Metrical prodosy: A template-and-constraint approach to phonological phrasing in Italian. Based on the poetry of Giuseppe Ungaretti and Eugenio Montale
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7.0 Introduction

This chapter is dedicated to phonological phrase outputs that are larger than the default $\phi$. In chapter 3, five \textit{Complex $\phi$ Forms} were distinguished which were found in the poetry of Ungaretti and Montale. These forms are repeated in (1).

\begin{itemize}
  \item (1) a. Complex $\phi$ Form Ia:
  \begin{itemize}
    \item $\phi$
    \item $\omega$
    \item $\Sigma$
    \item $\sigma$
  \end{itemize}

  b. Complex $\phi$ Form Ib:
  \begin{itemize}
    \item $\phi$
    \item $\omega$
    \item $\Sigma$
    \item $\sigma$
  \end{itemize}

  c. Complex $\phi$ Form II:
  \begin{itemize}
    \item $\phi$
    \item $\omega$
    \item $\Sigma$
    \item $\sigma$
  \end{itemize}

  d. Complex $\phi$ Form III:
  \begin{itemize}
    \item $\phi$
    \item $\omega$
    \item $\Sigma$
    \item $\sigma$
  \end{itemize}

  e. Complex $\phi$ Form IV:
  \begin{itemize}
    \item $\phi$
    \item $\omega$
    \item $\Sigma$
    \item $\sigma$
  \end{itemize}
\end{itemize}

The recorded subcorpus of poems showed a rapid decrease in proportions from Complex $\phi$ Form Ia to Complex $\phi$ Form IV. On the basis of a comparison between syntax-based NV-parsings and perception-based PR-parsings, I formulated the hypothesis that the phonological phrase is conditioned by a maximal size of six

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1 Parts of this chapter were presented at the TIN-dag, Utrecht, January 1995.

2 The proportions in Montale are 15.5%, 10.5%, 3.5% and 0.7%, and in Ungaretti 13%, 13%, 4.8% and 1% for Complex $\phi$ Form Ia, II, III and IV, respectively.
metrical positions. In terms of subphrasal prosodic constituents, this maximal size amounts to three feet which are grouped in a maximal prosodic word plus a strict minimal prosodic word:

(2) Maximal \( \varphi \) Hypothesis (revised)
A \( \varphi \) maximally contains a Max\( \varphi \) plus a SMin\( \varphi \).

In other words, Complex \( \varphi \) Form II constitutes the Maximal\( \varphi \) template:

(3) Max\( \varphi \) template

\[
\begin{array}{c|c|c|c|c}
\hline
\varphi & \varphi & \varphi \\
\hline
\xi & \xi & \xi \\
\hline
\iota & \iota & \iota & \iota
\end{array}
\]

The constraint \( \ast \)SupraMax\( \varphi \) ensures that the maximal size of the \( \varphi \) template is not exceeded by output candidates:

(4) \( \ast \)SupraMax\( \varphi \): Supramaximal \( \varphi \) outputs are prohibited

Accordingly, phrasal outputs corresponding to Complex \( \varphi \) Form III and IV violate \( \ast \)SupraMax\( \varphi \). A constraint that is higher ranked than \( \ast \)SupraMax\( \varphi \) must be assumed to be at play in order to account for such outputs. The final part of this chapter is dedicated to this issue.

Although the phrasal outputs corresponding to the Complex \( \varphi \) Forms Ia and Ib do not violate \( \ast \)SupraMax\( \varphi \), they deviate from the structural requirements expressed by the Def\( \varphi \) template. That is, both the Complex \( \varphi \) Forms Ia violate PARSE-\( \sigma \) (= syllables are parsed into feet), and Complex \( \varphi \) Form Ib also violates FILL-Max\( \varphi \) (i.e., a head foot must be preceded by a dependent foot). I consider these outputs to constitute expanded Def\( \varphi \)'s. Regarding Complex \( \varphi \) Form IV, the reason that this \( \varphi \) form does not constitute the Max\( \varphi \) template presumably resides in its quantitatively balanced structure. That is, by assuming that the Iambic/Trochaic Law does not only govern the organization of syllables into feet (cf. Hayes 1995), but also the organization of feet into prosodic words, and words into phonological phrases, the iambic organization of the Italian phonological phrase should be quantitatively unbalanced. More concretely, it is predicted on the basis of the perceptual universal

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3 Cf. section 3.3.1.2.
4 The metrical pattern of the Max\( \varphi \) reflects Hayes' (1984) Phrasal Rule, presented earlier in section 3.2.5: the second highest level bears two marks, spaced as far apart as possible. The Hammock principle (cf. van Zonneveld 1985, Booij 1995) involves the same metrical pattern, just as the principle of Head-Dependent Asymmetry (cf. Dresher & van der Hulst 1995) which says that heads tend to be heavier than dependents.
5 See chapter 2, footnote 22, for Hayes' formulation of the Iambic/Trochaic Law.
which correlates intensity to trochaic patterning and duration to iambic patterning, that the dependent part of the iambic phrase should be structurally less complex than the head part. This structural difference is manifested by the Maxp template, but not by Complex Form IV.

