause</th>
<th>N₁ &lt; subject of relative clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUSE</td>
<td>tear gas</td>
<td>drug deaths</td>
</tr>
<tr>
<td></td>
<td>disease germ</td>
<td>birth pains</td>
</tr>
<tr>
<td>FOR</td>
<td>field mouse</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>morning prayers</td>
<td>-</td>
</tr>
</tbody>
</table>

Levi states that, on her approach, all *predictable* semanticosyntactic relations of compounds can be covered by the rules proposed and so the only compounds that should be listed in a dictionary are those with idiosyncratic meaning. However, although this model is much more economical than Lees’, its main advantage, namely the high level of abstractness in the predicates, turns out to be a serious disadvantage.

Clark, Hecht & Mulford (1986: 25) remark that the high degree of ambiguity involved in root compounds cannot be captured by the specific limited set of rules, as in the case of innovative compounds like *umbrella-man* interpreted in an experiment as ‘a man walking around with his head completely concealed by an umbrella. Also Ryder notes that “if there is no way to determine when an output in a given context is derived from one or another of these predicates, then the outputs are not only ambiguous, they are vague” (: 28). In addition, as Downing (op. cit.) points out, in compounds there is usually a generic relationship between the members, while this is not necessarily expressed in relative clauses, since “not every man who removes the garbage is a *garbage-man*” (Gleitman & Gleitman 1970: 96, cited in Downing: 822).

Bauer (1978) suggests that the underlying structure of all NNCs is a proposition (P) consisting of two nouns, and a verb he calls ‘a PRO-verb of compounding’. As for the semantic content of this verb, it suffices to state that this “stands in such a relationship as one might expect, given all contextual factors, too” (: 122). However, concerning non-deictic compounds never encountered before, “the present context will be too impoverished, and the context provided by the listener’s knowledge of the meaning of the element nouns will be too rich, to allow a unique determination of the meaning of the compound” (Ryder: 31-32).

Therefore, it seems that it is very difficult to formulate rules general enough to encompass all of the semantic relations expressed in compounds⁴⁶. The analyses of

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⁴⁵ The rest of the RDPs are: MAKE, USE, BE, IN, FOR, FROM, ABOUT.
⁴⁶ For other analyses based on the semantics of compounds, see Adams (1973) and Warren (1978).
compound formation we discuss next share the assumption that the only generative component is the syntactic one.

2.6 Generative approaches to compounds

In generative studies of compounds the central debate is on whether these constitute morphological or syntactic objects. The issue pertains to the following questions:

a) What differences/similarities are there between compounds and phrases?
b) What kind of rules can account for compound formation?
c) If compounding rules are more or less the same as those applying at phrasal structure, does this entail that compounds are formed in syntax?

2.6.1 Differences between compounds and syntactic phrases

Compounds have many characteristics of words. First, they are referentially opaque, that is, syntax cannot ‘see’ inside them. Consider the sentences below:

(26) a. He took the bottle of wine, and poured some of it, in my glass.
    b. *He took the wine, bottle and poured some of it, in my glass.

Unlike in (26a), where the pronoun can refer to part of the phrase, in (26b) the pronominal cannot refer only to part of the compound. In this respect, compounds are ‘anaphoric islands’\(^\text{47}\), like words. Also, compounds are subject to some ‘intervention constraints’, not valid in the case of syntactic phrases. This is shown in the examples below, from Zwicky (1990: 212).

(27) a. Typical example:
    television + tables

    b. Intervening dependent within first participant:
    *television from Japan + tables

    c. Intervening dependent within second participant:
    *television+big tables

    d. Intervening loose-construction modifier:
    *television, or so I think, tables

\(^{47}\) This was first remarked by Postal (1969), as reported by Sproat (1988).
The above restrictions pertain to the more general property shared by words and compounds, called ‘lexical integrity’. In addition, compounds often get lexicalized. Unlike the meaning of a phrase, which can be deduced from the meaning of its parts, the meaning of compounds is often non-compositional; for instance, knowing that ‘closet’ means ‘a private room’ is not enough for one to guess that *water closet* means ‘a toilette’. Also compounds may undergo a semantic drift and get a completely idiosyncratic reading. For example, while *penknife* originally meant ‘the knife used for cutting quills’, nowadays it means ‘a small knife with blades that fold back into the handle’\(^{48}\). Furthermore, unlike syntactic phrases, compounding exhibits many arbitrary exceptions in terms of productivity, which is a characteristic of lexical rules. For instance, as Spencer notes, in English one can say *rainfall* and *snowfall* but not *hailfall* or *sleetfall*. Finally, compounds are right-headed while phrases are left-headed\(^{49}\).

However, Sadock (1998: 164-166) disputes that some of the above constitute arguments for the morphological nature of compounds\(^{50}\) for the following reasons. First, because the ‘anaphoric islandhood’ of parts of compounds does not hold in all cases. For example, the pronouns can refer to the NHN in a compound, when the former is a proper name.

(28) a. Gingrich supporters think he is brilliant.
   b. Volvo-owners tend to like them.

Second, because compounds are not always “syntactically inviolate”\(^{51}\).

(29) a. Chicago area math and science requirements
   b. Voter anger and outrage

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\(^{48}\) The original meaning is from Spencer (1991: 312) and the current meaning from Sinclair et al. (1987).

\(^{49}\) This is prima facie an overgeneralization and we discuss it later.

\(^{50}\) In his paper, Sadock argues for independent principles of morphology, i.e. a theory in which words should not be defined in terms of their differences/similarities with syntax.

\(^{51}\) See also Marchant (1969: 26) who states that “serial combinations such as *house and shop owners* (*wind and watermills*) occur in English as in German”. However, according to Bloomfield (1935: 232) this is possible only in German compounds.
Third, because the vast majority of compounds are not lexicalized, and last, because not only compounds may undergo semantic drift, but so may phrases, e.g. the tower of Babel (cf.: the Eiffel Tower).

Nevertheless, compounds have some other properties which are clearly properties of phrases too. Those have motivated various ‘syntactic’ analyses of compound formation and are discussed in the next section.

2.6.2 The link between compounds and syntactic phrases

To start with, compounds are recursive, like phrases:

(30) a. Review policy 
   b. Pay review policy 
   c. Government pay review policy 

In addition, they may have a hierarchical constituent structure. For this reason, they are analyzed schematically in a way similar to that of syntactic phrases, the difference being that there are no intermediate (X’) projections, and both higher and lower nodes are of the X° level:

(31) 
    \[ N \\
    N | N \\
    N | N \\
    government | review | policy \]

Cinque (1993) indicates the difference between lexical syntax and syntax proper using negative integers on the nodes in the X-bar schema which represents the structure of compounds. Compare (32a) with (32b) (from Lardiere 1994).

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52 The discussion that follows is based on Spencer (op. cit.), unless otherwise specified. For a survey of more arguments for the syntactic nature of compounds, albeit controversial ones, see Baker (1998), as well as criticism against them in Di Sciullo & Williams (1987).
53 The same is assumed for complex words such as, for example indecipherability, which is analyzed as [N [ A [ Vde[cipher][able]] ity]].
54 In Hale & Keyser’s (1993) terminology this is ‘l-syntax’ and ‘s-syntax’ respectively.
The main similarities between phrases and compounds commonly accepted involve properties of the synthetic compounds in particular. These can be outlined as follows. First, the important syntactic distinction between S(ubject) and O(bject) has its role also in these compounds. Namely, unlike an object, a subject cannot be the NHN of a synthetic compound as illustrated by (33a,b)

(33) a. *bee-stinging
   b. *rain-falling (cf. rainfall)

To capture this distinction, Roeper & Siegel (1978) employed concepts of the X-bar structure and formulated the First Sister Principle:

First Sister Principle (FSP)
All verbal compounds are formed by incorporation of a word in first sister position of the verb.

Namely, in the sentence *He drives trucks* which has the (simplified) structure in (34), only *trucks*, being in the first sister position of the verb can incorporate into it:

(34) IP
    NP Ian
    VP
    V drives
    NP trucks
Selkirk (1982: 34) formulated the same restriction non-transformationally as the following principle:

The no-Subject constraint
The SUBJ argument of a lexical item may not be satisfied in compound structure.

Now note that the FSP cannot preclude ungrammatical compounds like (39b) and (39c), in the meaning of (35a).

(35) a. the putting of cats in the well
   b. *cat-putting in the well
   c. *well putting of cats

Hence, Selkirk (op. cit.: 37) suggested the following additional principle:

First Order Projection Condition (FOPC)
All non-SUBJ arguments of a lexical category $X_i$ must be satisfied within the first order projection of $X_i$

Besides the above, a syntactic principle seems to apply to synthetic compounds. This is the ‘Theta-Criterion’ formulated by Chomsky (1981: 36) as follows.

$\Theta$-CRITERION
Each argument bears one and only one $\theta$-role, and each $\theta$-role is assigned to one and only one argument.

Theta-roles express semantic properties linked with the arguments of predicates. For example, in the sentence Mary hit him the verb hit (the predicate) is transitive and takes two arguments: the external one (the subject) which is assigned the thematic role of the Agent and the internal one (the object), which is assigned the thematic role of the Patient. So the sentence *Mary hit him them is ungrammatical because the single (Patient) argument of the verb is expressed by two NPs. Now consider the following examples from Baker (1998: 189-190).

(36) a. He is a truck-driver.
   b. *He is a truck-driver of 14-wheelers.
(37) a. I enjoy pasta-eating.
   b. *I enjoy pasta-eating of sardines.

The unacceptability of (36b) and (37b) indicates that there is saturation of the internal argument (the Theme) inside the compound. Germane to the above is Baker’s (1988) Uniformity of Theta Assignment Hypothesis (UTAH), according to which, thematic relations are taken to directly reflect deep structural relations. Moreover, theta-marking, is linked with the Case Filter (Chomsky 1986a: 96):

**CASE FILTER**

(i) A position P is visible in a chain if the chain contains a Case-marked position.
(ii) Each argument A appears in a chain containing a unique visible theta position P, and each theta position P is visible in a chain containing a unique argument A.

Importantly, only an argument can be assigned case and nouns in argument positions are phrases, namely NPs. In other words, a noun of the X₀ level cannot be visible in an argument position, since it cannot receive case. To return to compound analyses, Lieber (1992) suggests that in a synthetic compound like, e.g. truck-driver, the NHN is base-generated in a complement position. However, since it is not a phrase (NP) but a head (X₀) and only NPs can be case-assigned, it moves in surface structure to an adjunct position. Through one more operation, the V and the agentive suffix -er become sisters of the same projection. The last two steps are illustrated in (38a,b).

(38) a. \[\begin{array}{c}
N \\
V^n \\
\text{truck} \\
\end{array} \]
\[\begin{array}{c}
\text{er} \\
\end{array} \]
\[\begin{array}{c}
\text{drive} \\
\end{array} \]

b. \[\begin{array}{c}
N \\
\text{truck} \\
\end{array} \]
\[\begin{array}{c}
N \\
\text{drive} \\
\end{array} \]
\[\begin{array}{c}
\text{er} \\
\end{array} \]

---

55 Or DPs in more recent analyses, as discussed.
56 Although this thesis adopts the term ‘deverbal’ and not ‘synthetic’ for -er compounds, from this point onwards in this chapter, the term will appear as used by each of the respective researchers.
Note that, although the above mentioned researchers employ syntactic notions in the analysis of compounds, they all consider the latter morphological objects but they propose that syntactic principles apply also in morphology. On the other hand, parts of their claims have been used by other investigators who support that synthetic compounds can be generated in syntax. Some analyses adhering to this view are outlined below.

According to Lardiere, Fabb (1984) suggests that compounds can be formed in syntax assuming that bar-projection rules can be extended “to allow $X^0$ to dominate two (other) $X^0$ nodes, and assuming affixes to be $X^0$-level words” (39a,b), which results in the structure shown in (39c).

(39) meat-eating

Furthermore, he proposes that the verb is assigned case by the -ing suffix and, subsequently the N itself is case-assigned through co-indexation with the V.

In Lardiere’s account, Sproat’s (1985) analysis is in the same line. Nevertheless, he opposes to the possibility that a non-maximal projection can theta-mark and instead adopts Higginbotham’s (1985) ‘theta-identification’. In this approach, the NHN and the HN are in a modifier-head relation, but still the V discharges its theta-role to the modifying N through identifying with it. Also, he suggests that the V assigns case to the N on the left. As Lardiere reports, Sproat claims that the position of the object to the left of the verb is a “historical relic”, since English used to be an OV language, and although this changed in phrases, it remained so in compounds. We return to this in Chapter 4.

Before we present some other analyses, let us clarify the term ‘noun incorporation’\textsuperscript{57}. This is defined as the compounding of a noun stem and a verb into a complex form. However, unlike synthetic compounding in English, in the incorporated noun stem has
referential properties. Consider (40a,b) from Southern Tiwa (Ackema 1999: 23-24, attributed to Allen et al. 1984).

(40) a. Yede seuan-ide a-mũ-ban
    that man-suf 2sgS-see-past
    ‘You saw that man’

b. Yede a-seuan-mũ-ban
    that 2sgS-man-see-past
    ‘You saw that man’

In (40b) while the head of the NP seuan which is the object of the transitive verb mũ is no more a free element, it is still associated with the ‘stranded’ determiner yede and has definite reference. At the same time, the verb becomes intransitive. Baker (1988a) proposes that similar cases of noun incorporation are formed in syntax and offers the analysis in (41).

(41)         ………………….
    V’
    NP                             V
    0
    Det           N
    0                   N
    0                  V
    0
    yede         ti                seuani      mũ

In this approach, noun incorporation is viewed as the result of noun movement from its initial position adjacent to the determiner, to a position next to the verb with which it is compounded.

Due to the differences between the properties of the NHNs in cases like the above, and those of NHNs in English compounds, Baker makes a distinction between ‘true’ incorporating languages and languages like English by claiming that, in the latter, synthetic compounding is a morphological process. Nevertheless, there are others who consider both incorporation and compounding as morphological processes (Mithun 1984; Di Sciullo & Williams 1987; Rosen 1989; Ackema 1999 a.o.). In these

57 The discussion of noun incorporation is based on Ackema (1999), unless otherwise stated.
analyses, the incorporated noun is base-generated to the left of the verb, that is, noun incorporation does not involve the syntactic process of ‘move alpha’. This is illustrated in (42).

\[
\begin{array}{c}
\text{(42) \hspace{2cm} \hdashline} \\
\text{NP} & \text{V' } \\
\text{Det} & \text{N'} & \text{V0} \\
\text{yede} & \text{seuan} & \text{mù} \\
\end{array}
\]

According to Lardiere (op. cit.), Roeper (1988) contends that English synthetic compounds “are formed in the syntax by a “rule of category change” which changes IP to NP. This change causes the loss of case, which in turn leads to the incorporation of the object/internal argument into the verb, which in turn results in loss of definite reference”. Roeper’s analysis includes also a PRO in the D-structure of a synthetic compound. Simplifying, the compound is formed by nominalization of the verb via lowering of -ing suffix into the V node and through incorporation of the head of the NP rock into the V. This process is shown in the structure below (from Lardiere)\(^{58}\).

\[
\begin{array}{c}
\text{(43) \hspace{2cm} IP \rightarrow NP} \\
\text{Spec} & \text{I \rightarrow N} \\
\text{PRO} \hspace{1cm} \text{PRO} \hspace{1cm} \text{VP} \hspace{1cm} \text{V \rightarrow N} \\
\text{Infl} & \text{-ing} & \text{V} & \text{N} \\
\text{throw} & \text{rock} \\
\end{array}
\]

\(^{58}\) Note that the intermediate I projection does not bear a bar. We do not know if this is so in the original analysis or if it is an omission on Lardiere’s part.
Roeper suggests that the Spec of IP (and therefore PRO) may be optional depending on whether the subject of the sentence is co-referential with the subject of the compound, as in *John likes clam-baking* or whether it is not, as in *John likes clam-bakings*. Lardiere remarks that Roeper’s analysis conforms with syntactic principles such as Bakers’ UTAH, Travis’s (1984) Head-Movement Constraint⁵⁹, as well as “the link between case-assignment and definite reference, and the notion that only maximal projections are referential (Sproat 1985)”. Crucially, as Lardiere reports, Keyser & Roeper (1992) who also support that noun incorporation in English compounds takes place in the syntax, state that the lack of plural inflection of the NHN in the compound is due to the fact that, generally, incorporation involves only the head of the NP.

In contrast with the above, Di Sciullo & Williams (1987) (DS & W) suggest that compounds are morphological objects and that morphology and syntax may share a common set of rules, but still they form two separate modules. On this view, called the Atomicity Thesis, there is a ‘word syntax’ with its own separate mechanisms, and compounds are ‘syntactic atoms’.

Essentially, in supporting that words enter syntax after having been fully formed within the morphological module, they follow Chomsky’s (1970) ‘lexicalist approach’ to word formation⁶⁰. Central in their theory is the claim that words and compounds consist of features “but these features have no structure, and the relation of these features to the internal composition of the word cannot be relevant in syntax” (: 49).

For example, a noun such as *parks*, is considered to consist of two lower nodes, one carrying the stem *park* and the other carrying the inflectional affix –*s*⁶¹. The features of the stem which are [noun], [inanimate], [neutral], as well as the feature of the inflectional suffix [plural] percolate⁶² to (become part of) the dominating node N:

---

⁵⁹ According to this, “an X may only move into a Y which properly governs it”.

⁶⁰ Other researchers sharing the same view are Williams (1978, 1978a) and Lapointe (1979), as reported in DS & W (: 49).


⁶² The notion of ‘feature percolation’ in the making up of words was first developed by Lieber (1980, mentioned by Spencer: 323) who stipulated the Feature Percolation Convention regarding compounds: “In compound words in English features from the righthand stem are percolated up to the branching node dominating the stems”.

---
Inserted in a syntactic string, *parks* will agree with a plural VP such as *are*. So the plural affix participates both in the making up of a word (the morphological level) and in the agreement relation between the word and other words in syntax because “syntax and morphology share a vocabulary for features” (DS & W: 49). Crucial in their theory (: 26) is the notion of ‘relativized head’ in morphology:

Definition of “head$_F$” (read: head with respect to the feature F)

The head$_F$ of a word is the rightmost element of the word marked for the feature F.

Unlike in syntax, where the head is identified intrinsically, that is, by being a non-maximal projection, in morphology, since all constituent parts of words are non-maximal projections, the head is identified contextually. Leaving aside some problematic aspects of this approach$^{63}$, viewing compounds as morphological units entails that in, for example, *parks commissioner* or *rat eaters*, neither *parks* nor *rat* inherit their $[\pm$plural$]$ feature to the highest node; instead this is done *commissioner* and *eaters* respectively, that is, by the rightmost members. On the other hand, *parks* is interpreted as $[+$plural$]$, because its rightmost member is the plural suffix –s which percolates to the first dominating node. This is illustrated in (45) (from DS & W: 49).

(45)

\[
\begin{array}{c}
\text{NP-sing} \\
\text{the} \\
\text{N-sing} \\
\text{N-pl} \\
\text{park-sing} \\
\text{s-pl} \\
\text{commissioner-sing}
\end{array}
\]

$^{63}$ For instance, Baker (1988a) shows that DS & W’s definition of head of a word cannot capture certain phenomena in other languages such as Chichewa, Tuscarora and Tzotzil where also “prefixes affect the features of a word that they attach to” (: 269). For further criticism on DS & W’s proposal, see Aronoff (1988) and Bauer (1990), among others.

$^{64}$ Note that a regular plural NHN in an English compound is an exceptional case. This is picked up in Chapter 3.
Importantly, syntax can read only the features of the head of the compound, namely in a phrase, *parks commissioner* will be matched with a [-plural] determiner or adjective. Thus, in this respect, compounds are like words: parts of them cannot interact directly with syntax. However, this analysis is problematic with respect to the following forms occurring in Romance languages:

(46) a. abrelatas (=open-3rdsng cans) ‘can opener’ Spanish
    b. porta-bandiera (=carry-2ndsng flag) ‘the flag-carrier’ Italian
(47) b. datore-di-lavoro (=the giver of work) ‘the giver of work’
(48) a. arc-en-ciel (=arch in sky) ‘rainbow’ French
    b. trompe-l’oeil (deceive-3rdsng the eye) ‘optical illusion’

The above share many characteristics with compounds. Namely, they are syntactically inviolable and referentially opaque; on the other hand, they may include determiners as well as prepositions and, importantly, they are left-headed. To save their theory, DS & W (: 82) suggest that forms of this type are syntactic items reanalyzed as words, by “a non-morphological word-creating rule of the periphery of the grammar”, which is shown in (49).

(49) e.g. un abrelatas

```
N
 / \  
|   |
V   XP
```

Moreover, DS & W label compounds of this type ‘syntactic words’. The proposal for a ‘marked’ rule like the above\(^{65}\), may be justified by the fact that (at least in Romance) right-headed semi-word formations like the above are not as productive as compounds in, say, the Germanic languages. We return to this in Chapter 4.

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\(^{65}\) For more arguments in favour of DS & W’s non-morphological word-creating rule, as well as an extension of it, see Zwanenburg (1990).
2.6.3 Di Sciullo (1991)

Before we present the study referred to in the title above, we digress briefly to mention some points in another study since those are later criticized by Di Sciullo. Giorgi & Longobardi (1991) distinguish NHNs in compounds from those in phrases on the following criteria. First, these modifiers “do not seem to occupy or bind any A-position comparable to that of regular internal arguments” (: 131). Consider the following from G & L (ibid.):

\[(50)\)
\[
\begin{align*}
\text{a. The entrusting of a child to himself is a psychologically delicate moment.} \\
\text{b. A child’s entrusting to himself…} \\
\text{c. *Child entrusting to himself…}
\end{align*}
\]

\[(51)\]
\[
\begin{align*}
\text{a. the bartender of Bill’s bar} \\
\text{b. his bird-watching of the nightingale}
\end{align*}
\]

According to G & L, the fact that the genitive in (50b) “discharges …the θ-role of the head …it follows from the θ-criterion that the modifier of the compound is not licensed through such a θ-assignment”. The third criterion has to do with the fact that a proper name denotes a referential expression only when this is the NHN in a phrase and not in a compound. To prove this, they provide the following example, attributed to an unpublished work by E. Williams:

\[(52)\]
\[
\begin{align*}
\text{a. John is a Nixon hater, but he does not hate Nixon.} \\
\text{b. John is a hater of Nixon, but he does not hate Nixon.}
\end{align*}
\]

In William’s view, only (52a) is acceptable, which G & L take as an argument in favour of their claim.

Di Sciullo (1991) (DS) suggests that different criteria should apply for the argument status of the NHN in \(X^0\) items, since in this position the former is not a DP and hence it has no reference. Moreover, arguing against G & L’s claim that the theta role of the internal argument is not saturated in compounds, DS (: 4) contends that this seems to be so because in the specific examples “the doubled phrase acts more as a modifier”, which explains the grammaticality of (53a,c) as opposed to (53b,d):

---

66 Examples from G & L (ibid.).
67 But cf. Sadock’s claim (p. 36).
(53) a. John is the dish-washer of the cantina.
    b. *John is the dish-washer of dishes.
    c. John is the piano-player of Bill’s bar.
    d. *John is the piano-player of the piano.

In addition, to account for facts concerning head-directionality and the relation between the NHN and the HN in English and Italian deverbal compounds, DS (: 1) suggests the following regarding morphological items:

(i) Theta theory applies to Xo’s if the parts of the structures allows it.
(ii) Pro is licensed in Xo’s if it can be licensed and identified in XP’s.
(iii) Head movement in Xo’s is restricted by independently motivated conditions.

(i) distinguishes compounds inside which both the internal and the external argument roles of the verbal base are saturated, from all other compounds. On this approach, in English deverbal compounds the external theta-role may be saturated only by the -er and not by the -ing suffix, as shown by the fact that a by-phrase is admissible only in the former case:

(54) a. The ball-throwing (by Mary)
    b. The ball-thrower (*by Mary)

Thus defined, only compounds like the one in (54b) are considered complete functional complexes. With respect to their Italian counterparts such as mangia-tutto (lit. eat-all, ‘all-eater’), DS contends that theta-role saturation takes place inside the deverbal nominal, which is proved by the fact that this cannot admit either an of-phrase or a by-phrase:

(55) Gianni è un mangia (*di tutto / *da parte di Maria)
    Gianni is an eat (of everything/by Mary)

As there is no overt suffix to saturate the external argument role in Italian compounds, DS proposes the existence of a pro, given also the fact that, unlike in English, pro is licensed in Italian syntax because of its richer inflectional system (see (ii)). Nevertheless, she points out that pro in compounds is not licensed by the same principles this happens in syntax. Namely, she excludes the functional projection I or
AGR from the structural representation of Xo’s and she proposes that “Pro is licensed in Xo’s by theta-marking” (: 9). Moreover, she states that the content of pro does not have the referential and grammatical features of its syntactic analogue. Additional evidence that the external role of the verbal HN is saturated by a pro is the impossibility of adding the suffix -ore (-er) to the HN:

(56) *un mangiatore-pasta
   an eater-pasta

According to DS, (56) is ungrammatical because the same thematic role cannot be “resaturated”. Hence the structure of compounds in both languages under examination contains an external argument position. This is represented by pro in Italian and by the -er affix in English, and c-commands the V and its internal argument. Furthermore “theta-role assignment is to the right”. To account for the cross-linguistic difference in the linear arrangement of the compound members, DS (: 17) suggests that in English “the V moves to the c-commanding suffix… [and that]…In Italian, the V does not move, given that pro and not a suffix is the head of the structure”. The proposed structures (adapted from DS: ibid.) are illustrated in (57a-b).

(57) a. N
   V  N
   t N Vt suffix
   ball throw er

 b. N
   V  N pro
   mangia tutto

As DS states, the movement of V to the suffix in English is a head-to-head movement because this may apply also in a morphological structure. Moreover, this movement satisfies “the locality requirement imposed by an affix on the category it selects” and “A derivational suffix is a sister to the category it selects” (ibid.).

Recall that an empty pronominal category was suggested also by Roeper (1988) concerning the structure of synthetic compounds such as rock-throwing. However his analysis differs crucially from DS’s in that it is clearly syntactic and PRO is licensed by a functional projection (IP). On the other hand, DS considers compounds Xo’s and,
in her approach, syntactic concepts are “compromised” so as to account for the structure of morphological objects. Concerning English deverbal compounds, to the best of our knowledge, this is the only analysis proposing that it is the V that moves, and not its object. As we will see in Chapter 3, in Di Sciullo & Ralli (1994) pro is abandoned from the structure of Romance compounds and in right-headed deverbal compounds the moving member is the object. Moreover, in Di Sciullo & Ralli (1999) the NHN in right-headed deverbal compounds is base-generated in the adjunct position. Aside from this, an advantage of Di Sciullo’s (1991) approach, as remarked also by DS herself, is that it may explain better than other analyses claims about developmental stages in the acquisition of L1 English compounds (see Chapter 4).

2.7 Problems in constraining compound formation

Many rules or principles regarding compound formation seem to fall upon recalcitrant data. To start with, Selkirk’s constraint on subject arguments inside compounds is disproved by data from other languages. As reported by Beard (1995: 170), Hoeksema (1987: 124) shows that subjects do occur as the NHNs in Dutch deverbal compounds when the verb is of the unaccusative or ergative type:

(58) a. aard-beev-ing               ‘earth quake’
    earth quak-ing
 b. klank-verander-ing      ‘sound change’
    sound chang-ing
 c. kosten-stijg-ing             ‘cost increase’
    cost-increas-ing

Moreover, Beard (ibid.) comments that this is true for English too, as demonstrated by, for example, student rioting and guest lecturing. Hence, he proposes that the no-Subject constraint applies only to cases where the NHN derives from a transitive verb.

Now, let us consider two other suggestions. One of them, already discussed, is Selkirk’s condition according to which “All non-SUBJ arguments of a lexical category Xᵢ must be satisfied within the first order projection of Xᵢ”. The other one

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68 See also DiSciullo & Ralli (1994, 1999) for a different account of similar facts.
concerns Grimshaw’s (1990: 14) proposal that the order of constituent nouns in compounds is due to that theta-roles are satisfied according to the following hierarchy: (Agent (Goal (Theme))). In this approach, Theme must be satisfied in the compound before Goal (which in turn must be satisfied before Agent). Consider the example below from Grimshaw (ibid.).

(59) a. Gift-giving to children
    b. *Child-giving of gifts

Now note that (59a) is not predicted by Selkirk’s second condition. Grimshaw herself (: 175) concedes that this is so and remarks that the specific example “does have a faint air of illegitimacy” but that it also “contrasts very clearly” with (59b). However, in a discussion of Selkirk’s proposal, Beard (1995: 170) points out that what makes such constructions sound odd is the genitive marker of following -ing items and that, once of is removed, similar constructions sound better. He demonstrates this with examples like the ones below:

(60)   a. Tree-eating pasta (is frowned upon in this neighborhood)
    b. Street-peddling your art (is degrading)

He goes on to say that when the HN in compounds concerns “Latinate nominalizations” Selkirk’s condition is disproved even if the of marker is present:

(61)  a. garage storage of automobiles
    b. home maintenance of electronic equipment

Note that the compounds in (60) are ‘synthetic’ while in (61) they are not. Beard remarks that “nothing precludes an…account of compounds like pasta-eating…as [[pasta]N[eating] N]” and reports Booij’s (1988) suggestion that both compound categories have the above structure, whereby “Argument structure is…assigned at semantic level under the assumption that the deverbal noun inherits the argument structure of its base” and which permits “the concatenation of any two nouns, derived or underived” (: 171). Turning to another study, Kuiper (1999: 418) disagrees with Grimshaw’s claim that a synthetic compound such as dog biting is unacceptable if dog is interpreted as a subject. Some of the examples he provides to disprove Grimshaw are the following:
(62)  a. (SPCA rangers noticed that) the dog biting of children (had increased).
       b. Donor giving of used clothing is down this year.

Note that (62a,b) pose a problem both with respect to Grimshaw’s hierarchy of thematic arguments in synthetic compounds and regarding Selkirk’s constraints. Kuiper (: 418-419) also doubts that arguments are “genuinely saturated within the compound”, given, for example, the following:

(63)  a. Joanna’s frequent stock-taking (of) the produce department was appreciated.
       b. The aeroplane’s cloud seeding (of) the area above the desert proved successful.

Now recall that Roeper (1988) considers ‘synthetic compounds’ different from deverbal ones in that the external argument of the former exhibits a control relation with the syntactic subject in the same sentence and that, in addition, he contends that they may have a progressive aspect, unlike their non-synthetic counterparts. Also recall that Roeper is one of the few researchers supporting that synthetic compounds may be syntactically derived. On this, we report Ackema’s (1999: 80) relevant comments, where the following examples come from. Consider the sentences below.

(64)  a. John likes clam-baking.                      (John is the baker)
       b. John likes clam-bakings.                (John is not the baker)

(65)  a. John enjoyed clam-baking for hours.   (progressive)
       b. John enjoyed clam-bakings for hours. (stative)

Now consider the following:

(66)  a. John likes baking.                    (John is the baker)
       b. John likes bakings.               (John is not the baker)

(67)  a. John enjoyed baking for hours.    (progressive)
       b. John enjoyed bakings for hours. (stative)

As Ackema remarks, the phenomena under discussion are not due to the nature of synthetic compounds, since the same contrast is shown to hold between non-compounded -ing nominals. He goes on to say that “What these examples might indicate …is that event -ing nominals are syntactically derived, but the question of
how to derive event -*ing* nominals does not related to the question of how to derive N-V compounds” (ibid.).

Turning to another rule concerning compound formation, consider Botha’s (1983) restriction on phrases being parts of compounds. This is falsified by the examples below, selected from Wiese (1996: 184).

(68) a. English
   a slept-all-day look
   (She had) a why-does-it-always-have-to-happen-to-me air

   b. Afrikaans
   op’n-ry nests ‘in-a-row nests’

   c. Dutch
   lach-of-ik-schiet humor ‘laugh-or-I-shoot humour’

   d. German
   der Von-Alubert-geküßt-worden-zu-sein Alptraum
   ‘the having-been-kissed-by-Alubert nightmare

The above aimed to underscore that many of the principles or constraints concerning compound formation can be falsified. But this should not surprise those who regard compounds morphological, and not syntactic objects. As Smirniotopoulos & Joseph (1998: 451) state, morphological rules differ from syntactic ones in that, while the latter are “generally quite productive”, this is not the case with the former, which “need not be productive and can show a significant number of arbitrary exceptions”.

Last Fanselow (1988: 97) maintains that “no fully convincing examples of regularities in word formation exist that can be explained in terms of principles of UG…” and that “the rule for compounds could “reduce to a trivial statement …plus a language-particular definition of the notion head’”. The ‘trivial’ rules he proposes are presented below:

(i) $X \rightarrow Y Z$ where $X$, $Y$ and $Z$ are words

(ii) In $[X Y Z]$, $Y$ is the head of $X$ (French, Italian…)

   In $[X Y Z]$, $Z$ is the head of $X$ (German, English…)

Note that Botha’s relevant restriction is called ‘The no phrase constraint’, about which “Hoeksema (1986) points out that this expression violates the constraint it names!” (Spencer 1991: 321).

Except the second example in English which is from Spencer (op. cit.).
2.8 Compounds and the ’s genitive.

There is a type of noun combination where the genitive ’s affix is attached on the first noun and, at the same time, this combination has the characteristics of a compound. Namely, the affixed NHN means ‘kind of’ and thus has a similar role to that of an adjective or of the NHN in a compound.

(69)  a. He wore a sailor’s suit.      cf. He wore a blue suit.  
     b. This is a lady’s drink.       cf. This is a soft drink.

(70)  a. a girls’ school            cf. a village school  
     b. a baker’s boy               cf. a school boy

Sometimes these genitive constructions can be used interchangeably with the respective compounds:

(71)  a. learners’/learner autonomy 
     b. a baby’s/a baby carriage

As regards items like the examples in (70), Jespersen (1961: 275) remarks that “it is really impossible to draw a line” between genitives and compounds and calls them ‘loose compounds’, while he terms the ones in (69) and in (71) ‘genitive compounds’. Marchant (1969: 27) reports a distinction made by other investigators between ‘specifying genitives’, in which the first element can be isolated from the second one (72), and ‘classifying genitives’, where this is not possible (73).

(72) cat’s eye = literal meaning 
     a. a beautiful cat’s eyes 
     b. a cat’s beautiful eyes

Footnotes:
71 Besides exceptions such as *parks commissioner* mentioned before, note that there is also a small number of, namely lexicalized compounds with a genitive NHN and an omission of the apostrophe as in, e.g. *townsman, lambswool, menstwear* etc., which are ‘historical relics’.
72 Choice between some of these forms often depends on regional variety (see Swan 1980) or on style (see Jespersen 1961 and Agathopoulou 2000). Also note that there are cases where both types of genitive occur in the same phrase, as in e.g. *Palet’s bachelor’s life, her child’s face* (cf. ‘the face of her child’) (Jespersen: 280).
(73) cat’s eye = metaphorical meaning: ‘a kind of gem’
   a. a beautiful cat’s eyes
   b. *a cat’s beautiful eyes

However, Marchant (28) considers expressions like the one in (72) compounds and not genitives, and the affix ‘s inside them as merely a linking element, like the one found in German compounds, e.g. Ankunftszeit (arrival-s-time = time of arrival).

