V-N COMPOUNDS IN ITALIAN:  
A CASE OF AGREEMENT IN WORD FORMATION*

MARTINA GRACANIN-YUKSEK  
Massachusetts Institute of Technology

0. Introduction  
Compounds of the type verb-noun (V-N) in Italian have been studied for their argument structure (DiSciullo & Ralli 1994), exocentricity (Bisetto 1999) and the prosodic status of their component parts (Nespor & Vogel 1986; Pepperkamp 1997). In this paper I explore Italian V-N compounds in the context of the gender and number morphology they bear, with an emphasis on gender marking in the plural.

V-N compounds can denote instruments (‘instrument compounds’), shown in (2), or people (‘agent compounds’), illustrated in (3). Instrument compounds are masculine regardless of the gender of the noun contained in the compound. This is visible in their masculine agreement with associated determiners and adjectives: the noun mano (‘hand’) is feminine in isolation, as shown in (1), but the compound asciugamano (‘towel’) is masculine.

(1) una mano  
a-F.SG hand  
‘a hand’

(2) a. un piccolo asciuga-mano  
a-M.SG small-M.SG dry-hand  
‘a small towel’

* I am very grateful to Alec Marantz, David Pesetsky and Donca Steriade for their invaluable comments and discussion. This paper was presented at LSRL 35 at the University of Texas at Austin (February 2005). I would like to thank the audience for their useful questions and comments. All inadequacies are my own.

1 Some compounds, like lavapiatti/lavastoviglie (‘dishwasher’) and portaerei (‘aircraft carrier’) are feminine, but they are very few in number and can be regarded as exceptions.
Agent compounds, on the other hand, show natural gender agreement: their gender depends on the gender of their referent.

(3) un / una ficca-naso
   a-M.SG / a-F.SG thrust-nose
   ‘busybody’

According to prescriptive grammars of Italian, V-N compounds do not inflect in the plural, i.e. they are invariant. Native speakers, however, seem to be quite willing to violate this rule. If plural is overtly marked on the compound, it is reflected in the change of the final vowel of its nominal part, as in (4).

(4) a. un asciuga-mano
    a-M.SG dry-hand
    ‘a towel’

   b. degli asciuga-manì
    some-M.PL dry-hands
    ‘some towels’

The surprising fact is that when a compound contains a feminine noun of the first declension (casa, –e, ‘house’), the plural morphology which appears on the noun is feminine in form (–e), despite the masculine agreement of the compound with adjectives and determiners. For example, the feminine noun testa (‘head’) belongs to the first declension and forms plural with –e; teste (‘heads’). In isolation, it requires a feminine determiner, as in (5). The compound poggiatesta (‘headrest’), in the plural also acquires the ending –e, but it agrees with a masculine determiner. This is shown in (6).

(5) a. una / *un testa
    a-F.SG / a-M.SG head
    ‘a head’

   b. delle / *dei teste / *testi
    some-F.PL some-M.PL heads
    ‘some heads’
(6) a. un /*una poggia-testa
a- M.SG / a- F.SG rest-head
‘a headrest’

b. dei /*delle poggia-teste/*poggia-testi
some- M.PL / some- F.PL rest-heads
‘some headrests’

The morphology that the masculine compound poggiatesta (‘headrest’) shows in the plural manifests the feminine gender of the embedded noun (testa, ‘head’). Striking is the fact that the ending –e is otherwise reserved exclusively for the plural of feminine nouns of class –a (is not found on masculine nouns of any nominal class). Table 1 shows Italian noun endings in different classes in both numbers. The plural ending of masculine nouns of all classes is –i.