Before starting to present the facts provided by the verse data, I briefly consider prosodic maximality as a general issue in phonological grammar. Maximality as a constraint on prosodic well-formedness touches upon one of the major theoretical prerequisites to standard prosodic phonology, namely, upon the n-ary branchingness of prosodic constituents (cf. Nespor & Vogel 1986, Hayes 1989a). N-ary branchingness implies that there is no principled restriction on the number of constituents that can be grouped together into a single higher-ordered constituent. Although n may have the value 2, it may also have the value 8 or 23 or infinite. In phonology, evidence in favor of this unrestrained branchingness principle has never been provided. In fact, the principle denies the role of rhythmic alternation in the organization of speech phenomena. In the prosodic literature, the n-ary branchingness principle has often been called into question: syllable structure (cf. van der Hulst 1984, Hyman 1985, Hayes 1989b, Kaye, Lowenstamm & Vergnaud 1990, Fikkert 1994), foot structure (cf. Prince 1980, 1990, Hayes 1981, 1985, 1995, König 1993ab) and prosodic word structure (cf. Dixon 1977, 1988, Hewitt 1992, Helsloot 1993) are argued to be bounded by a maximal number of subordinated constituents. This number corresponds to either two or three.6

With respect to maximality conditions on phrasal phonological constituents in Italian, two studies provide evidence in favor of such conditions: Beccaria (1964) and Voghera (1992). Based on a large corpus, Beccaria found that Italian prose evinces a recurrence of melodic units which range in size from six to eleven syllables. Quite a similar result is obtained by Voghera (1992) on the basis of an analysis of the intonation structure of (spontaneously) spoken Italian. The medial size of the tonal group occurring in five different types of speech equals eight syllables (Voghera 1992:115).7 In addition, Voghera found that the tonal group maximally encloses two accented syllables. In terms of the constituents of the Prosodic Hierarchy, melodic unit and tonal group correspond to the intonation phrase rather than to the phonological phrase.8

6 Apart from purely linguistic arguments, extralinguistic and/or paralinguistic arguments provide additional evidence in favor of conditions on maximality. For instance, physical restrictions determining breath intake and breath volume indirectly relate to the maximal size of phrasal phonological constituents (cf. Lenneberg 1967, Levelt 1989). Psycholinguistic studies which deal with the function of rhythm in speech perception and speech production also provide strong arguments against the n-ary branchingness principle (cf. Allport e.a. 1987, MacKay 1987, Darwin 1987, Handel 1989).

7 The 5 speech types analyzed by Voghera range from a most informal conversation among friends to a most formal presentation at a scientific conference (Voghera 1992:78-83).

8 Cf. chapter 1.
The fact that both Italian prose and spoken Italian are characterized by an intonational constituent that contains about eight syllables, strongly suggests the existence of a maximal limit on the number of syllables (and thus of feet and prosodic words as well) that may form an intonational constituent. *Mutatis mutandis*, the phonological phrase, occupying the immediately lower position within the prosodic hierarchy, should also be characterized by a maximal number of syllables. As for the phonological phrase in the free verse data, the existence of such a maximality condition indeed alludes to a more general principle of maximality. Although the arguments to be presented here in favor of $\varphi$-maximality derive from the analysis of the poetry of Ungaretti and Montale, the linguistic phenomena involved cannot be claimed to being typical of poetry alone.

The chapter is organized as follows. Section 7.1 discusses three input types giving rise to maximal or supramaximal $\varphi$ outputs. Prosodically unmarked inputs are distinguished from underspecified inputs and overspecified inputs. A number of the constraints presented in the previous two chapters are crucially involved. The fundamental question to be answered is why (supra)maximal $\varphi$ outputs arise, instead of default $\varphi$'s. Section 7.2 compares the templatic approach with the syntax-based approaches to phonological phrasing. Section 7.3 deals with a set of *SupraMax$\varphi$* violating outputs which cannot be explained by metrical principles alone. That is, more specific non-metrical information is at stake. In section 7.4, two phenomena are presented which argue in favor of a bidirectional view of the interface between the components of the grammar.

### 7.1 (Supra)maximal Phrasing: Inputs and Outputs

Obviously, the number of inputs which may give rise to (supra)maximal $\varphi$ outputs will be much higher than the number of inputs giving rise to default $\varphi$ outputs.\(^9\) The Max$\varphi$ template contains two more structural positions than the Def$\varphi$ template, which implies a higher value of combinatorial possibilities of lexical and grammatical words. It is not this value in which we are interested, however, but rather in the prosodic properties characterizing the inputs. I will start with textual inputs which give rise to $\varphi$ outputs which correspond to the Max$\varphi$ template.

The default textual input of the Max$\varphi$ template is characterized by two $\omega$-head features and either one or no $\Sigma$-head feature. That is, the number and values of the textual prosodic features are roughly the same as the number and values of the features in the output.

\[
\begin{array}{c|c|c|c}
\omega & \Sigma & \omega \\
\hline
a. & /ogni/ /mio/ /tardo/ & [ogni mio tardo]_{\varphi} \\
& every my late & M107:6
\end{array}
\]

\(^9\) Section 5.3 already distinguished some 54 default $\varphi$ textual inputs.
PHONOLOGICAL PHRASE MAXIMALITY

b. /ch'entra/ /nel/ /pomario/ [ch'entra nel pomario]_φ M5:1
which enters in the apple-orchard

In the light of the observation that the poetry of Montale and Ungaretti mainly consists of default, or two-φ phonological phrases, the outputs in (5) call for an explanation. That is, how to account for the fact that two textual φ-head features are parsed into one φ and not into two φ's? One reason resides in the avoidance of a violation of FILL-Minφ. 10 That is, FILL-Minφ is satisfied at the expense of the constraint which ensures that phonological phrases are proper realizations of the Defφ template:

(6)  Defφ: φ outputs are realizations of the Defφ template

The tableau in (7) illustrates the input-output relation with respect to (5b). Both the output candidates show up with a φ that is either smaller or larger than the default φ, but only candidate (ii) does not violate FILL-Minφ. The maxφ output in (7ii) is the optimal output.