Turning to another study, Woisetschlaeger (1983: 146) uses adjectival modification as a test of disambiguating between what he calls ‘inner’ and ‘outer’ genitives. He suggests that a well-known mathematician’s proof of the theorem can be analysed in 3 ways:

(74) a. \([\text{NP}\ [\text{NP} \text{a well-known mathematician}’s] \ [\text{N’ proof of the theorem}]])
   b. \([\text{NP} \ [\text{Det a} \ [\text{N’ well-known} \ [\text{AP mathematician}’s] \ [\text{N proof}]]]])
   c. \([\text{NP} \ [\text{Det a} \ [\text{N’ well-known mathematician}’s] \ [\text{N proof}]]])

In (74a) the adjective modifies only the genitive NP and is an outer genitive. However, in (74b) and (74c) where the adjective modifies the whole N’s+N complex and not just the modifier, according to Woisetschlaeger (ibid.) these structures are “instances of inner genitives, semigrammaticalized restrictive modifiers that take their place to the right of adjectival modifiers. The inner genitives are phrasal structures at the N’-level; they lack the determiners of full NPs, but they can have adjectival modifiers” (emphasis added).

Last, Lyons (1999: 23-24) notes that in possessives the NHN is definite, as the paraphrases in (75a-e) show.

(75) a. [[my cousin] = the son of my aunt and uncle
   b. [[Fred’s] only friend] = the only friend Fred has
   c. [[that man next door’s] car] = the car belonging to the man next door
   d. A visitor’s hat = the hat of a visitor
   e. A friend of mine’s cousin = the cousin of a friend of mine

Furthermore he contends that “The impression of indefiniteness comes from structural ambiguity”. Namely, a woman’s drink has the following two readings:
(76) a. a [woman’s] drink = a drink suitable for women
   b. [a woman’s] drink = the drink belonging to a woman/left behind by a woman

Revamped into the DP schema expounded in Chapter 1, inner genitives (i.e. non-possessives) and compounds are single DPs, while outer genitives (i.e. possessives) consist of two DPs. Leaving the inner genitive aside\textsuperscript{73}, let us compare the compound structure in (77) with the genitive structure in (78)\textsuperscript{74}.

\begin{figure}[h]
\centering
\begin{tikzpicture}
  \node (dp) {DP};
  \node (d) [below of=dp, label=left:{D}] {a};
  \node (np) [right of=d, label=right:{NP}] {a race car};
  \node (n) [below of=np, label=left:{N}] {race};
  \node (n2) [right of=n, label=right:{N}] {car};
  \draw (dp) -- (d);
  \draw (d) -- (np);
  \draw (np) -- (n);
  \draw (n) -- (n2);
\end{tikzpicture}
\caption{(77) a race car}
\end{figure}

\begin{figure}[h]
\centering
\begin{tikzpicture}
  \node (dp) {DP};
  \node (dp1) [below of=dp, label=left:{DP}] {the president’s};
  \node (d) [below of=dp1, label=left:{D}] {∅};
  \node (n) [right of=d, label=right:{N}] {car};
  \node (dp2) [right of=dp1, label=left:{DP}] {my car};
  \node (d2) [below of=dp2, label=left:{D}] {∅};
  \node (n2) [right of=d2, label=right:{N}] {car};
  \draw (dp) -- (dp1);
  \draw (dp1) -- (d);
  \draw (d) -- (n);
  \draw (dp2) -- (d2);
  \draw (d2) -- (n2);
\end{tikzpicture}
\caption{(78) the president’s car cf. my car}
\end{figure}

Due to the mentioned differences between a compound and a genitive construction, these two structures have not been investigated together in SLA research so far. In following chapters we show that there may be a link between the two of them as regards the interlanguage compounds.

\textsuperscript{73} ‘Inner genitives’ will not concern us any further. For more recent analyses of this type of constructions, see Shimamura (1999) and references there.

\textsuperscript{74} The structures in (78) come from Radford (1997: 165) and are also found in an adapted form in Bongartz (2002: 31).
CHAPTER 3: NOUN COMBINATION IN GREEK

3.1 Introduction

The aim of this chapter is threefold:

- To present the structure of simple and complex DPs, as well as the structure of compounds in the learners’ L1 Greek.
- To discuss the parametric differences between English and Greek regarding phrasal noun combination.
- To present and evaluate a previous analysis of English and Greek compounds.

3.2 Simple and complex DPs

In Greek DPs nouns are headed by the definite or by the indefinite article, of which the latter lacks an overt plural form, as in English. Case, number and gender distinction is overtly realized on both article forms:

Table 1: Definite/indefinite marking in Greek

<table>
<thead>
<tr>
<th></th>
<th>Definite</th>
<th></th>
<th></th>
<th>Indefinite</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singular</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nom.</td>
<td>o</td>
<td>i</td>
<td>to</td>
<td>enas</td>
<td>mia</td>
<td>ena</td>
</tr>
<tr>
<td>Gen.</td>
<td>tu</td>
<td>tis</td>
<td>tu</td>
<td>enos</td>
<td>mias</td>
<td>enos</td>
</tr>
<tr>
<td>Acc.</td>
<td>to(n)</td>
<td>tin</td>
<td>to</td>
<td>ena</td>
<td>mia</td>
<td>ena</td>
</tr>
<tr>
<td><strong>Plural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nom.</td>
<td>i</td>
<td>i</td>
<td>ta</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gen.</td>
<td>ton</td>
<td>ton</td>
<td>ton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acc.</td>
<td>tus</td>
<td>tis</td>
<td>ta</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adjectives canonically precede nouns and the DP members overtly agree in number, gender and case:

(1) Merik-i andr-es dhen anexonte tis
    some-nom.sg.masc men-nom.sg.masc not tolerate-3pl the-acc.pl.fem
    ekshipn-es ghinek-es
clever-acc.pl.fem women-acc.pl.fem

‘Some men cannot tolerate clever women’

Horrocks & Stavrou (1986, 1987) were the first to suggest a determiner layer (initially labeled ‘det’) in the functional architecture of nominals. Simplified for the present purposes, according to their proposal, a single Greek DP has the structure in (3).

(3) (ta) kala pedhia / (=the) good children)

In more recent analyses, a further functional projection has been suggested for languages with ‘rich’ morphology. In those, there is overt number (as well as case and possibly gender) agreement between determiners, adjectives and nouns, and is often labeled Num(ber)P(hrase). However, it is used to account for different facts depending on the language. For instance, in Romance and Hebrew, where the position of adjectives is post-nominal, the noun is assumed to be base-generated lower than the adjective and raise to this functional category at PF, attracted by a strong feature of Num(ber) (Bernstein 1991 and Ritter 1993 for the two languages respectively, cited in Hawkins 2001: 248). For Greek, a similar functional layer has been suggested by Karanassios (1992)\(^{77}\) to account for distributional differences between the definite and the indefinite article. Specifically, only the definite article can co-occur with a demonstrative pronoun. Compare (4a) with (4b).

\(^{76}\) This table is adapted from Tsimpli & Stavrakaki (1999: 36). The latter include also kapios, kapia, kapio (=some /someone) in the indefinite article paradigm, which will not concern us here.

\(^{77}\) See also Stavrou (1996) for an extension of Karanassios’ proposal. Other analyses building on Karanassios are discussed later.
Chapter 3  Noun combination in Greek

(4) a. Afto to vivlio
    This the book
    ‘This book’

   b. *Afto ena vivlio
    This a book.

In Karanassios’ approach, the proposed functional projection is called Def(initiveness) and may host the definite article when the Specifier of the DP is occupied by the demonstrative pronoun. When the D is [-def], the FP is empty. This is illustrated in (5) and (6) respectively, adapted from Marinis (2000).

(5) \[\begin{array}{c}
\text{DP} \\
| \\
\text{D’} \\
| \\
\text{D} \\
\text{[+def]} \\
\text{afto} \\
\text{F’} \\
\text{F} \\
\text{NP} \\
\text{to spiti}
\end{array}\]

(6) \[\begin{array}{c}
\text{DP} \\
| \\
\text{D’} \\
| \\
\text{D} \\
\text{[-def]} \\
\text{ena} \\
\text{F’} \\
\text{F} \\
\text{NP} \\
\text{Ø spiti}
\end{array}\]

Stavrou (1999) observes that in a single DP in Greek, the adjective can be in a (non-canonical) postnominal position only when the determiner is [-def]:

(7) a. enas dhemonas fterotos
    a d hemon winged
    ‘a winged demon’

   b. *o dhemonas fterotos
    the dhemon winged

To account for this, she suggests that when the article is [-def] the head of the functional projection FP is empty and the noun can move to it. However, when the article is [+def], this position is occupied, hence the noun cannot move there. Also, she notes that when there is multiple noun modification by adjectives and the article is [-def], one of the modifiers may follow the noun (8a,b): Nevertheless, in the
occurrence of the definite article, this is possible only through the phenomenon of ‘determiner spreading’ (cf. (9a,b) with (10a,b)):

(8)  a. *ENA PANEMORFO FOREMA LEFKO  
     b. *ENA LEFKO FOREMA PANEMORFO  

(9)  a. *TO PANEMORFO FOREMA LEFKO  
     b. *TO LEFKO FOREMA PANEMORFO  

(10)  a. TO PANEMORFO FOREMA TO LEFKO  
      b. TO LEFKO FOREMA TO PANEMORFO  

Consequently, Stavrou (214) proposes that the nominal clause in Greek contains an FP between the DP and its complement noun. In cases like (10a,b) the specifier of FP hosts an AP and its head hosts the lower definite determiner. When the article is [-def] as in (9a,b) the head of FP is empty. The suggested structure is shown in (11)78.

78 See also Ralli & Stavrou (1998) and Giannakidou & Stavrou (1999).
Turning to complex DPs, the head is canonically on the left and is modified by a noun in the genitive (12a), in a prepositional phrase (12b) or in an appositional structure (12c)\textsuperscript{79}.

\begin{enumerate}
\item (12) a. I isaghogh-is (Ø/ton) tsighar-on
The importers-nom (Ø/the-gen) cigarettes-gen
‘cigarette importers’

b. Ena kalathi me fraules.
A basket-nom with strawberries-acc
‘a punnet of strawberries’

c. Ena paketo tsighara
A packet-nom cigarettes-acc
‘A packet of cigarettes’
\end{enumerate}

The genitive phrase may also occur in a prenominal position\textsuperscript{80}:

\begin{enumerate}
\item (13) a. Tis Mer-is to spit-i cf. To spiti tis Meris
the-gen Mary-gen the-nom house-nom
‘Mary’s house’

b. Ton dhentr-on ta klari-a cf. Ta klaria ton dhentron
The-gen trees-gen the-nom branches-nom
‘the branches of the trees/ the tree branches’
\end{enumerate}

Horrocks & Stavrou (1986, 1987) and Alexiadou & Stavrou (1999) suggest that the noun in the modifying DP is base-generated postnominally where it receives (genitive) case; when it appears before the noun it modifies, this is in a non-argument (A’) position, parallel to the spec CP\textsuperscript{81}.

In view of the above, the structure of the Greek complex DP, when the modifying noun is in the genitive case, is something like in (14).

\textsuperscript{79} Alexiadou & Stavrou (1999) call these appositional constructions ‘pseudopartitive’, to distinguish them from partitive ones, such as Meriki apo tus mathites (=Some of the students).

\textsuperscript{80} Holton et al. (: 264) note that “this normally applies only to the possessive genitive and the genitive of quality, but not to the other genitive constructions”.

\textsuperscript{81} Alexiadou (1999) supports that the postnominal position of the genitive expressing alienable possession is a derived one. However, child language acquisition data points to the validity of the former suggestions (Marinis 2000, 2003).
(14)  
```
(14)                              DP
   D                           FP
      [±def]                 F'
    ena/to                   N'
        AP                      F
               F          def. art / Ø
              meghalo       (to)
          AP                  N'
                  F
                 N
                    N
                      N'
                        DP
                          tis ghinekas
```

The above structure can accommodate all the sentences in (15a-d).

(15)  a. Ena/To meghalo kokkino vivlio tis ghinekas  
      A/the big red book the -gen woman -gen

b. Ena meghalo vivlio kokkino tis ghinekas

c. To meghalo to kokkino vivlio tis ghinekas

d. To meghalo vivlio to kokkino tis ghinekas

When the HN is modified by a noun in a prepositional phrase, the lower part of the structure is as shown in (16).

(16) ena kalathi me fraules (see 12b)

```
(16)                     N'
   N                        PP
      kalathi         P'
         P
            me
                D'
                    D
                       NP
                           fraules
```

Having outlined noun modification in Greek phrases, we next turn to NNCs.
3.3 Compounds

Greek compounds are single morphophonemic units consisting either of two stems (17a) or of a stem and a word (17b) (Ralli 1992, Nespor & Ralli 1996). Their constituents are linked by the vowel -o- when the second member starts with a consonant. They bear one primary stress, are canonically right-headed and inflections are suffixed on the head.

(17) a. nixt-o-lúludh-o < níxt-a (night) + lulúdh-i (flower) ‘night flower’
   b. domat-o-salát-a < domát-a (tomato) + salát-a (salad) ‘tomato salad’.

In Ralli’s (1992) account, besides the N+N category, the possible combinations in Greek compounds are as follows (adapted from Ralli: 145-149).

A+N

(18) asximó-papo < ásximo (ugly) + papí (duckling) ‘ugly duckling’

Adv + N

(19) ksana-dhiávasma < ksaná (again) + dhiávasma (reading) ‘re-reading’

---

82 From the rebetiko prison song Ἡσουνα ξυπόλυτη, dated before 1900, other details unknown. Source: Petropoulos (1979: 114).

83 Exceptions to this rule are cases in which the first constituent ends in a stressed vowel /i/, e.g. taksímetro (< taksí + métro, ‘taxi-meter’) (Joseph & Philippaki-Worburton 1987: 226-227) and compounds of archaic origin, in which the first member bears an inflectional suffix, as shown by the following examples, adapted from Ralli (1998: 63).

(i) Hellíspontos < Héllis (Helli-gen) + póntos (sea) ‘Helli’s sea’
(ii) niktílampís < nyktí (night-dat) + -lampís (who shines) ‘he who shines at night’
(iii) nunexís < nun (brain-acc) + -exís (who has) ‘he who has brains’

There is also a type of compounds in which the first member is historically a genitive, e.g. Xristúghena (Jesus-gen+ birth, ‘Christmas’) and panepistimíu-poli (university-gen+city, ‘university city’). Triantafilidis et al. (1978: 177) label items like the above where the first member retains its inflectional affix as ‘non-properment dit’ compounds. Anastasiadi-Simeonidi (p.c.) maintains that from the syntactic viewpoint the u inside Greek compounds cannot be considered a genitive marking on the NHN since it not productive. She further observes that this applies even in compounds formed nowadays where the NHN is poli (=city) and the NHN ends in u as indicated by constructions such as tenekethud-poli (cf. tenekes-nom, tenek-gén but *tenekethu).

84 Greek compounds are written without hyphens. Those are added here to make their morphological makeup explicit.
A+A
(20) sten-ó-makros < stenós (narrow) + makris (long) ‘oblong’

Adv+A
(21) argh-o-kínitos < arghá (slow) + kinitós (moving) ‘slow-moving’

N+A
(22) kosm-o-ksákustos < kósmos (world) + ksakustós (famous) ‘world famous’

N+V
(23) xart-o-pézo < xartí (paper/card) + pézo (play) ‘play cards’

V+V
(24) anigh-o-klíno < anígho (open) + klíno (close) ‘open and close’

Adv+V
(25) kak-o-metaxirízome < kaká (badly) + metaxirízome (treat) ‘ill-treat’

Pron+A
(26) egh-o-kentrikós < eghó (I) + kentrikós (central) ‘self-centered’

Now we turn to root and deverbal NNCs, examples of which are shown in (27a-d) and (28a-f) respectively.

ROOT COMPOUNDS
(27) a. keras-ó-pita < kerási (chair) + píta (pie) ‘cherry pie’
   b. riz-álevro < rízi (rice) + alévri (flour) ‘rice flour’
   c. anemó-milos < ánemos (wind) + mílos (mill) ‘windmill’
   d. karekl-o-pótharo < karékla (chair) + podhári (leg) ‘chair leg’

DEVERBAL COMPOUNDS (The bold letters indicate the derivational suffix)
(28) a. ghinek-o-kataktités < ghinéka (woman) + kataktitis (conqueror)
   ‘lady killer’
   b. ambel-o-kládhema < ambéli (vineyard) + kládhema (pruning)
   ‘vine-pruning’
   c. plak-ó-strosi < pláka (flat stone) + stró-si (paving)
   ‘flat-stone-paving’

As Ralli (1992: 149) notes, in Greek there are also compounds whose first member is a cardinal number, e.g. eptá-lofós < eptá (seven) + lófós (hill) ‘based on seven hills’
Moreover, there are Adv+Adv compounds, as in oló-ghira < ólo (all) + ghíro (around) ‘all around’.
Most of the examples in the section are adapted from Ralli (1992), Di Sciullo & Ralli (1994) and Di Sciullo & Ralli (1999).
Chapter 3 Noun combination in Greek

d. emat-o-kílis < éma (blood) + kílisma (wallowing)
   ‘steeping in blood’

e. dhani-o-dhóti < dhanio (loan) + -dhótisi (giving)\[87\]
   ‘loan-giving’

f. vivlio-parusiasi < vivlío (book) + parusiasi (presentation)
   ‘book presentation’

With respect to deverbal compounds, Di Sciullo & Ralli (1999: 191) remark that as in English, in Greek too, the NHN is not necessarily linked to an argument position. For instance, in (29c) it is the Instrument and in (29d) it is the Location but in the rest of the examples in (29) the NHN is the Theme\[88\]. According to DS & R, other theta-roles which may be saturated inside Greek deverbal compounds are those of Agent, Material, Source and Goal. As regards root compounds, the variety of the semantic relations between the HN and the NHN is as large as that concerning their English counterparts. Aside from this, it seems that ‘synthetic’ compounds like the one in *John likes clam-baking*, where the subject of the sentence may have control over the action denoted by the deverbal nominal in a compound, are not as frequent in Greek as in English. This is because the fully productive Greek gerund with the suffix –ondas, which could be considered the morphological equivalent of the English –ing suffix, “is used as a sentential temporal or manner adverbial”(J & PW: 186) and cannot form a complex item with a noun:

(29) ghraf-ondas < ghrafo (write) + ondas ‘while writing’
   but: *vivlio- ghraf-ondas ‘book-writing’

Moreover, while action nominals in -si may take a NHN as a Theme argument, this is generally limited in the case of other highly productive action nominals:

(30) a. psísi-mo (‘baking’) but *stridho(clam)- psísi-mo ‘clam-baking’
    b. plísi-mo (‘washing’) but *piato(dish)-plísimo ‘dish-washing’

\[87\] The HN *dhóti* is marked with a hyphen because it does not appear in a free form.
\[88\] In addition, DS & R support that theta-role satisfaction is more extensive in Greek than in English compounds due to the rich inflectional system of the former. However, this will not concern us here.
Chapter 3   Noun combination in Greek

(31) a. klάdhe-ma (‘pruning’) but *dhentro(tree)-klάdhe-ma ‘tree-pruning’
    b. fόrto-ma (‘loading’) but *amakso(car)-fόrto-ma (‘car-loading’)

So besides (28b) above, we can think of very few compounds with a process nominal deverbal head in –ma and a Theme NHN:

(32) a. mali-o-trάvigma < mali (hair) + travigma (pulling)
    b. pedh-o-mázoma < pedhi (child) + mazoma (gathering)

Aside from this, anaphoric islandhood and word inviolability apply fully in Greek, as demonstrated by (33) and (34) respectively.

(33) *I Avramο-polites tha ton psiysun.
    the Avramo-citizens will him vote
    ‘The citizens of Avramo(poulos)’ will vote for him.

(34) *nero ke anemomili (acceptable form: neromili ke anemomili)
    ‘wind and watermills

Certain head nouns in compounds, never occur as free forms:

(35) a. ktin-o-trόfos ‘cattle-breeder’ cf. *trofos
    b. la-o-plάnos (lit. people seducer) ‘demagogue’ cf. *planos

Anastasiadi-Symeonidi (1986) and Kakouriiotis, Papastathi & Tsangalidis (1997) propose that these forms are bound morphemes or as ‘pseudostems’. On the other hand, Ralli (1992), Ralli & Raftopoulou (1998) and Raftopoulou (2000) maintain that they are stems. Consider (36).

---

89 But cf. (29b). In some attested compounds which have a process nominal deverbal head in –ma, the NHN may look like the Theme but according to native speaker judgements it is actually the Agent:
(i) pontiko-fάghoma < pontikόs + fάghoma = ‘rat-eating’: referring to something that has been eaten by rats
(ii) aeto-pέtaghma < aetόs + pέtaghma = ‘eagle flying’: referring to the flying of an eagle, not to the action of flying a kite (aetόs in Greek meaning both ‘eagle’ and ‘kite’).
90 As in phedh-o-mάzoma < pedhi (child) + mazoma (gathering). However, note that the specific compound refers exclusively to ‘mass kidnapping of children’ which took place during the Turkish occupation and (arguably) also during the Civil War in the late 40’s.
91 Avramo(poulos) = a mayor of Athens. The specific compound appeared in a Greek magazine.
92 Some forms occur only in compounds in English too: all-giver, theater-goer, ironmonger, babysitter (cf. *giver, *goer, *monger, *sitter). The same is true for the first member of the compound, as in cranberry (cf. *cran). On the other hand, none of this appears to be an affix either. See Aronoff (1976) and Fabb (1998) a.o.
(36) a. apoplanó < apo-plan-ó  ‘seduce’

Ralli (: 160) remarks that if the forms under consideration are considered affixes, the
above word, whose middle part is the same as that of the head noun in (35c), would
have the structure [Prefix-Suffix-(Infl)], which “is very highly marked and does not
occur with ‘true’ affixes”.

Compounding in Greek is a very productive process. Novel items are very often heard
on TV and appear in the written press:

(37) a. papa-rokádhes
   priest rockers (a rock band consisting of priests)

b. metox-o-dhánio93
   stock loan (loan to buy stock-shares with)

c. Kufodin-o-tiléfona
   Kufodinas telephones (telephone lines for citizens to give information about
   Kufodinas94)

d. lik-o-xoreftis
   wolf dancer (the leading actor in the film Dancing with the wolves)

Novel compounds are often devised also as an eye-catching means for shop names, or
in advertisements:

(38) a. art-o-lixudhjés
   bread goodies (the name of a bakery)

b. astr-o-provlépsis
   star predictions (from a newspaper advertisement)

Moreover, people easily coin compounds in daily conversation:

---

93 Due to the recent phenomenon of bank offers for various sorts of loans, there is also dhorodhánio
(=giftloan, ‘a loan to buy gifts with’) and dhiakopodhánio (=holiday loan). As in English, in Greek too,
many new compounds are made up in analogy with existing ones. For example, because of the present
situation with terrorism, based on the established tromokratia (=terror rule, ‘terrorism’), journalists
have created the compounds tromonomos (=terror law, instead of ‘antiterrorist law’, to imply that this
law terrorizes the citizens), tromoxtipima (=terror strike, ‘terrorist attack’), tromodhiki (terror trial,
referring to the trial of an alleged terrorist whom some people considered innocent), tromolista (=terror
list, ‘a list with names of people suspected as terrorists’) and many others.

94 Kufodinas: a wanted member of the terrorist group 17th November.
Chapter 3  Noun combination in Greek

(39) a. idhr-o-katástasi
   water situation (referring to a Turkish bath)

   b. tzartzan-o-therápia
      Tzartzano therapy ‘overuse of Tzartzanos’ grammar book’

   c. duvar-o-skópisi
      wall observation ‘the action of doing nothing but looking at the wall’

Greek compounds can be recursive:

(40) a. aghrot-o-dhani-o-dhótisi
    farmer loan giving ‘money-lending to farmers’

    b. pedh-o-odhont-iatros
       child tooth doctor ‘a children’s dentist’

    c. asvest-o-polto-piisi
       lime pulp making ‘lime-pulp-making’

However, albeit intuitively speaking, multi-stemmed compounds like the above in which the two initial constituents are in a hierarchical relation are relatively rare in the language. In fact the example in (40a) has been made up by DS & R who maintain that it is acceptable by native speakers, and the examples in (40b,c) are among the very few of this kind in our data. More frequent are similar compounds in which the relation between the two initial constituents is coordinate (J & PW: 227), like the ones shown next.

(41) a. ot-o-rin-o-laring-o-lóghos
    ear nose throat expert ‘ear, nose, and throat specialist’

    b. kafe-zith-estiatório
       coffe ale restaurant ‘a coffee- and ale-shop’

    c. skulik-o-mirmingh-ó-tripa
       worm ant hole ‘a worm- and ant-hole’

As regards word order, although Greek compounds are generally right-headed, there are also left-headed compounds:

(42) a. mis-ánthropos
    hate man ‘man-hater’
b. dhos-i-loghos
give   word, speech   ‘quisling, collaborator’

Mackridge (1985) refers to this category as a deviation from the general rule and Ralli (1992: 150) supports that left-headed compounds are not in fact productive and that “… the examples found in the language should be viewed as remnants of Ancient Greek compound formations”. While this is true of the items in (42a,b), there are also compounds like the ones in (43), which do not originate from ancient types of the language.

(43)  a. bertheps-o-dhouliá
      mix   business   ‘tricky business, an awkward state of affairs’

b. vrext-o-kükia
      soak   beans   ‘soaked broad beans’

Also, novel or hapax legomena compounds may sometimes be left-headed95:

(44) a. karf-o-mezèdhes
      nail  titbits   ‘nails to pick titbits with’

b. ombrel-o-vroxìtses
      umbrella rains-diminutive   ‘umbrellas with a water-sprinkling device’

Nevertheless, most left-headed compounds seem to be of the exocentric type, as attested by the examples in (45a-d).

(45) a. mal-o-bábaki96
      hair  cotton   ‘white-haired people’

b. xaft-alévris
      swallow flour   ‘a naive person’

c. ghlif-o-kutálas
      lick   spoon   ‘a parasite’

---

95 (a) was coined by a Greek comedian (Lazopoulos) on a TV program, in reference to special embellishments of a leather jacket, and (b) was used by a student in a discussion about business ideas for the summer.
96 From Tsiforos (1996).
Gafos (1992) contends that left-headed compounds constitute a productive category in Greek and that the relationship ‘argument of’ can hold either rightwards or leftwards contra Di Sciullo and Williams’ (1987) definition of ‘head’ in a word. Evidence for this are examples where in compounds with the same deverbal constituent the head can appear in either position.

(46) a. katsik-o-kléftis
   goat       stealer                                     ‘goat thief’
   
   b. kleft-o-kotás
   stealer chicken                                    ‘chicken thief’

According to Gafos, further support for the productivity of left-headed compounds is offered by the existence of items in this category where the order between the HN and the NH is free:

(47) a. xion-ó-nero / ner-o-xiono
   snow       water                                          ‘sleet’

   b. kardhi-o-xtípi / xtíp-o-kárdhi
   heart       beat                                         ‘heart-beat’

   c. lem-ó-ponos / pon-ó-lemos
      throat      ache                                        ‘throat ache’

   d. zo-ó-filos / fil-ó-zoos
      animal fond                                        ‘fond of animals’

Beard (1996) disputes Gafos’ claim, based on his personal communication with Ralli who informed him that compounds of this type are of a very limited type. Furthermore Beard states that “in English and other languages unproductive classes are often expandable in ways that suggest productivity”. Examples like the following attest to this: cutthroat, lockjaw, passport, daredevil, turncoat, scarecrow, breakwater, spoilsport, cutprice, scapegallows, telltale, crybaby, killjoy, telltruth, skinflint, makeshift, etc. However, according to Beard, this pattern is no longer productive. Also note that all of the above are exocentric compounds. In support of Beard’s and Ralli’s

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97 These items are termed ‘dhiplotipa’ (=double-type) compounds by Triantafilidis et al. (1978: 175).
98 Also: kefal-ó-ponos / pon-ó-kéfalos (‘headache’), kil-ó-ponos/ pon-ó-kilos (‘bellyache’). However, this variation is not always possible: stomax-ó-ponos (‘stomachache’) but * pon-o-stómaxos.
view, it should be mentioned that our own search in Greek dictionaries, yielded only about 70 such V+O types, out of which the majority are archaic forms and of the exocentric type, while left-headed endocentric compounds were not more than two dozens. In view of this, we adhere to the position that in Greek, like in English, one-word endocentric compounds are right-headed by default. This is not the case, however, with compounds consisting of two (or more) words, discussed next.

3.4 Phrasal compounds

There is also a type of productive noun combination with characteristics of both compounds and noun phrases. Those are of two categories, the first of which concerns the so-called appositional compounds:\footnote{Triantafilidis et al. use the term ‘loose compounds’ for the respective category.}

(48) plio-ksenodhoxio
    boat-hotel ‘hotel boat’

Appositional compounds constitute a comparatively recent phenomenon in the language, considered the result of lexical borrowing from French. This was first remarked by Triantafilidis et al. who state in a prescriptive mode that “compounds of this kind are not in accordance with the spirit of the Greek language” (\(\text{:\,} 178\), our translation). Moreover they advise against using them in writing, exemplifying how they can be replaced by one-word compounds or by relative clauses. However, according to Anastasiadi-Symeonidi (1986) this category of compounds contributes to the enrichment of the Greek language with further means of voicing novel concepts required by developments in science and technology. Moreover, as she states, two-word compounds are very expedient in cases where brevity of expression is important, as for example, in journalistic language and even more so if the formation of one-word compound would entail an inconveniently long construction. Also, in translating compounds from English into Greek, although novel compounds are sometimes coined, the most usual option is phrasal compounds\footnote{That is, besides the even more common option of a N+Ngen or a Adj+N construction.}. Ralli (1992: 172) remarks that “This may be due to the fact that their internal structure does not involve any application of phonological amalgamation process”.

Hypotactic compounds of this
type are left-headed\textsuperscript{101,102} and consist of phonologically and morphologically autonomous words, each with their own inflectional ending\textsuperscript{103}. As J & PW note, variation in case often affects both nouns simultaneously\textsuperscript{104}:

(49) a. i xóra -mélōs  
     the-nom.sg country-nom.sg member-nom.sg  ‘the member-country’  
b. tis xóras -mélus  
     the-gen.sg country-gen.sg member-gen.sg  ‘of the member country’  
c. i xóres -méli  
     the-nom.pl country-nom.pl member-nom.pl  ‘the member-countries’  
d. ton xorón -mélōn  
     the-gen.pl country-gen.pl member-gen.pl  ‘of the member-countries’

Nevertheless, often only the first noun is affected:

(50) a. mia thálasa -ghialí  
     one-nom.sg sea-nom.sg glass-nom.sg  ‘a glass-like sea’  
b. *mias thálasas -ghialiú  
     one-gen.sg sea-gen.sg glass-gen.sg  ‘of a glass-like sea’  
c. mias thálasas -ghialí  
     one-gen.sing sea-gen.sing glass-nom.sing  ‘of a glass-like sea’

\textsuperscript{101} This discussion leaves out coordinate appositional compounds, in which the two members always agree in case, number and gender (i):

(i) ilektrológhi- mixanológhi  
     electricans-nom.pl.masc   engineers- nom.pl.masc  ‘electrical engineers’

\textsuperscript{102} Note that appositional compounds of the endocentric type whose NHN is an English word may follow the English word-order, as illustrated by the attested examples in (i-iii).

(i) média-dhikhóros  
     media-lawyer  
(ii) Bárbie-politikós  
     Barbie-politician  
(iii) remíx-sinerghasía  
     remix-cooperation

On the other hand, appositional compounds whose NHN is a French word follow the French word order (see Anastasiadi-Simeonidi 1986,1994).

d. * thálases -ghialiá
  sea-nom.pl glass-nom.pl ‘glass-like seas’

Evidence for the compound status of the expressions under discussion comes from the fact that insertion of another element between its members is not tolerated:

(51) a. polithrónes-kardhiēs
    armchairs hearts ‘heart-shaped armchairs’
  b. meghales (=big) polithrónes-kardhiēs
  c. * polithrónes-meghales kardhiēs
  d. ke(=and) polithrónes-kardhiēs
  e. * polithrónes ke kardhiēs

The semantic relations holding between the members of a phrasal compound are more limited in number than in the case of one-word compounds. Besides phrasal compounds with the metaphorical meaning ‘A which is like B’ (51) or ‘A which is also B’ (48,49), there are also those whose NHN adds an attribute to the HN:

(52) a. sáltsa -manitári
    sauce-nom.sing mushroom-nom.sing ‘mushroom sauce’

The second category of phrasal compounds, concerns N+Ngen constructions:

(53) zóni asfalías
    belt-nom safety-gen ‘safety belt’
(54) koutáli (tis) súpas
    spoon-nom (the-gen) soup-gen ‘soup spoon’

Although the above structures look like phrases, their compound status is shown by the fact that no syntactic operation can affect their internal structure, as it is the case with the rest of the phrasal compounds:

(55) *zóni meghalis(=high) asfalías

---

104 Examples in (49) and (50) are adapted from J & PW: 227-228.
105 See also Gavriilidou (op.cit.).
Moreover, even when there is an optional determiner in some of them (see 54), this item has no referential features (Anastasiadis-Simeonidis 1986:179)\(^{106}\). Following Di Sciullo & Williams’ (1987) analysis of Romance compounds, Nespor and Ralli (1997) consider Greek phrasal compounds as items generated in syntax and “subsequently reanalysed as \(X^0\) when they enter the lexicon” (: 366).

Having outlined compound types, as well as noun modification in simple and complex DPs in Greek, next we examine some differences between English and Greek in the domain of phrasal noun combination.

3.5 Parametric differences between English and Greek in simple and complex DPs

3.5.1 D-features and agreement between the DP members

In a foregoing section we showed that in Greek the definite article can co-occur with a demonstrative pronoun:

(56) Afto to vivlio
    This the book ‘This book’

Tsimpli & Stavrakaki (1999: 42)\(^{107}\) note also the following. First, in Greek, a proper name is always preceded by the definite article:

(57) a. *(I) Ianthi-fem taksidhevi poli sixna
    The-fem Ianthi-fem travels-3s very often
    ‘Ianthi travels very often’.

Second, the Greek definite article may precede adverbials, wh-phrases and full clauses:

(58) To oti pipe monos tu dhen me anisixi.
    The that went-3s alone his not me worry-3sg
    ‘That he went on his own, does not worry me.’

\(^{106}\) Also other functional elements inside compounds may be kind of ‘frozen’. Nicoladis (2002) shows that the prepositions à (‘at’, ‘with’ or ‘of’) and de (‘of’, ‘about’ or ‘from) inside French compounds, as in, e.g. tasse à café (lit. cup for coffee, ‘coffee cup’) and un camion de pompiers (lit. a truck of firefighters, ‘a fire truck’) are not interpreted as meaningful elements by children. So she tentatively suggests that those are “in an intermediate state between prepositions and linking elements” (: 59).