<table>
<thead>
<tr>
<th>Class 1 (-a)</th>
<th>Class 2 (-o)</th>
<th>Class 3 (-e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem</td>
<td>Sg. Pl.</td>
<td>Stem Sg. Pl.</td>
</tr>
<tr>
<td>Masculine</td>
<td>Problem -a -i</td>
<td>Libr -o -i</td>
</tr>
<tr>
<td>Gloss</td>
<td>problem(s)</td>
<td>book(s)</td>
</tr>
<tr>
<td>Feminine</td>
<td>Test -a -e</td>
<td>Man -o -i</td>
</tr>
<tr>
<td>Gloss</td>
<td>head(s)</td>
<td>hand(s)</td>
</tr>
</tbody>
</table>

Table 1: Italian nominal classes – Singular & Plural

I propose that the phenomenon of ‘gender mismatch’ between the morphological shape of the compound and its syntactic agreement, illustrated in (6b), is the result of agreement between different pieces of the complex structure of V-N compounds. The view of agreement I adopt relies on the notion of ‘feature sharing’ (Pollard & Sag 1994; Frampton & Guttman 2000; Pesetsky & Torrego 2004). It is the very same mechanism that lies at the heart of the convergence of a syntactic derivation. Here is how the process of agreement as feature sharing is defined in Pesetsky & Torrego (2004):

(7) (i) An unvalued feature F (‘a probe’) on a head H at a syntactic location α (F_α) scans its c-command domain for another instance of F (‘a goal’) at a location β (F_β), with which to agree.
   (ii) Replace F_α with F_β, so that the same feature is present at both locations.

What is meant by ‘an unvalued feature’ is a feature that is not specified in the lexicon. The crucial aspect of this definition of agreement is the lack of the reference to a value. Agreement is not seen as a process that happens iff a value
can be assigned to a previously unvalued feature. Instead, agreement is a
mechanism that applies blindly, as soon as two matching features find
themselves in the appropriate syntactic configuration. Suppose that \( \alpha \) is an
unvalued number feature (NumF). If \( \beta \) is also a NumF, and is accessible to \( \alpha \), \( \alpha \) can agree with \( \beta \) even though \( \beta \) might also be unvalued. If either \( \alpha \) or \( \beta \) later
agrees with a valued NumF \( \gamma \), the value of \( \gamma \) spreads to both \( \alpha \) and \( \beta \) by virtue
of the previously established agreement relation between the two. In the next
section I illustrate how agreement works in the formation of simple nouns.

1. Agreement in the formation of simple nouns

   It has been proposed in the literature that in the lexicon, a noun stem is
associated with a matrix of features such as category, gender and class (Lieber
1992; Müller 2002). Suppose that a nominal feature matrix also contains the
feature ‘number’. Category, class and gender features are valued, while
number is unvalued. Here are some examples of Italian nominal stems, as they
are listed in the lexicon:

   \[
   \begin{align*}
   \text{a. cas-} & \quad \text{b. libr-} & \quad \text{c. croc-} \\
   \text{num: } & \quad \text{num: } & \quad \text{num: } \\
   \text{gend: f} & \quad \text{gend: m} & \quad \text{gend: f} \\
   \text{class: 1} & \quad \text{class: 2} & \quad \text{class: 3} \\
   \text{cat: N} & \quad \text{cat: N} & \quad \text{cat: N} \\
   \text{‘house’} & \quad \text{‘book’} & \quad \text{‘cross’}
   \end{align*}
   \]

   Chomsky (1995, 2000, 2001) claims that unvalued features are not usable at
the interfaces. Therefore, all unvalued NumFs must agree with a valued
instance of the matching feature for the derivation to converge.

   I suggest that the source of the number information for nominal structures in
Italian is a separate lexical item, ‘inflection’ (Infl\(^0\)), which is merged with the
nominal stem. Infl\(^0\) is phonologically null. It comes from the lexicon either as
singular or as plural. Under agreement with Infl\(^0\), the unvalued NumF on a
nominal element acquires value. I propose that the final vowel on a noun,
which I will be referring to as the ‘theme vowel’, is a spell-out of the values of
features that make up the feature matrix associated with the noun.