(7)  FILL-Minφ >> Defφ from [ch'entra nel pomario]_φ

Consider now the textual inputs in (8). These inputs differ from the above ones insofar that either a Σ-head feature or two φ-head features precede the two φ-head features:

(8)  Σ  φ  φ

10 See section 6.0 for the definition of FILL-Minφ.
The outputs violate the Light/Heavy alternation, or the iambic pattern, of the Maxϕ template: the ω-stress and φ-stress are not separated by a Σ-stress. In order to account for the outputs in (8), we may invoke the constraint PARSE-ω, presented in chapter 5, section 5.1.1: ωs are parsed into φs. Consider the representations in (9) for the textual input /della luce breve/. (9a) presents the parsing in accordance with the Maxϕ template, (9b) presents the actually observed realization.

(9)

(9a) PARSE-ω is violated (cf. ω) as well as the constraint FILL-Maxϕ:

(10) FILL-Maxϕ: the Maxϕ template must be properly filled

In (9b), FILL-Maxϕ is also violated, but the textual ω-head is parsed (although not licensed by a templatic position). FILL-Maxϕ may be argued to be outranked by PARSE-ω. Consequently, the dependent ω position of the Maxϕ template will not be phonetically interpreted (as indicated by the round brackets around the dependent ω position). It should be noted, however, that the phrasal outputs are not always this consistent. In (11), PARSE-ω is now violated: the outputs display the Light-Heavy pattern proper of the Maxϕ template.
Especially in the recordings of Montale this $\omega$-stress ‘retraction’ can be observed. The phonetic realization of the above outputs is as follows: the FILL-Max\(\Phi\) violation amounts to addition of word stress prosody, and the PARSE-$\omega$ violation to deletion of word stress prosody. That is, a pitch accent is associated with the foot on the left, but not with the foot in the middle.

The recordings of Ungaretti contain just one example of this input/output relation:

(12) \[
\text{by persistent vapours}
\]

Notably, the reverse situation in which a textual input of the type $\omega+\Sigma+\omega$ is realized as $\Sigma+\omega+\omega$ is not found in the recorded data. This fact provides strong evidence in favor of the iambic pattern displayed by the Max\(\Phi\) template.

The textual inputs in (13) provide additional evidence here. The inputs contain only one $\omega$-head feature, which is parsed into the head position of the $\Phi$. The output gives rise, however, to a phrase-initial $\omega$-stress. The violation of FILL-Max\(\Phi\) is phonetically interpreted as addition of prosodic $\omega$ features. That is, the phrase-initial syllable is realized with a pitch accent.

(13) \[
\text{of-the your dust}
\]
But why do the inputs in (13) give rise to MaxΦ outputs, and not to DefΦ outputs? Since FILL-MinΦ is vacuously satisfied, there must be another constraint ranked crucially higher than DefΦ. FILL-Φ-Head, presented earlier in section 6.1, is at stake. The constraint requires the head position of the Φ to be filled with a textually specified Φ-head feature. The inputs in (13), however, contain just one Φ-head feature. The tableau in (14) illustrates the relevant constraint interaction with respect to (13b).

<table>
<thead>
<tr>
<th>Candidates</th>
<th>FILL-Φ-Head</th>
<th>DefΦ</th>
</tr>
</thead>
<tbody>
<tr>
<td>![ tableau image ]</td>
<td>![ tableau image ]</td>
<td>![ tableau image ]</td>
</tr>
</tbody>
</table>

The optimal candidate is (14ii): word stress prosody, and not phrase stress prosody, is added to /quando/.

Consider now the parsings in (15). The TexIn of both examples contains a single Φ-head feature, preceded by two Σ-head features associated with an inflected preposition and a possessive pronoun. The lefthand Σ is realized with word stress prosody in a neutral reading (cf. 15a), but the Σ in the middle is realized with word stress prosody in a focused reading (cf. 15b).
The focus reading is thus associated with a metrical pattern which deviates from the basic Light-Heavy or iambic pattern reflected by the MaxCP template. Reference must thus be made to more specific information in accounting for the violations of FILL-MaxCP. In chapter 8, I shall propose a formalization of the relevant focus information in terms of \{semantics, prosody\} alignment.

A final reason will be discussed now which causes MaxCP outputs to be realized rather than DefCP outputs. Consider the examples in (16), which are characterized by textual inputs containing three \textit{eo}-head features.

\begin{align*}
\text{(16)} & \quad \text{Neutral Reading:} \\
\Sigma \Sigma \omega & \quad \text{[$\ell$]} \quad \text{[$\ell$]} \quad \text{[$\ell$]} \\
\text{a. } /della/ /tua/ /polvere/ & \quad \text{della tua polvere} \\
\text{of-the your dust} & \quad \text{U172:24} \\
\text{b. } /nella/ /tua/ /Carinzia/ & \quad \text{nella tua Carinzia} \\
\text{in-the your Carinthia} & \quad \text{M125:29}
\end{align*}

The invocation of FILL-MinCP does not enable us to explain the relevant outputs: both inputs may be parsed into two $\phi$'s without violating FILL-MinCP. Notice however that both inputs contain stress-final words: /sò/, /tè/, /avrò/, /più/. In order to properly fill the positions of the $\Sigma$ template (FILL-$\Sigma$), associated with these word-final stresses, a dependent syllable must be textually present. The outputs give indeed rise to properly filled foot templates, i.e., there are no phrase-internal FILL-$\Sigma$.
violations. PARSE-\Sigma and PARSE-\omega are both violated, however, as indicated by the angled brackets. And so is the constraint Def\varphi. The tableau in (17) illustrates the interaction between FILL-\Sigma and Def\varphi.