\(^{107}\) See also Roussou & Tsimpli (1994) and Tsimpli (1999).
(59) To pos, ke to pote dhen ta ksero.
The how and the when not them-know-1sg
‘I don’t know how and when.’

(60) To xtes ke to simera ine ghnosta.
the yesterday and the today are known
‘I/We know about yesterday and today.’

In all the above cases, the definite article functions expletively\textsuperscript{108}. Namely, it is semantically empty, since it carries out purely grammatical operations and does not convey definiteness or specificity to its complement. The English definite article cannot have any of the above uses:

(61) a. *This the book.
b. *The Ianthi travels very often
c. *The that he went on his own, does not worry me.
d. *I don’t know the how and the when.
e. *We know about the yesterday and the today

Last, as T & S (: 43) show, in Greek, unlike in English, the definite article is obligatory before a generic subject (62a) and it may occur also with a generic object (62b):

(62) a. *(I) falenes ine thilastika.
the-fem whales are mammals
‘Whales are mammals.’
b. Antipatho/Miso *(tis) dhialekis.
detest-1s / hate-1s the lectures
‘I detest lectures.’

Because in Greek, on the one hand, there is no N-to-D movement like in English\textsuperscript{109}, while, on the other hand, the article has expletive uses, like in Italian, Roussou and Tsimpli (1994) had suggested that Longobardi’s (1994) parameter needs refinement,

\textsuperscript{108} Cf. the previous discussion about Longobardi’s (1994) theory. Also see Vergnaud & Zubizaretta (1992).
\textsuperscript{109} Recall that N-to-D movement is assumed to apply in languages where an overt definite article may or may not precede a proper name and where the default position of the adjective is postnominal.
since the relevant facts from Greek point to the necessity for a third value. More recently, building on Karanassios’s (1992) proposal for extending the structure of the DP in Greek, T & S contend that in this language the [+/-definiteness] feature is carried by a Def(inite) node dominating the D node, which hosts demonstrative pronouns and the indefinite article. The D node hosts the definite article whose role is to carry case and phi- (number and gender) agreement features. The structure suggested by T & S (: 47) is shown in (63).

\[
\text{(63) } \quad \text{DefP} \\
\text{Def } [+/-\text{def}] \\
\text{afio/ena} \\
\text{this/a} \\
\text{DP} \\
\text{D [case]/[phi-]} \\
\text{to the} \\
\text{N(P)} \\
\text{vivlio} \\
\text{book}
\]

In the case of generic nouns and proper names where the article is expletive, that is, it has no definiteness or referentiality features, T & S (: 47) suggest that the Def node is missing and the D bears only case and phi-features:110

\[
\text{(64) Generic / proper name} \\
\text{DP} \\
\text{D [case]/[phi-]} \\
\text{N(P)} \\
\text{o/i/to} \\
\text{the} \\
\text{……}
\]

The question that arises is how the definite article is interpreted as having a definite/referential feature in the absence of a demonstrative pronoun. Let us digress briefly to discuss the theoretical underpinning of T & S’s relevant account. Roberts and Roussou (1999) investigate the generative linguistic accounts of the difference between the underlying and the overt position of linguistic elements and

\[110\text{ When the article precedes adverbials, wh-phrases, and full clauses, the D node carries only the [case] feature.}\]
they point out certain imperfections and problems of the feature-checking mechanism within Chomsky’s minimalist approach. Namely, the specific model introduces semantically empty features which operate covertly and must get deleted before they reach LF, since they are non-interpretable at this level\textsuperscript{111}. Moreover, deleted features sometimes do not have a PF reflex, while other times they do. For example, while Case-features are non-interpretable at LF, they are nevertheless phonologically realized. So, as they note, it would be optimal to get rid of non-interpretable features altogether and develop instead a model within which feature strength necessarily maps onto a morpho(phono)logical realization. Now, according to the Form Dependency Principle, for an interpretable feature to be ‘recovered’ at LF, it must appear overtly on the highest position found in a head-dependency chain through the operations of ‘Merge’ or ‘Move’. Based on this, T & S suggest that when no demonstrative occupies the Def position, which is the highest one, the article moves to it and thus the semantic features of definiteness and referentiality are recovered. At this point, one may wonder why in Greek phi- and case-features appear overtly on all the members of the DP, given that in the minimalist framework Case is a non-interpretable feature and must be erased at LF after checking has taken place. As for phi-features, those are interpretable only on nouns. Furthermore, according to the theory previously exposed, it would be sufficient for a feature to be morphologically realized on the highest position of a head dependency. This would imply that phi-features should be marked only on nouns, and Case features – if marked at all – should be overt only on the article. With respect to this, building on Manzini (1995), T & S suggest that those reduplicated agreement features have a resumptive character and they occur overtly because

“agreement features on all heads of the nominal projection are part of the PF realization of a head-dependency / head-Chain formed between them” and that “the head-dependency formed includes heads which are selected as complements. Thus, all features (interpretable and non-interpretable) will be available to the dependency formed including the phi-features on the head” (: 46).

Moreover, the resumptive features are erased at LF, but the heads bearing them are not for reasons of the well-formedness condition on the dependency chain they are members of.

\textsuperscript{111} See the discussion in Chapter 1.
Building on T & S, Zevgoli (2000) suggests that since the definite article is taken to carry only case and phi-features, the fact that it needs overt realization to perform those syntactic operations, as indicated by its expletive uses, points to a strong feature of the D-node, under which the definite article merges. In Zevgoli’s words “Being strong the formal features of D in MG (Modern Greek) must be checked before Spell-Out...”. Importantly, she maintains that “the D node of the MG nominal phrase differs crucially from its English counterpart in that the former but not the latter bears strong case and phi-features”. Also, she proposes that overt case and phi-features on all the members of the nominal dependency in Greek is due to PF reflex of the strength of those features after being erased. Last, Zevgholi adheres to T & S’s position that Case, being non-interpretable on any of the DP members, is associated with D and that the overt case features of the other members of the nominal dependency are resumptive. The discussed analyses reveal that Greek differs from English with respect to the strength of D features and with respect to the strength of case and phi features. This may prove important as regards the interlanguage compound structure.

3.5.2 The alternation between an adnominal genitive and a PP

We have shown that in Greek a noun can modify another noun either as being part of a PP or in an adnominal genitive (AG) (see p. 61). The two modifying constructions are often, but not always in complementary distribution. Through the English glosses of the Greek examples we have also shown that in the equivalent English construction the NHN is either in a PP or it is the left member of a compound but not an AG. This cross-linguistic difference has been attributed to the fact that, unlike in English, in Greek a noun can be assigned the genitive case by another noun which properly governs it (Horrocks & Stavrou 1987). In a more recent approach, the Greek genitive in a certain construction is viewed as triggered by a feature of a functional category. We briefly digress here to sketch out the theoretical framework of this proposal.

In Roberts & Roussou’s (1999) theory mentioned previously, because functional elements may or may not be overt, those which are morphologically realized are marked as +p, while those which are not overt are marked as –p. To formally capture parameterization in this domain, they assign a diacritic * in cases where this feature is phonetically realized. Thus F* stands for a feature which must be overt in the sense that it triggers movement or merge. In an examination of various phenomena, they
show that their suggestion is not an alternative to previous accounts merely in terms of notation, but that it may explain various phenomena without the postulation of non-interpretable features. For example, omitting details, they demonstrate how a wh* can better account for the operations of Move and Merge in some structures. Moreover, in this approach, all movement is overt. This said, we turn to the study relevant with our subject.

Bouba (1998, 2000) investigates various aspects in which Greek double object constructions (DOCs) differ from their English counterparts. In what interests us, the indirect object (IO) in Greek may alternate between the genitive and the accusative case. The latter is possible only when the IO is complement of a PP. Examples (65a,b) and (66a,b) taken from Bouba illustrate this.

(65) a. I Eleni aghorase tin blouza ghia to Ghiani the-nom Helen-nom bought-3s the-acc blouza-acc for the-acc John-acc ‘Helen bought the blouse for John’
   b. I Eleni aghorase tou Ghiani tin blouza the-nom Helen-nom bought-3s the-gen John-gen the-acc blouza-acc ‘Helen bought John the blouse.’

   b. O Ghiannis edhose stin Eleni to vivlio The-nom John-nom gave-3s to-the-gen Helen-gen the-acc book-acc ‘John gave the book to Eleni.’

As shown by the translation, the IO cannot be in the genitive case in English. To account for this cross-linguistic difference, in line with Salles (1997a,b) Bouba proposes that there is a null P involved in DOCs. She supports this as follows. After she investigates the properties of primary prepositions in English and in Greek, she observes that in the latter language those have an affixal character, as evidenced from specific phenomena:

- Elision of prepositions before words starting with a vowel both in phrases and in compounds:
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• *ghi’ afto*[for this], *ap’ to*[from the],
  *dhiepistimonikos*[interdisciplinary’]< *dhia + epistimonikos*

• Attachment of a preposition to a question word:
  *ghia+ti=giati*[for+what=why/because]*

• Obligatory attachment of a preposition to a following determiner with loss of its final vowel: *sto(n): to + the-masc. acc. sg*

The above shows that Greek allows the P+D pair to be spelled out sometimes as a single morpho(phono)logical unit. On the other hand a P in English is always a free morpheme. Also, as Bouba notes, while P-pied-piping is possible both in English and in Greek, P-stranding is not possible in the latter language:

(67) Se pjion edose to vivlio o Ghianis?
   ‘To whom did John give the book?’
(68) *Pjion edhose o Ghianis to vivlio se?
   ‘Who did John give the book to?’

In view of this evidence, Bouba assumes that “there can be a strong dependency of the preposition on its complement”. In addition, based on the fact that some prepositions are semantically impoverished, she proposes that P may be viewed as a functional category with a parameterized nominal element D. Moreover, following Roberts and Roussou (1999), she suggests that this feature has the diacritic * in Greek, because it “triggers movement from D to P, forming the complex Head [P+D]”\(^{(112)}\). In English, P does not have a D bearing this diacritic, which accounts well for the cross-linguistic difference concerning the non-affixal nature of prepositions and the possibility for P-stranding in this language. As regards alternation in case marking of nouns in IO position, she suggests that these constructions can be analyzed in a unified manner, if we assume that a P is always present, but it is overt only with a IO in the accusative. On the other hand, when the IO is marked with a genitive, the specific case is the

\(^{(112)}\) As Bouba notes, “this operation is consistent with Chomsky’s (1995) Minimal Link Condition”. This has been formulated as follows.

**Minimal Link Condition**

K attracts α only if there is no β, β closer to K than α, such that K attracts β. (\(^{311}\))
mopho(phono)logical reflex of a covert P with a D*. In this approach, as Bouba remarks that

“there is no need to invoke the mechanism of case checking for the IO, given that the DP has its case properties satisfied internal to the PP. It is a PP-internal operation that affects the pronunciation of the IO. PF rules will interpret the abstract [P+D] complex as a single phonological word inflected for gen. case.”

Nevertheless, she poses the following restrictions:

- P = argument licenced within VP
- D= lexicalized
- P= [-locative]

The [-locative] restriction on P was laid in view of the fact that this is the only case where the alternation between an AG and a PP is impossible in IOs. The following examples, adapted from Bouba, illustrated this point. Compare (69) with (70)

\[(69) \text{O} \quad \text{Ghianis} \quad \text{fortose} \quad \text{mila} \quad \text{sto} \quad \text{fortigho} \]
\[\text{the-nom John-nom loaded-3s apples-acc to-the truck-acc} \]
\[\text{‘John loaded apples on(to) the truck.’} \]

\[(70) *\text{O} \quad \text{Ghianis} \quad \text{fortose} \quad \text{tu} \quad \text{fortighu} \quad \text{mila} \]
\[\text{the-nom John-nom loaded-3s the-gen truck-gen apples-acc} \]
\[\text{‘John loaded the truck apples} \]
\[\text{‘John loaded the truck with apples.’} \]

Assuming that this approach is generally on the right track, let us investigate whether it can account also for the difference between Greek and English as regards AGs outside the verbal clause. We will attempt to do so by examining the distribution of an AG and a PP in the two languages under examination, first dealing with cases in which the HN is a root nominal.

As it is well-known, the English genitive affix is strongly associated with animacy. In the case of inanimate nouns, the of-possessive is usually preferred. Compare (71) with (72)\textsuperscript{113} (adapted from Lyons 1986: 131).

\[\text{113 However, as Lyons (1986: 123) demonstrates, the complimentary distribution of the preposed and the postposed genitive in English is determined by the type of other modifiers present in the construction:}\]
Chapter 3  Noun combination in Greek

(71) a. John’s colour deepened.
    b. ?? The colour of John deepened.

(72) a. ? I wasn’t keen on the ceiling’s colour.
    b. I wasn’t keen on the colour of the ceiling.

According to Quirk, Greenbaum, Leech & Svartvik (1985) among others, the genitive marking is acceptable in English also with inanimate nouns, but usually when those denote a kind of ‘personal’ connection. Consider (73a-d) from Quirk et al. (: 1277).

(73) a. China’s economy
    b. (?) China’s roads
    c. ? China’s climate
    d. * China’s map

In examples such as the ones in (73b-d) the NHN is canonically included in a prepositional phrase. On the other hand, in Greek, it would be obligatory for the NHN to be in the genitive in all constructions like the above:

(74) to xroma tu Ghiani / to xroma tu tavaniu
    the-nom colour-nom John-gen / the-nom colour-nom ceiling-gen

    b. the book of John’s that you borrowed  cf. *John’s book that you borrowed
    c. a/this book of John’s  cf. *(the/a/this) John’s book
    d. (some) books of John’s cf. *some John’s books

We are aware that this affix can also occur with inanimate nouns when the genitive expresses measure, as well as in some cases of ‘descriptive genitive’: ten days’ absence, a summer’s day. However, this does not weaken our argument, since it concerns a very limited number of expressions, some of which are considered old relics (Agathopoulou 2000). Quirk & Greenbaum (1977) remark that also “nouns of special interest to human activity” can be marked as genitive: the brain’s weight, the mind’s development etc. One could mention more examples, such as the book’s cover. Nevertheless, in all that is written in this domain, it seems that there are no clear criteria concerning the acceptability of an inanimate noun marked with the genitive affix. For instance, while Quirk et al. put an asterisk on China’s map, Lyons (1987) uses the question mark.

A PP is also possible instead of a AG but with a slight change in meaning, as it is the case between an of- PP and another PP in English:

(i) a. M’ aresi to xroma tu tavaniu
    me-like the colour-nom ceiling-gen
    ‘I like the colour of the ceiling.’
    b. M’ aresi to xroma sto tavani
    me-like the colour-nom on-the-acc ceiling-acc
    ‘I like the colour on the ceiling.’
Unlike what happens with IOs, it seems that the alternation between an AG and a PP in complex DPs is more feasible in English than in Greek. Nevertheless, note that in all the above examples in English, the NHN is [+definite/+specific]. As discussed in Chapter 2, this is generally the case with genitive nouns in English, except in constructions such as a [woman’s] drink, where it is proposed that the NHN may not be a full NP and it is like the NHN in compounds. Moreover, even in those cases, the NHN is usually [+animate]. However, our object here is modification by inanimate nouns which are [-specific] and generic in English, and merely generic in Greek, since in this language, the definite article occurring before the NHN is an expletive one and bears no specificity or definiteness features. So let us examine the extent to which the alternation between a PP and an AG in English and in Greek is possible in this case. Consider the following:

(76) a. Eftiaksa ena keik apo fruta
    made-I a-acc cake-acc from fruit-acc
    ‘I made a cake from fruit.’

b. Eftiaksa ena keik fruton
    made-I a-acc cake-acc fruit-gen
    ‘I made a fruit cake.’

(77) a. Episkeftikame ena musio ghia pexnidhia
    visited-we a-acc museum-acc for toys-acc
    ‘We visited a museum for toys.’

b. Episkeftikame ena musio pexnidhion
    visited-we a-acc museum-acc toys-gen
    ‘We visited a museum a toy museum.’

(78) a. Exun mia eteria ghia aftokinita
    have-they a-acc company-acc for cars-acc
    ‘They have a company of cars.’
b. Exun mia eteria aftokiniton
   have-they a-acc company-acc for cars-acc
   ‘They have a car company.’

In the above examples, while the alternation under discussion is feasible in Greek, in English the NHN is either in a PP or in a NNC, as shown by the translation. An AG would be clearly ungrammatical:

(79) *a fruit’s cake, *a toys’ museum, *a cars’ company

Importantly, in Greek we may have the overt occurrence of the (expletive) article heading the NHN (80a-c), which is impossible in English (81a-c):

(80) a. to musio ghia (ta) pexnidhia / to musio (ton) pexnidhion
   b. to keik me (ta) fruta / to keik (ton) fruton
   c. i eteria ghia (ta) aftokinita / i eteria (ton) aftokiniton
(81) a. the factory for *(the) toys
   b. the cake from *(the) fruit
   c. the company for *(the) cars

We take it that Bouba’s second condition is kept, since the D is potentially overt only in Greek. Now let us consider whether the third condition, namely that P must be [-locative] also applies in complex DPs. (82) and (83) show that it may not:

(82) Ta spitia stis polis ine pio akriva apo
    the-nom houses- nom in-the-acc villages-acc are more expensive from
   ta spitia sta xoria
    the-nom houses-nom in-the-acc villages-acc
   ‘City houses are more expensive than village houses.’
(83) Ta spitia ton poleon ine pio akriva apo
    the-nom houses-nom the-gen villages-gen are more expensive from
   ta spitia ton xorion
    the-acc the-gen villages-gen
   ‘City houses are more expensive than village houses.’
Note that when the article of the NHN is not used expletively (84a), the PP construction may have a different meaning from its AG alternative:

(84) a. To trapezi stin kuzina
    the-nom kitchen-nom in-the-acc kitchen-acc
    ‘The table in the kitchen’

b. To trapezi tis kuzinas
    the-nom kitchen-nom the-gen kitchen-gen
    ‘The kitchen table’

In (84a) the HN may be any kind of table found in the kitchen. In (84b) the normal reading of the HN is ‘a table made to be used in a kitchen’. So we do not need an extra restriction here. Nevertheless, the alternation between a PP and an AG does not hold in cases such as the one shown next.

(85) Ena bukali me nero / Ena bukali nero
    A-nom bottle-nom with water-acc / a-nom bottle-nom water-acc
    ‘A bottle with water / a bottle of water’

In (85) the NHN is in the accusative even when it is in an adnominal position. Now consider (86).

(86) Ena bukali ghia nero / Ena bukali neru
    A-nom bottle-nom for water-acc / A-nom bottle-nom water-gen
    ‘A bottle for water’

In (86) the alternation is possible but in (85) it is not, the difference between the two of them being that (85) has a partitive meaning. So let us propose that in Greek complex DP phrases when the NHN is generic it occurs in the genitive due to the morpho(phono)logical reflex of a P+D* fusion, under the condition that the complex DP is not a partitive construction. The suggested structure is shown in (87).
When the NHN is in the accusative, the P is overt both in the English and in the Greek respective constructions. Now recall that the present thesis involves also complex DPs in which the HN is a -er deverbal nominal. We observe that no alternation is possible in this case:

(88) a. Eksaghoghis aftokiniton
    exporters-nom cars-gen
    ‘exporters of cars/car exporters’

b. I kapnistes puron
    the-nom smokers-nom cigars-gen
    ‘the smokers of cigars / the cigar smokers’

but:

(89) a. *Eksaghogis ghia/apo aftokinita
    exporters-nom for/of cars-acc

b. *I kapnistes ghia/apo pura
    the-nom smokers-nom for/of cigars-acc
Nevertheless, as discussed in Chapter 2, deverbals have different properties than those of root nominals. The NHN in the former can be the internal argument of the head, while in the latter the NHN is an adjunct. Also, while nominals inherit the direct argument constancy of the verb they derive from, they don’t have its case-assigning properties. Cross-linguistically, verbs directly theta-mark their complements by assigning them the accusative case. The parametric variation between the two languages under examination is that deverbals in English cannot assign case to their complement nouns and this is done through the preposition of; in Greek, deverbal nouns directly assign case to their complements but, unlike verbs, these nouns assign the genitive case\textsuperscript{116}. Now let us deal with some cases which seem to falsify our assumptions.

Inanimate nouns which look like themes of deverbals may be in the genitive case also in English:

\begin{itemize}
\item (90) a. the problem’s solution
\item b. the book’s translation
\item c. the city’s destruction
\end{itemize}

However, Grimshaw (1991) discusses argument-taking and non-argument-taking nominals and shows that the examples in (90) are within the latter category. Consider the following\textsuperscript{117}:

\begin{itemize}
\item (91) the solution to/*of this problem (cf. exporters of shoes)
\item (92) a. the translation of the book (in order) to make it available to …. 
\item b. *the book’s translation (in order) to make it available to …. 
\item (93) a. *The tree’s removal by Mary 
\item b. *During the course of the food’s digestion by worms
\end{itemize}

As Grimshaw notes, unlike what happens with most other argument-taking deverbals, solution cannot take an of-PP as a complement (91). Moreover, the construction

\textsuperscript{116} For an account of the genitive case marked on DPs which are arguments of certain derived nominals in Greek such as katastrofi (=“destruction”) or eksetasi (=“examination”) see Alexiadou & Stavrou (1998, 1999).

\textsuperscript{117} Most of the examples are based on Grimshaw, adapted and extended for our purposes. Note that Grimshaw focuses on the contrast between what she calls ‘complex event nominals’ and other nominals. Simplifying, the former are gerunds derived from dynamic transitive verbs and have various
under consideration is unacceptable when followed by a purpose clause (92) or with a by-phrase (93). Conversely, the internal arguments of gerundive nominals cannot take the genitive affix:

(94) *city’s destroying, *tree’s felling

Hence the examples in (90) where the NHN is marked with genitive are not generalizable and the canonical form of deverbal complements in English is a PP while in Greek it is a genitive DP. Aside from this, it is important to note that genitive case marking in Greek is realized by a bound affix of a fusional character, that is, this affix marks the noun not only for case but also for number and gender:

Table 2: Examples of case, number and gender marking of nouns in Greek

<table>
<thead>
<tr>
<th></th>
<th>Definite</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Singular</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nom.</td>
<td>lof-os (‘hill’)</td>
<td>limn-i</td>
<td>vun-o</td>
</tr>
<tr>
<td>Gen.</td>
<td>lof-u</td>
<td>limn-is</td>
<td>vun-u</td>
</tr>
<tr>
<td><strong>Plural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nom.</td>
<td>lof-i</td>
<td>limn-es</td>
<td>vun-a</td>
</tr>
<tr>
<td>Gen.</td>
<td>lof-on</td>
<td>limn-on</td>
<td>vun-on</td>
</tr>
</tbody>
</table>

On the other hand, the English ’s affix exhibits the characteristics of a clitic: it is a phonologically bound but syntactically free item and has a phrasal scope\(^{118}\). Note that in the case of conjoined DPs, it attaches only to the last N:

\(^{118}\) To offer a brief diachronic development of genitive marking in English, let us report the following. Drawing on Norde (2001), Traugott (2001) informs us that Old English inflectional genitive (which is a word-bound morpheme) shows concord within the possessive NP, as it is exemplified in (i) where this NP is ‘Ecgfrith the king’ (Note that there is also case agreement between the article and the genitive NP):

(i) ðæs cyning-es sweost-er Ecgfrïð-es (c. 1000 Aelfric Hom 11, 10 87, 215)
    the-gen king-gen sister-nom Ecgfrïð-gen
    ‘the sister of Ecgfrith the king’

However, as she notes, “three hundred and fifty years later we find a clitic”:

(ii) the god of slepes heyr (c. 1368 Chaucer, Book of Duchess 168)
    ‘the god of sleep’s heir’

Rosenbach & Vezzosi (1998) state that “from Old English onwards the s-form generalizes to all noun declensions and at the same time the inflectional genitive is to a large extent replaced by the
(95) a. Chomsky’s theory  
   b. Chomsky and Halle’s theory  
   c. Chomsky, Halle and Lasnik’s theory / Chomsky et al.’s theory  

In Greek all the conjoined DPs are marked for genitive:  

(96) a. I            theoria        ton             Roussi,        Tritsi         ke Papadopoulou  
            the-nom theory-nom the-gen, pl Roussi -gen, Tritsi-gen and Papadopoulou-gen  

Moreover, in cases where the possessor DP is modified by a PP, ’s attaches to the noun complement of P  

(97) a. the cat on the mat’s whiskers  
   b. the man with the hat’s problems  
   c. the woman in the black coat’s book.  

In Greek, only the possessor DP bears the genitive marking:  

(98) To vivlio tis        ghinekas      me    to         mavro      palto  
            the  book  the-gen woman-gen with the-acc black-acc coat-acc  
            ‘the woman in the black coat's book’  

Furthermore the ’s may attach also to non-nominal elements  

prepositional of-construction”(: 35). This is in accordance with the change of English into an analytical language. Oddly, as R & V demonstrate, towards the end of the 16th century there is a resurgence of the s marking and it is used at the same rate with the of-construction. They also let us know that according to Janda (1980) and Allen (1997) a.o. “when the s-form generalized to the whole genitive paradigm, it began to exhibit characteristics of a clitic”(: 37).  

Examples in (97) and in (99b,c) were retrieved March 30th, 2003 from Andrew Spencer’s material on the World Wide Web:  

http://privatewww.essex.ac.uk/~spena/371/lg371_ch3.htmhttp://users.info.unicaen.fr/  

(99a) is from Spencer (1991). As he reports (: 382), according to Zwicky (1987) the possessive s is not a clitic because it is suppressed after a morpheme with the same shape:  

(i) *my two kids's ideas  
(ii) *anyone who hurries’s ideas  

In Spencer’s account , Zwicky argues that “if the possessive ’s is a genuine clitic…then it would be put in place by syntactic and not morphological rules” and he concludes that “the possessive is an inflectional affix, which is, however, attached to the edge of the phrase rather than to the head of the phrase”. On this Spencer notes that “Since …any word in the language can end a noun phrase this means that all words in English are given this inflection”. In what interests us, clitic or no clitic, the English affix ’s differs considerably from the genitive marking in Greek.
(99) a. People who hurry’s ideas
b. The man who Harriet met’s hat
c. The girl I’m speaking to’s hat

In Greek, only elements belonging to the DP domain may carry the genitive morpheme. Last, let us turn to the structural representation of the genitive construction in English as proposed by Radford (1993: 92) and shown in (100) (bold added).

(100) \[ [\text{DP}[\text{the government}][\text{D}'[\text{su's}][\text{AP}[\text{recent}][\text{NP}[\text{tax reforms}]]]]] \]

According to Radford (ibid.) “’s …(can) be analysed as a head Determiner which licenses a NP or AP complement and a DP specifier”\(^{121}\). On this, Lyons (1999: 293) points out that since ’s is in the D position, it is a determiner and “no other determiner can appear there”\(^{122}\). As previously discussed, in Greek the respective D position is occupied by a determiner. Moreover there is strong (overt) case (as well as number and gender) agreement between the determiner and its complement noun. For this reason the structure of a genitive DP such as tu Ghiani (=John’s) can be as shown next\(^{123}\).

\[ (101) \]

\[ \begin{array}{c}
\text{DP} \\
\text{D} \\
\text{tu} \\
\text{Spec} \\
\text{F'} \\
\text{F} \\
\text{NP} \\
\text{Ghiani} \\
\end{array} \]

\(^{121}\) Omitting examples, Radford (: 92-93) offers the following empirical evidence in favour of his proposal that ’s can be analysed as a head determiner: a) “like demonstrative determiners in English, possessive ’s can be used both prenominally and postnominally”, b) “there are strong distributional parallels between ’s and the definite Determiner the: they are the only two Determiner constituents which can precede the post-determiner Quantifier every”, c) “both the and possessive nominals can be preceded by the same range of pre-determiners” and d) “’s and other Determiners are mutually exclusive”.

\(^{122}\) Lyons (ibid.) goes on to say: “The reason for this is that the D head in …[the] English… [genitive] structure has to be able to assign genitive case to the possessive in its specifier, and the familiar Det[erminer]s do not have this property”.

\(^{123}\) For a justification of postulating an FP in the Greek DP see Panagiotidis (2000) and Alexiadou, Haegeman & Stavrou (2001) a.o. As discussed in Section 3.2 the FP in the DP structure has been proposed to accommodate other facts too, which will not concern us here.
The point of the above is that, besides the different distribution of the adnominal genitive with respect to the cases discussed before, English and Greek differ also as regards the structure of genitive DPs. In English the D position of the genitive NP may be occupied by ’s while in Greek the same position is occupied by a determiner and overt case agreement between the determiner and its complement NP is possible only in Greek.

3.6 An overview of differences in phrasal noun combination and in compounds between English and Greek

As regards noun combination in phrases, due to the reasons previously discussed, the L1/L2 differences are the following.

- In Greek, the R feature of D is strong, while in English it is weak. Number (as well as case and gender) agreement between the article the adjective and the noun, is morphologically marked. On the other hand, in English there is no overt number (or case/gender) agreement between the DP members\(^{124}\).
- In Greek complex DPs, when the HN is a root nominal the NHN may be either an AG or the complement of a P and when the HN is a deverbal nominal, the NHN is an AG. In English complex DPs the NHN is the complement of a P.
- In the Greek genitive construction both the NHN and the HN are headed by overt articles. In the equivalent construction in English only the possessor is headed by an overt article.

Concerning NNCs, the differences between the two languages are the following.

- NNCs in Greek are formed from two stems or from a stem and a word; in English, both of the compound members are perceptually words\(^ {125}\).
- Plural NHNs may occur only inside English NNCs.
- NNCs may include phrases only in English.

\(^{124}\) Adjectives such as \textit{various} and \textit{numerous} require plural noun modifiees, only due to the fact that they are ‘intrinsically plural’ (Radford 1997: 152). In other words, there is no overt morphological agreement in number between adjective and noun.

\(^{125}\) Except some cases mentioned in Chapter 2 where the HN is \textit{giver} or \textit{sitter}, as well as neo-classical (or non-native) compounds such as \textit{erythro-cyte}.
• ‘Anaphoric islandhood’ and word inviolability may be lax only regarding English NNCs.

Moreover, in Greek there are also phrasal compounds which differ from their English counterparts in that they are left-headed by default and in that their members often agree overtly in case and in number. The possible effects of the above mentioned L1-L2 differences in the interlanguage compounds will be taken up in the last chapter. Leaving this aside, next we turn to an analysis encompassing compound formation in both languages.


This section presents an analysis of compound formation which, as far as we know, is the only one which considers English compounds in tandem with their Greek counterparts. Di Sciullo and Ralli (1994) suggest that morphological operations are part of a subcomponent of the grammar separate from that of syntax and that compounds are constructions of the X₀ level. On their account (: 62-65), there is an interface between word-structure and the Conceptual-Intentional (C-I) system called Morphological Form (MF) which “can be viewed as being part of LF without being subject to regular LF interpretation” and which they call the MF/LF interface. Also “X’ structure may be part of word structure” but it is not visible at the MF interface. Now while X₀ expressions may have either an adjunct-head or a head-complement structure at Spell-Out, they have an adjunct-head structure at the MF/LF interface. Depending on the linear arrangement of the compound constituents “either the complement moves overtly to the adjunct position or the adjunct position is null”. This is presented in (101a,b) and (102a,b), adapted from DS & R (: 65).

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126 See also Di Sciullo & Ralli (1999).
Next we turn to their account of the surface structure of compounds. Based on Longobardi’s (1994) theory (see Section 1.3.2) they state the following:

We posit in Minimalist terms that nouns are associated with a definite feature [D], and that this feature is strong in Italian and weak in English. Movement of N to empty D in Italian is overt because of the strength of the [D] feature of N, whereas in English and in Modern Greek this feature is weak, thus no movement of N to D occurs overtly (: 65).

According to this proposal, in deverbal compounds the bare NHN moves overtly (before Spell-Out) from a complement to an adjunct position in order to escape the default existential interpretation of bare nouns and get a generic reading, as well as in order to be in a non-case-assigning position. On the other hand, in Romance compounds the NHN moves overtly (at PF) to D attracted by its strong feature and moves only covertly (after Spell-Out) to the adjunct position. Nevertheless, they note that “in morphological derivation, strong features do not move for feature checking but for feature saturation” (: 65, fn. 4)\textsuperscript{127}. Last they suggest that the moved NHN

\textsuperscript{127} DS & R’s paper focuses on theta-role saturation of deverbal compounds. This, however, does not concern us at this point.
forms a chain with its trace but that “the chain it is a head of is not visible at the interface, but only the features of the head of the chain are” and that consequently “the bare noun in adjunct position may only have an attributive interpretation and not a descriptive one” (: 65).

We would like to point out the following. While, on the one hand, DS & R support the separation between morphological and syntactic operations, on the other hand, they account for cross-linguistic differences in compound formation based on parameterization in terms of feature-strength of the functional category D. We find this odd, despite the distinction made between ‘feature checking’ and ‘feature saturation’. Namely, we can understand their suggestion for overt N-to-D movement as regards Romance compounds because those can be viewed as items being formed in syntax and reanalysed as words. Nevertheless we fail to understand what D the NHN may move to (covertly) in the case of English and Greek compounds, given that those are formed in the morphological module. As for DS & R’s assumption about the strength value of the D-referential feature being the same in English and in Greek, we have already presented evidence that this does not hold (see 3.5.1). Importantly, in a refinement of his previous work, Longobardi (2001) supports that “… the referential feature of the determiner position, D, is ‘strong’…” when “… visible systematic association of referential items with D (either by overt movement of the noun itself or by means of an expletive placeholder) is necessary…” (: 25, emphasis added). Consequently, he proposes that Greek has a strong referential feature in D. Granted the above, DS & R’s analysis seems to be on shaky grounds.

More recently Di Sciullo & Ralli (1999) suggest that unlike what happens in Romance compounds which are syntactic words (see above), in Greek compounds the NHN being a bare stem “cannot undergo Longobardi’s (1994) N to D movement…Thus …this noun must appear in adjunct position at Spell-Out, a position where case is not visible and a position where a large variety of roles can be expressed” (: 192). Moreover, in this analysis, the NHN in Greek compounds is base-generated in the adjunct position.

128 Longobardi also claims that Greek is typologically in an intermediate position between Romance and Germanic languages, as it has an expletive definite article, like in Romance but it lacks overt N to D movement, like in Germanic.
CHAPTER 4: THE SECOND LANGUAGE ACQUISITION OF COMPOUNDS

4.1 Introduction

This chapter starts by an overview of research related with a) the acquisition of L1 compounds in English and in other languages, as well as with b) the L2 acquisition of English compounds by children and adults. Next it focuses on the issues relevant with the present investigation and finishes with the formulation of the research questions and the hypotheses connected with the experimental part of this thesis.

4.2 The first language acquisition of compounds

Most of the studies about the SLA of compound formation consider the extent to which adults differ from or resemble children in this respect. Hence, we start with work pertaining to the FLA of the structure under consideration.

4.2.1 Developmental stages and the effect of L1 typology

Based on results from previous studies, Clark, Hecht & Mulford (1986) remark that children acquiring English as a first language may start coining novel root compounds, as, for example, sky-car, from one-and-a half year of age (1;6). Moreover, according to Clark, Gelan & Lane (1985), they make no errors regarding stress, word order or the interpretation of root compounds after the age of 2;6-3;0. On the other hand, they produce deverbal compounds later and, additionally, those are non-adult-like in the early stages.