\[\text{2 A possible argument for the presence of NumF on nominal stems comes from the nouns that}
\text{ have only singular/plural forms (singularia/pluralia tantum). Grammatical number of such}
\text{nouns does not depend on their syntactic environment, but is presumably specified in the}
\text{lexicon. Positing the same feature on all nouns makes singularia/pluralia tantum nouns}
\text{formally identical to regular nouns.}\]
For concreteness, I assume that category, class and gender feature are also present on Infl\textsuperscript{0} head, but are unvalued and acquire values through agreement with the stem. This mechanism is illustrated in Figure 1:  

\begin{figure}[h]
\begin{center}
\begin{tikzpicture}[auto,>=latex]
\node (n1) at (0,0) {N\textsubscript{1} \text{ThV}};
\node (infl0) at (1,0) {Infl\textsuperscript{0}};
\node (n2) at (2,0) {N\textsubscript{2}};
\draw (n1) -- (infl0);
\draw (infl0) -- (n2);
\end{tikzpicture}
\end{center}
\caption{Agreement between the stem and Infl\textsuperscript{0} in number, gender, class and category features}
\end{figure}

Once the nominal stem, cas- is valued for number, all its features are valued and its theme vowel can be spelled-out with singular morphology: cas-a (`house').

A note is needed here about the conditions under which agreement happens. The standard conditions on agreement in syntax are the following:
- The unvalued feature that triggers agreement (`the probe') is always located on a head (not on a phrase).
- The probe must c-command the goal.

In Figure 1, the nominal stem cas- (`house') does not c-command Infl\textsuperscript{0}, under the standard definition of c-command:

\begin{equation}
\alpha \text{ c-commands } \beta \text{ iff } \beta \text{ is not contained in } \alpha \text{ and every } \gamma \text{ that dominates } \alpha \text{ also dominates } \beta. \quad (\text{Chomsky 1986})
\end{equation}

However, the projection of N (N\textsubscript{1}) does c-command Infl\textsuperscript{0}. Chomsky (1995) states that following the merger of two elements, \(\alpha\) and \(\beta\), the label of the newly formed node is either \(\alpha\) or \(\beta\). In the domain of morphology, the elements merged together are heads. It can be maintained then that in word-formation, all the elements created through the merger of two morphemes are also heads, and can as such act as probes. Thus, N\textsubscript{1} can probe Infl\textsuperscript{0}, since it c-commands it.

According to this proposal, the theme vowel of a simple noun is the expression of the features present on the nominal stem. It is not a phonological

\footnote{The direction of the arrow is from the probe to the goal; ThV stands for `theme vowel'.}
expression of the inflection itself. On the other hand, Infl^0, following agreement, possesses all the features that N_1 possesses, and crucially, N_1’s category feature. This enables us to say that in Italian noun-formation, Infl^0 always projects, passing the category information of its sister up the tree.

I now proceed to show how the agreement mechanism derives the gender mismatch in the V-N compounds, which we saw in (6b).

2. Agreement in V-N compounds

First, we have to establish the structure of V-N compounds in Italian. These compounds are exocentric. Their gender specification (masculine in instrument compounds (ex. 2), natural gender in agent ones (ex. 3) is not attributable to either V or N. Neither are the agentive/instrumental semantics. Agent nouns in Italian are normally derived by the pair of agentive suffixes: –tore and –trice. Both suffixes are lexically valued for gender: –tore is masculine and –trice is feminine, and they both attach to verbal stems.

(10) a. allenare  b. allena-tore  c. allena-trice
train-INF. train-AGENT.M.SG train-AGENT.F.SG
‘to train/to coach’ ‘trainer/coach’ ‘trainer/coach’

I propose that the structure of V-N compounds contains a similar functional head, which is phonologically null (Kiparsky 1982). This head provides the agentive/instrumental semantics of the compound and turns its complement into an agent/instrument noun. I will call this nominalizing head n.

Like –tore and –trice, n is lexically specified for gender. However, the value of its gender feature seems to be natural. This explains why agent compounds reflect the natural gender of their referents, and we will see that it also explains the fact that instrument compounds are masculine. Other instances of morphemes marked for natural gender in Italian include nominal stems like ragazz- (ragazzo/a = ‘boy/girl’), and bambin- (bambino/a = male/female infant).