(17) FILL-\Sigma >> Def\varphi, from [nòn avrò piu pensieri]\varphi

<table>
<thead>
<tr>
<th>Candidates</th>
<th>FILL-\Sigma</th>
<th>Def\varphi</th>
</tr>
</thead>
<tbody>
<tr>
<td>[l\varphi]</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>[l\varphi]</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>i. nonavro piu pensieri</td>
<td>![image]</td>
<td>![image]</td>
</tr>
</tbody>
</table>

In other words, the adverb /piu/ is realized without stress, and the verb /avro/ does not surface as \varphi-head by virtue of the fact that its foot wants to be properly filled with a dependent syllable as well as a head syllable. This results in a Max\varphi output.

Summarizing this section, maximal \varphi outputs give rise to the violation of the constraint Def\varphi, which states that phonological phrase outputs must correspond to the Def\varphi template. The constraints that are recognized as triggers of this violation are FILL-Min\varphi, FILL-\varphi-Head and FILL-\Sigma. A number of input-output relations provided evidence in favor of the claim that the Max\varphi template reflects an iambic Light-Heavy pattern: (a) the 'retraction' of a \omega-stress from the mid foot to the foot on the left (i.e. PARSE-\omega is violated, but FILL-Max\varphi is satisfied), (b) the absence of the reverse situation (stress postponing), and (c) the focus reading of outputs in which the mid foot is realized with prosodic \omega-head features, instead of the lefthand foot.

7.2 The Max\varphi Template versus Syntax-to-Prosody Mapping

In chapter 6, I presented a re-analysis of a set of inputs which according to Nespor & Vogel's relation-based syntax-to-prosody mapping approach give rise to a sequence of two phonological phrases. The PR-parsings argued against such two-\varphi outputs. I accounted for the attested outputs by means of the Min\varphi template and the constraint FILL-Min\varphi. In what follows, inputs will be considered which illustrate the opposite situation: NV-parsing assigns a single phonological phrase constituent to an input, while the actual realization shows that the input is parsed into two phonological phrases. The Max\varphi template and the constraint *SupraMax\varphi account for these outputs. In 7.2.1, I examine the phonological parsing of lexical
heads of maximal projections together with lexical and/or grammatical items on their non-recursive side, as well as the phonological parsing of two maximal projections displaying a head-complement relation. In 7.2.2, the observed (supra)maximal outputs in the poetry of Montale and Ungaretti will be considered in the light of the end-based and arboreal approach to phonological phrasing.

7.2.1 FILL-Maxp and Relation-based Syntax-to-Prosody Mapping: the case of non-recursive sides and Head-Complement sequences

The examples presented in section 3.3.2 of the phonological phrasing of lexical heads of maximal projections plus all elements on the non-recursive side of these heads are repeated in (18). While NV-parsing assigns one phrase to the relevant sequences, PR-parsing gives rise to two phrases:

<table>
<thead>
<tr>
<th>(18)</th>
<th>NV-parsing</th>
<th>PR-parsing</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>[la divina Indifferenza]</td>
<td>[là divina] [Indifferenza]</td>
</tr>
<tr>
<td>b.</td>
<td>[del solenne ammonimento]</td>
<td>[del solenne] [ammonimento]</td>
</tr>
<tr>
<td>c.</td>
<td>[presso un rovente muro]</td>
<td>[presso un rovente] [muro]</td>
</tr>
<tr>
<td>d.</td>
<td>[E solo]</td>
<td>[E solo quando]</td>
</tr>
<tr>
<td>e.</td>
<td>[D'inviolabili lontananze]</td>
<td>[D'inviolabili] [lontananze]</td>
</tr>
</tbody>
</table>

While the NV-parsings give rise to supramaximal outputs, the PR-parsings give rise to default outputs. As argued in section 6.2.1, a phonological grammar which includes {syntax, prosody} alignments which refer to either heads or edges of lexical maximal projections is rejected in favor of a phonological grammar based on prosodic feature matching of textual prosodic features and templatic prosodic features. The Defp template is the prosodic template that underlies phonological phrasing in the poetry of Montale and Ungaretti. Maximal or supramaximal p's are the result of the interaction between competitive constraints. Up to this point, the relevant constraints are purely metrical in nature. Regarding the phonological phrasings of the syntactic configurations in (18), Defp is not violated. That's all that counts.

As for head-complement sequences, recall that Nespor & Vogel (1986) assume that phonological phrase restructuring of a head and a non-branching complement is an optional process in Italian. The examples in (19) repeat those presented in 3.3.1.2. While NV-parsing assigns either one or two phrases to the involved sequences, PR-parsing gives rise to two phrases only:
The restructured NV-parsings, enclosed by the round brackets, all give rise to supramaximal \( \phi \) outputs. Except for the first phrase in (19d), the PR-parsings give rise to default \( \phi \) outputs. Henceforth, the conclusion is that a syntactic configuration like a head plus non-branching complement sequence is not a consistent trigger of \( \phi \)-formation. Whether head-complement sequences are parsed into one, two or more phonological phrases depends on their metrical complexity. In the verse data, default \( \phi \)'s are preferably realized. That is, the Def\( \phi \) template determines how sequences of textual inputs are prosodically parsed.