In a picture-naming task, C, H & M asked forty-eight children of four different group ages (3;0-3;10, 3;11-4;8, 4;9-5;7, 6;6-6;11), as well as eight adults, to produce novel deverbal compounds requiring an agentive (animate) or instrumental (inanimate) head. According to their predictions (: 9-11), children would demonstrate

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129 See also Livant (1962). In an experimental investigation, he shows that children of about five years of age easily make up compounds even in cases where the trigger is a nonsense word. For instance, when asked “what would you call a house a gup lives in?” or “what would you call a man who looks like a gloop?” children ‘automatically’ provided the compounds ‘a gup house’ and ‘a gloop man’ (but cf. Berko 1958). Moreover, they interpret similar items with ease.
developmental stages in the acquisition of compounds, defined by the following principles.

(i) **Principle of simplicity**

Make as few changes as possible in forming a new word from an old one

(ii) **Principle of conventionality**

Find the word or device that is conventionally used to express the requisite meaning

(iii) **Principle of productivity**

Look for the commonest device that expresses the desired meaning and use that in constructing a new word form.

Results confirmed their hypothesis as, unlike the adults’ responses which yielded error-free O+V-er/-ing compounds, children’s responses revealed that the younger ones produce a verb stem + a noun, where the latter stands for the suffix; at a later stage, they produce bare or suffixed verb stems + object nouns; last, the canonical forms, that is, objects + suffixed verb stems\(^{130}\). Table 1 exemplifies this.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Word Form</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>*V+N</td>
<td>wash-man, open-man</td>
</tr>
<tr>
<td>Stage 2</td>
<td>*V+O</td>
<td>hug-kid, break-bottle</td>
</tr>
<tr>
<td></td>
<td>*V-ing+O</td>
<td>moving-box, throwing-ball</td>
</tr>
<tr>
<td></td>
<td>*V-er+O</td>
<td>cutter-grass, puller-wagon</td>
</tr>
<tr>
<td>Stage 3</td>
<td>O+V-er</td>
<td>water-drinker, well-builder</td>
</tr>
</tbody>
</table>

Besides the errors shown above, C, H & M present examples of children’s constructions in which the deverbal suffix attaches to the object in a word-final position, as, for example, in *dry-hairer and *sit chairer. Consequently, they point out that the acquisitional data disproves the theoretical analysis of deverbal compounds proposed by Roeper and Siegel (1978), as well as the one by Selkirk

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\(^{130}\) About child acquisition of the -er affix for coining agent and instruments nouns, see Clark & Hecht (1982).
(1982), which were discussed in Chapter 2 and repeated here in (1) and (2) (respectively).

(1) \[[O+V]-er\]
(2) \[[O+[V-er]]\]

C, H & M support that (1) makes the wrong prediction that children will start by first moving the O to the left and then affixing the whole of the O+V form as a phrase. As for (2), although it is more in accordance with their findings, it cannot account for the V+O-er constructions (and the same applies to (1)). With respect to the latter they state that “although we elicited only a few such errors in the present study, we have observed several in the spontaneous speech of four- and five-year-olds” (: 25).

The investigators are not explicit about the order at which the specific structures occur in the developmental continuum and hence there is no way to tell if they precede or follow the other V-erO forms or even if they co-occur with the OV-er forms. Note that, if both error types (i.e. V-erO and VO-er) are generally made by children, the only analysis mentioned so far which may account for the acquisitional data, is the one offered by Di Sciullo (1991)\(^{131}\). However, similar errors are not reported in more recent research we will discuss later. Next we turn to some other studies.

Clark and Barron (1988) elicited novel compounds from three-to-six year old children by asking them to respond to a puppet which produced both grammatical and ungrammatical compounds. Results verified that children go through a general VO stage. Lardiere (1994) did an extensive search for samples of compound production in longitudinal data from two children, Abe (2;4-4;1) and Sarah (2;3-5;1), collected by Kuczaj (1976) and Brown (1973) from each child respectively\(^{132}\). Her findings show that these children too first produce novel root compounds and then deverbal ones and that, with respect to the latter, they follow developmental stages similar to the ones reported in C, H & M’s experimental study, with the exception of V+man and V+O-er constructions. Aside from this, Lardiere criticizes C, H & M’s principles for being “at best descriptive” and for making wrong predictions. Namely, she points out that since ‘simplicity’ equates ‘easiness’, it cannot explain why forms such as \textit{fix-man} are

\(^{131}\) See p. 49.
\(^{132}\) Those were included in the CHILDES database (see MacWhinney & Snow 1985, reported in Lardiere).
acquired earlier than easier ones such as build-wall, given that the former is a non-canonical VS construction, while the latter is a canonical VO construction. In addition, she supports that because affixed forms are less simple than unaffixed ones, the simplicity principle cannot explain why children start with forms such as hug-kids and later they strip the plural inflection off the NHN in the reverse order. Last she notes that ‘conventionality’ is merely another name for ‘grammaticality’ and that “These principles really amount to stating what does in fact happen in L1 acquisition without shedding any light on how it happens” (emphasis in the original). Later in this chapter we discuss Lardiere’s explanatory account of the L1 data.

Clark (1998) reports that children of other L1 Germanic languages also produce novel root compounds from a very young age, as the examples in (3a,b) from Clark (: 387) demonstrate.

(3)  a. Icelandic (2;4): kubba-bill ‘block-car’ (for a car made of blocks)  
    b. German (2;7) : Korb-wagen ‘basket wagon’ (for a doll’s pram of straw)

On the other hand, children learning Romance languages do not produce compounds until the age of five or later, because these forms are of low productivity in the specific languages (Clark: ibid). Now, what about languages which have productive compounding but are typologically different from, say, the Germanic ones? The results from Clark & Berman (1987) involving L1 Hebrew may enlighten us in this respect.

According to C & B, Hebrew compounds differ from their English analogues in the following respects. First, they are left-headed, following the canonical A+N or N+N phrasal word order. Second, they may include two unchanged lexemes (4a,b) or the head constituent may be changed by the application of morpho(phono)logical operations. The latter range from simple ones (5a,b), to more complex ones (6a,b)\(^\text{133}\).

(4) No change
   a. kise shel / le-tinokot chair of / for babies
   b. kiseˆ tinokot baby chair

\(^{133}\)The symbol ‘ (called the ‘caret’) appears between the two lexemes in Hebrew compounds.
Chapter 4  The second language acquisition of compounds

(5) Addition of a consonant to the head stem
   a. kufsa im kaftorim box with buttons
   b. kufsə̃ kaftorim button-box

(6) Internal change of the head stem and final stem reduction:
   a. láyla- ba-xóref night in-the-winter
   b. leył̂ xóref winter-night

(adapted from C & B: 549)

C & B examined production and comprehension of L1 Hebrew novel compounds by sixty children (aged 3;0-9;0) and twelve adults through a picture naming task. In what interests us, results showed the following. First, unlike English children, their Hebrew peers made almost no word-order errors (0.2%). Second, the more there was a requirement for a morpho(phono)logical change of the verbal lexeme, the less successful the responses were, depending on the age of the participants. For instance, in compounds where no change was required, like in (4b), even the three-year olds reached a successful performance of 90%. Nevertheless, children in the same age group were successful only at 60% in constructions like (5b) and did not produce any correct forms at all when a whole change of stem was involved like in (6b). Note that in the latter case neither the nine-year olds nor the adults were fully successful, since their scores of successful performance were 74% and 94% respectively.

C & B conclude by saying that while English children have mastered root compounds by the age of three, and have got both the suffixes and the word order correct by the age of six as regards deverbal compounds, Hebrew children need about three years more in order to learn all of the related morphological changes. Aside from this, in C & B’s viewpoint Hebrew-speaking children make no errors in word order because unlike in English the head-modifier order in compounds is identical to that in phrasal syntax in Hebrew, which seems to have a facilitating effect. However, although not explicitly stated, from the data C & B make available, it is apparent that they involved only root compounds, while in the data discussed so far English children are generally supposed to have problems concerning word order only in deverbal, and not in root compounds.\footnote{For this reason, we fail to understand why Clark (1998) referring to evidence from the C & B study points out that “children learning languages where the verb phrase head and compound head have the}
Next we deal with some other studies which show experimental results or raise issues not taken into consideration by previous investigators in this area.

For instance, Schneider (to appear) shows that L1 German children as old as 5;9-8;6 make word-errors also in the production of novel root compounds. Additionally, it has been proposed that deverbal compounds may be acquired later than root ones because they are much less frequent in the input. For instance, Nicoladis & Yin (2002) report that among all the compound types they found in child-directed English, O+V-er constructions amounted only to 5%. Moreover, evidence for a distinct intermediate V+O stage does not seem to be supported by all the related studies. Specifically, in Nicoladis’ (to appear) longitudinal data from one child, reversals in deverbal compounds were rare. She also reports that Becker (1994) found no reversed forms in similar data either. Importantly, Nicoladis points out that the initial trigger for head-directionality in compounds may not be phrasal ordering for the following reason. Although such an assumption may explain the developmental differences in the acquisition of word-order of deverbal compounds between, say, L1 English and L1 French children, it fails to account why the latter interpret compounds in the reverse order. For example, they explain *lave-bouteille* (lit. wash-bottle, ‘a bottle washer’) as ‘a bottle washing something’. Hence Nicoladis contends that “Because French-speaking children can produce VO compounds only late in the preschool years and they make agentive errors in comprehension, it seems unlikely that they use canonical phrasal ordering as a cue to ordering their compounds”. In Section 4.4 we present experimental evidence from another study by Nicoladis which seems to confirm this claim.

4.2.2. Regular and irregular non-head nouns

As discussed in Chapter 2, the NHN in English compounds is canonically a singular noun, or rather a stem. In the various syntactic or lexical-syntactic analyses we examined this has been attributed either to the process of incorporation whereby the noun loses its inflectional affix or to the fact that in compounding the NHN is base-generated as a bare stem. However, this applies generally in the case of regular nouns,
while irregular ones and pluralia tantum may appear as NHNs in compounds in the plural form as, for example, teeth in teeth marks and clothes in clothes shop. An account of these facts has been suggested by Kiparsky (1982). According to his model of level ordering for lexical phonology, word-formation rules are organized at three levels of representation. The first one includes morphemes whose affixation to a stem causes some kind of (morpho)phonological or semantic alteration as, for example, in- (legal → illegal), -th (long → length), -ity (sane [θi] → sanity [æ]) or -tion in population. Additionally, it includes irregular word-forms, such as noun plurals or verbal past tense and participles. The second level involves non-deforming derivational affixes and compounding and the third level includes regular morphology. Table 2 illustrates this model.

Table 2. Level-ordered rules (Adapted from Gordon: 75)

<table>
<thead>
<tr>
<th>THE LEXICON</th>
<th>Examples</th>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underived lexical items (stems)</td>
<td>+ion, +ous, +ity, +th … in+, con+, sub+… teeth, mice, oxen… scissors, pants… went, gone…</td>
<td>Derivational, irregular, semantically idiosyncratic, host deforming, stress shift, vowel reduction, unproductive</td>
</tr>
<tr>
<td>水平1</td>
<td>#ness, #ism, #er, #ist… un#, non#, semi#… Compounding</td>
<td>Derivational. Non-deforming, (more) semantically predictable, productive.</td>
</tr>
<tr>
<td>水平2</td>
<td>#s, #ed, #ing…</td>
<td>Regular inflections, non-deforming, semantically predictable.</td>
</tr>
</tbody>
</table>

In this approach, Kiparsky proposed that the facts about the compound structure discussed in the foregoing paragraphs may be explained as follows. Assuming that

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135 As reported by Spencer (1991: 81), the Level Ordering Hypothesis was originally proposed by Siegel (1979).

136 According to Gordon (1985: 74) “population appears to go beyond a simple semantic composite of populate and the nominalizing +ion affix”.

137 For a suggestion that level-ordering applies in Greek too see Ralli (1988).

138 The symbols ‘+’ and ‘#’ were originally suggested by Chomsky and Halle (1968) to represent a morpheme boundary marker and a word boundary marker respectively. ‘+’ indicates that morphophonemic changes are allowed across the affix and its stem, while ‘#’ signifies that only postcyclic phonological alternations apply between the affix and its stem.
level ordering operates in a bottom-down fashion, because irregular plurals are formed at level one they can be inputted to compounds since the latter are formed at level two; the reverse occurs regarding regular plurals because those are level-three formations and hence they are banned from inside compounds.

To check whether this is valid as a kind of innate learning mechanism, Gordon (1985) carried out an experimental investigation of the acquisition of compounds by L1 English children aged from 3;2 to 5;10. His method was a picture naming task in which all cards depicted someone eating a number of the same things, the latter being different for each picture. The multiple cues for the object corresponded either to a regular or to an irregular noun. Participants had to answer the question “What do you call someone who eats X?”, which would yield a novel deverbal compound of the type “an X-eater”. To check the extent to which the plural form of the nouns involved in the experiment had been acquired, Gordon first showed the children cards with multiple representations of the objects included in the compound task and asked for their names. For example, there was a picture with two mice, another one with clothes, etc.

Results from the compounding task demonstrated that children overwhelmingly reduced regular plurals. On the other hand, those who had mastered an irregular plural did not generally change it into its respective singular form, either in the case of irregulars such as mice or as regarded some of the pluralia tantum such as clothes and pants. Moreover those of the children who had produced an overregularized noun form in the first task as, for example, *mouses, generally omitted the plural affix when they produced it in compounds. Finally there were no differences between the younger and the older children with respect to the regular/irregular dissociation. Gordon suggests that these results cannot be explained on the assumption that children develop a kind of rule through exposure to input. As he notes, his examination of standardized data showed that the speech most children hear is impoverished with respect to such a distinction. For instance, they often hear toothbrush. On the other hand, compounds like teethmarks, people-eater, and men-bashing, are rare in the input. Therefore, according to Gordon, the constraints on level-ordering may be innate.

139 Within the pluralia tantum group there was a discrepancy between clothes and pants on the one hand and glasses and scissors on the other. Namely, the latter nouns were reduced into the singular significantly more than the former.
Further support to Gordon’s claim for the existence of level-ordering in the acquisition of compounds comes from another study which points to a cross-linguistic potential of such an inner mechanism. Based on a model of level-ordering for the German language and having examined longitudinal data from L1 German impaired (dysphasic) and non-impaired children, Clahsen, Rothweiler, Woest & Marcus (1992) show that the German regular plural affix -s is consistently omitted from inside compounds (7a), while irregular ones, such as -er, -(e)n and -e and are not (7b-d)

(7) a. auto-s ‘cars’ → autobahn ‘highway’
   b. bild-er ‘pictures’ → bilderbuch ‘picture book’
   c. banane-n ‘bananas’ → bananenquark ‘banana cottage cheese’
   d. schwein-e ‘pigs’ → schweinehirt ‘pig herdsman’

Subsequently in line with Gordon they conclude that Kiparsky’s model of level ordering is an innate mechanism guiding language acquisition. In addition they suggest that Pinker and Prince’s (1994) ‘dual mechanism’ model may also account for their results. According to this, irregular forms are unpredictable and must be memorized. Therefore they are stored in the lexicon and are retrieved as such. For example, in the mental lexicon there is one separate entry for child and another one for children or for go and went. On the other hand, as regards regular forms all that is needed is one entry for, say, toy and one for play, plus the knowledge of the productive rule ‘add –s for plural’ or ‘add –ed for past tense’. So regulars and irregulars represent two dissociated types of knowledge. However, as discussed later in this chapter, Clahsen et al. have been criticized for conflating the models of ‘level ordering’ and that of ‘dual mechanism’, while those two differ from each other in important respects.

4.2.3 Regular plural non-head nouns

Besides being an irregular plural, the NHN in compounds may exceptionally be a regular plural noun in a three-membered compound, as the examples in (8a,b) from Selkirk (1982: 52) show.

140 But cf. Dressler, Libben, Stark, Pons and Jarema (2001: 190) who contend that “in German plural
In line with Kiparsky (1982), Alegre & Gordon (1996) hypothesized that compounds like the above are formed in a recursive fashion, whereby an Adj + N phrase is constructed in syntax and reintroduced in the compound, as shown in (9a), from A & G (: 69).

In (9), the adjective modifies rat and not rat eater. On the other hand, in the case where the adjective modifies the whole compound the latter has a non-recursive structure. This is illustrated in (10), taken from A & G (ibid.).

A & G investigated this assumption as follows. They asked three-, four- and five-year old children classified in three age groups (respectively) to identify four pairs of pictures, all of which depicted a kind of creature eating other creatures. The only difference between the two pictures in each pair was in terms of whether it was the eater or the eatees painted in a certain colour, which was the same in either case. For example, one picture showed a red eater, while the other one showed red eatees. A separate pre-test had ensured that the children knew the words for the colours. In the main test, first they had to describe the pictures in each pair and then to respond to questions like “Can you point to the picture that shows a red rat eater?” or “Can you point to the picture that shows a red rats eater?” To control for a possible effect
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related to the stress pattern adopted by the experimenters, the latter were trained to avoid any prosodic cues. Moreover, when coding the recorded data, all cases in which such an effect was possible were counted out. In brief, results seem to support the hypothesis, since children from all age groups gave Adj + Npl + N constructions a recursive interpretation and seemed to perceive Adj + N + N forms as non-recursive ones.

Nevertheless A & G note that while the above experimental evidence may explain compounds like high stakes diplomacy, there still remains a problem with a regular plural NHN in compounds not fronted by adjectives (see 8b). Thus in a following study, Alegre and Gordon (1999) set out to investigate the hypothesis that the occurrence of a plural NHN may be linked with a [+heterogeneity] feature related with its meaning. On this approach, in a compound like faces lab the NHN is interpreted as ‘many types of face’ rather than merely ‘many faces’. Moreover, the researchers claim that this is even more plausible in the case of abstract nouns as exemplified by compounds research which seems acceptable unlike animals research which sounds odd. To test the above assumptions, they constructed two sets of compounds. The first set involved manipulation of the head noun (HN) and every compound whose HN promoted a heterogeneous reading (e.g. rocks research) was matched with another one having the same NHN but a non-heterogeneous head (e.g. rocks pile). The second set focused more on the combined effect of heterogeneity and abstractness and included compound types which were semantically categorized as shown below.  

Heterogeneous abstract:  e.g. account(s) manager, absurdity(es) list  
Non-Heterogeneous abstract:  e.g. report(s) pile, feature(s) matching  
Heterogeneous concrete:  e.g. bug(s) exterminator, car(s) show  
Non-Heterogeneous concrete:  e.g. banana(s) eater, flower(s) box

After given a thorough explanation on the concepts of ‘heterogeneity’ and ‘abstractness’, university student informants were asked to rank the test items on a seven-point scale accordingly. There was another two-set task involving judgements on the acceptability of the plural affix in each of the compound type. As regards

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141 The compounds were tested with both singular and plural NHNs.
rankings on the first set, results showed that the participants preferred plural NHN in compounds to which they had attributed a heterogeneous reading, than in those with a non-heterogeneous one. Responses in the second set revealed that the participants liked better a plural NHN in compounds which combined heterogeneity with abstractness than in the rest of them. Based on the results and following Di Sciullo & William’s (1987) definition of the head in \( X^0 \) items, A & G suggest that the plural affix –s is the head of the NHN attributing the [+heterogeneous] feature to it. On the other hand, an irregular plural NHN does not receive such an interpretation because, in that case, the head is the (plural) word itself. We return to this later.

4.3 Summary

Overall, research in the FLA of compounds focuses on developmental stages concerning the correct constituent order and the issue of plural NHN. With respect to the former, a line is drawn between the two compound types. However, although there is evidence that deverbal compounds are acquired with more difficulty than root ones, there is no consensus as to why this occurs. According to some researchers, it is the more complicated structural make up of deverbal compounds, as compared with that of root ones, which causes the dissociation. Others contend that this happens because deverbal compounds occur less frequently in the input a child is exposed to. As regards plural NHNs, the situation seems to be even more complicated. While level ordering and/or the dual route mechanism may account for the regular/irregular distinction, other factors, such as recursive properties of compounds or the semantic features of the NHN and the HN are assumed to condition whether also a regular plural NHN may be acceptable. Last, frequency of occurrence and morphological complexity are two causes for cross-linguistic difference with respect to the onset time for the acquisition of compounds.

4.4 Bilingual children’s compounds

As discussed in chapter 1, there is ample evidence showing that unlike what happens with adults, children who start learning a second language naturalistically manage to acquire the same linguistic competence as that of the monolinguals’ in the respective
language. However, there is also evidence demonstrating that children go through developmental stages which exhibit L1 cross-linguistic transfer\textsuperscript{142}, as adults do.

Nicoladis (2002a) investigates word order in production and in comprehension of novel root compounds in French and in English by French-English bilingual and English monolingual children of the same age range (3;3-4;9) in each group. The former were further subdivided into a French-dominant and an English-dominant group, according to their performance at the Peabody Picture Vocabulary Test (PPVT)\textsuperscript{143} which had been administered to check the children’s knowledge of the words to be used in the main test. The aim of this study was to examine whether and the extent to which factors such as frequency, ambiguity or language dominance cause transfer. According to the investigator, assuming that there is a causal relation between frequency and transfer, the latter should occur from English into French and not vice versa, since compounds are much more productive in the former language. So the bilingual participants should exhibit more reversals in French than in English compounds. As to the second factor, a structure is presumed to be unambiguous if there is one option for it in a language and vice versa for an ambiguous structure. In this case, transfer should take place from the unambiguous to the ambiguous language structure\textsuperscript{144}. Last if language dominance constrains transfer, English-dominant bilinguals should reverse French compounds more than their French-dominant peers.

Nicoladis used a picture naming task where there was a set of three pictures for each test item. In the first two pictures the cues for the compound members were presented separately (one in each), while the third one depicted a combination of the cues. In half of the pictures the separate cues were in the French order and in the other half in the English order. So to trigger, say, *flower chairs*, there was one picture with flowers, one with chairs and one with chairs having flowers painted on them. Moreover in some cases the cues were ordered as flowers + chairs and in others in the opposite way. The bilingual children were asked to give each picture a name both in English and in French, for example, *fish shoes* or *des souliers à poissons* (respectively). In the comprehension part of the test, they had to point to a picture corresponding to the compound named by the investigator out of an array of four pictures. In that case, the

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\textsuperscript{142} See, for example, Schwartz & Sprouse (1994), Haznedar (1997), Grinstead & Keiko (2002), Garcia Mayo, Ibarrola & Liceras (2002).

\textsuperscript{143} See Dunn & Dunn (1997) cited in Nicoladis.

\textsuperscript{144} According to Müller (1998) and Hulk & Müller (1999), as reported by Nicoladis.
fourth picture presented the trigger for the test item in a different way from that of the third picture. So for *rabbit car* there was one drawing with a car next to a rabbit and another one with a car having rabbit ears and a tail. Overall, results did not demonstrate clear effect of any of the above mentioned factors.

We would like to make some points concerning the initial hypotheses of this study. First, as regards compounds, the possibility of transfer of a more frequent structure over an infrequent one would implicate more reversals in French than in English compounds. Nevertheless recall that, as FLA studies show, word order errors in compounds are usually committed in cases where the linear arrangement of constituents in them is the opposite from the one they have in phrases. This is plausible, since we may assume with reason that learning two different word order options for noun combination is more difficult than applying the same rule both in phrases and in compounds, despite how frequently the constructions under consideration occur in the input. On the other hand, frequency could possibly affect transfer with respect to syntactic constructions, as Müller (1998) claims.

Now let us turn to the second factor which is hypothesized to exert a cross-linguistic effect. Ambiguity has been claimed to trigger transfer in the acquisition of syntactic strings. For instance, in German the object may follow or precede the verb, while in English only the former option is allowed. Now Döpke (1998, reported in Nicoladis) has claimed that English-German bilingual children demonstrate a non-target-like VO order in German because they transfer the L1 unambiguous structure to the L2 ambiguous one.

Unfortunately we do not know the facts in Döpke’s study. However, extrapolating this to the acquisition of compounds involves the assumption that children treat syntactic strings on a par with morphological ones. Furthermore, while in the case of the VO order the acquisitional task is between two options concerning the same syntactic expression, as regards compounds the situation gets more complicated. Namely the bilingual child would have to consider the order of nouns in phrases and in compounds both in English (where it is different) and in French (where it is the same). In our opinion, this seems to be a far cry from how compounds are learned. More importantly, note that ambiguity and frequency are mutually exclusive concerning compounds. That is, if the former holds, since in French N+N combination the head is on the left both in phrases and in compounds and the opposite happens in English, the
French/English (or English/French) bilinguals may transfer the French word-order of compounds in English and not vice-versa. On the other hand, if frequency conditions transfer, the same bilinguals should reverse compounds much more in French than in English.

Aside from the above, Nicoladis study shows the bilinguals make word order errors both in French and in English compounds and that, as regards the latter, erroneous responses were twice as many as those of the monolinguals’. Importantly, this study also shows that English monolinguals reverse not only deverbal, but root compounds too. Group errors in this case amounted to an average of about 20%, ranging from 0 to 67%. Nicoladis underscores that no other study has dealt with this matter directly and that by manipulating the cues as described she may have shown that previous studies as, for example, Clark et al. (1985) reveal part of the truth. Moreover she argues convincingly that results in this respect cannot be due to task effect given the discrepancy in errors between the monolingual and the bilingual group. In addition, as there were no between-group differences in the comprehension task, Nicoladis tentatively proposes that cross-linguistic effect is related only to production and not to comprehension. Regardless of this, she does not reveal rate of reversals in responses to inversed and non-inversed cues separately, so we are not in a position to know the extent to which order of presentation affected the children’s performance.

In subsequent work, Nicoladis (in press) predicts that if structural ambiguity constrains transfer “French-English children should use more ungrammatical Verb-Object compounds than English-speaking children and more grammatical Verb-Object compounds than French-speaking children”. The participants were 36 French-English bilinguals aged between 3;7 and 5;9, as well as 36 English and 21 French monolingual children of the same age range. The tasks administered were similar to those in her previous study with the difference that this time the pictures aimed at the production and the comprehension of deverbal compounds, which have a VO structure in French and a OV-er structure in English. Because in French the specific compounds refer to types of machines, the children were shown pictures such as the following. There was, for example, a machine pushing buttons aiming at the
Production (or at the comprehension in the respective task) of *pousse-boutons* or of its English counterpart *button-pusher* and the French test had items different from those in the English test. To give an example from the comprehension task, for an item such as *frappe-maison* (lit. hit-house=‘house hitter’) children had to choose among an array of four pictures. Besides the correct one which depicted a machine hitting a house, the others showed a) a house b) an ant and c) a house hitting an ant. The results from the production task verified the prediction. Nevertheless, in the interpretation task the bilinguals did not make more errors than the monolinguals, although they lagged behind the latter in vocabulary size and hence Nicoladis suggests that ‘cross-linguistic transfer is a language production phenomenon’. Importantly, because transfer does not seem to be related with comprehension she states that “in identifying ambiguous structures, it is essential to consider what children think is ambiguous”.

Let us discuss the last point in some detail. This study demonstrates that bilingual as well as monolingual children who correctly produce a compound such as *house hitter*, may understand it as ‘a house hitting an ant’ instead of ‘a machine hitting a house’. Put differently, the NHN in the English OV-er as well as in the French VO compound may be perceived as an adjunct, not as the object of the V. Based on this, Nicoladis tentatively proposes that what triggers the acquisition of compounds may not be the phrasal VO order but the phrasal adjective-noun order. In her account, if this were true, it would entail that the discussed construction is more ambiguous for L1 French children than for their L1 English peers. This is because the adjective can be either pre-nominal or post-nominal only in French, as in, for example *un gros ballon rouge* (cf. *a big red ball*). Note that, based on observational and experimental data, Nicoladis (1999) and Nicoladis (2002b) states that children make word errors in NNCs but not in adjective-noun phrases (APs) and that therefore the ordering of constituents in NNCs and in APs is “due to different processes…despite semantic similarities between these two structures (2002b: 647). Nevertheless because her informants were four year old, she remarks that probably “Children use APs and compounds as cues to each other, but at an earlier age” (ibid.).

Leaving this aside, it is important to note that the results from the study on deverbal compounds verified those concerning root compounds in the previous study as to the dissociation between production and comprehension. Crucially, Nicoladis also reports
that VO (instead of OV-er) compounds in English were produced only at 2% by the monolinguals and although such forms are attested in preschoolers’ language, it should not be considered as representative of a compounding stage children go through. Let us emphasize that if Nicoladis is on the right track, unlike certain assumptions discussed in Section 4.2.1, as well as the claims in a study we will see later, it is possible that psycholinguistically the derivation of the OV-er compound structure is unconnected with the clausal VO structure.

Another study dealing with the effect of bilingualism in the reversal of root compounds was carried out by Schneider (to appear). This involved L2 German bilingual children from a variety of L1 backgrounds: Italian, French, Croatian and Greek, aged 4;5-9;2, matched with a German monolingual group aged 5;9-8;6. The target items both for production and for comprehension were pictures, each of which depicted the cues for the two compound constituents both separately and in combination. For example, for candle ship, there were candles, a ship, and a ship with candles on it. Overall, rate of reversals in production did not seem to be linked with L1 effect. However, as the investigator himself admits, various other factors, such as age difference or language dominance may have biased the results. What may be of interest is that German monolinguals made errors at 21%. On this, the investigator remarks that the experiment seems to have induced more reversals than those made in spontaneous speech. Nevertheless, note that in the latter case the children use mostly lexicalized compounds, while the experiment involved novel compounds. Moreover, recall that the same percentage error of reversals was made by English children in Nicoladis’ study, where the French-English bilinguals had a much higher percentage of errors, and where results were not biased, unlike what happened in Schneider’s study. Hence, we may assume that monolingual children do, after all, make word-order errors not only in deverbal, but also in root compounds—at least in elicitation tasks. Leaving this aside, similar results were obtained in Schneider’s comprehension task, with the exception of the L1 Greek child. Namely, while in the production task she had the same rate of unsuccessful performance as that of the monolinguals’ (21%), her interpretations were erroneous at 50%.

perspective, we should consider them as part of morphology, not of syntax.

146 This study involved also a group of German monolinguals who had received an intensive course in Italian, which will not concern us here.
All in all, the empirical data points to potential L1 effect in the acquisition of compounds by bilingual children. However, the latter involves only word order. On the other hand, there is no information about whether L1 could also bias for the production of affixes inside compounds. This point is treated in studies pertaining to the acquisition of compounds by adult populations and is discussed next.

4.5 The Basic Variety

This section focuses on two studies carried out within a large-scale project involving various interlanguages\(^{147}\) of adult immigrant populations. Data collection was effected by means of free conversation and film retelling/commenting at three different periods in time (‘cycles’), namely, one, two and three years after the participants had arrived at the host countries.

Broeder, Extra & van Hout (1989) examined the word-formation processes in the L2 Dutch developing lexicon of two Turkish and two Moroccan immigrants. Like English, Dutch has right-headed NNCs and left-headed DP-PP-DP phrases\(^{148}\), both of which are widely used. On the other hand, the common pattern for noun combination in Turkish is right-headed NNCs while Arabic\(^{149}\) has left-headed DP-PP-DP phrases. Results from the analysis of the oral protocols show that all participants produce compounds from early on but the Turks do so to a much larger extent than the Moroccans. Additionally, while the former use NNCs in cases where DP-PP-DP phrases are the common option in the L2, the latter do exactly the opposite. Last, recursive hypotactic compounds are produced exclusively by the Turks. These facts are exemplified in Table 3.

Table 3. L1 effect in noun-combination pattern (selected from Broeder et al.1989)

<table>
<thead>
<tr>
<th>L1</th>
<th>interlanguage forms</th>
<th>L2 Dutch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkish</td>
<td>andere-mensen-garage</td>
<td>garage van andere mensen ‘other people’s garage’</td>
</tr>
<tr>
<td></td>
<td>politie-bureau-director</td>
<td>chef van het politieburo ‘director of the police office’</td>
</tr>
<tr>
<td>Arabic</td>
<td>kleren van baby</td>
<td>babykleren ‘baby clothes’</td>
</tr>
<tr>
<td></td>
<td>winkel van sigaret</td>
<td>cigarenwinkel ‘cigar shop’</td>
</tr>
</tbody>
</table>

\(^{147}\) This is the project ‘Second Language Acquisition by Adult Immigrants’ of the European Science Foundation. For details, see Perdue (1993,1993a).

\(^{148}\) Noun+preposition+noun phrases are termed ‘circumscription’ by Broeder et al.

\(^{149}\) The language of the Moroccan participants.
Drawing on the same databank, Broeder, Extra, van Hout & Voionmaa (1993) investigated word-formation processes in English, Dutch and Swedish as target languages intersecting with six other source languages. In what interests us, their findings revealed the following about the general characteristics of the early stage.

- Noun-noun word-formation process is much more productive than derivation\(^{150}\).
- The most productive noun-noun word-formation process is head-final NNCs.
- Word order of constituent nouns in compounds and in DP-PP-DP phrases, generally reflects that of the L2. This is more evident in Dutch than in English and in German.
- Word order in noun-noun composition for the learners is not as strict as word order in V-O phrases.
- No binding phonemes occur between the two members of NNCs (in languages where this is required).

Based on the above, they conclude that “compounds are not acquired as unanalysed wholes but rather reflect learners’ own productive rules” (: 70). Moreover, the more prominent L1 effect on word order in Dutch is, in their view, due to the fact that this language is more ambiguous than the other two languages with respect to a preferred order. Drawing on data from the same project, Klein & Perdue (1997) overview the general characteristics of the primary interlanguage state which they call the Basic Variety\(^{151}\) and suggest that “source language preferences emerge where the TL system offers an option” (: 312).

\(^{150}\) Note that in the three target languages involved here, while NNCs are morphologically transparent items generally resulting from the union of two lexemes which have the same form outside compounds, derivation is a more complex process because it entails affixation. If, on the other hand, compounding involves complex morphological operations, such as, for example, blending and internal root affixation, learners resort more to derivation. Olshtain (1987) shows this in a study concerning the adult acquisition of Hebrew compounds.

4.6 Markedness effects

Balhorn (1993) examines the use of NNCs and DP-PP-DP phrases with the aim of exploring the role of markedness on first and second language acquisition. Based on a classification of languages according to Greenberg’s (1965) notion of language typology, he claims that a pre-head modifier noun is a marked option because it is found only at a percentage of four in a hundred among the attested SVO languages with prepositions (like English). Based also on the UG principle according to which complements are normally to the right of the head noun, he states that “… prehead genitives, as they are left-branching adjuncts, can be considered marked” (: 55). Hence he hypothesized that when faced with an option, nonnative speakers of English will show a greater preference for NPN constructs, i.e. the unmarked option, than the native speakers. He tested his hypothesis by means of a preference cloze test where participants had to complete ten sentences using either the deleted original NNC or an equivalent NPN construct, as the example in (11) from Balhorn (: 65) illustrates.