Riente (2003) proposes that in Italian, the gender value of some nominal stems is not fixed in the lexicon. These are subject to a redundancy rule, which marks them ‘feminine’ iff their referent is a female. I adopt this idea, but propose that it is morphemes with natural gender specification that undergo the rule, and not those whose gender feature is unvalued (for the latter, I propose that they acquire the value via agreement). The redundancy rule is given in (11):

(11) [nat]_{GEN} \rightarrow [f] / \_\_\_\_ , ♀
If the referent of a noun with the natural gender value is not a female, it is
assigned masculine by default.

\[ \text{Figure 2: Structure of the V-N compound poggiastea ('headrest')} \]

Given everything presented so far, the structure of a V-N compound must look
something like Figure 2. The structure in Figure 2, together with the feature
sharing operation of agreement is responsible for the gender mismatches
observed at the beginning of the paper. In the next section, I show how gender
mismatches are derived.

2.1. Deriving the gender mismatch

Here I present step by step derivation of the plural form of the
compound poggiastea ('head rest'), which for most speakers I consulted
surfaces as poggiasteo ('head rests').

In the first step, the stem is merged with the verb, but no agreement takes
place between them. The noun is understood as an internal argument of the

---

4 Additional evidence for \( n \) and its gender specification is provided by diminutive formation:
instrument V-N compounds in Italian always form diminutives by a masculine suffix –ino,
regardless of the gender of the embedded noun. For reasons of space I omit these data here.
5 Infl\(_{[n]}\) labels the node projected by Infl\(_0\) after its merger with \( n \). Throughout the paper,
subscripted brackets in diagrams are used to indicate the head which most recently merged
with the projecting head.
6 The verbal element in Italian V-N compounds is a non-agreeing verbal form. Different
authors assign it different morphological make-up: Tollemache (1945) considers it to be the
what appears to be the ‘verbal’ part of the compound is actually its agentive nominalization,
with invisible (either null or dropped) nominalizing suffix –tore. What is important for this
analysis is that no agreement takes place between the verbal and nominal parts of a compound.
I assume this to be the consequence of the verbal element lacking the relevant features.
verb. It is expected that it is the \( \theta \)-role assigner that projects, rather than the assignee. The head which projects is thus probably the verb.\(^7\) Furthermore, if \( n \), which merges next, is indeed like \( -\text{tore/-trice} \), we expect it to be subcategorized for a verbal element.

Next, the null nominalizer is merged, as shown in Figure 3. Agreement is triggered by all unvalued features. The unvalued class feature on \( n \) is valued by the class feature of \( N \), the closest (and the only) head with the relevant feature in the c-command domain of \( n \). The unvalued NumF on \( n \) enters agreement with the matching feature on \( N \), but since both are unvalued, neither acquires a value. However, a link is established between them (marked in the diagram as \( Ag \), for ‘Agreed’), so that once one of them is valued, the other will receive the same value. Since the NumF on the nominal stem has not yet acquired a value, the shape of the theme vowel is still not determined. No agreement in gender feature is happening in the structure, since both gender features have a lexically specified value: the noun is feminine, and \( n \) possesses natural gender. At this point, the structure looks like the one in Figure 3b.

Finally, the inflection node is merged, with the valued NumF. We are interested in the case where the value is plural, since only then do we obtain a gender mismatch. The unvalued features on Inf\(^0\) (gender, class and category) trigger agreement with the valued features on \( n_{[\beta]} \). The unvalued NumF on \( n_{[\beta]} \) also triggers agreement with the valued NumF of Inf\(^0\) (recall that in this model \( n_{[\beta]} \) has the status of a head, therefore, a probe).

---

\(^7\) This is not to say that the resulting constituent is a verb \textit{per se}, but only that it is “V-headed”.