### 7.2.2 Fill-Max\( \phi \) and Functional Projections

Let me now consider the (supra)maximal \( \phi \) outputs from another point of view: which are the syntactic boundaries within which (supra)maximal \( \phi \)'s occur? A statistical analysis of all the (supra)maximal \( \phi \) outputs in Montale and Ungaretti may be insightful. The following five configurations are distinguished: (a) a lexical head of a maximal projection plus all the specifiers/modifiers on their non-recursive side (Spec\( H \)), (b) a lexical head plus a non-branching complement (HNbrC), (c) a lexical head plus a branching complement (HBrC), (d) two lexical heads that are governed by the same functional projection (FF\( HH \)), and (e) two lexical heads that are governed by different functional projections (\( FFH \) \( HFH \)). In Montale, 113 (supra)maximal \( \phi \) outputs are found, and in Ungaretti, 78. In table 7.1, the number and proportions are given.

| Table 7.1. (Supra)max\( \phi \) outputs and syntactic configurations. |
|-----------------|-----------------|-----------------|-----------------|
|                 | Montale         |                 | Ungaretti      |
|                 | nr  | %   | nr  | %   |
| a. Spec\( H \)  | 32  | 28.3| 40  | 51.3|
| b. HNbrC         | 10  | 8.9 | 7   | 8.9 |
| c. HBrC          | 34  | 30.1| 16  | 20.5|
| d. (FF\( HH \))  | 34  | 30.1| 14  | 18  |
| e. (\( HFH \) \( HFH \)) | 3   | 2.6 | 1   | 1.3 |
| Total            | 113 | 100 | 78  | 100 |
That is, SpecH, HBrC and (FpHH, constitute the three syntactic configurations which are most frequently found in (supra)maximal \( \phi \) outputs. Notice now that NV-parsing correctly predicts the SpecH (and HNbrC) outputs, but not the parsings of HBrC and (FpHH. Nor does it predict the parsing of (FpH (FpH. The end-based approach, with \( \{X^{\text{max}}, R\} \) as the parameter for Italian, correctly predicts the SpecH, HNbrC and HBrC outputs, but not the parsings of (FpHH and (FpH (FpH. And, with the exclusion of HbrC, the arboreal approach correctly predicts all parsings, but only if the heads are not branching. That is, in the arboreal approach prosodic phrasing is not blocked by the boundary of a functional projection. In other words, none of the syntax-based prosodic parsing approaches is able to account for the three most frequently occurring syntactic configurations displayed by the (supra)maximal outputs found in the recorded poems of Ungaretti and Montale. These results strengthen the claim that prosodic phrasing is grounded on metrical principles of well-formedness, and not on syntactic constituency.

As the rates indicate, (supra)max's enclosing heads that are dominated by two different functional projections occur sporadically. In order to capture all the parsings, however, an alignment constraint might be introduced which ensures that the right edge of a functional projection corresponds to the right edge of a phonological phrase: \( \{X^{\text{Func}}/R, \phi/R\} \). That is, the variety of syntactic configurations displayed by the (supra)maximal \( \phi \)'s disfavors an account in terms of these configurations other than a very global one. The right edge of a functional maximal projection, rather than the right edge of a lexical maximal projection, embodies this global account. This proposal is reminiscent of the 'top-down' parsings suggested by Selkirk & Shen (1990) and Condoravdi (1990) in which intonational phrase boundaries are identified prior to phonological phrase boundaries. Within the I-domains, phonological phrasing takes place then in accordance with the constraints imposed on \( \phi \)-minimality and \( \phi \)-maximality. A systematic investigation of \{syntax, prosody\} alignment involving functional projections on the one hand, and phonological phrases and/or intonation phrases on the other, has yet to be undertaken.

7.3 Phonological Phrase Supramaximality

Let me take up the issue now of the surfacing of supramaximal \( \phi \) outputs, i.e., of outputs violating *SupraMax\( \phi \), which cannot be accounted for by prosodic constraints like FILL-Min\( \phi \), FILL-\( \phi \)-Head or FILL-\( \Sigma \). That is, these constraints are all

---

11 The involved phrases are:

\[
\begin{align*}
[\text{com'\`egliora (pp oggi)}_{\phi}] & \quad \text{"like then, today"} \quad \text{M529} \\
[\text{in cui p\`ar (pp sc\`andu)}_{\phi}] & \quad \text{"in which it seems [that] bursts"} \quad \text{M818} \\
[\text{nell'\`ora (pp ch\`e si scioglie)}_{\phi}] & \quad \text{"in the hour that is dissolving"} \quad \text{M8157} \\
[\text{\`e la sorpresa (pp se\`e)}_{\phi}] & \quad \text{"and the surprise when"} \quad \text{U22618}
\end{align*}
\]
satisfied irrespective of whether the relevant strings are parsed into one or two $\phi$'s.

The representations involved are:

(20) \[ \sigma \sigma \sigma \sigma > \omega \omega \omega \]

\[ \Sigma \Sigma \Sigma \Sigma \sigma \sigma \sigma \sigma \sigma \sigma \]

\[ \gamma \gamma \gamma \gamma \omega \omega \omega \]

\[ \Sigma \Sigma \Sigma \sigma \sigma \sigma \sigma \sigma \sigma \]

\[ \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \]

\[ \gamma \gamma \gamma \gamma \omega \omega \omega \]

\[ \Sigma \Sigma \Sigma \sigma \sigma \sigma \sigma \sigma \sigma \]

\[ \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \sigma \]

In accounting for the supramaximal $\phi$ outputs, I shall refer to the triggers of prosodic underparsing distinguished in section 3.6. Like the triggers of prosodic overparsing, the triggers of prosodic underparsing will be formally identified by either textual or templatic input specifications. The triggers are listed below.

(21) a. Polymorphemic Lexical Words (3.6.1.1)
b. Complex-Preposition Constructions (3.6.1.2)
c. Possessive Constructions (3.6.1.3)
d. Narrativity (3.6.2)
e. Enjambment (3.6.3.1)
f. Long Lines (3.6.3.2)

Like the four predictions formulated in chapter 6 regarding the grammatical properties of $\phi$-subminimality, we may formulate a number of grammatical predictions regarding $\phi$-supramaximality:

(22) a. $\text{FILL-Max}_0$ is crucially dominated by another constraint
    b. This constraint ensures faithful parsing or filling of intrinsically non-metrical information
    c. Violation of $\text{FILL-Max}_0$ is minimal
Regarding the triggers in (21), two subsets emerge: textually specified triggers on the one hand, and templatically specified triggers on the other.\textsuperscript{12}

\begin{center}
\begin{tabular}{ll}
\textit{TexIn:} & \textit{TemIn:} \\
Polymorphemic Words & Narrativity \\
Complex Prepositions & Enjambment & Long Lines
\end{tabular}
\end{center}

The textual inputs are discussed in section 7.3.1, and the templatic inputs in section 7.3.2.