(11) She said that the explosion broke all of the ________-windows-, (the, in)-kitchen-, 

Because results showed that the native speakers used significantly more NNCs than the non-native speakers, the investigator considers his predictions confirmed. We are not convinced that this conclusion is warranted and we will outline why below. First, as the investigator himself states, the social and discourse context probably exerted a serious bias on the participants’ options. For example, in sentences with missing NNCs such as campus speaker, KU freshman and campus community, the native speakers did better because they were more familiar with these expressions. Second, and perhaps more serious, Balhorn does not take into account the learners’ L1 typology involved in his study and neither does he provide any relevant information. So we do not know if it included non-natives whose L1 is, say, Turkish-like where right-headed compounds are very productive, as well as those whose language has no such phenomenon, and if both fared worse than the English students. Importantly,

152 ‘Genitive-Noun’ or ‘N prep N constructions’ respectively in his study. Despite the specific terminology, he explains that “s” genitive types were excluded as an additional option from the task, on the assumption that the learners would dismiss them under the influence of the commonly taught prescriptive rules against using this type where inanimate head nouns are involved.
however, the two Broeder et al. studies have shown that what is a ‘marked’ or an ‘unmarked’ form for the learners may be related not only with the L2 but also with the L1 typology.

The effect of markedness is examined also by Olshtain (1986). Her investigation involved a comparison between Hebrew and English, and, in her definition, a construction is ‘marked’ when it represents the less preferred option for noun modification. As will be shown, although this study focuses on compound translation processes, it offers useful insights to the present investigation. Recall from section 3.2.1 that Hebrew has compounds consisting of two independent bases as well as one-word compounds. Nevertheless, this language resorts mostly to two kinds of derivational process in order to name new entities. Those consist either in the “blending of a root and a noun pattern” or in “expanding an existing lexical base” (: 232), as exemplified in (12a) and (12b) (respectively) taken from Olshtain (: 232).

(12) a. tɛxtɪv < k-t-v (write) + tašdir (brief television kit < š-d-r (broadcast))
   ‘written order’

b. mišpat-an < mišpat (court case) + -an (agent affix)
   ‘lawyer’

Moreover, Hebrew seems to resort to NNCs less than English, which was verified by results in her study. This involved Hebrew-English and English-Hebrew translations of five passages, the latter being different in each case. A contrastive analysis of the way compounds were translated in those passages showed more NNCs in English than in Hebrew (87% and 63% respectively). Additionally, both in the written translation task, as well as in an oral translation task, when there was no lexicalized compound in Hebrew for its counterpart in English, participants resorted mostly to N+Adj phrases or to DP+PP+DP constructions. For example, brain surgery was translated as “nituax moxi” (N+Adj), despite the equally acceptable NNC “nituax moax”, and earth magnetism was translated as “the magnetism of the globe (earth)”. On the other hand, this did not occur at all in the translation of NNCs from Hebrew into English. Commenting on this, Bongartz (2002) states: “It is possible … that the typological propensity of Hebrew for disambiguation through case inflections motivates the choice of paraphrases” (: 55). Relevant to this is Agathopoulou’s (2000) study which demonstrates that in Greek-English translations, L1 Greek learners of
English prefer DP-PP-DP and affixal genitive phrases over NNCs. For example, they opt for *the towel of the bath* or *the station's clock* instead of *the bath towel* and *the station clock*. Consequently, she assumes that the learners’ option is affected by the L1 typology, since in Greek, also a morphologically rich language, although NNCs are very productive, the preferred option of noun modification is either by means of an adjective, or by a genitive DP\(^\text{153}\).

4.7 Level-ordering: Clahsen (1995)

Clahsen (1995) investigates the acquisition of German plural suffixes by Portuguese, Spanish and Italian immigrants drawing on the databank of a longitudinal study. In his account, from the early state those affixes that are perceived as regular by the learners (-s or -n, depending on the L1) are overused, while those perceived as irregular do not occur very often. He suggests that this is evidence for an innate learning mechanism that may be explained by Kiparsky’s (1982) Elsewhere Condition, according to which, a language acquirer resorts to a form generated by a productive rule, only in the absence of an idiosyncratic (listed) entry in the Lexicon. Moreover, he reports that what constitute default plurals for the learners are not produced inside compounds. On the other hand, irregular plurals do occur in the interlanguage compounds. Hence, he contends that “this result clearly favors a dual-mechanism model, which offers ways of qualitatively distinguishing between regular and irregular morphology over any unitary network” (136). However, Clahsen’s assumptions in this study as well as in his previous study involving data from L1 German compounds were put into question by another researcher as we will see shortly.

4.8 Evidence against level-ordering: Lardiere (1995a,b)

Focusing on deverbal compounds, Lardiere (1995, 1995a)\(^\text{154}\) disputes the validity of level ordering, based on both descriptive and empirical facts. The former regard

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\(^{153}\) Nevertheless, she concedes that translation tasks may bias strongly for a L1-like structure. For a relevant discussion see, for instance, Ellis (1994).

\(^{154}\) Lardiere’s work first appeared in her (1994) doctoral dissertation, parts of which were later refined and published in Lardiere (1995) and Lardiere & Schwartz (1997). Here we refer mainly to the published work but we also draw on her dissertation.
Spanish and Chinese\textsuperscript{155}. Unlike in English, Spanish deverbal compounds are internally inflected, with the ending of the first member being the affix denoting the third person singular of the present indicative. Moreover, count nouns in the NHN position always bear the plural suffix, although this does not determine the plurality of the whole compound, which has the same form both in the plural and in the singular number. Examples are shown in (13)\textsuperscript{156}.

\begin{itemize}
\item[(13)] a. un lavaplatos (a washes-plates) ‘a dish-washer’
\item b. un abrelatas (an opens-cans) ‘a can-opener’
\end{itemize}

Lardiere points out that since, according to level ordering, regular inflection cannot be imputed to compounds, this model cannot predict the facts in Spanish compounds. As for the second language she examines, omitting details, based on Sproat and Shih (1992), she claims that level-ordering does not hold in Chinese either, contra Packard (1990). Leaving aside the apparent descriptive inadequacy of this model, let us turn to Lardiere’s endeavour to investigate the same issue from the acquisitional perspective. She did so by means of two experiments, both of which were similar to Gordon’s (1985) and aimed at the learners’ production of novel deverbal -er compounds (‘synthetic’ in her terminology). In the first one, the participants were 15 Spanish and 11 Chinese high-intermediate to advanced adult learners of English. Those had to provide answers to questions like “What would you call someone doing X?”, with a variation between regular, irregular nouns or pluralia tantum. Both experimental groups produced both irregular and regular plural NHNs, unlike what happened in the previous studies. Furthermore, as Lardiere points out, the learners behaved similarly with respect to both types of nouns. Namely, excepting only two of them, all the rest who pluralized regular nouns also did so to a similar degree with irregular ones. In addition, there was an obvious L1 effect, since the Spanish produced significantly more plural NHNs than the Chinese. Table 4 demonstrates results from our own count of group percentages, based on Lardiere’s (1995: 42) detailed presentation of each participant’s performance.

\textsuperscript{155} Recall that Romance compounds were described in chapter 2. Nevertheless, some relevant facts and examples are repeated for the needs of the present discussion.

\textsuperscript{156} Examples and references in this section are from Lardiere, unless otherwise specified.
Chapter 4  The second language acquisition of compounds

Table 4. Plural NHN in Lardiere’s (1994) first experiment

<table>
<thead>
<tr>
<th>L1</th>
<th>regular</th>
<th>irregular</th>
<th>pluralia tantum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>61.94(70/113)</td>
<td>87.5(49/56)</td>
<td>85.71(36/42)</td>
</tr>
<tr>
<td>Chinese</td>
<td>31.39(27/86)</td>
<td>67.44(29/43)</td>
<td>69.69(23/33)</td>
</tr>
</tbody>
</table>

As shown, irregular nouns and pluralia tantum appear to have been pluralized to a greater extent than regular nouns. Marcus (1995) made his own estimation on Lardiere’s group percentage results and ran a statistical analysis which revealed a significant difference between regular and irregular plural NHNs. Hence he states that Lardiere’s disproof of level-ordering is disproved by her own data. In reply to this, Lardiere points out that the litmus for the validity of level-ordering is regular plurals inside compounds, not the irregular/regular discrepancy.

In her second experiment, the non-native participants were Spanish students, divided according to their level of proficiency into three groups, ‘low’, ‘mid’ and ‘high’. There was also a control group of L1 English speakers. This time, responses were elicited by means of a picture-naming task, where participants were shown a creature doing something. For example, it was painting someone else’s toes, and the expected response was toe-painter. The cues for the NHN varied in the same way as in the previous experiment. Results showed a large discrepancy between the natives and the non-natives. Table (3) (adapted from Lardiere) demonstrates this.

Table 5. Percentage of plural NHNs in Lardiere’s (1994) second experiment

<table>
<thead>
<tr>
<th>levels</th>
<th>regular</th>
<th>irregular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>68.2</td>
<td>52.94</td>
</tr>
<tr>
<td>Mid</td>
<td>46.94</td>
<td>53.33</td>
</tr>
<tr>
<td>High</td>
<td>33.33</td>
<td>72.73</td>
</tr>
<tr>
<td>Natives</td>
<td>0</td>
<td>4.8</td>
</tr>
</tbody>
</table>

We can observe that all learner groups produced regular plurals and that level of proficiency had an effect. Moreover, as Lardiere herself remarks, this time there was no intra-subject consistency regarding the two categories of nouns. In addition, note that the advanced group pluralized irregular nouns to a greater extent than the other two groups did. A plausible explanation here is that advanced learners have a better mastery of the specific forms. Aside from this, results here too disprove the validity of level-ordering.
Lardiere provides further evidence in favor of her claim. First, a regular plural NHN need not be idiosyncratic in meaning contra Gordon’s (1985) proposal. For example, consider (14) where, according to Lardiere (329), reservations in the second sentence, has the same meaning as that of its singular counterpart in the first one.

(14) a. Honey, call down to the reservation desk.
    b. Honey, call down to the reservations desk.

Second, when a pluralia tantum noun has an idiosyncratic meaning, it loses its inflection when compounded, like the books (=an account ledger) but bookkeeper (=an accountant). Third, she observes that, unlike bookkeeper, all attested examples with regular plural NHN in Gordon’s study concern root compounds. As she notes, results from her own search of L1 data referred to before further supports a root/deverbal dissociation, since it reveals that children may produce a regular plural affix only inside root compounds.157

Fourth, there are compounds bearing regular inflection internally, like in longer-lasting (effects), broken-hearted, bull’s eye etc, contra the level-ordering model. Fifth, this model is problematic as regards the German language too. Namely, in what interests us here, based on the analysis of L1 and L2 German acquisitional data in Gawlitzek-Maiwald (1994) and in Weneger (1994), Lardiere suggests that what Clahsen (1995) takes as the representation of the default regular plural suffix in L1 German and in the various German interlanguages is disputable.158 Moreover she points out that neither his study on child L1 compounds we discussed earlier, nor the one on L2 compounds is comparable to that of Gordon’s, because Clahsen dealt only with lexicalised root compounds, while Gordon had investigated the production of novel deverbal compounds. As we will see next, Lardiere adopts an analysis in which deverbal compounds are set apart from their root counterparts on structural grounds.

157 Lardiere is right as regards the examples in Gordon’s study. However, recall from section 3.2.3 that in Selkirk’s relevant examples there are the following: programs coordinator and buildings inspector. Despite the fact the the –or affix is not as productive as –er, in the two examples the NHN is clearly the theme of the HN, as it is the case only in deverbal compounds.

158 See also Weneger (2000) who offers further evidence against considering the –s suffix as the default plural and for the non-arbitrary nature of noun pluralization in German. Moreover, she supports that there is no feeding relationship between inflection and compounding.

Building on previous proposals and considering the L1 English data examined by Lardiere (1994), Lardiere & Schwartz (1997) (L & S) analyse deverbal compounds as lexical AGR(eement) P(hrase)s of the $X^0$ level, using a ‘syntax-below-level’ notation à la Cinque (1993). They suggest that in Spanish, the Spec(ifier) of AGR is occupied by “a null subject pro, licensed by Spec-Head agreement and identified by the inflectional features of the verb” (: 330), the latter being at the AGR head position. This pro is caseless, since, as discussed, although in Spanish deverbal compounds the verbal part bears the suffix $\text{–s}$ of the 3$^{rd}$ person singular, it is not a case-assigner. Moreover, the NHN of the compound is non-referential, despite bearing the plural affix $\text{–s}$. The structure proposed by L & S (: 331) is demonstrated in (15).

(15) e.g. lavaplatos (lit. washes dishes) ‘dishwasher’

\[
\begin{array}{c}
\text{AGR}^0 \\
\text{SPEC} \\
\text{pro}_i \\
\end{array}
\quad
\begin{array}{c}
\text{AGR}^{-1} \\
\text{AGR}^2 \\
[3\text{sg}] \\
\text{lava}_j \\
\end{array}
\quad
\begin{array}{c}
\text{V}^0 \\
\text{SPEC} \\
\text{ti}_i \\
\end{array}
\quad
\begin{array}{c}
\text{V}^{-1} \\
\text{V}^{-2} \\
\text{ti}_j \\
\end{array}
\quad
\begin{array}{c}
\text{N}^0 \\
\text{N}^{-1} \\
\text{N}^2 \\
\text{platos} \\
\end{array}
\]

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159 See Roeper (1988) and Keyser & Roeper (1992), also mentioned in chapter 2, as well as Di Sciullo (1992a, b, c), reported in L & S.
As regards English compounds, they propose the following. Because, unlike Vs, Ns cannot assign case, when the V gets nominalized and loses the relevant property, its complement NHN is no more visible in this position and therefore moves to an adjunct position where it incorporates with the V stem. Crucially, and in line with Anderson (1985) among others, they contend that “…[since] lack of nominal inflection…[is]…a hallmark of incorporating processes, incorporation…could account for the well-known constraint against plurals in compounds in English” (: 332). Moreover, they adhere to the existence of a null external argument PRO (see Section 1.3.3), which agrees with the features of the -er deverbal suffix via a Spec-Head relation. The structure suggested by L & S (: 333) is shown in (16).

\[
\text{(16) e.g. dish-washer}
\]

Now let us return to results the two experiments in Lardiere’s (1994) study, on which L & S draw. In the first one, the participants made many word-order errors and there was L1 effect, since the Spanish group fared much worse than the Chinese. In the second experiment, which involved participants with three different levels of proficiency, results revealed that deverbal compounds are acquired in a developmental fashion, similar to what happens in FLA, but not exactly the same. In order to understand L & S’s suggestion about the interlanguage structure, let us consider the
error types in some detail. ‘VO’ errors included mostly constructions in which the verb had a –er or a –ing affix, as, for example, washer/washing-hands\textsuperscript{160}, while occurrences of a bare verb form, as in wash hands, were rare. Furthermore, third-person singular verb forms, as in washes hands, were even rarer. Based on this evidence, L & S suggest that the –er/-ing suffix inside the interlanguage compounds is the morphological realization of the L1 AGR\textsuperscript{-2} head with its [3sg] features “…and still licenses pro as the external argument if the verb raises up to it” (: 338). Accordingly, they propose (: 341) that the underlying interlanguage structure has the form shown in (17).

(17) e.g. *washer dishes

\[
\begin{array}{c}
\text{AGR}\textsuperscript{0} \\
\text{SPEC} \\
\text{pro}
\end{array}
\begin{array}{c}
\text{AGR}\textsuperscript{-1} \\
\text{AGR}\textsuperscript{-2} \\
\text{SPEC} \\
\text{wash}_{j}\text{-er}
\end{array}
\begin{array}{c}
\text{V}\textsuperscript{0} \\
\text{V}\textsuperscript{-1} \\
\text{N}\textsuperscript{0} \\
\text{N}\textsuperscript{-1} \\
\text{N}\textsuperscript{-2} \\
dishes
\end{array}
\]

At the later V-erO stage, the suffixed forms may indicate that the process of nominalization has taken place, but the object has not been incorporated. When the learners finally produce OV-er compounds but the O is in a regular plural form, L & S propose that this reflects a process whereby the NHN adjoins at a further projection of the AGR\textsuperscript{0} phrase. The part of this structure that interests us is shown in (18).

\textsuperscript{160} The O+Ving forms considered erroneous were those which, according to the investigators, clearly stood for compounds and not phrases, since they were preceded by an article as in, for example, a baby-kissing.
They suggest that this occurs because, unlike incorporation, which involves movement, adjunction is a simpler process in terms of learnability, as evidenced in the L1 data with respect to root compounds, discussed before.

A point worth emphasizing in the above analysis is that it draws on a distinction between the assignment of abstract features and their morpho(phono)logical realization. In what mainly concerns us, L & S claim that, despite being plural, interlanguage NHNs are meant as generic, as it is the case with NHNs in Spanish which are generic and plural. If we understand this correctly, L & S mean that plural or no plural the learners know that the NHN in English compounds cannot be referred to independently. As it will be discussed in Chapter 6, we think that this claim is not well-founded.

Regarding L & S’s compound analysis, although it is based on a previous suggestion by Di Sciullo (1991) it differs crucially from the latter since it includes a functional category and a PRO in the structure of English compounds. Recall that Di Sciullo excludes an AGR projection not only because, as she suggests, pro is licensed by theta-marking in Italian deverbal compounds due to their $X^0$ status, but also because the 3rd person singular affix of the verbal head does not indicate real inflection. On the other hand, Lardiere (1994) claims that in Spanish compounds the verbal part exhibits a 3rd person singular form and not a stem form, as exemplified by *cuentagotas* (lit. counts drops=‘eye-dropper’) where the verb stem is *conta*, or *abrelatas* (lit. opens cans = ‘can-opener’) with the verb stem being *abrir*. All in all, this approach moves

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161 See Chapter 2.
towards an even more ‘syntactic’ analysis of compounds than the one offered by Di Sciullo, although here too compounds are considered morphological objects.

4.10 Base rule ordering: Lardiere (1998)

To explain word-order variation in compounds cross-linguistically, Beard (1996) building on Botha (1981) suggests the following principle.

(I) BASE-RULE ORDERING PRINCIPLE

The subordinate constituent of a compound N assumes a position identical with the default position of a single, unmodified, lexical adjective in a NP.

To account for some counter-evidence to the above, after an exhaustive examination of relevant facts from a large number of Indo-European and non-Indo-European languages, he revises (I) into (II).

(II) BASE-RULE ORDERING PRINCIPLE (BROP)

The subordinate constituent of a compound N either (i) assumes a position identical with the default position of a single, unmodified, lexical adjective in a NP or (ii) retains the constituent positioning of the input phrase, i.e. that of the NP, VP or AP corresponding to the compound.

According to BROP, languages which conform to (i) are ‘input’ languages, as, for example, Navajo and Dakota, while those for which (ii) holds are ‘output’ languages, as, for example, all Indo-European languages. So, in English deverbal compounds as, for example, truck driver, the head-modifier order is not according to the input category, which is the verb drive, but according to the output category, which is the nominal driver. Last, the above principle is linked with the principle of the Head-Application Default (Stump 1991), namely that “inflectional morphology operates on the head of the complex category-changing derivations”.

Lardiere (1998) investigates this proposal with respect to the Spanish-English interlanguage. Facts about Spanish compounds, as well as errors made by L1 Spanish learners in English compounds, have already been discussed. As reported by Lardiere, in Spanish DPS, adjectives canonically follow the noun, but sometimes they may precede it. However, the latter is possible only in the case of a single adjective, while A(djectival) P(hrase)s are always in postnominal position. Lardiere hypothesized that
if BROP is correct, learners who reversed English compounds would not have yet learned that the default position for APs in English is the opposite than that in Spanish. To investigate this, she used a PNT depicting creatures with various weird characteristics, to elicit AP-N structures as, for example, a green-haired person and a square-nosed person. Results showed that the learners who reversed compounds, had no problems with the correct order of AP-N structures. To account for this, Lardiere suggests the following. Beard’s proposal that all Indo-European languages have an ‘output’ parameter setting for compounding is wrong and Spanish is, in fact, an ‘input’ language, due to the known facts about VO order which is the same in compounds and in syntactic phrases. Therefore, what learners transfer is the L1 parametric ‘input’ option, not the L1 word order, “or we would expect to find head-modifier ordered NPs, as well” (: 296). To make her parameter-resetting analysis more credible, Lardiere emphasizes the existent within-subject consistency as regards word-order in compounds. Nevertheless, she also points out that BROP cannot account for data showing that L1 English children go through a stage at which they produce reversed compounds like eater flies while, on the other hand, they do not make any errors concerning AP-N order. Hence she concludes by claiming that the lexico-syntactic approach in Lardiere (1994) and Lardiere & Schwartz (1997), as discussed in a previous section, may better account for the empirical data.

In terms of descriptive adequacy BROP seems to be superior to previous analyses concerning rules about head positioning in compounds. For instance, recall from Chapter 2 that in order to support their right-headedness principle Di Sciullo & Williams (1987) introduce a separate ‘marked’ rule for left-headed Romance compounds. Another example is Lieber (1992). She proposes a principle, according to which, in a given language, heads in the VO sequence are initial or final with respect both to syntax and to compounds. As this obviously does not hold for English, to save her principle, Lieber suggests that the right-headedness of English deverbal compounds derives from the OV syntax of Old English and that while there was a change in the order of constituents in syntax, the old order was preserved in compounds. Beard remarks that if Lieber’s principle was correct, then change would have occurred both in syntax and in compounds, or else we wouldn’t find the VO order only in “a few archaic isolates such as pickpocket and scofflaw in English”.

We would like to refer to relevant evidence from a different source. Greek has gone through a diachronic change from a OV to a VO language as regards syntax but
compounds have an OV order, like in English. However, as Raftopoulou (2000: 15, 26) informs us, Tserepis’ (1902) data shows that in Homer’s epics VO compounds are about as many as their OV counterparts and, crucially, that the former type appeared in Greek before the latter. If Raftopoulou is correct, Lieber’s account for the English phenomena does not hold, since the opposite is true for the respective Greek phenomena. On the other hand, note that the data from Homer poses a problem as to the existence of a default order in compound constituents within the same language, despite the fact that the discussed compounds seem to be mainly of the exocentric form, as, for example, φερέ-oικος (=lit. carry + house, ‘a nomad’). In addition, BROP may be threatened by the existence of both right-headed (monomorphemic) and left-headed (phrasal) compounds in Greek.

Beard disputes Gafos’ claims that the latter constructions are compounds and suggests that “they are NPs with noun attributes”. Specifically he focuses on examples such as anthropos-araxni (=man-spider ‘spider man’) and plio-fantasma (ship-ghost ‘ghost ship’) and maintains that Greek phrasal compounds are “literal head-initial phrases or metaphorical head-final phrases (since) …What is the difference between a ship which is a ghost and a ghost which is a ship, or a man who is a spider and a spider which is a man?” His goes on to say that “Similar metaphorical compounds appear in English, e.g. child prodigy, boy wonder… There is no semantic difference between a child prodigy and a prodigy child”. However this is an overgeneralization because, as shown in Chapter 3, in Greek there are many phrasal compounds whose members do not have a metaphorical relation. Leaving this aside, Beard’s principle seems to be problematic on the explanatory level since, besides Lardiere’s (1998) data, it is also disproved by the data in Nicoladis’s (1999, 2002b) discussed in Section 4.4.

4.11 Complex predicates and compounds: Slabakova (1999)

According to Slabakova (1999), Snyder (1995) proposes that there is a link between the existence of productive root compounds and certain syntactic constructions in the same language. The latter refers to verb-particle, resultative and double object constructions of the type exemplified in (19a-c).

(19) a. John picked up the book. VERB-PARTICLE
     b. She danced her feet sore. RESULTATIVE
     c. She gave him a hug. DOUBLE-OBJECT
In all of these sentences the main verb (a predicate) forms a semantic unit with another predicate, in order to “jointly characterize a single event argument” (Slabakova: 644) as, for example, the Theme ‘the book’ in (19a). This two-part ‘complex predicate’ is assumed to be a X<sup>0</sup>-category item, resulting from the merging of the heads of the two constituent predicates at the level of semantic interpretation. In Snyder’s proposal, a language may have constructions like the above only if it also has productive root compounds. The compound parameter is formulated in terms of an affixal property<sup>162</sup>. Namely, a language like English, where, a predicate can be semantically affixed to another predicate has a [+affixal] value. On the other hand, say, Romance languages which have neither complex predicates of the type described above, nor productive root compounding, have a [-affixal] value<sup>163</sup>. According to Snyder, a child exposed to a language with a [+affixal] value acquires complex predicates and root NNCs simultaneously.

Slabakova investigated this in an experimental study involving 14 L1 English and 14 L1 French adult learners of Spanish of a low intermediate level matched with a control group of native speakers. According to the hypothesis, the English learners would transfer the L1 [+affixal] value, thus accepting (ungrammatical) complex predicates and NNCs in Spanish, while the French learners would not because their L1 has the same value, that is, [-affixal], as that of Spanish. Knowledge of complex predicates was tested through a GJT. With respect to compounds there were two tests, an Elicited Production Task (EPT), and a Forced Choice Task (FCT). In the former, they had to complete the answer to a question like “How do you call the food that cats eat?”, where the expected correct answer was comida de gatos. In the FCT (: 646), they had to answer in terms of a three-choice option:

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<sup>162</sup> See also Keyser & Roeper’s (1992) ‘Abstract Clitic Hypothesis’.

<sup>163</sup> Note that ‘double object constructions’ refers to cases where the V can combine with the indirect object without a preposition, which is not allowed in Romance languages, as (i) from French demonstrates.

(i) Il a donné le livre *(á) Paul.

    He has given the book *(to) Paul
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(20) Susana va a tomar clases de tango. Necesita comprarse unos zapatos especiales.
Son unos: (Susan is going to take tango lessons. She needs to buy herself some special shows. They are called:) 164.

- zapatos tango (=shoes tango)
- tango zapatos (=tango shoes)
- zapatos de tango (=shoes for tango)

The three complex syntactic constructions were tested by means of a GJT. Here we will refer to results concerning only resultatives, for reasons we explain shortly. Table 6 shows rates of successful performance in compounds and in judgements on (ungrammatical) resultatives.

Table 6. Percentage of successful performance in Spanish compounds and resultatives (Slabakova 1999)

<table>
<thead>
<tr>
<th>L1</th>
<th>EPT compounds</th>
<th>FCT compounds</th>
<th>GJT resultatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>80</td>
<td>-</td>
<td>89</td>
</tr>
<tr>
<td>French</td>
<td>49.2</td>
<td>90</td>
<td>80</td>
</tr>
<tr>
<td>English</td>
<td>52.8</td>
<td>81.4</td>
<td>50</td>
</tr>
</tbody>
</table>

As we can see, there is not much of a difference between the two groups in the domain of compounds. On the other hand, performance in the GJT showed a statistically significant difference between the two learner groups with respect to resultatives. Although these results do not seem to confirm the hypothesis, Slabakova points out that the similarity between the two learner groups as to their performance in the compound tasks may have been biased by the fact that the English participants had a good command of French. Moreover, she reports that an analysis in terms of individual performances across tasks indicates a highly significant association between knowledge of complex predicates and rate of success in the compound tasks. She also presents tables with relevant data (: 650), one of which is shown as Table 7 here.

164 The correct answer is zapatos de tango. Note that the target form of a Spanish compound is actually revealed by the occurrence of clases de tango in the sentence. We are not in a position to know if this is done on purpose, that is, to investigate the extent to which the learners cannot make the right choice despite this clue.

165 The FCT was not administered to native speakers.
Table 7. Contingency of Acquisition between NNCs and resultatives
(Slabakova 1999)

<table>
<thead>
<tr>
<th></th>
<th>Yes N-N compounds</th>
<th>No N-N compounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes Resultatives</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>No Resultatives</td>
<td>5</td>
<td>7</td>
</tr>
</tbody>
</table>

These results seem to generally confirm the initial hypothesis, since for 22 out of 28 participants, compound (de)learning appears to go hand-in-hand with the (de)learning of resultatives. Nevertheless, the important thing here is how many of the English and how many of the French learners are included in each of the four categories in the table. Namely, in this approach, we should not expect French learners within the Yes N-N compounds/Yes Resultatives category. Still, there is no way to know this from the way the data is made available. As regards statistical methods, we think that results from correlating subjective judgements on certain types of sentences with performance on compounds in two other different tasks is not a firm base upon which conclusions may be drawn\(^{166}\). Next we examine the theoretical underpinning of this study.

After a cross-linguistic examination of relevant data, Snyder (1999) states that the best diagnostic for the complex predicate/compounding connection is the existence of resultative sentences. On this criterion, he surveys seventeen languages and shows that there is a general pattern according to which, languages with resultatives also have productive root compounds. However, he also notes that Basque has productive root compounding but it has no resultatives. Note that this applies also in Greek\(^{167}\), since this language has productive root compounds but no resultatives\(^{168}\). For example, the Greek translation of the English resultative in (21) is ungrammatical.

(21) a. John hit the metal flat.

*The John sfirokopise to metalo isio

Possible grammatical Greek equivalent:

O    John   sfirokopise to  metalo mexri na isiosi

The John   hit              the metal   until   to get flattened

‘John hit the metal until it got flat’

\(^{166}\) See the relevant discussion in Chapter 6.

\(^{167}\) An account for the lack of resultatives in Greek is offered by Giannakidou & Merchant (1999).

\(^{168}\) Neither verb-particle or dative double-object constructions.
To account for similar facts, Snyder emphasizes that the complex predicate/compounding connection is unidirectional, that is, a language may have productive root compounding without resultatives, but the reverse is not necessary. Nevertheless, Snyder makes no suggestion about a third kind of value to accommodate the fact that languages like Basque and Greek are neither [+affixal] nor [–affixal]. Last, he reports that the child data he examined shows a simultaneous acquisition of compounds and complex predicates but he notes that the latter do not include the resultative construction “because of its extremely low frequency in the speech of both children and adults”. Given that the specific construction is the crux of the argument for the existence of the compound parameter, it seems to us that the latter is on shaky grounds, unless it is empirically validated.


As reported by Liceras & Diaz (2000) (L & D), to account for the difference in head directionality between Romance and English-like compounds, Piera (1995) suggests that, in the former, there is no possibility for leftward adjunction because nouns in these languages differ in their structural make-up from, say, English nouns. Namely, Spanish nouns have a word marker (WM), unlike their English counterparts, as shown in (22a,b).

(22) a. N[[perr ] o ] ‘dog’
   b. N[dog ]

The underlined vowel in (22a) marks the noun for gender. The double-bracketing is assumed to prevent movement of the noun to the left, while there is no such obstacle in the case of (22b), as shown by (23a,b).

(23) a. N[*policia [[perr ] o ]
   b. N[police [dog ]

Thus, in this approach, parameterization entails a [+/– WM] property.

---

170 All examples in this section are adapted from L & D.
L & D investigate the validity of Piera’s parameter, as well as Snyder’s [+/- affixal] parameter discussed in the previous section connected with the acquisition of L2 English compounds by adult leaners from a variety of L1 Indo-European and non-Indo-European backgrounds. As they note, Snyder’s theory entails that English is the superset language, since it has both [+affixal] and [–affixal] constructions, while Spanish, which has only [–affixal] constructions is the subset language. Therefore, and in connection with Berwick’s (1985) subset principle, N-N compounding in Spanish is a marked option. On the basis of all the above, they make the following predictions.

- If the [+/- affixal] is correct, and L1 does not play a role, then Spanish NNCs will be acquired with difficulty by all learners, or else those of the learners whose L1 has the superset option will differ from the others. Regarding word-order errors, no prediction can be made within this framework
- If the [+/- WM] parameter is correct, then the learners will start producing the target items only after a lot of exposure to the L2 input, they will make no word-order errors, and they will exhibit a symmetrical knowledge between production of left-headed compounds and correct gender marking on the head of the compound. If the [+/- WM] is not the trigger for the acquisition of compounds, then the interlanguage compounds will reflect L1 transfer and gender marking will not be target-like.

The above were tested by means of two picture-naming tasks and the participants were of three proficiency levels, that is, beginners, intermediate and advanced. In brief, results showed that NNCs is not a marked option, since those were produced by most of the learners. Moreover, as L & D claim, results indicate that the trigger for the acquisition of NNCs is not the [+WM] value but rather head directionality, that is, changing from the different L1 order to the target-line order. Hence, the [+/- affixal] parameter does not seem to have a role even when viewed within a different framework.

---

171 That is, in English complex predicates have their periphrastic counterparts and N-N compounds have their phrasal analogues.

172 A subset relation with respect to a certain structure S holds between two languages (L1, L2), if S occurs only in L1 and not in L2, in which case, S is a marked structure.

Bongartz (2002)\(^{173}\) investigates the acquisition of NNCs in relation with DP+PP+DP constructions, which she calls ‘incorporation structures’ and ‘DP+DP paraphrases’ respectively. In her analysis, which draws on the DP hypothesis\(^{174}\), a NNC like the toy factory has the same deep structure with a DP+PP+DP construction construct like the factory for toys, as regards the order of the constituent nouns. This is illustrated in (24a) and (24b) respectively, from Bongartz (: 33).

(24) a. the factory for toys

\[
\begin{array}{c}
\text{DP}_1 \\
\text{D}_1 \\
\text{The[+]specific]} \\
\text{NP} \\
\text{N} \\
\text{factory} \\
\text{PP} \\
\text{P} \\
\text{for} \\
\text{DP}_2 \\
\text{D}_2 \\
\emptyset \ [-\text{specific}] \\
\text{N}_2 \\
\text{toys}
\end{array}
\]

(24) b. the toy factory

\[
\begin{array}{c}
\text{DP}_1 \\
\text{D}_1 \\
\text{The[+]specific]} \\
\text{NP} \\
\text{N'} \\
\text{N}_1 \\
\text{factory} \\
\emptyset \ [\mu \text{specific}] \\
\text{N}_2 \\
\text{toyi} \\
\text{factory}
\end{array}
\]

\(^{173}\) We would like to make a brief note about the apparent anachronistic order of events in this section: Bongartz’s first work was her (1998) Ph.D. dissertation, which was published in 2002, so her (2000) study is the most recent one.

\(^{174}\) See discussion in Chapter 1.
On this account, in (24a) the null determiner $D_2$ has a [-specific] feature which can be checked in situ by the [-specific] $N_2$ (toys), but in (24b) the null determiner $D_2$ lacks a value for specificity (notated as $[\mu \text{ specific}]$), which renders the DP non-interpretable at LF. In languages with weak determiner features, like German and English, the $[\mu \text{ specific}]$ D-feature of the NHN triggers its incorporation with the HN. The two nouns merge under the N’ node, where the NHN can take a value for specificity from $D_1$, through feature attraction. Its surface position, either on the left or on the right of the HN, depends on the related language-specific requirement. If determiner features are strong, they can percolate to the NHN, hence there is no need for its getting incorporated with the HN, as it is the case with Romance compounds.

Note that, unlike in Lardiere’s analysis where only deverbal compounds are considered incorporation structures, Bongartz suggests that also root compounds result from a similar process. Recall that one of Lardiere’s arguments for considering root compounds as adjunction structures was that in L1 English the NHN may (exceptionally) bear the plural affix only in this category, while this is totally prohibited in deverbal compounds. To account for this, Bongartz follows a different line.