Figure 3: Derivation of poggiateste (‘headrests’): steps 1 and 2
Once the value for the NumF on $n_{[V]}$ is set to plural, the same value appears on the nominal stem, by virtue of the feature sharing mechanism of agreement. All the features on nominal stem are now valued. The exponent of the obtained feature matrix on N is the vowel $-e$, since the noun is feminine and belongs to class 1. The structure obtained is the one in Figure 4. Merger of $\text{Infl}^0$ triggers the application of the redundancy rule in (11). Given that the referent of the compound is not a female, the structure is assigned masculine gender, probably by default. As a result of the masculine gender assignment, the projected node of $\text{Infl}^0$ now contains features [m] and [pl].

In Italian, determiners agree with their complement nouns in number and in gender. So, the determiner that accompanies the noun poggiateste (‘head rests’) must be $i$ (‘the-M.PL.’). Thus, we obtain the gender mismatch: a noun with feminine morphology and masculine syntactic features:

(12) $i$ poggia-teste
    the-M.PL rest-heads
    ‘the headrests’

Italian V-N compounds that show gender mismatch include compounds such as puliscitestina/-e (‘CP player’ head cleaner(s)’), apriorperta/-e (‘remote door opener(s)’), segnavia/-e (‘signpost(s)’), copritastiera/-e (‘keyboard cover(s)’).

The analysis outlined here extends to all compounds that have a distinct morphological form in the plural. The theme vowels vary with the nominal

---

8 It remains an open question whether all instances of [nat] in the structure are replaced by [m], or just the one on the most recently merged element, i.e. the one on $\text{Infl}^0$. 
class and gender, since they are the spell-out of the particular feature combination present on N. With the exception of feminine nouns of the first declension or class 1 (–a), the plural marker for all other nouns in Italian is –i, as shown in Table 1. Thus we obtain the following:

\[(13)\]
\[
\begin{array}{ll}
\text{a. la mano} & \text{b. gli asciuga-mani} \\
\text{the-F.SG hand-CL2} & \text{the-M.PL dry-hands} \\
\text{‘the hand’} & \text{‘the towels’} \\
\text{c. ilporto} & \text{d. i passa-porti} \\
\text{the-M.SG port-CL2} & \text{the-M.PL pass-ports} \\
\text{‘the port’} & \text{‘the passports’}
\end{array}
\]

This analysis indicates that agreement is operative not only in sentence-syntax, but also in structures below the level of the word. It gives support to agreement seen as feature sharing, triggered by unvalued features, regardless of whether or not they are assigned a value as a result of the agreement operation.

The analysis as it stands predicts that in all V-N compounds the NumF on the stem is determined by the number value present on the Infl\(^0\) which attaches outside \(n\), i.e. that no V-N compounds are invariant. This is of course not right. In the following section I examine invariant compounds.

2.2. **Deriving invariant V-N compounds**

The difference between the compounds that have a distinct plural form and the invariant ones can be attributed to whether the number of the noun embedded in the compound is interpreted or not. In the compounds that inflect for plural, the interpretation of the compound does not depend on the plurality of the embedded noun. It does not matter whether a towel is used to dry one or more than one hand, or whether one or more heads rest on a headrest. When the meaning of the compound does not co-vary with the value of the NumF on N, this feature can be valued late in the derivation, as we saw above.

Invariant compounds, on the other hand, are transparent enough with respect to the semantics of the embedded noun for the speakers to know whether a singular or a plural noun is appropriate. Thus, there is a difference between *portaspazzolino* and *portaspazzolini* (carry toothbrush-SG/PL = ‘toothbrush holder’): the former holds only one toothbrush, while the latter holds more than one. A compound like *cavalcavia* (ride street = ‘overpass’) has to contain a singular noun *via* (‘street’), presumably because an overpass is conceived of as crossing only one street. Here, the denotation of the compound

\(^9\) CL1/2/3 indicates the nominal class the noun belongs to, as shown in Table 1.
varies (or would vary) with the toggling of the value of the NumF on N. The number value of N seems to be built into the meaning of the compound.\(^{10}\)

In this model, the NumF on nouns is unvalued in the lexicon. The source of its value is Infl\(^0\). If for some compounds N must be either singular or plural in order for the compound to be assigned meaning, and this particular value must be available regardless of the compound’s syntactic environment. I propose that in these cases an additional Infl\(^0\) node attaches directly to the noun at the very beginning of the derivation. This step is shown in Figure 5.