### 7.3.1 Textual Triggers of $\phi$-Supramaximality: PARSE

The textual triggers of $\phi$-supramaximality have in common that their input specification does not only involve head features but also edge features. Recall from chapter 4 that prosodic head-feature specification is based on the distinction lexical word vs. grammatical word. With respect to edge-feature specification too, prosodic information as well as morphological information is involved.

#### 7.3.1.1 Polymorphemic Words

A single polymorphemic item is always parsed into one $\phi$, irrespective of the metrical shape of the output $\phi$. Up till now I simply assumed this containment: all segments specifying a word are parsed into the same phonological phrase. This containment requires to be formally specified, however. I refer to the constraint as to PARSE-$\{/\text{seg}/\text{Mwd} > \phi\}$:

\begin{equation}
\text{PARSE-$\{/\text{seg}/\text{Mwd} > \phi\}$: all segments of a (morphological) word are parsed into one and the same phonological phrase}
\end{equation}

Consider the outputs in (25). The output in (25a) violates $^{*}\text{SupraMax}\phi$, and the output in (25b) violates PARSE-$\{/\text{seg}/\text{Mwd} > \phi\}$. The FILL-Max$\phi$ violation is indicated by the syllable node not enclosed by square brackets, and the PARSE-$\{/\text{seg}/\text{Mwd} > \phi\}$ violation is indicated by the angled brackets enclosing part of the segments specifying the word /inconsapevolezza/.

\textsuperscript{12} The possessive constructions discussed in 3.6.1.3 do no require a separate input specification: a prosodic input specification based on the distinction lexical $x$ grammatical word sufficiently accounts for the fact that a Determiner-Possessive-Noun sequence may trigger supramaximal-$\phi$ outputs.
A constraint ranking in which PARSE-{{seg/Mwd > ϕ} dominates *SupraMaxϕ accounts for the fact that the relevant supramaximal ϕ outputs must be considered optimal. In poetry, polymorphemic words giving rise to supramaximal ϕ's occur rarely, however.

7.3.1.2 Complex Prepositions

In (26) and (27), the examples of complex-preposition constructions are repeated from section 3.6.3.2. While the ϕ outputs in (26) are supramaximal, those in (27) are not.

(26) a. Un rovello [e di quà dall'erto muro]ϕ M5:10
b. [accanto a lunghe secche]ϕ mi raggiunge M51:11
c. Sarai una statua [davanti all'Eterno]ϕ, U158:6

(27) a. [a sommo] [di minuscole biche]ϕ M28:8
b. [vicino] [alla matita]ϕ delle labbra, M125:26

As already mentioned in 3.6.3.2, I assume with Rizzi (1988) that complex prepositions are stored in the lexicon as single items. The fact that these items may give rise to supramaximal ϕ outputs provides additional evidence in favor of this account. That is, complex prepositions are grammatical items, and as such they are prosodically specified like all grammatical items, i.e., with either a Σ-head feature or no prosodic feature at all. The segmental complexity of complex prepositions requires a Σ-head feature, associated with the most prominent vowel of the string. The textual specification is as follows:

(28) Text: {Complex Preposition, Σ-head}

\[ \Sigma \]

| [C...CV...CV...C]| Complex Preposition

Again, the constraint PARSE-{{seg/Mwd > ϕ} can be invoked: all segments of a complex preposition are parsed into a single ϕ.
The fact that the recordings of the verse data may also give rise to parses in which the head word of the complex preposition is realized as \( \varphi \)-head shows that complex prepositions and simple prepositions indeed have different morphological configurations. It is the morpheme which may have a lexical function in another context that surfaces as \( \varphi \)-head: /sommo/ in (27a), and /vicino/ in (27b).

7.3.2 Templatic Triggers of \( \varphi \)-Supramaximality: FILL

The templatic triggers of \( \varphi \)-supramaximality differ from the textual triggers insofar that structures rather than items are involved. Like templatic triggers of \( \varphi \)-subminimality, I formally represent the templatic triggers of \( \varphi \)-supramaximality by means of alignment templates. In addition to prosodic information, either semantic or versificational information is specified. The constraint FILL-\( \varphi \), introduced in 6.3.2, ensures that templatic specifications are properly filled in the output. With FILL-\( \varphi \) ranked higher than *SupraMax\( \varphi \) in the constraint hierarchy, the surfacing of supramaximal \( \varphi \) outputs is grammatically explained.

7.3.2.1 Narrativity

As mentioned in 3.6.2, in particular in Montale there are poems which are characterized by their narrative discourse structure. In addition to morpho-syntactic and semantic properties, prosodic organization also contributes to the narrativity of a text. Instead of prosodically culminating phrases, like Mincp's, phrases expressing continuance, like Maxp's, are realized. Some examples from 3.6.2 are repeated here.