As discussed in chapter 2, it remains a mystery why in constructions such as the exercise shoes and the rubber boots, only the former has the stress pattern typical of compound nouns. Bongartz discusses related work which attempts to explain this difference in stress pattern in terms of dialectal variation, semantic criteria, discourse effects and degree of lexicalization, and concludes that none of the suggested explanations is satisfactory. Subsequently, adhering to Lieber (1992), she proposes that difference in stress pattern is due to difference in structure. Namely, a construction resembling a compound but with a non-compound-like stress denotes prenominal modification. The difference between the two structures is shown by applying one-pronominalization (25a,c) and word-order change (25b,d), as Bongartz (29) demonstrates.

(25) a. the large rubber [boots]$_{Ni}$ and the small leather ones$_i$ have been sold out.
   b. the rubber exercise shoe
   c. *the new exercise [shoes]$_{Ni}$ and the old brown ones$_i$ have been misplaced.
   d. *the exercise rubber shoe
According to Bongartz, the fact that *rubber boots* allows pronominal reference to one of its parts as well as insertion of another word between its members, while *exercise shoes* disallows either of those operations, indicates that in *rubber boots* the NHN is a prenominal modifier while in *exercise shoes* the NHN is incorporated. Thus a construction without a forestress like the *rubber boots* is assumed by Bongartz to have the same structure as that of an adjective + noun phrase. This is demonstrated in (26a,b), from Bongartz (: 27).

(26) a. the rubber boots       cf.       b. the old boots

Let us ponder on the validity of the above suggestion based on some of the facts discussed in Chapter 2. If it is correct, then *apple cake* which has a compound stress and *apple pie* which has a non-compound stress must be analysed as *exercise shoe* and *rubber shoe* respectively and would imply that the following are true:

(27) Compound
a.  (I bought) *an apple expensive cake
b.  *The expensive apple [cakes]_{Ni} and the cheap chocolate ones_{i} have been sold out.

(28) Prenominal modification
a.  ??the apple expensive pies
b.  ??The expensive apple [pies]_{Ni} and the cheap chocolate ones_{i} have been sold out.

Despite our lack of native-speaker intuitions, we think that (28a,b) are as ungrammatical as (27a,b). We assume that the same results would be obtained if we applied the tests of word-insertion and one-pronominalization to other constructions with the primary stress on the HN, such as the ones mentioned by Levi (1988: 42): *rice pudding, city parks, lake temperature, committee decision, manager efforts* etc.
Nevertheless the implausibility of analyzing the above in the same way as rubber shoes is probably due to that they are lexicalized. At this point, let us cite a relevant remark made by Jespersen: “If… we stuck to the criterion of stress, we should have to refuse the name of compound to a large group of two-linked phrases that are generally called so, such as headmaster or stone wall” (1961:135). Importantly, it has been noted that the stress pattern of certain compounds such as, for example, chicken soup and picture window varies according to dialect (Levi: ibid.). Therefore we remain skeptical as to the validity of the distinction between prenominal modification and incorporation in compounds.

The experimental part of the study under consideration involved L1 Chinese and L1 Czech learners of English, all university students. There was also a control group consisting of native speakers who were high-school graduates. In each of the two non-native groups there was a further division between intermediate and advanced students. At this point we digress to refer to some relevant facts about the learners’ L1, based on Bongartz’s description. Czech is a language with ‘free’ word order and rich morphology. In DPs, there are no overtly realized articles, although there are demonstrative pronouns, and nouns are affixed for case, number and gender. The [+/-specificity] feature of the DP is determined by its position in the sentence. Nouns may combine either in phrases, where the NHN is on the right and is fully inflected, or in a compound.

Czech compounds are single morphophonemic units consisting of two stems linked by the vowel -o- when the second stem ends in a consonant:

(29) a. ten zvěr-o-lékař  
    this animal doctor    ‘veterinarian’
    b. cti-zádost  
    honour demand       ‘ambition’

(adapted from Bongartz 2002: 65)

Compounding is marginally productive in Czech, so the common option is phrasal noun combination. As regards Chinese, this language resembles Czech in its free

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There is also very small number of non-productive compounds where the NHN bears a genitive affix.
word order and in its lack of articles. However, it differs radically from the former in that it has no affixes and hence it is called an ‘isolating’ language. Instead of affixes, there are function words, such as, for example –man, which marks plurality on persons. Chinese is a ‘topic-prominent’ language, where relationships between the members of a sentence are indicated by their linear arrangement. Both in phrasal noun combination and in compounds, the NHN is on the left. In the former construction, a dependent clitic marker ‘de’ attaches to the first noun, while, in a compound, there is nothing between the two members. The latter structure is exemplified in (30a,b), which is adapted from Bongartz (: 75).

(30)  a. yi bu yuyanxue-zhuzuo
     one CL linguistics work ‘a piece of work on linguistics’
     b. yi ci jingji- taolunhui
     one CL economy discussion-meeting ‘a conference on economy’

Last, compounding in Chinese is the preferred option over phrasal noun combination. Omitting details, based on descriptions according to which the NHN both in Czech and in Chinese is non-referential in compounds while it is referential in phrases, Bongartz proposes that her account for noun incorporation in English applies also in Czech and in Chinese. Subsequently, and in what interests us, she anticipated the following from her experimental results.

- The Czech learners would prefer phrasal noun combination to compounding, while the Chinese would do the opposite.
- Both learner groups would fail to associate noun plurality with determiner specificity features and, hence, the constraints on the occurrence of plurals inside compounds. Therefore, based on L1 typology in terms of grammatical marking, the Czech learners would avoid plural NHNs in compounds because this is disallowed in Czech. On the other hand, the Chinese would use both regular and irregular NHN in compounds because there are no inflections in their language.

\(^{176}\) With the difference that in Chinese the NHN incorporates with the HN by moving under a N’ node on the right. As regards Czech, Bongartz builds on the fact that specificity is linked to (overt) case marking. For this reason, in Czech incorporation structures “the noun must move to a position where it is c-commanded by the D to which the case feature of the head noun percolates”:( 67).

\(^{177}\) Bongartz included also hypotheses pertaining to effects of task and level of language proficiency, to which we will refer separately.
• Both learner groups would differentiate between the referential potential of the
NHN in compounds and in phrases, because this differentiation exists also in their
L1s.

• As regards word order in interlanguage compounds, the Chinese would make
errors because compounds in their L1 are left-headed, while the Czechs would not
make any such errors, for the opposite reason.

The data was selected by means of interviews, story-retelling, picture-naming (PNT)
and grammaticality judgements (GJT). In the PNT, some pictures depicted multiple
cues for the NHN and others a single cue. In the GJT, there was a binary YES/NO
option. The native speakers participated only in the two latter tasks. Besides
investigating intuitions about plural NHNs in compounds, the GJT aimed to tap the
participants’ intuitions concerning the referentiality of the NHN in compounds and in
phrases\(^\text{178}\). For this purpose it contained sentences like in (29a), matched with
sentences like in (29b), from Bongartz (: 107).

(31) a. Jessica is a car driver who drives trucks.

    b. Jessica is a driver of cars who drives trucks.

The reason for choosing this test form was the following suggestion by Olsen (1992).
The HN in deverbal compounds can be modified by a relative clause containing the
same verb as the one the head of the compound derives from when the object of the
verb is other than the NHN of the compound, as in (29a). On the other hand, this is
impossible when the noun is modified by another noun in a phrase, as in (29b)\(^\text{179}\).
As regards plural NHNs, the task included sentences in which the NHN in a
compound was either a regular or an irregular plural noun:

(32) a. The cat had claws marks all over its body.

    b. Films rating is sometimes a problem.

    c. A feet test is necessary for every mailman.

\(^{178}\) Recall that in the theory we have adopted the NHN both in truck driver and in driver of trucks is
non-referential, in the former because it is a N and in the latter because it is a generic DP and therefore
its D is –R. Nevertheless, ‘referential’ in Bongartz implies a NHN whose D has a set value for
specificity. In this section we use the term in the latter meaning.

\(^{179}\) Recall from Chapter 2 that a similar example was proposed by Williams for the same purpose and
Those were matched with similar sentences in which the NHN in the compound was in the singular. Results confirmed the first hypothesis, since the Czechs used more phrasal combinations than compounds, and the Chinese did the reverse. Moreover, this happened across all tasks. Leaving this aside, we turn to the hypotheses as regards plural NHNs. The interviews and the story-retelling task yielded almost no such forms. Nevertheless, in the picture-naming task (PNT), both learner groups produced the –s affix inside compounds, and the Chinese did so to a larger extent than the Czechs, while the native speakers did not make any such errors. Irregular NHNs were produced exclusively as singular forms in the two targeted compounds mouse trap and mouse catcher. For reasons that will be obvious shortly, next we present part of the results from the GJT\textsuperscript{180}.

Table 8. Results from the GJT in Bongartz (2002: 126)

<table>
<thead>
<tr>
<th></th>
<th>Chinese</th>
<th>Czech</th>
<th>NS\textsuperscript{181}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rejected regular plural NHNs</td>
<td>61.66 (37/60)</td>
<td>63.33 (38/60)</td>
<td>68.33 (41/60)</td>
</tr>
<tr>
<td>Rejected irregular plural NHNs</td>
<td>25 (15/60)</td>
<td>38.33 (27/60)</td>
<td>51.66 (31/60)</td>
</tr>
<tr>
<td>Accepted plural controls</td>
<td>76.66 (46/60)</td>
<td>73.33 (44/60)</td>
<td>65 (39/60)</td>
</tr>
</tbody>
</table>

We observe that there is almost no difference between the two learner groups with respect to judgements on regular plural NHNs, while the Czechs did better in irregular plurals. In addition, and, more interestingly, the NS performed more or less the same as the learners concerning regular plural NHNs but rejected irregular plural NHNs more than the latter. Last, the NS accepted compounds with singular NHN less than either of the two learner groups. Commenting on this, the investigator finds the NS results ‘puzzling’ and notes that the small rejection of regular plural NHN cannot be due to a misreading of the affix, since irregular plurals were rejected to a roughly similar extent. To state the obvious, results disproved the relevant hypothesis.

\textsuperscript{180} At this point we are not interested in the effect of the level of proficiency in English, so only total results from each learner group are included here.
\textsuperscript{181} NS=native speakers.
Next we turn to results from judgements concerning intuitions about the referentiality of the NHN. In brief, both learner groups preferred sentences like *Jessica is a car driver who drives trucks* twice as much as sentences like *Jessica is a driver of cars who drives trucks*. This would seem to confirm the related prediction, if it were not for the NS who accepted two thirds of the sentences with compounds but also accepted half of the sentences with the complex DPs. Hence, the investigator concedes that results were inconclusive in this respect, a point we take up in the next chapter. Last, neither the hypothesis concerning word order errors was confirmed, because both learner groups produced a negligible number of reversed compounds.

Bongartz (2000) picks up the issue of plural NHN within the same theoretical framework. This time, the performance of L1 Chinese and L1 Czech learners was compared to the performance of L1 intermediate and advanced German learners of English. The method of elicitation was a PNT with 22 sets of cards, 12 of which depicted multiple cues for the NHN and the rest 10 had single cues for the same purpose. German differs from the other L1 involved in this study in that it has overt articles which exhibit morphological agreement with nouns in number (as well as case and gender). As it happens also in English, the determiner preceding plural nouns has a set value for specificity. If overt, it is [+specific], if covert (that is, null), its default reading is [–specific] but it may also be [+specific]:

\[
\begin{align*}
\text{(33) a. [die Kinder]$_{DP}$ spielen} & \quad \text{‘the children are playing’ [+specific]} \\
\text{b. [Ø Kinder]$_{DP}$ spielen gern} & \quad \text{‘children enjoy playing’ [–specific]} \\
\text{b’.} & \quad \text{‘children enjoy playing’ [+specific]}
\end{align*}
\]

(: 176)

The hypotheses were formulated as follows.

**H1** Because their L1 does not associate plural morphology with specificity features, the Czech and Chinese learners will use regular plurals inside of noun+noun compounds.

**H2** The German learners will not use regular plurals inside of noun+noun compounds because their L1 associates overt plural marking with specificity features and the need for determiner feature checking.

(: 174)
In brief, the prediction was disconfirmed, since not only did the German produce plural *s inside compounds, but also they did so more than the other two groups. Apart from this, according to the investigator, L1 typology is evidenced by the following. First, the Chinese were the only ones who produced the *s inside compounds regardless of whether there were single or multiple cues for the respective responses, while the Czechs pluralized the NHN only in the latter case. Second, German was the only L1 involved in which compounds bear internal affixes, albeit (assumingly) irregular ones. Based on this, Bongartz infers that “the impairment is traceable to the L1 D-system and L1 morphology” (: 181).

From what we understand, she implies that the German learners consider L2 English NHNs as Ns, not as DPs, despite the specific results. Nevertheless, she also calls for further research in the same line, pointing out that “especially relevant will be evidence from learner intuitions about the referential properties of the incorporated noun in noun+noun compounds which coincide with the ban on regular plurals” (ibid.). We take this up in the next chapter. For now, we would like to make some comments on Bongartz’s approach.

To start with, like Di Sciullo & Ralli (1994), Bongartz employs features of functional categories in the analysis of compounds. However, while the former investigators are, as we claim, inconsistent in that, on the one hand, they consider compounds morphological objects and, on the other hand, they implicate D-features in their analysis, Bongartz states clearly that “Morphology is Syntax”182. For the sake of the argument, let us concede that this analysis is welcome as more economical, since it shows that the same rules which may account for syntactic items, also apply in the analysis of compounds. Nevertheless, first, it is not shown that the [µ-specific] feature may account for other phenomena as well and, therefore, it seems to be an ad hoc stipulation. Second, this analysis may not explain the existence of English-like compounds in a language with strong determiner features such as Greek. Last, it cannot account for irregular plural NHNs. Consider the following:

(34)  
   a. I like Ø sardines.
   b. *I like Ø sardine.

(35)  
   a. I like Ø mice.
   b. *I like Ø mouse.
The same complement-selection properties of the null D required for the regular noun in (35a,b), are required for the irregular one in (36a,b). Nevertheless, recall that B’s empirical data did not trouble her as to this matter for two reasons. First because the results from the GJT were not very enlightening in this respect (see Table 8) and therefore may be disregarded. Second because in the PNT there were only two items with irregular NHN, *mouse trap* and *mouse catcher*, about which the investigator notes that “interestingly” neither got pluralized either by the learners or by the native participants. However, if it is true that there is no restriction on irregular plural NHNs in compounds, Bongartz’s account must be severely flawed.

4.14 Connectionist approaches

In order to test the validity of the level-ordering model and of the dual route mechanism in the acquisition of English compounds, Murphy (2000) did an experimental study involving one hundred L1 French learners. Those were originally evaluated as representing three different levels of proficiency according to their grade, but only the two more advanced ones were also administered an independent diagnostic test, which did not show any important differences between the groups. There were also fifteen native speaker controls. To elicit novel deverbal compounds she followed Gordon’s (1985) and Lardiere’s (1994) method by asking questions like “What do you call a person who protects children/babies”? This time however, the responses were obtained in written form. The reason for this was twofold. First, in order to investigate whether modality would affect the performance, as compared with the other studies, and second because the plural morpheme -s is silent in the learners’ L1 French which, according to Murphy, often causes French learners’ failure to pronounce it in English.

The stimuli used for the NHN consisted of eight regular nouns and five irregular ones\(^{183}\). In brief, results showed the following. The controls pluralized irregular NHNs at 28% and regular ones at 1.7%, which was found to be a significant within-group difference. The regular/irregular distinction was significant also with respect to the learners. However, the latter pluralized regular NHNs at 40-50% and irregular ones at

\(^{182}\) From her (2000) article titled “Why Morphology is Syntax”.

\(^{183}\) There were also three pluralia tantum nouns in the stimuli but relevant results are not revealed in this study because its focus was on the regular/irregular dissociation.
about 75%. Moreover there was no language proficiency effect. Aside from this, some of the participants did not differentiate between regular and irregular nouns, either by pluralizing them to the same extent, or by consistently adding an –s both to the regular and to the irregular nouns.

Consequently Murphy supports that the results disprove the validity of both the level-ordering model because regular plural s is produced inside compounds and of the dual route mechanism (DRM) because of the non-differentiation between regular and irregular plurals. The investigator also reports that “46% of the responses to regulars patterned one way (where plurals were included) and 54% patterned in another way (where plurals were excluded)” (182). She goes on to say that this is not predicted by proponents of the DRM like Marcus et al. (1995) according to whom “the computational, symbolic system, said to govern regulars is blind to individual properties of words” (ibid.). In Murphy’s viewpoint compound production is triggered solely by the input. More specifically, with respect to results in Gordon (1985) she proposes that L1 English children’s omission of plural affixes inside compounds is due to the fact that even at the age of 3 they have had enough exposure to the language to notice that “there are no regular plurals found in the middle of words” (189). On the other hand, she attributes the L1 French participants’ production of regular plural NHNs to lack of enough exposure to English and to a cross-linguistic effect. Murphy claims that the latter cannot be due to the form of French deverbal compounds because in those there are no plural affixes inside the compounds (e.g. essuie-mains) but it may be due to the form of the French root compounds in which the NHN takes a plural affix (e.g. timbres-poste). Last, as NHNs, the shoe, hand and tooth were pluralized to a significantly higher degree than other nouns in the stimuli. In the investigator’s view, this is more proof in favour of her standpoint, since the particular nouns usually occur more often in the plural than in the singular form in the input.

To turn to another study, Hayes, Murphy, Davey, Smith & Peters (2002) hypothesized that English children omit the plural affix -s from inside compounds because they learn from the input that the middle of a noun+noun string is the position for the genitive affix ’s, which also explains irregular plural NHNs since those do not end in -s. To investigate this hypothesis they trained a computer neural network model (NNM) on data-based child-directed speech and showed that the NNM can do the following:
“learn that [–s] is associated with word-finality” (105)

predict what kind of word category is more probable to follow another word category depending on whether the latter ends in -s or in ’s

disambiguate between plural nouns and possessive nouns given minimal semantic information about “the numerical context in which the phrase is uttered” (106).

To test the above, Murphy & Hayes (M & H) (2002a) ran an experiment where 13 L1 Chinese participants of advanced level in English and 22 native speakers (NS), all adults, were asked to respond on-line to contextualized compounds with an /s/ in their middle. The /s/ was either the genitive affix (e.g. taxi’s driver) or the plural affix (e.g. cats feeder). The stimuli also included compounds where the NHN ended in /s/ (e.g. grass cutter), in a non /s/ phoneme (e.g. drink server) as well as noun phrases in which the noun was preceded by an adjective with a comparative or a superlative affix (e.g. biggest seller). The hypotheses were as shown below:

A. If possessive /s/ is allowed within noun-noun sequences, and plural /s/ is not allowed, then subjects should find possessive /s/ easier to process within noun-noun compounds.

B. If learning about this ‘competition’ depends on exposure to input, then L2 learners, with less exposure than NSs, should show a different pattern of results.

Results from reaction time measurement revealed that the NS process faster a) compounds without an /s/ than compounds with an /s/ inside them, b) compounds with /s/ genitive than compounds with /s/ plural, c) compounds with a regular NHN than those with an irregular one and d) all NHNs with regular morphology (except plurals) than irregular plural ones. On the other hand, the learners did not exhibit any such differences in reaction time. In M & H’s view, this verifies their hypotheses and disproves the theory of the dual-route mechanism because the latter cannot account for the lack of the regular/irregular dissociation on the part of the learners.

The studies presented in this section are within the so-called ‘connectionist’ framework, which denies the existence of innate learning mechanisms in general. Research in this field is concerned mainly with the domain of morphology and more

184 This account is based on M & H’s power-point presentation at the SLRF 2002 which Murphy kindly sent us.
particularly with the regular/irregular dichotomy. However, as regards the latter, studies involving patients with various kinds of impairment have shown that there is such a thing as dissociation between regular and irregular forms, a point taken up in the last chapter. Pending the empirical results in the present study, we abstain from any further comments here.


This section presents one more study investigating the validity of the level ordering model (LOM). Urano (2001, 2002) elicited novel English deverbal compounds à la Gordon (1985) from a group of nineteen Japanese adults whose level of proficiency in English ranged from intermediate to advanced. According to Urano, compounding of the X-doer type is very productive in Japanese and the NHN is not marked by any of the plural suffixes in the language, such as -tati, -ra, and -domo.\footnote{All examples are adapted from Urano.}

(36) Japanese English
N-Vroot N-Ver
a. hae-tataki (‘fly-hit’) fly swatter
b. *hae-tati-tataki (‘fly-pl hit’) *flies swatter

Results showed that first, regular NHNs were pluralized at 46% and that only one participant consistently omitted the /s/ from inside compounds, which disproves the LOM as it happened in the studies previously mentioned. Second, the learners fared significantly worse with respect to irregular nouns. Commenting on the former type of results, Urano tentatively suggests that regardless of whether LOM is innately available, the difference between the learners’ performance and the children’s performance in Gordon’s study may imply that SLA is fundamentally different from FLA as Bley-Vroman (1989) proposes. Furthermore he disputes Murpy’s input-based account, by claiming that if it is correct, then at least the very advanced learners in his study would not have produced plural /s/ inside compounds, given also the fact that unlike in Murphy’s (and Lardiere’s) study no L1 effect can explain this.

We find Urano’s criticism against Murphy justifiable. On the other hand, we remain skeptical about his suggestion regarding the difference between FLA and SLA. In our
view, the crux of the matter is whether the interlanguage forms are compatible with UG principles. However, Urano does not go deeper into the reason why his participants produce the non-native-like forms. For instance, although similar results are obtained in Lardiere’s and in Bongartz’s studies, the analyses of the interlanguage structures offered in both studies are shown to be UG-constrained. Moreover, note that Urano does not discuss the difference between regular and irregular plural NHNs revealed in his results. This dissociation is important in that it points to the validity of the dual-route mechanism in SLA, unlike the claims by Murphy as well as by M & H.

4.16 The central issues

Research in the SLA of compounds has focused on the following:

(i) The role of the L1/L2 typological intersection in the choice between compounds and phrasal noun combination or the extent to which L1 compounds can be considered a marked option for the learners, and how this affects the interlanguage compounds.

(ii) L1 effect on head-directionality in L2 compounds.

(iii) Testing proposals for ‘compounding parameters’.

(iv) Plural NHNs in interlanguage compounds.

Excepting Piera’s [+/- WM] property and Snyder’s [+/- affixal] parameter, insights from all the discussed studies will be employed for the formulation of our hypotheses. Before we do the latter, we will further elaborate on some of the issues previously raised.

4.16.1 The regular/irregular dissociation

In Section 4.8 we presented Lardiere’s arguments against the level-ordering model (LOM) mainly as to its tenet concerning the ban on regular plural NHNs. However she maintains that LOM offers a poor account also regarding irregular plural NHNs for reasons we explain next. As Lardiere reports, Gordon (1989) found that children accept at a high rate derived words (presumably unknown to them) which are complex and compositionally rather opaque as, for example, direction. This result is not
predicted by LOM because the derivation of such words requires the addition of a host-deforming affix which belongs to level 1. To account for the results in his study, Gordon suggested a revision of the model. Omitting details, as Lardiere shows he was justifiably criticized for the fact that his revision did not conform with the essence of the specific theory of Lexical Phonology within which level ordering had been suggested in the first place. The latter criticism came from Hannah and Stotko (1993) who offered a different account for Gordon’s results by means of their definition of ‘phonological word’ (PW). In short, according to this an affix may count as a PW depending on the kind of phonological processes involved in word formation. Consider (33a,b) from Lardiere (: 47).

(33) a. [direction]PW
    b. [direct]PW [ness]PW

This account is based on the fact that in (33a) the word is phonologically opaque, while the one in (33b) consists of two distinct phonological units. Based on this Lardiere (ibid.) claims the following.

Within this approach, the ‘mismatch’ between phonological and morphological structure characteristic of irregular plurals makes them more ‘difficult’, at least initially, for children to analyse, and may account for why English L1 children produce irregular plurals in compounds whereas adults do not.

Moreover, she points out that Hannah and Stotko’s analysis is more congruent with the dual mechanism model, according to which, as discussed, irregular forms are listed as unanalysed forms, while regular ones are produced by the application of a productive rule. In addition, given that level-ordering makes various other claims, the two models should not be considered as two versions of the same theory.

Related research offers more examples as to the inadequacy of level-ordering\(^\text{186}\). For instance, in Spencer’s (1991) account, Aronoff (1976) remarks that in the word organization we have the level 2 affix -ize inside the level 1 affix -ation, while according to this theory rules apply in a downward fashion. However, rejecting LOM altogether leaves us without an explanation for the occurrence of irregular plural

\(^{186}\) For a survey, see Spencer (1991).
NHNs in compounds. This does not seem to trouble Lardiere since she downgrades the latter phenomenon by emphasizing that those of her participants who pluralized regular NHNs, consistently did so with irregular ones. Nevertheless recall that this occurred only in her first study, while, in the second one, there was no such consistency. Also recall that the more advanced learners produced fewer regular plural NHNs but more irregular ones than the other two groups (see Table 5: 138). A solid basis for her standpoint might be the fact that the native controls in her study produced irregular plural NHNs only at 4.8%. Moreover, as she remarks, this happened only in cases where the cue for the NHN was *teeth*, which she accounts for by suggesting that the specific item has a ‘collective’ interpretation (: 47). But while on the one hand her argument against the validity of level-ordering is basically the phenomenon of regular plural NHNs in the interlanguage compounds, on the other hand she does not take into serious consideration the more extensive pluralization of the irregular NHNs by the learners, regardless of the native speakers’ performance.

Moreover to account for the discrepancy between children’s performance in Gordons’ (1985) study and the performance of the adult native participants’ in her study, Lardiere (1995: 47) suggests that “children do not seem immediately to ‘recognize’ the morphological plurality of irregular nouns, although they may recognize that they are semantically plural”. This is consistent with her explanation about the occurrence of *teeth* in her own data, as mentioned. Now the only way to tell whether Lardiere is right would be further research about whether native adults discriminate between regular and irregular plural NHNs in compounds. This has been the focus of the study we discuss next.

Pinker & Prince (1994) and Pinker (1999) disclose the following results from a research by Sengas, Kim, Pinker & Collins (1991). In this, sixteen L1 English adults were asked to rate the naturalness of regular and irregular plural NHN in novel compounds embedded in sentences like those shown below (from Pinker: 182).

(37) a. Hordes of rabid rats are swarming out of the Callahan Tunnel since construction began there. The governor has given a *rats-alert* advising people to stay in their homes.
   b. My cat Muffin left three dead mice on my doorstep this morning. She’s a pretty good *mice-hunter*, some with a regular and others with an irregular plural NHN.

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187 As mentioned by Pinker, those were later included in an unpublished manuscript by Sengas, Kim & Pinker (1999).
The latter were “rated as far more acceptable…(and) …Moreover, the effect was independent of collectivity” (P & P: 338). In other words, while the acceptance of teeth or feet could be accounted for by assuming that they receive a collective reading, the same argument does not hold in the case of mice. Besides this, while hands may also call for a collective reading, we are informed that people liked feet crusher significantly more than hands crusher. From this the researchers conclude that “there is a robust, unconfounded regular/irregular distinction in compounding, just as Gordon and Kiparsky assumed”(ibid.). In what concerns us, Pinker (1991: 532) had made the following testable predictions:

(i) Irregular forms should be strongly affected by properties of associative memory such as frequency and similarity, whereas regular forms should not.
(ii) Irregular forms should be available as the input to other word-formation processes, whereas regular forms should not\(^\text{188}\).

In view of the experimental evidence mentioned before, Pinker (: 180) proposes the following schema which can account for compound formation:

\[
\begin{array}{cccc}
\text{Memorized roots} & \rightarrow & \text{Complex word formation} & \rightarrow & \text{Regular inflection} & \rightarrow & \text{Syntax}
\end{array}
\]

This may be reminiscent of level-ordering but there is the important difference that its first box, call it level or stratum, does not involve affixes. Pinker states that it should be taken merely as “laying out the logic of word-formation” (: 181). Moreover, to account for the occasional appearance also of regular plural NHNs, as well as that of phrases inside compounds, he suggests that there is a kind of ‘loop’ whereby those forms are generated in syntax and “routed backward to the word-formation box” (: 183), which he schematizes as shown next:

\(^{188}\) His third prediction which will be touched upon in the last chapter, regarded regular and irregular verbs.
Notwithstanding the above, Lardiere’s account of (deverbal) compound formation is not threatened by the occurrence of irregular plurals inside compounds. Since she assumes that the NHN is base-generated as a plural form and loses the plural inflection as a result of its getting incorporated, nothing precludes an irregular NHN in the premodifying position, given also that the motivation for movement in her approach is the inability of the nominalized head to assign case. On the other hand, the possibility of irregular plural NHNs in compounds totally disprove the analysis proposed by Bongartz (see pp. 140-141).  

4.16.2 The root/deverbal dissociation

As discussed, some researchers support a distinction between deverbal and root compounds and others do not. Among the former there are those who also suggest that root compounds are adjunction structures, that is, they are base-generated in this order, while deverbal compounds result from movement of the NHN which incorporates with the verb. This implies that children use phrasal structure to learn how to order deverbal compounds, while they do not do this with respect to root compounds. Support for the specific claim is children’s reversals in deverbal compounds, which occur at an intermediate developmental stage. Another concomitant of the dissociative analysis is that the plural affix is not allowed inside deverbal compounds because those are incorporation structures, while it may (albeit exceptionally) occur in root compounds which are adjunction structures. Since the main representative of this claim is Lardiere, let us consider the data she presents with respect to this distinction. The root compounds with regular plural NHN produced by

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189 In a pilot test conducted for the purposes of the present investigation, participants were asked to give names to pictures containing the combination of two items and aiming at the production of novel root and deverbal compounds. Results showed that the adult native English speakers pluralized regular NHNs at 3.7% (3/81) and irregular NHNs at 33.33% (15/45). We take this as evidence in favour of Pinker’s account.
one of the children (Sarah) cannot be compared against deverbal constructions, since she did not produce any such forms at all. As to the other child (Abe) a comparison between the two compound categories should involve only the root compounds produced after the age at which the first deverbal compound was uttered. Table (9) demonstrates the data.

Table 9. Novel root & deverbal compounds produced by Abe (3;6-4;10) (selected from Lardiere 1994, 1995)

<table>
<thead>
<tr>
<th>Root</th>
<th>deverbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. chocolate balls candy</td>
<td>rattle snake killers</td>
</tr>
<tr>
<td>2. eggs cartons</td>
<td>meat-eater</td>
</tr>
<tr>
<td>3. monarchs butterflies</td>
<td>building crasher</td>
</tr>
<tr>
<td>4. bugs giraffe</td>
<td>bird eater</td>
</tr>
<tr>
<td></td>
<td>star maker</td>
</tr>
<tr>
<td></td>
<td>[baseball players]</td>
</tr>
<tr>
<td>5.</td>
<td>ghost chaser</td>
</tr>
<tr>
<td>6.</td>
<td>hole diggers</td>
</tr>
<tr>
<td>7.</td>
<td>meat-eating dinosaurs</td>
</tr>
</tbody>
</table>

First let us clarify that since Lardiere is not concerned with root compounds she does not make available all of the relevant forms produced by Abe during this period and singles out the ones with a plural NHN. On the other hand, all the deverbal compounds the child produced are the ones included in the table. We have struck out the items which do not count with respect to what interests us here either because their NHN is a mass noun or because they may have the recursive structure allowing for the plural affix, as discussed in Alegre & Gordon (1996). For example, the first root compound may be analyzed as [[potato heads]apples]. This leaves us with only six compounds as the data on which Lardiere’s argument is based. However, note that since we are not in a position to know the frequency of the occurrence of plural NHN in root compounds, no comparison between the two categories can be made. Namely, as Lardiere reports, root compounds were much more frequent in the child’s data. Therefore, the three items with plural NHN may represent a very low percentage of such examples and, anyway, no real comparison can be made, since this should be based on a similar number of items for each of the categories.

Turning to Gordon’s study, we see that the four-year olds pluralized the regular NHN in deverbal compounds at 1.8% (1/55) and the five-year olders did so at 3.6% (2/55).
Although this is indeed a very low percentage, it shows that given a large number of deverbal compounds, plural NHNs may occur even in this category. However, as Gordon did not include root compounds in his study, again, no comparison can be made between the two categories as regards pluralization of the NHN. Therefore, the experimental evidence under discussion is slim to support a root/deverbal dissociation in this respect. On the other hand, recall that attested compounds are assumed by some to bear evidence to such dissociation. However, deverbal compounds are considerably less frequent than root ones and there are no relevant corpus-based frequency counts that could reveal a comparison between the rate at which a plural NHN may occur in a root compound and the rate at which it may occur in a deverbal compound. So we think that attested compounds do not provide solid evidence for the distinction under discussion. In addition, let us report here that in our pilot study of the only two compounds with regular plural NHN produced by the native speakers one was a root compound and the other one deverbal: carrots ring (twice) and snakes hunter (once). In view of the above, we are in favour of a uniform analysis concerning the two compound categories as regards the underlying position of the NHN.

What is left is the difference between root and deverbal compounds in that the NHN may be saturate the internal theta-role of the HN only in the latter. On this Baker (1998) states: “I am not convinced that the division between root and deverbal compounds is as sharp as it is sometimes presented as being” in view of the fact that a noun is likely to “take an argument even though it is not derived from a verb” (: 197-198). He demonstrates this by comparing the two categories as shown next.

(38) a. *John is a truck-driver of 14-wheelers.
   b. ??the piano-leg of the Steinway baby grand.

In Baker’s account, the awkwardness of (38b) indicates that like in the deverbal compound (38a) also in the root compound the NHN is an internal argument and that therefore “the head seems to assign a thematic role to the nonhead” (: 198). We concede that one may object to equating root with deverbal compounds in this way. Nevertheless the root/deverbal similarity can be viewed also on different criteria. Recall that as it was demonstrated by Nicoladis studies, children often attribute an adjunct-head instead of a complement-head structure to OV-er compounds. Moreover, contra previous research, the same investigator states that in her experiments VO
forms do not generally occur and therefore such constructions should not be construed as a stage in the acquisition of compounds. Last, the same researcher, as well as Schneider (to appear) show that children reverse the order also in root compounds. Thus, given also the facts discussed in previous paragraphs, we will assume that root and deverbal compounds should be viewed in a unified manner and we propose the following as regards their structure. In English compounds, because the NHN is a bare stem and therefore a caseless noun in complement position, it is not visible at LF. So before it enters syntax, that is, within the morphological module, it moves to an adjunct position and incorporates into the HN. On the other hand, in cases where the NHN is, by exception, a regular plural (or a phrase) we take it that this is formed in syntax and enters the compound through the kind ‘loop’ suggested by Pinker (1999). As regards Romance-like compounds, in line with Di Sciullo & Williams (1987) we assume that those are formed in syntax and subsequently get reanalyzed as compounds. Also we adhere to Di Sciullo & Ralli’s (1994, 1995) suggestion that in the latter type of compounds the NHN is in an adjunct position at LF. Last, irregular plurals may occur inside compounds *par excellence* by virtue of their being stored in memory together with regular stems.