---

\(^{10}\) Not all compounds that are invariant rely for their meaning on the number of N. Thus apribottiglie (open bottles = ‘bottle opener’) is invariant, even though the plural of bottiglie (‘bottles’) does not seem to contribute anything to the semantics of the compound. A plausible explanation for why in such cases the number of the embedded noun must be fixed might involve the speakers’ knowledge of the world, i.e. their knowledge of the use of the object denoted by the compound (whether it is used to perform an action on one or more objects).
All unvalued features trigger agreement and acquire values. Once N possesses values for all the features in its feature matrix, the theme vowel is spelled out as feminine plural of class 1: –e. The noun is merged with V, and then with n. Unvalued features on n trigger agreement with the valued features on the closest head in the c-command domain of n with the relevant features. Since V does not have the relevant features, n agrees with the next closest head: Infl[N].

Finally, the ‘outer’ Infl⁰ is merged. The unvalued features on Infl⁰ agree with the n[V]. Since n[V] has no unvalued features left in its feature matrix, it triggers no agreement with Infl⁰. Even though Infl⁰ acquires gender, class and category features from n[V], no feature values are transferred from Infl⁰ to n[V] or to any other node in the structure. Thus, the value of the NumF on the outer Infl⁰ only affects the choice of the determiner. In Figure 7 below, the outer Infl⁰ bears singular features.

This completes the derivation: all unvalued features have acquired values. Natural gender is replaced by masculine by default gender assignment. The outer inflection is marked for masculine singular, and this is the information used for determiner and modifier agreement.

---

For this to be possible, some notion of cyclic spell-out of morphological structures is necessary. It seems plausible that spell-out is triggered by the merger of the Infl⁰ node.

**Figure 7:** Derivation of fermacarte (*stop papers = ‘paperweight’): step 3
3. **Conclusion**

The model of morphology developed in this paper correctly derives the plural forms of both invariant and inflected V-N compounds in Italian (including those with the gender mismatch). Moreover, it does so by relying on the operation of agreement, which is well attested in linguistic research. If this analysis is correct, the difference between morphology and syntax lies in the kind of features present on the components that are merged together and in the status of the intermediate nodes built in the course of a derivation (probes vs. non-probes). On the other hand, the two modules are the same with respect to the processes they employ in deriving legitimate structures.

**References**


Index for LSRL edited version:

**Subject index**

*Agree* (see ‘agreement’)
agreement 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12
**c-command** 3, 5, 8
**compounds**
  - agent 1, 2, 6
  - instrument 1, 6
  - inflected 13
  - invariant 2, 10, 13
  - V-N 1, 2, 3, 6, 7, 9, 10, 13

**feature(s)**
  - category 4, 5, 7, 8, 12
  - class 4, 5, 8, 10, 12
  - gender 4, 5, 6, 8, 10, 12
  - number 4, 5, 8, 9, 10, 11, 12
  - sharing 3, 7, 9, 10
  - unvalued 3, 4, 5, 6, 8, 10, 12
  - valued 4, 5, 8, 12

**gender**
  - feminine 1, 2, 3, 6, 8, 9, 12
  - masculine 1, 2, 3, 6, 7, 9, 12
  - mismatch 3, 6, 7, 8, 9, 13
  - natural 2, 6, 7, 8, 13

**goal** 3, 5
**head** 3, 5, 6, 8, 12
**infl** (see ‘Inflection’)
**inflection** 4, 5, 6, 8, 9, 10, 11, 12
**label** 5, 7
**n** (see ‘Nominalizer’)
**nominalizer** 6, 7, 8, 12
**NumF** (see Feature > Number)
**probe** 3, 5, 8, 13
**projection** 5, 6, 8, 9