(29) a. [Poi seguimmo il canale] \( \varphi \) M125:7
b. [Com'elöna oggi] \( \varphi \)
c. [Tù mi'hai detto primo] \( \varphi \)
d. [non èra chè un momento] \( \varphi \)
e. [chè mi èra in fondo] \( \varphi \) M52:9-16

The involved \{semantics, prosody\} alignment template is formalized as follows:

(30) TemLin: \{Narrativity, [\( \varphi \)Max] \}

That is, (supra)max\( \varphi \)'s are evaluated as optimal if promoted by this \{semantics, prosody\} alignment template. The constraint FILL-\( \varphi \) ensures that templatic input specifications are properly filled in the output. With FILL-\( \varphi \) ranked higher than *SupraMax\( \varphi \), the grammar accounts for the (supra)max\( \varphi \) outputs.
7.3.2.2 Long Lines

As shown by the parsing tables of long lines (12 ≤ λ ≤ 18), in section 3.2.5, long lines tend to be realized as maximal or supramaximal \( \varphi \)'s. In comparison with the Def\( \varphi \)'s characterizing the most frequently occurring medial line types, (7 ≤ λ ≤ 11), the Max\( \varphi \)'s of long line types is marked. Therefore, I suggest that the templatic input contains a \{versification, prosody\} template to express this relation.\(^{13}\) Most clearly, long lines evince sequences of Max\( \varphi \)'s. In addition, the relation long lines and Max\( \varphi \)'s typically characterize lines that occur neither as poem/stanza-initial nor as poem/stanza-final lines. These edge-located lines are typically realized by Min\( \varphi \)'s, as argued in chapter 6.

(31) \textit{TemIn}: \{Long Lines, [\lambda_{\text{Max}}]\}

Consider some examples from 3.2.5.

(32) a. \[\text{Quando piú sérdo o meno] il ribollio dell'acque}\] \[\lambda=13 \ M51:9\]
b. \[\text{I'acevano gli spari], nel grembo solitario}\] \[\lambda=14 \ M41:5\]
c. \[Poi [côme s'uno scherno], [s'accameránano di gitto]\] \[\lambda=15 \ M40:5\]
d. \[arida], rivolgendomi, [vedrò compirsi il miracolo]\] \[\lambda=16 \ M40:2\]

Again, with FILL-\( \varphi \) dominating *SupraMax\( \varphi \), the (supra)Max\( \varphi \) outputs safely pass the control.

7.3.2.3 Enjambment

In section 3.6.3.1, I observed that the phenomenon of enjambment on the one hand, and (supra)max\( \varphi \) realization on the other, are tightly bound. More concretely, an extremely high rate of (supra)max\( \varphi \)'s was found in this across-\( \lambda \) position. Enjambment is the phenomenon \textit{par excellence} which breaks the law: line boundaries and phonological phrase boundaries do not coincide. I will account for enjambment by the following \{versification, prosody\} alignment template:

(33) \textit{TemIn}: \{Enjambment, [\lambda_{\text{Max}}]\}

Consider some of the examples from 3.6.3.1:

\(^{13}\) Although I refer to long lines, a parallel with fast speech can be made. That is, the relevant \{versification, prosody\} alignment template might also be stated in terms of a \{speech rate, prosody\} template.
As before, the above (supra)max outputs are evaluated as optimal by the grammar. The constraint that accounts for proper filling of specific templates, FILL-\( \varphi \), dominates constraints ensuring proper filling of less specific templates, like \( ^*\text{SupraMax}\varphi \).

7.3.3 Summary

The above subsections presented the triggers of \( \varphi \)-supramaximality identified in chapter 3, in the light of the template-and-constraint approach developed in this thesis. Textual triggers as well as templatic triggers are argued to be stored in the input in the form of \{prosody, non-prosody\} alignments. Constraints ensuring proper filling/parsing of these alignment specifications are ranked higher than the purely prosodic constraints of metrical complexity. In the actual case, FILL-\( \varphi \) and PARSE-\{seg/Mwd > \( \varphi \)\} are both ranked higher than \( ^*\text{SupraMax}\varphi \).

While textual triggers to supramaximal \( \varphi \) outputs are characterized by the \{morphology, prosody\} alignment, templatic triggers are characterized by either the \{semantics, prosody\} or \{versification, prosody\} alignments. Regarding the latter, it can be argued that the effect of supramaximal \( \varphi \)'s, i.e. prosodic continuance, is intentional in nature.

More triggers of \( \varphi \)-supramaximality may certainly exist, other than those discussed here.

7.4 Modular Interaction and \( \varphi \)-Maximality

In the light of prosodic maximality, two phenomena will now be discussed which are also of interest where the modular organization of the grammar is concerned. The relevant phenomena are Possessive Inversion and Adjective/Adverb alternation. The interactions discussed up till now between prosody on the one hand, and non-prosodic linguistic information on the other, served to account for the phonological phrases found in the poetry of Montale and Ungaretti. The
phenomena to be discussed now, by contrast, illustrate how a prosodic analysis allows us to account for non-prosodic linguistic properties. Put differently, prosody may affect lexical variation and 'allo-syntactic' variation.

7.4.1 Possessive Inversion

In section 3.6.1.4, I presented examples of what I called Possessive Inversion: DET-POSS-ADJ-N > DET-ADJ-POSS-N. For the sake of exposition, I repeat the examples in (35).

b. [il certo] [tuo fuoco] M107:4
c. [del grande] [tuo viso in ascolto] M150:3

The unmarked word order is DET-POSS-ADJ-N, and not DET-ADJ-POSS-N. The unmarked word order, however, may easily give rise to (supra)maxcp outputs, given the fact that two prosodically weakly specified words follow one another immediately. The marked order gives rise to submaximal φ outputs: prosodically weak and prosodically strong words alternate.