In view of the above, the structure of compounds we propose is based on the following: a) the L1 acquisition data b) our standpoint that features of functional categories do not have a role in the analysis of morphological items and c) that complex-word formation should not be accounted for by syntactic rules and principles in a strict sense (Chomsky, 1970). Subsequently we take it that deverbal compounds in English and in Greek have the structure shown in (39b) which derives from and (39a):  

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190 But cf. Ackema and Neelman (2002) who propose that Germanic deverbal compounds have the structure \[[N [V TRUCK DRIVE] ER]\] and that these compounds are derivatives of N-V forms. In their approach, although non-synthetic compounds like *to breast-feed* exist, the formation of synthetic ones such as *to truck-drive* is blocked unless not further derived as ‘truck-driver’. Moreover, as reported by A & N (: 21), previous research has shown that ‘children can interpret *writer with a candy bar* as ‘someone who writes with a candy bar’, that is, as corresponding to a morpho-syntactic structure \[[WRITE WITH A CANDY BAR] ER\]”. However, because the focus of this paper is not on compounds, there is no further explanation of the above and unfortunately we lack access to the study where a complete account is offered.
(39) e.g. shoe exporter, orghan-o-pextis (=instrument player, ‘musician’)

Similarly, root compounds in English and in Greek have the structure shown in (40b) which derives from (40a):

(40) e.g. toy factory, keras-ó-pita (< kerási (cherry) + píta (pie) )

Based on the discussion above and in the previous chapters, next we present our research questions and hypotheses.
4.17 Research questions and hypotheses

The crucial issues addressed here are the following:

- Why do Greek learners of English produce compounds with the plural or with the genitive affix inside them?
- Does the regular/irregular distinction hold? If so, what theory can account for this on the basis of the L2 data?
- Is there L1 transfer? If so, what is its nature and, furthermore, what are its effects?
- If the interlanguage structure is non-native-like, is it still UG-constrained?

Before presenting the predictions formed on the basis of the theoretical assumptions presented earlier, let us repeat the differences concerning noun combination between the L1 and the L2 discussed in Chapter 3.

In Greek case and phi-features are strong and hence they have a PF reflex after being erased. Additionally, strong agreement between all members of the DP dependency is overtly manifested by means of resumptive case and phi-features. So [number] is marked not only on the noun where this feature is interpretable, but also on the article and the adjective where it is non-interpretable. Moreover case, which is a generally uninterpretable feature, has a PF reflex not only on the item it is associated with, i.e. the determiner, but also on the rest of the members of the dependency. In English, the above features are weak, hence [number] is marked only on nouns and the case feature is not overt\(^\text{191}\).

Additionally, in Greek phrasal noun combination when the NHN is generic and [-partitive], the NHN can be in the genitive a) due to the strong D feature of a covert functional category P when the HN is a root nominal and b) because the NHN is directly assigned the genitive case when the HN is a deverbal nominal. In the respective English construction, when the HN is a root nominal, the NHN cannot be in the genitive because the D feature of P is weak. Neither can the NHN be in the genitive when the HN is a deverbal nominal because in this language deverbal nominals cannot directly assign case to their complement nouns, the latter being assigned case via a preposition.

\(^{191}\) Excepting pronouns.
As regards compounds in the two languages, those are structurally the same but differ in their overt realization mainly in that while both in English and in Greek the NHN is a stem, stems are not phonological words in Greek but are in English. Moreover, learners of English do not generally have negative evidence as to the stem status of the NHN in terms of explicit instruction in language classes, a point elaborated in the final chapter. In addition, only in English the NHN may be a regular plural noun (albeit exceptionally) or an irregular plural noun or even a phrase. Based on the above mentioned L1/L2 differences, and taking into account the research questions, we make the following predictions concerning the results from our experiment:

If we assume that (i) the learners perceive the L2 forms under investigation as compounds, (ii) (positive or negative) L1 transfer occurs in adult language acquisition and (iii) Greek compounds are structurally the same as those in English, we predict the following:

A. (i) The learners will not produce/accept either the plural or the genitive affix inside compounds.
   (ii) They will not deem it possible for the NHN to refer independently in a compound.
   (iii) They will not have problems with head directionality in compounds.

However, because the overt realization of features in compounds is not the same in the two languages, it is possible that the learners will not perceive the L2 compounds as equivalent to their L1 analogues. That is, the overt differences between English and Greek compounds may block positive L1 transfer effects. In that case, we predict the following:

B. (i) The learners will produce/accept the plural affix inside compounds.
   (ii) Their judgements may exhibit the effect of the L1 (resumptive) number agreement features between the DP members.
   (iii) The learners will produce/accept the genitive affix inside compounds due to the different parametric options between English and Greek as regards case-marking of the NHN in complex DPs.
Furthermore, if B(i-iii) hold, this implies that the learners perceive the NHN as a DP. In this case,

(iv) They will deem it possible to refer independently to the NHN in a compound.
(v) They will probably have problems with head directionality in compounds.

If the predictions in B are verified, then we may expect persistent problems even at the advanced level of the L2 acquisition because the relevant L1/L2 differences concern parametric values in terms of formal features of functional categories. Irrespective of the above, we predict also the following:

C. (i) If our analysis in Chapter 4 is correct, root and deverbal compounds have a uniform structure. Therefore, the learners and the native speakers will not treat the two categories differently. That is, whether they accept/produce regular plural NHNs or not, they will do so to the same extent in root and in deverbal compounds.
(ii) If the dissociation between regular and irregular plural nouns is psycholinguistically correct, both the learners and the native speakers will produce/accept irregular plural NHNs significantly more than regular plural NHNs.

These predictions are discussed on the basis of the results of the study in Chapter 6.
CHAPTER 6: INTERPRETATION OF THE RESULTS, DISCUSSION AND CONCLUSION

6.1 Introduction

The focus of this chapter is the interpretation of the experimental data. In Section 6.2 an attempt is made to probe the significance of the -s plural affix and of the -s genitive affix inside the interlanguage compounds. Section 6.3 deals with the nature of L1 effects, which is partly based on the experimental data regarding irregular plural NHNs. Section 6.4 analyses the learners’ performance concerning the word order in compounds and Section 6.5 presents our proposal about the interlanguage structure. Section 6.6 picks up the discrepancy in the participants’ performance between regular and irregular NHNs and also fulfils the previously made promise to present a non-nativist theory about the dissociation between regular and irregular nouns in compounds, as well as regular and irregular morphology in general. This so-called ‘connectionist’ theory is evaluated in view of both relevant results in the present study and empirical data from studies with a nativist orientation. Section 6.7 explores the import of the present research on previous studies of compounds and the SLA theories adopted in them, combined with the implications of our research for SLA theories in general. Section 6.8 offers our conclusions and a brief discussion about whether our results support a dichotomy between root and deverbal compounds, to what extent our relevant prediction is correct and whether this has implications for the theoretical analysis of compounds. Section 6.9 completes this thesis by making certain suggestions for further research in the acquisition of compounds.

6.2 The significance of the affix inside the L2 compounds

Results in the present study show that, generally, the learners produce and accept the -s plural affix and the ’s genitive affix inside English compounds. According to our predictions, this may indicate that they do not perceive the L2 compounds as equivalent to the L1 compounds but rather as complex DPs. This surmise is based on the following fact. Unlike in the case of, say, German compounds, whose NHNs may bear a plural affix (albeit an irregular one), NHNs in Greek compounds are bare stems. Therefore, while regular plural NHNs (henceforth RPNHNs) in German-English compounds may (arguably) be due to L1 effect of a surface kind (Bongartz
2000), no such effect can be called upon to justify hypothesizing that, despite their performance, the Greek learners’ mental representation of the L2 compounds is similar to that of the natives’.

To start with results from the PNT, the phonological environment did not exert any effect at all regarding the occurrence of /s/ (see p. 173) and out of all the elicited compounds with /s/ inside them 85% occurred in responses to pictures which contained multiple cues for the NHN. Moreover, results from the GJT reveal systematic contextual variability in the performance of the learners (but not of the NS) regarding their preference for RPNHNs. We believe that this is strong evidence in favour of the claim that the discussed affix signifies plurality of the NHN in the interlanguage. The next question is whether it is possible that despite producing/accepting RPNHNs the learners know that the constructions those belong to constitute compounds. Recall that despite the occurrence of the same non-target-like constructions in all other related studies, to the best of our knowledge, so far no one has questioned the compound nature of the interlanguage forms. Nevertheless, no one else before has tested the acquisition of compounds through a multiplicity of tasks, with the notable exception of Bongartz (2002). She has also been the only one who wondered whether the learners know that the NHNs are not DPs in themselves\textsuperscript{217} and hence called for further research in this area.

Following this call, we demonstrated that besides the production/acceptance of RPNHNs, the learners differ significantly from the controls in their judgements concerning the possibility to refer separately to the NHN. Moreover, the results showed developmental effect (albeit not statistically significant). Given also that there was no between-group difference concerning the distractors, we may assume that this test indeed reveals a difference between the NS and the learners in the issue under investigation. In addition, a comparison between results in the RJT and those in the GJT concerning RPNHNs (Table 1) seems to strengthen our argument.

<table>
<thead>
<tr>
<th></th>
<th>GJT</th>
<th>RJT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>87%</td>
<td>82%</td>
</tr>
<tr>
<td>ADV</td>
<td>60%</td>
<td>61%</td>
</tr>
<tr>
<td>INT</td>
<td>40%</td>
<td>51%</td>
</tr>
</tbody>
</table>

\textsuperscript{217} Although in Bongartz’s terminology NHNs in compounds are DPs too, albeit with a D with no specificity feature.
However, there is a caveat regarding whether we may indeed establish a connection between learners’ perception of the referentiality of the NHN on the one hand and production/occurrence of plural NHNs on the other hand. Note that the strength of this relationship may not be gauged by statistical analysis because this would be methodologically wrong. As pointed out by Helmond & van Vugt (1984: 26),

“by correlating one group of subjective judgements with another group of subjective judgements, no definite statements about causal relationships between two variables can be made, as it is always possible that a third variable is causally related to both of the first two and has produced the relationship observed between them”.

Still we have independent evidence in favour of our claim. According to our predictions, if learners perceived the NHN in the L2 compounds as a word and, by extension, as a DP, then the interlanguage constructions would probably exhibit certain types of L1 effects. This point is taken up in the next section.

6.3 The nature of L1 effect

By hypothesis, an L1 effect would manifest itself in the form of (resumptive) number agreement features between the DP members as well as the production/acceptance of s genitive inside compounds. We will start from the first type of effect. Recall that the PNT was manipulated so as to check whether learners would pluralize the NHN more in responses to pictures where there were multiple cues also for the HN, than in responses to pictures where there was a single cue for the HN. The statistical analysis did not reveal a significant difference for the HN. Note, however, that participants in all groups sometimes produced singular words for the HN in responses to pictures with multiple cues. For example, they said *carrot eater or biscuit tin* while there were two people eating carrots and three tins in the respective pictures. The omission of the -s from the HN was at the rate of 21% for the NS, 23% for the ADV and 35% for the INT. Also, especially as regards the INT, in some cases it was not obvious whether the elicited items were indeed names for the whole picture or whether they were the mere juxtaposition of words corresponding to separate names for the cues. For instance, sometimes a participant looked at the picture and started by uttering the indefinite article, paused for a second, then produced the name for one of the cues, paused again, and finally uttered the name for the second cue as well. Often this
string of words was repeated faster, which gave the impression that the final response indeed corresponded to a complete name for the picture. For example, the learner said “a……bulb……box” and then “a bulb box”. However, the repetition did not always occur. Also, a small number of the INT used what was arguably the indefinite article regardless of the number of cues for the HN, as in “this is a….carrot….dishes”. Given the above, we believe that this type of task does not lend itself to checking the possible L1 effect of strong agreement features.

Nevertheless, results from the GJT revealed that such an L1 effect exists. This was estimated on the score means of items paired according to the kind of determiner which preceded them. Here we present a more detailed picture of the specific results, illustrated in Table 2.

Table 2. Rate of rejection of regular plural NHN(GJT ) – Item analysis

<table>
<thead>
<tr>
<th>DET.</th>
<th>COMPOUND</th>
<th>NS</th>
<th>ADV</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>bananas bag</td>
<td>90%</td>
<td>76%</td>
<td>61.53%</td>
</tr>
<tr>
<td>A</td>
<td>carpets cleaner</td>
<td>95%</td>
<td>68.96%</td>
<td>53.57%</td>
</tr>
<tr>
<td>The</td>
<td>towels box</td>
<td>80%</td>
<td>59.25%</td>
<td>40%</td>
</tr>
<tr>
<td>The</td>
<td>snakes trainer</td>
<td>75%</td>
<td>60%</td>
<td>44.82%</td>
</tr>
<tr>
<td>Ø</td>
<td>flies net</td>
<td>90%</td>
<td>62.06%</td>
<td>16.66%</td>
</tr>
<tr>
<td>Ø</td>
<td>shoes exporters</td>
<td>83.33%</td>
<td>39.28%</td>
<td>25%</td>
</tr>
</tbody>
</table>

The detailed analysis reveals that the INT were less successful in both bare plural compounds than in the rest of the categories, while the mean score for the ADV was due to the results from one item only, that is, *shoes exporters*. Given that *shoe* as the NHN was pluralized much more than other nouns also in Murphy’s (2000) study, it is plausible that this occurs because the particular word is a semantic plural and usually appears in this form rather than in the singular, as Murphy also suggests. Hence, we cannot support that L1 strong number agreement features exert an effect on the judgements made by the ADV. Nevertheless, it should be noted that in this group too compounds with a RPNHN are liked less when preceded by the indefinite article than in the two other categories, which differentiates them from the performance of the NS. The NS equally dislike, for example, *a bananas bag* and *flies nets*. On the other hand, they seem to dislike least of all *the towels box* and *the snakes trainer*.

We think we can offer an explanation with respect to the last item, which was favoured more than the other items within this group. A search on the Internet revealed the existence of many athletic teams called ‘The Snakes’ together with a lot
of information about them including news about the trainer of the team, called, of course, ‘the Snakes trainer’. Therefore it is probable that the NS are exposed to input of this kind through newspapers and the television, and the phonological analogy between the Snakes trainer and the snakes trainer affected their performance in the GJT. Nevertheless the results related with the towels box remains a mystery to us. For instance, we cannot resort to the possibility that in this item the -s bears a [+heterogeneous] feature à la Alegre & Gordon (1996), since the same could apply to the NHN in carpets cleaner which was rejected at 95%. Note that the next favourite of the NS is shoes exporters and this may have happened for reasons already discussed with respect to the performance of the ADV. Therefore out of the three less rejected items, the RPNHNs in two of them were probably considered not as bad as in the rest of the items for reasons irrelevant to their linguistic context. The same may hold for the towels box, yet for reasons unknown to us.

Our point is that the judgements of the NS are not conditioned by the type of article preceding the compound or the [+/-singular] number feature of the HN, unlike what happens with the learners’ judgements. Based on this, we may assume that the latter are indeed biased by the L1 effect of strong number agreement between the members of the DP dependency. Further support for this claim comes from results related with the learners’ performance in irregular plural NHNs (IPNHNs) to which we turn next. Recall that the statistical analysis showed no significant effect of number agreement between the participants’ performance with respect to each item in the GJT is presented in Table 3.

Table 3 Rejection of irregular plural NHNs

<table>
<thead>
<tr>
<th>DET.</th>
<th>COMPOUND</th>
<th>NS</th>
<th>ADV</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>mice cage</td>
<td>50%</td>
<td>37%</td>
<td>13%</td>
</tr>
<tr>
<td>A</td>
<td>mice catcher</td>
<td>71%</td>
<td>69%</td>
<td>32%</td>
</tr>
<tr>
<td>The</td>
<td>teeth gel</td>
<td>69%</td>
<td>29%</td>
<td>13%</td>
</tr>
<tr>
<td>The</td>
<td>teeth healer</td>
<td>64%</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>Ø</td>
<td>feet products</td>
<td>80%</td>
<td>26%</td>
<td>17%</td>
</tr>
<tr>
<td>Ø</td>
<td>feet washers</td>
<td>22%</td>
<td>17%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Note that the performance of the INT in IPNHNs differs radically from their performance in RPNHNs (cf. Table 2). While in the latter there was systematic contextual variability, here we can see that feet in feet products where the HN is plural
is liked less than teeth in the respective compounds where the HN is singular. As for the ADV, although they are more successful in judgements on the two compounds preceded by the indefinite article than in the rest of the items, we believe that their performance is affected by the fact that unlike mice, teeth and feet are semantic plurals, like shoes in shoes exporters.

Turning to the NS, recall that in the PNT they pluralized foot considerably more in the compound that was novel to them than in the one they were familiar with, as in foot kissers versus foot cream. We hypothesize that the same factor biased their judgements in the GJT, since feet washers is a novel compound while foot products is existent, although it is not lexicalized. Now note that in the case of IPNHNs, their plurality is not marked in the same way it is marked on the regular HNs, that is, matching in number between the two nouns is not identical morphologically. In our opinion, the fact that as regards irregular plural NHNs the learners’ performance is not affected by the [+/-singular] feature of the HN, while the opposite occurs in the case of regular plural NHNs shows that there is indeed L1 effect of resumptive number agreement features. Next we discuss the possible effect of the parametric difference between L1 and L2 with respect to genitive case marking of the NHN.

Results from the PNT showed that only the INT provided responses which could be considered constructions with a genitive and not a plural NHN and that although those responses were very few, the statistical analysis revealed a significant difference in this domain. There is one caveat here, namely that one cannot be certain about whether the specific responses indeed represent genitive constructions. In this case, the learners who produced a N+s+N string to name pictures where there were single cues for NHN (and for the HN) were almost exclusively the ones who also produced forms such as *feets shampoo and *mices killer. Notwithstanding the ambiguity of /s/ here too, the latter strings probably do not represent overregularization errors but genitive NHNs218. Nevertheless, the interpretation of the specific responses in this respect is based to a smaller or to a larger extent on conjecture. On the other hand, we believe that we may rely more on results from judgements on genitive NHNs. For convenience, details about the relevant results are presented twice, both in terms of

218 At this point, let us report that while piloting the PNT, we asked one of the Greek informants to say why she had produced /s/ inside compounds with an irregular NHN. Looking amazed by the question, she answered “But, of course, I meant them as genitive, not as plural!”.
the root/deverbal distinction and with respect to the article preceding each of the compounds:

**Table 4.** Rejection of genitive NHNs – Item analysis

<table>
<thead>
<tr>
<th>DET.</th>
<th>COMPOUND</th>
<th>NS</th>
<th>ADV</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>hat’s company</td>
<td>95%</td>
<td>82.75%</td>
<td>55.66%</td>
</tr>
<tr>
<td>A</td>
<td>bell’s designer</td>
<td>85%</td>
<td>68.96%</td>
<td>55.55%</td>
</tr>
<tr>
<td>The</td>
<td>toys’ museum</td>
<td>90%</td>
<td>60%</td>
<td>41.37%</td>
</tr>
<tr>
<td>The</td>
<td>cigars’ maker</td>
<td>100%</td>
<td>58%</td>
<td>32.14%</td>
</tr>
<tr>
<td>Many</td>
<td>trucks’ industries</td>
<td>94.73%</td>
<td>77.77%</td>
<td>43.21%</td>
</tr>
<tr>
<td>Ø</td>
<td>dolls’ importers</td>
<td>84.21%</td>
<td>58.33%</td>
<td>21.42%</td>
</tr>
</tbody>
</table>

Recall that, as we claimed, Greek differs parametrically from English as to the following facts that allow a genitive NHN in noun combinations like those in Table 4. First, when the HN is a root nominal, the strong D feature of a (covert) P attracts the D of its complement DP, which subsequently gets fused with the P and the P+D fusion is spelled out as genitive (cf. Bouba 2000). Second, when the HN is a deverbal nominal, the NHN is in the genitive because deverbal nominals in Greek have the property of assigning genitive case to their complement nouns. On the other hand, in the respective cases in English, a) the D feature of P is weak and b) deverbal nominals cannot assign (genitive) case to their complement nouns, hence the NHN is not marked for genitive. Turning to the empirical data, recall that while the INT differ significantly from the NS (and the ADV) in both compound categories, the NS-ADV difference is significant only regarding the deverbal items. This data seems to indicate that the ADV have reset the value of the D feature of P from the L1 strong specification to the L2 weak specification but that they have not acquired the different parametric option of the L2 concerning the (in)ability of deverbal nouns to assign case to their complements. Hence they are more successful in root than in deverbal compounds. Nevertheless we will claim that the following interpretation is more plausible than the one just offered.
Learners of English know that the genitive in this language expresses mainly possession, which is generally (albeit not always) related with animate nouns in the place of the possessor. The fact that the ADV *systematically* prefer less compounds whose both members have a [-animate] feature to compounds in which there is an -er suffix for ‘agent’ and, therefore, also a [+animate] feature, reveals that judgements in this group are affected by the semantics of the compounds, despite that in the specific items it is the possessum and not the possessor bearing the [+animate] feature. Hence, given also the paced nature of the GJT, they respond more favourably to *dolls’ importers* than to *trucks’ industries*. Additionally, recall that the ADV were the most agnostic regarding judgements in this structure as compared with judgements on compounds with either regular or irregular plural NHNs. Moreover, one-third of the learners in this group expressed ignorance at least once. Therefore we think that no parameter resetting has taken place for either of the two learner groups as regards the possibility of an adnominal genitive in the specific contexts in the L1 but not in the L2. Last it is interesting to note that if our analysis is correct, the advanced learners’ judgements on genitive NHNs in compounds are affected neither by an L1 nor by an L2 property, since the [+/-animacy] feature is not related with genitive marking in Greek, and in English the specific feature is related with the NHN, not the HN.

A determiner effect was also revealed in judgements on compounds with genitive NHNs. That is, when results were analysed according to score means by type of determiner preceding the compound, the NS-ADV difference was significant only concerning judgements on compounds with genitive NHNs preceded by the definite article. Note that this was the only case in which the root-deverbal difference was almost negligible for the ADV, since *the toys’ museum* was rejected much less than the other root compounds and it was the only root compound which was rejected almost to the same extent with deverbal compounds. Nevertheless, given that in this task the root compound with the indefinite article *a hat’s company* was semantically implausible, since you cannot have a company for one hat only, the fact that it was rejected more than *the toys’ museum* does not come as a surprise. This leaves us with *many trucks’ industries* which was indeed rejected more than its root counterpart with the definite article. However, we may not investigate whether there is indeed the discussed effect based on difference in performance between two items only, so we will abstain from any conjecture regarding this matter. Last, the expected result, namely that the learners’ performance here would not exhibit any kind of systematic
variability revealing L1 strong number agreement effect between the NHN and the HN, further confirms that this effect indeed holds in the case of regular plurals. Therefore, we may assume with reason that at least for some of the learners the first member of the L2 constructions is viewed as an autonomous item which can bear its own features for number and case and which can be referred to independently. This is especially true for the INT who differ from the other two groups also in their judgements on correct compounds. On the other hand, the ADV are near-native-like regarding their performance in correct compounds, which shows that they are probably at a stage of acquisition characterized by ‘indeterminacy’ (Sorace 2000) as regards the L2 compound structure. The above may explain also the errors in the word order of the compound members, which will be discussed shortly.

6.4 Do the learners know the correct word order in English compounds?

Results from the PNT showed that the INT made significantly more errors in word order than the NS and that this erroneous performance concerned only root compounds. In the IT, which involved only this compound category, both learner groups fared significantly worse than the NS. Moreover, there was also a statistically significant developmental effect. Next we discuss the extent to which these results may be reliable enough to support any assumptions as to the learners’ knowledge about head directionality in the L2 compounds by offering more information about the participants’ performance in the IT, as well as evidence from an additional IT.

To start with, the natives avoided giving definitions at a percentage of 8.5, while learners in both groups did so to a percentage of less than 0.5\textsuperscript{219}. It seems that the former tended to abstain from providing any reasonable interpretation they could think of, if that violated the established word order. This did not seem to be taken into consideration in the learners’ case. We must concede that although no pressure was exerted on the participants to explain all of the compounds, due to their studentship status, the learners may have felt it was their duty to complete the task more than the NS did. Nevertheless given the developmental effect this is not of much importance.

\textsuperscript{219} Missing answers in the NS group represent exclusively cases where no interpretation was provided, while as regards the learners missing answers involve mainly responses which were unclear with respect to the object of investigation.
Chapter 6 Interpretation of the results, discussion and conclusion

It must also be noted that performance across the items was not uniform. For instance, all groups fared worst at explaining lamp jungle\textsuperscript{220}, while both learner groups fared best in the case of snake hawk, which is not a surprising result. Namely an interpretation like ‘a hawk which feeds on snakes’ or ‘a hawk which chases snakes’ is more compatible with pragmatic knowledge than the reverse\textsuperscript{221}.

Perhaps, another point worth considering is the extent to which level of education biased error rates. Gleitman & Gleitman (1970) showed that this may be so. However, in their study, while the group of the most educated participants performed better than the rest of the groups in other respects, the same group provided the highest rate of left-headed (non-canonical) interpretations\textsuperscript{222}.

We think it would be interesting to compare the results in Ryder’s (1994) research to those obtained here, since her L1 English participants were roughly age peers of the learners’ in our study\textsuperscript{223}. Table 5 demonstrates the comparison with respect to the items that were common in the two studies.

Table 5. Rates of right-headed interpretations\textsuperscript{224}

\begin{center}
\begin{tabular}{|l|l|l|l|l|}
\hline
Item & Ryder (1994) & Present Study & & \\
 & NS(12) & NS(20) & ADV(30) & INT(30) \\
\hline
Drawer towel\textsuperscript{225} & 67.5% & 88.24% & 70% & 66.66% \\
Sweater car & 67.5% & 88.24% & 73.33% & 41.37% \\
House tree & 77.5% & 100% & 50% & 20% \\
Bottle flower & 80% & 100% & 55.17% & 16.66% \\
Lamp jungle & 82.5% & 73.69% & 86.66% & 57.14% \\
Bag peas & 82.5% & 100% & 62.06% & 26.66% \\
Sack bread & 85% & 84.22% & 50% & 17.24% \\
\hline
Average & 77.5% & 90.62% & 63.88% & 35.10% \\
\hline
\end{tabular}
\end{center}

\textsuperscript{220} In fact, this was the only item in the present study that triggered more erroneous responses from the NS than from the ADV.

\textsuperscript{221} Two learners interpreted this item by coining the equivalent Greek compound, that is, \textit{fidhoghérako} (=snake+hawk). In a similar independent test with different items, other students too explained ‘weird’ English compounds by making up equally ‘weird’ Greek equivalents. For example, \textit{banana bed} was translated into \textit{bananokrévato} (banana+bed). In the investigator’s opinion, this is a strategy largely followed to avoid offering a full explanation of meaning. However, at the same time, it verifies that compounding is Greek is indeed very productive.

\textsuperscript{222} The Gleitmans’ purpose was to investigate the extent to which linguistic competence is the same for all native speakers of a certain language, so compounds were simply an end to this means. ‘Other respects’ here involves errors pertaining to the stress pattern, as well as to the parsing of recursive compounds.

\textsuperscript{223} Ryder is not explicit about the age of her participants but she reports that those were “students in an introductory linguistics class”. We therefore assume that, on average, in terms of age and level of education, Ryders’ participants differ less from the Greek learners than do the NS in the present study.

\textsuperscript{224} In Ryder’s study there were twelve participants.

\textsuperscript{225} That was \textit{drawer pillow} in Ryder.
Chapter 6  Interpretation of the results, discussion and conclusion

The average successful percentage per group above shows that that level of education may indeed have an effect, since the performance of the NS in our study is superior to that of the NS in Ryder’s study. On the other hand, the Greek learners from both language proficiency levels lag behind their NS peers\footnote{Of course, there is no way to tell whether the difference between participants in the two studies is statistically significant.}

We concede that, to a certain extent, results in our study may have been biased by other extra-linguistic factors. For instance, the NS had an advantage over the learners as regards the item box wine, which, as we later realized, is a common type of cheap wine in their countries\footnote{Pragmatic knowledge also affects the kind of interpretation. For instance, in an independent study we carried out, most of the learners interpreted blanket woman as ‘a woman who makes/sells blankets’, while the majority of the NS interpreted it as ‘a homeless woman’. On the other hand, those of the learners who opted for a metaphorical interpretation, explained the same item as ‘a protective woman’ or ‘a woman childminder’, probably under the influence of the Greek metaphor ‘mana xriso paploma’ (=lit. mother golden quilt). Even more culture-specific were NS interpretations such as ‘the guy from the Simpsons’ and ‘a transformer from Beast Wars’ for the items helicopter woman and bee-man respectively.}. However, the average successful performance in the table is unrelated to this item. To check the extent to which word order errors in the learners’ responses were biased by extra-linguistic factors, we devised an additional interpretation task (IT2) exclusively for them. This task consisted of coinages of Greek compounds equivalent to the English ones used in the previous task (see Appendix), and it was administered separately, four or five months after the first cohort of tasks. A comparison between results in the IT1 and in the IT2 is shown next.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|c|}
\hline
 & ADV & INT \\
\hline
English compounds & 66.44\%(198/298) & 35.81\%(106/296) \\
Greek compounds & 88.33\%(265/300) & 75\%(195/260) \\
\hline
\end{tabular}
\caption{Comparison between right-headed interpretations in English and in Greek\footnote{The smaller number of interpretations to Greek compounds by the INT here is due to the fact that we were not able to locate some of the learners who had participated in the first task. So, in the second IT, there were 30 ADV and 26 INT and the number of participants involved in the statistical analysis of}}
\end{table}

We can see that both learner groups gave right-headed interpretations to their L1 compounds much more than they did in the case of the English compounds, which proved to be a statistically significant within-group difference at $p<0.001$ for both the INT and the ADV. In other words, although in their struggle to give meaningful interpretations the learners may violate the default order in their L1 too, they do so significantly less than in the case of the L2 compounds.
However this leaves us with the question why the learners exhibited a native-like performance with respect to deverbal compounds. We offer the following explanation. Results in the present study indicate that learners may have not yet acquired the canonical modifier-head order of the L2 compounds but they are successful in deverbal compounds because the latter contain thematic information and a derivational affix. Specifically, through input, learners soon realize that once the verb is nominalized, the predicate-argument order is reversed. On the other hand, (singular) root compounds do not provide such thematic or morphological cues. Alternatively, we could surmise that the learners’ performance is biased by the fact that in Greek there are also phrasal root compounds which are left-headed. However, we do not find this plausible. Specifically, as discussed in Chapter 3, the semantic relations expressed in phrasal compounds are limited and, significantly, the Greek counterparts of the English compounds used in the IT can only be one-word compounds which are canonically right-headed. Therefore the learners would have transferred this knowledge to English compounds, if they also knew that, for example, *lemon* in *lemon pie* is the same as *lemon* in *lemon-ó-pita*, that is, a stem, not a DP or an NP and therefore *lemon pie* is a compound like its Greek counterpart. From the learner’s viewpoint, since the NHN in English may be a plural form, albeit non-canonically, it is a noun with a feature specification for number, that is, [+/-singular], unlike the NHN stem in Greek. Psycholinguistically, this makes the whole L2 noun combination an implausible candidate for an item with the same status as that of the L1 compounds. This said, next we present our analysis of the interlanguage structure.

6.5 The interlanguage structure of compounds

First we need to make some brief points about the architecture of the DP. As discussed in Chapter 3, an extra functional projection between a DP and its complement noun has been suggested for languages with rich morphology (see, for instance, Panagiotidis 2000 and Alexiadou, Haegeman & Stavrou 2001). In those languages, there is overt number and case (as well as gender) agreement between determiners, adjectives and nouns, and may be labeled Num(ber)P(hrase), AgrP, AgrGenP K(ase)P etc. (Alexiadou & Stavrou 1999a). This FP is equivalent to the IP within-group differences concerning results from the first and the second IT was 28 for the ADV and 23 for the INT.
in the verbal clause and, besides hosting other members of the DP than the noun, it may assign number and/or case agreement between the D and its complement noun. There have also been suggestions for more than one functional projection between the determiner and the noun in order to accommodate, for instance, distinctions between Gender and Number (Picallo 1991). For Greek, where according to Ralli (1994) gender is inherent to the noun stem, Alexiadou et al. (op. cit.) argue that “number and case is represented under a single node, being the result of the prior application of the morphological fusion of two originally distinct terminal nodes” (: 28). In line with this analysis, we will assume that there is one FP both for number and case agreement features in Greek and that its postulation is justified given the strength of those features. On the other hand, in English such features are not strong and generally (but not always) a similar FP is not proposed for the English DP structure (cf. Radford 1997: 158). For the purpose of a more clear exposition, in the diagrammatic representation of the interlanguage structure this FP will be alternatively called either NumberP or CaseP depending on the kind of L1 effect the specific structure depicts. Having said this, based on the results from the experimental study and the offered interpretation, we propose that for the INT, whose performance exhibits L1 effect of strong (resumptive) number agreement feature between the members of the DP dependency, the interlanguage compound structure is the one shown next.

(1) e.g. flies nets

![Diagram of the interlanguage structure for INT with NumberP and CaseP features.]
The structure in (1) illustrates that the non-target forms result from a double X⁰-movement. Both the head noun N₁ and the modifying noun N₂, attracted by the strong [Num] feature, raise from their initial positions and adjoin to the head of FP, F[Num]. The N₁ ‘nets’ moves by substitution into F[Num] and then the N₂ ‘flies’ moves and incorporates (by adjunction) to N₁ creating an Num_{N₁}^{max} 229. The N₂ lands in the derived position after having first moved to the head of D₂ to obey the locality of head movement 230. The D₂ is unspecified for case and thus the N₁ may move further on its own. Crucially, it is the [+strong] resumptive number agreement feature of the specific functional category that makes this movement possible. Thus there is resumptive number agreement between the dependency D₁ – F – N₁, which may optionally spread to the N₂, hence the statistically significant higher acceptance of plural NHNs in bare plurals by the learners. As regards the interlanguage constructions which exhibit L₁ effects related with the acceptance of genitive NHNs, we propose that they result from XP movement. Concerning root compounds with a genitive NHN, the suggested interlanguage structure is the following.

(2) e.g. the toys’ factory

229 In the Minimalist Programme (Chomsky 1995), a category can be both minimal (X⁰ or X^{min}) and maximal (X^{max}) if it does not project further. Moreover, “a minimal category that consists of more than one element or to which other elements are adjoined constitutes a maximal projection of the minimal category” (Spyropoulos 1999).

Due to L1 effect, the D of the NHN *toys* moves to the covert P attracted by its strong nominal element (D*) resulting in a P+D fusion, which has the morpho(phono)logical reflex of marking the DP2 with genitive case (à la Bouba 2000). Subsequently, the DP2 moves to Spec FP. The extra determiner at Spec FP is eliminated at PF due to the identity of its features with the features of the determiner found at the higher node.

The structure we propose next, takes care both of genitive NHNs in interlanguage deverbal compounds, as well as the mental representation of regular plural NHNs concerning the ADV whose performance did not exhibit a statistically significant effect of L1 resumptive number agreement features. As regards the ADV, like the genitive NHNs, plural NHNs are the result of XP movement. This structure is demonstrated next.