Considering the fact that the phenomenon can be analyzed from a phonological, morphological, syntactic as well as semantic point of view, we would like to understand how the modules involved communicate with one another. The first hypothesis is that the trigger of the inversion lies in the semantic module. From the semantic module a message is sent to the phonological module: the message HIGHLIGHT is prosodically interpreted as PROSODIC PROMINENCE. At the same time, a message is sent from the semantic module to the syntactic module: the message HIGHLIGHT is syntactically interpreted as WORD ORDER INVERSION.14

The second hypothesis is that the trigger of the inversion lies in the prosodic module. From the prosodic module the message DEFAULT φ is sent. The semantic module interprets this message as PULSATING TENSION, and the syntactic module as SPEC-HEAD ALTERNATION.

In addition to Possessive Inversion, there are other phenomena which favor a grammatical model which allows for modular interaction from prosody to syntax, and from prosody to semantics. Postnominal Possessives, Fronting, Heavy NP Shift are just a few examples.15 Instead of considering these phenomena to be derived by rule from an underlying syntactic representation, we may think of 'allo-syntactic' structures which exist alongside one another, just as prosodically marked and

14 FRONTING might also be seen as a syntactic interpretation of the semantic message HIGHLIGHT.
15 See Zec & Inkelas (1990) and Verbijlde & van der Weijer (1990) for prosodic analyses of Heavy NP Shift in English. Inkelas & Zec (1995), referring to Swingle (1993), mention that the syntactic phenomenon of Right Node Raising in English is also affected by prosodic well-formedness conditions.
prosodically unmarked templates. The selection of either this or that 'allo-syntactic' structure is determined by non-syntactic information, like prosodic information.

7.4.2 Adjective/Adverb Alternation

As shown in sections 3.5.1.2 and 3.6.1.1, the alternation that exists in Italian between bare adjectives and adverbs formed by the suffixation of -mente, is interesting in the light of phonological phrasing. That is, the adjective is a foot shorter than the adverb. One foot more or less can be crucial, however, in order to avoid either violation of FILL-Mincp or violation of *SupraMaxcp. In addition, it can also be crucial in order to satisfy proper filling of a specific alignment template. Recall from 6.3.2.3, that Fronting is aligned with a Minp template: in this fronted position, the short adjective form may be found, as exemplified in (36).

(36) Un freddo cala... [Duro] il colpo svetta. M150:5

The distribution of the bare vs. -mente forms in the poetry of Montale and Ungaretti is as follows: in Montale, against 80 bare forms, there are only 4 -mente forms, and in Ungaretti, against 61 bare forms, there are 22 -mente forms. The one-foot-less forms occur much more frequently than the one-foot-more forms. I suggest that this rather unexpected distribution is due to the prosodic organization of the involved verse type. That is, a prosodic organization that is built on the two-foot Default-φ template amounts to lexical selection of those forms which best fit this template. In the case of Adjective/Adverb alternation, two prosodically different forms are available in the Italian lexicon: a short form and a long form. The short form is selected in the actual language type.

Like the phenomenon of Possessive Inversion, Adjective/Adverb alternation alludes to a general principle: the various modules of the grammar are simultaneously present and may communicate with one another in a bidirectional way.

7.5 Conclusions

This chapter dealt with the conditions on phonological phrase maximality. The Maxφ template, defined on the basis of the analysis of the poetry of Montale and Ungaretti, consists of a SMinφ plus a Maxφ. Evidence in favor of the Maxφ template is provided by the fact that a variety of textual inputs give rise to identical outputs. PARSE and FILL constraints account for the discrepancies between input
specifications on the one hand, and surface outputs on the other: textually overspecified inputs give rise to PARSE violations, which amounts to deletion of prosodic features, and textually underspecified inputs give rise to FILL violations, which amounts to addition of prosodic features.

Two textual input types provided evidence in favor of the \textit{SM}_{\text{Maxo}} + \textit{Maxo} \textit{Maxp} template: (a) underspecified inputs of the type $\Sigma + \Sigma + \omega$ are realized as $\omega + \Sigma + \omega$ in neutral contexts, and (b) inputs of the type $\Sigma + \omega + \omega$ may be realized as $\omega + \Sigma + \omega$, while inputs of the type $\omega + \Sigma + \omega$ are never realized as $\Sigma + \omega + \omega$. When $\Sigma + \Sigma + \omega$ inputs are realized as $\Sigma + \omega + \omega$, non-prosodic information like semantic focus appears to be involved.

Although the poetry of Montale and Ungaretti is prosodically built on the two-foot \textit{Defp} template, maximal $\varphi$'s are found in order to avoid violation of either FILL-\textit{Minp}, FILL-\textit{p-Head} or FILL-\textit{\Sigma}. (Supra)maximal $\varphi$ outputs that cannot be explained by referring to these prosodic constraints, display non-prosodic properties which I assumed to be aligned with prosodic information. More concretely, textual alignments involve (morphological) word boundaries (complex-preposition constructions included), and templatic alignments involve semantic and versificational information like narrativity, long lines and enjambment.

The conditions on phonological phrase maximality also account for prosodic outputs which either cannot be predicted, or are incorrectly excluded as being possible outputs by the standard syntax-to-prosody approaches. That is, elements on the non-recursive side of the head of an XP are not always parsed into a single $\varphi$ with the head X, and prosodic parsing of head-complement sequences into a single $\varphi$ is determined by metrical complexity, and not by syntactic branchingness.

Finally, I briefly discussed two phenomena which show that prosodic structure may determine lexical selection as well as ‘allo-syntactic’ selection. These phenomena argue in favor of a grammatical model in which all the components are simultaneously accessible. Possessive Inversion is triggered by semantic and/or prosodic structure. That is, syntactic means serve a semantic-prosodic goal. The other phenomenon, Adjective/Adverb alternation, shows that lexical selection may be sensitive to the phrasal prosodic context. Prosodic phrasing of verse favors short $\varphi$'s rather than long $\varphi$'s. This implies that short lexical items are preferred over long lexical items.