(3) e.g. the cigars’ maker / the snakes trainer

Like in (2), the structure in (3) results from movement of the NHN (DP2) which lands in Spec FP. The genitive NHN is assigned its case directly by the deverbal HN and hence there is no intermediate functional projection. The position of the plural NHN as an XP at the spec of FP which is a position separate from that of the HN illustrates lack of number agreement between the two members.
Note that the interlanguage structure regarding compounds with genitive NHN, is unlike the L1 Greek genitive structure where the NHN may precede the HN for reasons of focus (see p. 61). On the other hand, the specific interlanguage structure is similar to the one proposed for the adnominal genitive in Classical Greek (Manolessou 2000). An example of the latter is shown in (4).

(4) ο του βασιλέως θρόνος
    the-nom.sg.masc the-gen.sg.masc king- gen.sg.masc throne--nom.sg.masc
    ‘the king’s throne’

Importantly then, the interlanguage structures we propose are part neither of the L1 nor of the L2 but abide by the principles of UG.

6. 6 The dissociation between regular and irregular NHNs and connectionist versus nativist theories.

According to one of our predictions, all participants would exhibit a dissociation in their performance between regular plural and irregular plural NHNs. This prediction was independent from the rest of the predictions and was based on previous research as well as on results from our pilot test. However, recall that while some of the previous studies verified such a distinction, others did not. Nevertheless, unlike the results in Lardiere’s and in Bongartz’s experiments\(^\text{231}\) in the present study the learners and, more importantly, also the natives treated the two forms differently. Table 7 displays the successful performance in regular and irregular forms of all groups in each of the two tasks.

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>PNT</th>
<th>GJT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REG. PL</td>
<td>IRREG. PL</td>
</tr>
<tr>
<td>NS</td>
<td>99.44%</td>
<td>57.28%</td>
</tr>
<tr>
<td>ADV</td>
<td>92.04%</td>
<td>37.62%</td>
</tr>
<tr>
<td>INT</td>
<td>67.40%</td>
<td>32.86%</td>
</tr>
</tbody>
</table>

\(^{231}\) For all references to previous experimental studies, see Chapter 4.
The statistical analysis revealed that the regular/irregular difference is significant at p<0.01 for all groups and in both tasks. Noteworthy was the relatively high number of judgements expressing uncertainty, which was in inverse proportion with level of language proficiency (roughly 11% for the NS, 7% for the ADV and 2% for the INT). In terms of number of participants who were unsure in at least one judgement each, this involved eight NS, nine ADV and two INT. Additionally, the NS and the ADV were more uncertain than the INT also with respect to irregular singular NHNs. In this case, however, the highest number of participants who expressed uncertainty were among the ADV. Put differently, more ADV were uncertain, at least once each, about the acceptability of compounds with irregular singular NHN than in those with irregular plural NHN. It should be mentioned that in the PNT, some of the very advanced learners could not decide on the number of an irregular NHN and said, for example, “Foot cream….no, feet cream,…eh, I’m not sure…OK, feet cream” or the other way around. Occasionally they even asked in exasperation: “What’s the right one anyway?”. As for the NS, most of them expressed amazement as soon as they realized that they were not certain about the number form of those nouns, unlike in the case of their regular counterparts. Hence results in this study, verify that the regular/irregular distinction is a fact, unlike the results in Lardiere (1995, 1995a) and in Bongartz (2002).

The question that remains is what theory can account for this. We have already discussed two nativist theories, which are the level-ordering model (LOM) and the dual-route mechanism (DRM) and we also discussed two connectionist approaches. Here we will return to the latter in order to investigate their claims in more detail, taking into consideration the results of the present study. Following this, we will refer analytically to another study within the connectionist approach which includes only native speakers of English but nevertheless offers very interesting insights to our work. At the end of this section we will briefly consider also the extent to which experimental evidence from domains other than the SLA of compounds can be better accounted for by a connectionist or a nativist theory about the dissociation between regular and irregular morphology.

Murphy (2000) argues against the dual-route mechanism (DRM) based on that the non-native participants in her study pluralized regular and irregular NHNs in compounds almost to the same extent. Moreover they pluralized mainly those of the regular nouns which have a high frequency of occurrence in the plural, such as eyes,
hands and shoes. However, neither is confirmed by our empirical data. As it was shown, the regular/irregular dissociation was rampant in results across the two relevant tasks. Also, a detailed analysis of the distribution of the RPNHN in the PNT does not support Murphy’s claim. The data displayed in Table 8 bears out this point.

Table 8: Distribution of regular plural NHN in the PNT

<table>
<thead>
<tr>
<th></th>
<th>ADV</th>
<th>INT</th>
</tr>
</thead>
<tbody>
<tr>
<td>carrots</td>
<td>5% (3/60)</td>
<td>20% (12/60)</td>
</tr>
<tr>
<td>biscuits</td>
<td>14% (8/57)</td>
<td>46.66% (28/60)</td>
</tr>
<tr>
<td>eyes</td>
<td>6.6% (4/60)</td>
<td>40% (24/60)</td>
</tr>
<tr>
<td>flies</td>
<td>6.6% (4/60)</td>
<td>31.66% (19/60)</td>
</tr>
<tr>
<td>bulbs</td>
<td>7.4% (2/27)</td>
<td>23.33% (7/30)</td>
</tr>
<tr>
<td>hands</td>
<td>4.4% (1/23)</td>
<td>25% (6/24)</td>
</tr>
<tr>
<td>strawberries</td>
<td>3.3% (1/30)</td>
<td>23.33% (7/30)</td>
</tr>
<tr>
<td>tomatoes</td>
<td>-</td>
<td>3.3% (1/30)</td>
</tr>
<tr>
<td>lemons</td>
<td>-</td>
<td>3.3% (1/30)</td>
</tr>
</tbody>
</table>

We can see that the most extensively pluralized noun was biscuit in both groups. Is it possible that this noun is found in the plural form in the input more frequently than eye or hand? Or, did the input the INT had been exposed to by the time of the study include about the same number of instances of strawberries as those of hands? We find this implausible. The only part of the results that could support Murphy’s argument is the performance of the ADV in the GJT concerning shoes as the NHN. However, given the rest of the results, the evidence from our study in favour of this connectionist approach is slim.

Let us now turn to Murphy and Hayes’ (2002) (M & H) claims. According to those, the -s plural affix is banned from inside compounds because this place is hold for the -’s genitive affix and this is why unlike the non-natives, the natives show a smaller reaction time to e.g. a taxi’s driver than e.g. a cats feeder. On the other hand, the non-natives show no difference in reaction times between the two constructions because, according to this analysis, they lack enough exposure to input. Nevertheless, results in the present study do not support the above, as shown by the relevant data in Table 9.

Table 9. Comparison between rejection rates of s plural and s genitive

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>s plural</th>
<th>s genitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>89.27%</td>
<td>91.45%</td>
</tr>
<tr>
<td>ADV</td>
<td>64.32%</td>
<td>68.94%</td>
</tr>
<tr>
<td>INT</td>
<td>40.29%</td>
<td>38.23%</td>
</tr>
</tbody>
</table>
We can see that the NS fare slightly better in judgements on compounds with the -s genitive than in those with the -s plural and the same holds for the ADV. Now note the performance of the INT in the two categories. If M & H’s claim was correct, we should expect exactly the opposite results. Nevertheless, here the participants with the least exposure to input slightly prefer the genitive to the plural affix and the reverse holds for the NS. Notwithstanding the different methodology, it seems that the empirical data of this study does not support M & H’s theory, a point made first by Murphy herself when she was informed about our results (e-mail 25/10/2002). Moreover, this theory cannot explain convincingly the interlanguage compounds in the present study. Namely perhaps it may account for the discrepancy between adult natives and non-natives, especially when the NHN in the learners’ L1 compounds is suffixed with a plural –s. Yet we do not think it may account for the difference between the 3-year-old English children in Gordon’s (1985) study and our non-native participants. Here 93.3% of the latter were students at the English Department and, before entering the university, they had been exposed to the L2 for 6 years on average, both at state and at private schools\textsuperscript{232}. So those learners must have had at least an equal amount of exposure to input as had the three-year-olders in Gordon’s study\textsuperscript{233}. Last, there are no affixes inside the L1 compounds and so we may not interpret their performance as a transfer from L1 compounds. Hence the claims in the two discussed studies do not seem convincing. Next we turn to an even more recent study.

The initial hypothesis in the study by Haskell, MacDonald & Seidenberg (in press) was that both nativist models, that is, the LOM and the DRM, are wrong and that the regular/irregular dissociation with respect to plural NHN in compounds is conditioned by certain semantic and phonological constraints evidenced in the input. To investigate this hypothesis, they used the following method.

In the first part of the study they ran corpus-based counts and found that regular nouns in phrasal syntax (hereafter ‘in non-modifier position’) occur in the singular form at 70% and in the plural form at 30%. Moreover, they found that the difference in the frequency of occurrence between regular plural nouns in modifier position (i.e. in compounds) and in non-modifier position is proportionally comparable to the difference in the frequency of occurrence between irregular plural nouns in modifier

\textsuperscript{232} In addition, they live in a country where foreign TV programs and movies are generally not dubbed, and of which more than 90\% are in English.

\textsuperscript{233} Recall from Chapter 4 that the same point is made by Urano (2002).
position and in non-modifier position. They also found that “regular plural modifiers, while proportionally rare, occurred at a non-trivial rate: there were about twice as many tokens of regular plural modifiers as irregular singular modifiers (233 vs. 120)”. Note that this is very interesting because it establishes that there is no absolute prohibition against plural NHNs but a bias in favour of singular forms, which applies both for regular and for irregular nouns, as remarked by the investigators.

In the second part of the study, 72 undergraduate college students, all native speakers of English, were asked to judge on a seven-point scale the acceptability of compounds with singular and plural regular and irregular NHNs contextualized is short texts. An example with a regular NHN is given in (5).

(5) Amy’s toes had been hurting for several days, and she wanted someone to check them out. She called the clinic to schedule a toes examination.

Exactly the same sentence was repeated with the NHN in the singular form, i.e. toe examination, and a compound with an irregular NHN. That is, for example, toe/toes examination was replaced by tooth/teeth examination in the same context. The test was constructed in this way was so as to replicate Gordon’s (1985) experiment but this time with adult natives and in the written mode. Besides showing that singular NHNs and especially regular ones are preferred significantly more than plural ones, results also showed that there was no significant effect of morphological modularity. Importantly, the difference in the mean acceptability rating between plural and singular regular NHNs was quite similar to (although not the same as) the respective rating in the case of irregular NHNs. Moreover, the acceptability ratings of irregular plurals fell between the acceptability ratings for singular and plural regular NHNs.

As H, M & S contend, this finding discredits the LOM because “this predicts that singulars and irregular plurals should pattern together and that both should be better than regular plurals”. The researchers offer an alternative explanation of the data according to which the acceptability of a noun in the modifier position of a compound depends on a combination of its semantic plurality and its phonological similarity to a regular plural. Namely the noun’s chances to be acceptable in this position decreases if it is a semantic plural as, for example, mice234, and decreases even further if it is

234 As the investigators note, despite ending in /s/, mice is not a phonological plural because “the [s] allomorph must be preceded by a voiceless consonant, not a vowel (as in mice)”.

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both a semantic and a phonological plural, as, for example *rats*. In this approach, *rat*, *mouse* and *mice* are all within the same category where the phonological constraint against their being in the NHN position does not apply. The predictions according to this model are schematized in Table 10 (adapted from H, M & S).

<table>
<thead>
<tr>
<th>Example</th>
<th>Semantically plural?</th>
<th>Phonologically plural?</th>
<th>Acceptability</th>
</tr>
</thead>
<tbody>
<tr>
<td>rat, mouse</td>
<td>no</td>
<td>no</td>
<td>acceptable</td>
</tr>
<tr>
<td>mice</td>
<td>yes</td>
<td>no</td>
<td>marginal</td>
</tr>
<tr>
<td>rats</td>
<td>yes</td>
<td>yes</td>
<td>dispreferred</td>
</tr>
</tbody>
</table>

H, M & S tested the above with the help of 27 adult native participants who gave acceptability judgements to sentences like the ones used in the previous experiment. The test items were triples of nouns and every triple contained a noun in the singular and in the plural form as well as a ‘bifurcate’ pluralia tantum such as *pants* or *scissors*, which was semantically similar to the noun in the same triple. For example, one of the triples consisted of the words *hammer*, *hammers* and *pliers* and each one of them was contextualized in the same sentence, which in this case was “Put that back on the hammers rack” or “…on the pliers rack” etc. Bifurcate pluralia tantum were included because despite being plural phonologically and grammatically, previous research had shown that native speakers consider them semantic singulars. So in terms of constraints they are the exact opposites of irregular plurals like *mice*; nevertheless they are similar with the latter in that both are less constrained than singulars and more so than regular plurals. Results showed that in the acceptability ratings bifurcate pluralia tantum fell between the plurals and the singulars. According to H, M & S this disproves both the LOM as well as Pinker (1999)\(^{235}\). On the other hand, it confirms the constraint-based theory.

The same test included also voicing-change plurals (VCPs), that is, nouns like *wolf-wolves*. In these, no productive rule applies for plural formation (cf. *oaf-oafs*) and therefore according to LOM they belong to level 1 and pattern with the rest of the irregular nouns, which means that they should be preferred to regular plurals as NHNs in compounds. Within the constraints theory, VCPs are semantically and phonologically plural so they should be dispreferred as much as regular plurals in

\(^{235}\) Pinker’s relevant claim is the following: “Pluralia tantum in a sense are irregular regulars, and indeed they are happy to appear inside compounds: *almsgiver, arms race…*” (180).
compounds. Nevertheless, as the investigators note, VCPs may differ from regular plurals if they do not preserve the form of the singular stem when they become plural (cf. rat-rats with shelf-shelves). In what interests us, results showed that VCPs were accepted significantly less than singulars, which, again disproves the LOM and vindicates the constraints theory.

H, M & S investigate their theory also by means of other studies to which we will not refer here. The main point they make is that the less a noun sounds like a regular plural or has a plural meaning, the more acceptable it may be inside a compound and that children learn this through exposure to input. Moreover they suggest that their theory may account for related phenomena in German too. Specifically, as they remark, in this language “the -s suffix, which is argued to be the “regular” plural in German, is the only plural suffix which isn’t homophonous with an adjectival suffix, and it is also the only plural suffix that doesn’t appear in compounds”.

H, M & S conclude by rejecting level-ordering, since it cannot accommodate their empirical data. As regards the dual-route mechanism, they state that such a model “would have to explain not only why regular plural modifiers are strongly dispreferred compared to singulars, but also why a variety of intermediate cases – irregular plurals, pluralia tantum, and voicing change plural modifiers – are neither as acceptable as singulars nor as unacceptable as regular plurals”. In lack of such an explanation, H, M & S state that their account seems to be a more satisfactory one than a theory supporting the existence of an innate language acquisition mechanism.

Recall that level-ordering has been shown to be inadequate both at the empirical and at the descriptive level by previous studies too (see Chapter 4), as well as by our empirical data, so the fact that it lacks validity is established. For this reason, we adopted Pinker’s (1999) theory about the familiar phenomena, which is a combination of the dual-route model and a relaxed version of level-ordering. Nevertheless, the issues raised by H, M & S may challenge Pinker’s theory, and although results in the present study seem to support a rule-based model, they do so only to a certain extent. Specifically, as regards the NS in our study the difference in the mean acceptability rating between plural and singular regular NHNs was not similar to the respective rating in the case of irregular NHNs, as shown in Table 11.
Table 11: Acceptability of regular and irregular NHNs

<table>
<thead>
<tr>
<th></th>
<th>singular regular NHN</th>
<th>singular irregular NHN</th>
<th>plural regular NHN</th>
<th>plural irregular NHN</th>
</tr>
</thead>
<tbody>
<tr>
<td>NS</td>
<td>100%</td>
<td>94.78%</td>
<td>14.40%</td>
<td>44.86%</td>
</tr>
</tbody>
</table>

The singular regular-irregular difference was near significant \((p=0.055)\) but the plural regular-irregular difference was highly significant \((p=0.001)\). So, our data seems to support a distinction on the basis of regular/irregular morphology. Yet, there is considerable variation in the acceptance ratings within irregular items and some of those were rejected at the same rate as regular plurals (cf. Table 2 with Table 3). Therefore, we cannot give a decisive answer as to which of the two theories is correct. Still, there are other studies that offer convincing evidence against an input-based approach concerning the general phenomenon of the regular/irregular dissociation.

Berent, Pinker & Shimron (2002) investigated the issue with data from Hebrew. In this language, the noun stem may or may not change in the plural, irrespective of whether a regular or an irregular suffix is attached to it. In the experimental part of the study, native speakers of Hebrew were asked to pluralize novel nouns not resembling existing ones, as well as names that sounded like irregular nouns. The results showed that participants systematically used the default inflection with the former regardless of whether this changed the stem. In addition, they pluralized the irregular-sounding names (e.g., the Barak-Barakim), without applying the stem changes found in their homophonous words (e.g., barak-brakim “lightning”). In the investigators’ opinion, “these findings support the view that the regular/irregular dissociation cannot be reduced to differences in the kinds of phonological changes associated with those phenomena in English. Instead, regularity and irregularity must be distinguished in terms of the kinds of mental computations that effect them: symbolic operations versus memorized idiosyncrasies” (: 459).

Clahsen, Aveledo & Roca (2002) examined longitudinal and cross-sectional data from the spontaneous speech of L1 Spanish young children (aged 1;7 to 4;7) and found that when they start acquiring the inflectional morphology, they extend regular inflection over to irregular forms but not vice versa. Based on this, the researchers support that the hypothesis for a dual-mechanism model of inflection must be correct. Evidence for the latter view comes also from populations with various kinds of impairment. Clahsen & Almazan (2001) report that people with Williams Syndrome inflect regular nouns
correctly and make overregularizations which extend to NHNs in compounds. On the other hand, children with Specific Language Impairment exhibit the opposite behaviour, which “supports the theoretical distinction between listed lexical entries and a (rule-based) computational system for language” (729). Also Miozzo (2003) reports that a brain-damaged patient was significantly less accurate with regular than with irregular verbs.

In addition, studies in the acquisition of L2 English verbs by adults show that irregular past tense is marked more frequently than the regular past tense (Wolfram 1985; Wolfram et al. 1986, 1986a; Adamson, Fonseca-Greber, Kataoka, Scardino & Takano 1996; Lizska 2001 a.o.).

To return to the regular/irregular dissociation concerning the discussed phenomena in compounds, note that like the L1 English children in Gordon’s (1985) study, also the Greek participants in the present research cannot have encountered many (if any) compounds with teeth or feet as the NHN. On the other hand, they must be familiar with the compounds toothbrush, toothpaste, toothache, football, footnote and probably mousetrap, where the irregular nouns are in the singular, in the same way regular nouns are usually in the singular. However, given the limitations of our methodology, we cannot offer a conclusive answer as to whether the regular/irregular dissociation concerning the number of the NHN in English compounds is guided by an innate mechanism for language acquisition such as the one offered by Pinker (1999) or is input-based, as suggested by H, M & S’s ‘constraints theory’.

6.7 Implications for SLA theories

In this section, we will address the main questions about SLA as those were formulated in Chapter 1. To the question of whether adult language acquisition is guided by UG our answer has been that it is. If our analysis is correct, the interlanguage structure of the Greek-English compounds does not have the characteristics of a ‘wild grammar’ but abides by the principles of the Universal Grammar. In this sense it is a natural language. On the other hand we are not in a position to discuss the nature of the L2 initial state, since our study did not involve learners at the beginning of the acquisitional stage. Consequently our research does not bear on theories pertaining to this stage, such as Vainikka and Young-Scholten’s (for instance, 1996a) ‘minimal trees’ account. As regards the question of whether
there is such as a thing as ‘transfer’, our answer is a resounding ‘yes’. This lays on us the obligation to also answer the question of what is transferred, to what transfer may be attributed to, and what we predict for the end state, which is a complicated task given the object of our research.

To start with, generative SLA studies usually focus on a structure involving some kind of parametric difference between the L1 and the L2 and, consequently, the data is interpreted on the basis of this difference. On the other hand, the present thesis has dealt with a morphological structure and as such, in our view, it cannot be analysed in terms of features of functional categories. Moreover, whichever way one analyzes compounds, those are structurally the same in Greek and in English. However, taking into consideration divergent Greek-English compounds in observational data, we subsequently made the commonsensical hypothesis that these problems are connected with the overt realization of English compounds which is misleading for the learners. Based on this we investigated the extent to which L1/L2 parametric differences with respect to *phrasal noun combination* may affect the interlanguage compounds and we found that it does indeed. In this sense we have researched the adult acquisition of compounds in an unprecedented and perhaps unorthodox way but which, as we think, enabled us to find what is transferred as well as what this transfer may be attributed to. Namely we showed that parametric differences between the L1 and the L2 in the syntactic domain may affect the acquisition of a morphological structure due to its different morpho(phono)logical realization between the L1 and the L2. Besides this, the learners’ performance in genitive NHNs may also reveal L1 effect related to the typological propensity of Greek to disambiguate thematic relations between the head noun and its complement through case inflection\(^{236}\). As regards the end-state, our study has not included the kind of participants that could enlighten us in this respect. Nevertheless, we will discuss the question with respect to the advanced learners.

We saw that at the PNT the performance of the ADV was very similar to the performance of the NS. On the other hand, they did not fare equally successfully in the rest of the tasks. Without doubt this reveals a task effect. Mutatis mutandis, there should not be any NS-ADV significant differences in the rest of the tasks, if there was not some kind of persistent problem. Put differently, the type of task had an effect both on the learners and the natives, so what really counts is the difference between
Chapter 6  Interpretation of the results, discussion and conclusion

the groups. Now if these types of L1 effect are manifest even in morphological constructs of the L2, then generally L1 effects probably persist even at the end state of the L2, which results in a ‘divergent’ L2 grammar (see, for instance, Sorace 2000). Recall that according to our results the ADV have probably delearned the L1 strong (resumptive) number agreement features marked on articles and modifiers inside the same DP dependency. In our opinion, this is due to the fact that from a certain developmental stage onwards, this type of L1 effect may cease because, leaving articles aside, it concerns agreement between adjectives and nouns and not between nouns and nouns. On the other hand, the performance of the same learner group exhibits the L1 effects regarding the strong D-feature of the functional category P or the case-assigning properties of deverbal nominals in L1 Greek. All this has to do with properties of formal features non-interpretable at LF. Therefore it seems that the present study discloses phenomena similar with phenomena in some previous SLA studies, on the basis of which it has been concluded that “parameter resetting is unavailable in L2 acquisition, especially when the parametric features involved are non-interpretable at LF” (Tsimpli 1997: 236). In view of our data we will concede that this standpoint may be more accurate than ‘full access’ hypotheses (for instance, Schwartz & Sprouse 1996) according to which, given enough time and L2 input, adult learners will attain native-like competence.

Our empirical data also raises the question of whether it is safe to assume that non-native like structures merely reflect some kind of surface problem (cf. Lardiere & Schwartz 1997). Namely it is reasonable to hypothesize that regular plural NHNs (hereafter ‘plural NHNs’) in the L2 English compounds may be due to a ‘surface transfer’ if NHNs are plural in the L1 compounds. In our opinion, this remains largely an unfounded hypothesis. We will justify our statement by referring to the data in previous studies and the relevant assumptions presented in Chapter 4.

It is well known that Spanish compounds, which are left-headed and whose NHNs are always plural in compounds, are less productive than English compounds (Clark 1998 a.o.). Moreover, according to Liceras & Diaz (2000: 197) “they are not as productive as their left-headed counterparts in other languages”. So if Greek learners whose L1 has a very productive compounding mechanism which is also similar to the one in

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236 The particular point is made after Bongartz (2002: 55), although in her work this relates with the preference for phrasal noun combination over compounding.

237 See also Tsimpli & Roussou (1991), Bouba (2000) and Tsimpli (2003a) a.o.
English may still not perceive the discussed structure as a compound due to its overt characteristics, this is even more likely to happen with the Spanish learners. The implication is that the Spanish-English interlanguage constructions may reflect a structure similar to the Greek-English interlanguage constructions, that is, the L2 NHNs may have a DP status in the interlanguage, unlike the L1 NHNs. This runs counter to Lardiere and Schwartz’s (op. cit.) suggestion that the L2 plural NHNs are like their L1 analogues. The same can be true also for plural NHNs in the French-English compounds in Murphy’s (2000) study.

As regards Bongartz’s (2000, 2002) research, the data shows that the Czechs produce plural NHNs in English compounds, despite the fact that in their L1 compounds NHNs are overtly stems, as it is the case with our learners. Furthermore note that the Chinese-English compounds included -s too but this did not necessarily represent a number feature since they produced plural forms even in responses to single cues. The fact that learners whose L1 does not mark plural number morphologically (i.e. the Chinese) perform in this way, while learners whose L1 does mark plural number morphologically (i.e. the Czechs) perform in a different way should show us that the learners’ NHNs are specified for number. Let us now turn to the German learners. Bongartz hypothesizes that those produce more plural NHNs than the other groups because irregular plurals are allowed in German compounds. However, if the German-English compounds are interpreted in this way, we must assume that one of the following happens.

(A) The Germans do not know the distinction between regular and irregular plural non-head nouns in their own language.

(B) The Germans know this distinction in their language but not as regards L2 English.

(A) is obviously not true since generally the plural NHNs in German compounds are irregular and not regular nouns\textsuperscript{221}. This makes (B) implausible since we cannot think of a reason why such similarity between the L1 and the L2 compounds cannot turn into positive L1 transfer. Therefore, it can be suggested that regular plural NHNs in the German-English compounds are not the counterparts of irregular plural NHNs in

\textsuperscript{221} Unless -s is not the default plural affix in German after all, as it has been suggested by Dressler, Libben, Stark, Pons & Jarema (2001: 188) and Weneger (2000).
German compounds. Consequently, unlike the latter, the former may be meant as plural DPs. Importantly, in order to probe the interlanguage, a single elicitation task is not enough since this may conceal important facts as it has been shown here. A combination of an elicitation task with some kind of judgement task would optimally yield data on the basis of which we may be in a better position to assume that we know what the learners know before we adhere to a ‘surface transfer’ explanation. The findings in this research also disprove the ‘weak continuity’ hypotheses according to which only the L1 properties of lexical categories are initially present in SLA or also functional categories are present from stage one but that those start as ‘inert’ and in either case, the specifications of the L2 feature values are acquired in a developmental fashion. Neither of the above makes the correct prediction about the L1 effect of strong agreement features which was manifest systematically in the intermediate learners’ performance.

6.8 Conclusions

Hopefully, we have offered a glimpse into the mental representation of the Greek-English compound structure. In the course of our investigation and after a critical discussion of previous analyses regarding native compounds, we also offered our own proposal about the structure of L1 English and Greek compounds consistent with our standpoint that compounds are morphological items and so they cannot be analysed as syntactic constructions. Searching for differences between English and Greek compounds, we investigated the extent to which the existence of also left-headed compounds in one-word items in Greek means that there is no default order of the compound constituents in this language. To do the above we looked up lexicalized compounds throughout various dictionaries and we collected a large amount of data regarding non-lexicalized as well as novel and nonce compounds from all kinds of written material, from the television and from everyday speech. The data presented in Chapter 3 is but a miniscule representative of our collection. This search revealed that despite the occasional exceptions first, one-word compounds are certainly right-headed by default and, second, they are by far much more numerous than phrasal compounds, although the latter are also quite productive. It is only out of considerations linked with ease of articulation that phrasal compounds may replace one-word compounds, and this is restricted by the fact that fewer thematic relations
between the constituent parts can be expressed in the former than in the latter. Therefore, the default compounding mechanism in Greek is represented by the one-word items. Our constant preoccupation with the specific constructions made us alert as to their occurrence, which subsequently revealed to us how easily novel compounds are formed in Greek, some of which become part of the native vocabulary, while others remain hapax legomena. Although the above does not constitute any major discovery, it is still a small contribution to knowledge about noun-noun compounds in Greek.

Turning to the SLA of compounds, this research attempted to throw light upon all of the issues dealt with so far in the previous relevant studies. Moreover, and to our knowledge, ours has been the first study that investigated also the genitive affix inside non-native compounds. Nevertheless, observational data attests to such forms in other interlanguages too\textsuperscript{239}. This, coupled with previous experimental studies which also evidence the occurrence of the plural affix inside L2 English compounds, led us to the logical assumption that the learners’ errors may be largely due to the surface realization of the L2 construction which is misleading as to its structure\textsuperscript{240}. Also, compounds are at the periphery of grammar and usually EFL course books do not underline the fact that the NHN in compounds bears no suffix\textsuperscript{241}.

Our next logical hypothesis was that the interlanguage forms may reveal an L2 mental representation of the English compounds dissimilar to the native one. By ‘dissimilar’ we meant that the former may even be syntactic and not morphological structures. Our prediction was largely born out by the results. The way in which the tasks were manipulated allowed us to see the extent to which there is L1 effect of formal features of functional categories parametrically different from those of the L2. The results showed that this effect is present and persistent even at the advanced level of SLA.

\textsuperscript{239} Some years ago we posted a relevant query on an electronic list for teachers of English as a foreign language all around the world and we received multiple messages confirming the above claim. Let us also report that in an English film we watched recently, one of the heroes who is supposed to be a non-native speaker is made the butt for ridicule because he says, among other things, “the teeth’s (teeths?) brush”. We suppose that the script author included this kind of error as typical of non-native English.

\textsuperscript{240} This connects with our own experience of learning English in a formal context and, in particular, our own perception of the L2 compound structure. We confess that before this research never had it crossed our mind that the NHN in an English compound is a stem like the NHN in its Greek counterpart.

\textsuperscript{241} See, for instance, McCarthy & O’Dell (1994: 27), O’Dell (1997: 127). Lack of explicit instruction in this respect is not unjustified, since L2 English compounds with /s/ inside them would not impede meaningful communication. For this reason, pedagogically oriented studies concerning L2 English compounds usually center on the difficulties involved in disambiguating their meaning (Stageberg 1968), and especially when these occur in professional registers (Olshtain 1981/1982, Salager-Meyer...
which contributes to SLA theories by disproving some of them and by supporting others. Subsequently, we offered an analysis of the L2 compounds which may be an ‘unorthodox’ one, but so was our prediction which was later verified. Moreover we think that this analysis is the only one which may account for the Greek-English data. Granted that our account is correct, and to the extent that our methodology was good enough to yield reliable data, this thesis has shown that first, adult language learning is constrained by the principles of Universal Grammar and second, that parameter resetting concerning LF non-interpretable features may not be feasible, at least when the language is learned after childhood and in a formal context. Aside from this, the results here verify that natives and non-natives alike treat regular and irregular morphology differently. So if it is true that the regular/irregular distinction is guided by an innate mechanism, this applies also in the case of SLA, the difference in this respect being quantitative but not qualitative.

Our last point concerns the dichotomy between root and deverbal compounds. As regards the learners, the only difference found in this respect concerned errors in word order, for reasons explained. Nevertheless, the crux of the matter was whether the two categories differ in that root compounds are adjunction structures and, therefore may allow regular plural NHNs, while deverbal compounds are incorporation structures and hence they totally disallow plurals. The litmus for this is the performance of the NS. Since those did not differentiate between the two categories either in the PNT or in the GJT and, ironically, the one compound produced with a plural NHN by the NS was carrots eater, we proposed that whatever analysis one adopts, this must consider root and deverbal compounds in a unified manner.

6.9 Suggestions for further research

In this last section we make some suggestions which could provide useful insights as to certain issues not settled yet, as we think. Starting from the FLA of compounds, to substantiate previous claims, the following questions are in need for an answer:

- Do children pluralize regular NHNs more in root than in deverbal items?

1990 and Jullian 2002). For a ‘focus-on-form’ paper dealing with the teaching of compounds see Fotos (1998).
To what extent do children reverse the word order more in deverbal than in root compounds?

Is there a VO stage in the acquisition of compounds?

Do children indeed make VO-er errors (e.g. wash-disher)?

Do children who produce right-headed compounds also give right-headed interpretations to them?

As regards the SLA of compounds, it is by now an established fact that learners of English from a variety of different L1 backgrounds produce /s/ inside compounds to a smaller or to a larger extent. What needs to be verified is mainly the claims made in the present thesis. This would entail research in the same line but perhaps methodologically different. With respect to the latter we would like to point out the following.

To start with, investigating a multiplicity of issues or many aspects of the same issue within a single study may provide more insights about an interlanguage structure. This is especially true if results pertaining to one aspect of the issue can further illuminate other aspects of this issue. However, there are some caveats here due to practical considerations. More specifically, in the present study the GJT included 36 sentences with compounds and 36 distractors. We did not include more sentences with the target items because, unlike with syntactic structures, where learners may be more easily deceived as to the purpose of investigation, this is not feasible with compounds. This consideration resulted in less data than what we would like to have obtained for each of the categories under examination. So it is probably wiser to limit one’s goals and gather more data related with fewer research questions.

Moreover, as regards the ‘referentiality judgements’, despite the fact that results from the relevant task were conclusively in favour of our theory, this task is the first one of its kind and its validity must be further verified.

In addition, testing knowledge about word order in compounds, other types of tasks could also be used. For instance, one could ask learners to match a compound with one picture out of a set of three. In this set, one picture would present the cues in the order corresponding to the order of the compound members in the verbal cue, another picture would have the cues in a reversed order, and the third would be some kind of distractor. This test, as well as any test with some type of judgements may yield more reliable empirical data if carried out on-line, in which case information can be gained
also regarding reaction times. Unfortunately we were not able to do this ourselves due to lack of the necessary equipment.

Our claims about the L1 effect could be further tested if a similar experiment involved participants whose L1 resembles Greek in one of its parametric differences from English as discussed here. Furthermore, such a research should optimally include learners from a typologically different L1 as a control group. We are aware of the difficulty involved in finding a sufficient number of participants from different L1 backgrounds, especially in Greece. However, we make this proposal in the hope that someone may have the will and the means to carry out an investigation in this direction so as to (dis)prove our claims. Another issue is the extent to which results are biased by processing skills, which was not dealt with here. At this point we would like to refer to something which did not have an import on our results but which we find worth mentioning. The second interpretation task, besides showing that all of the learners did significantly better with the L1 Greek compounds than in English compounds, it also revealed a statistically significant difference between the INT and the ADV, in favour of the second. Given that this task was in Greek and also given that normally the learners are equally competent in their mother tongue, we find this result weird and we remain agnostic as to its cause.
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<td>ADV</td>
<td>Advanced</td>
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<tr>
<td>AG</td>
<td>Adnominal Genitive</td>
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<td>D</td>
<td>Determiner</td>
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<td>DC</td>
<td>Deverbal Compound</td>
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<td>DP</td>
<td>Determiner Phrase</td>
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<td>DRM</td>
<td>Dual Route Mechanism</td>
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<td>EFL</td>
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<td>F</td>
<td>head of Functional Phrase</td>
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<td>FLA</td>
<td>First Language Acquisition</td>
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<td>FP</td>
<td>Functional Phrase (maximal projection)</td>
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<td>GJT</td>
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<td>HNs</td>
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<td>Inflection (head of maximal projection)</td>
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<td>Intermediate</td>
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<td>Level Ordering Model</td>
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<td>MP</td>
<td>Minimalist Programme</td>
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<td>n</td>
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