Position of the head in Italian n-n compounds: the case of "mirror compounds"¹

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ABSTRACT

Several authors have recently pointed out that under certain conditions, a language can have both left-headed and right-headed compounding patterns. As contemporary Italian N-N compounds seem to encompass this phenomenon, the present article aims to examine parameters that determine or indicate the head position in these cases. Our hypotheses are based on a qualitative sample drawn from the Gradit dictionary and are further verified by a quantitative study about "mirror compounds" (*radiogiornale* vs. *giornale radio*) on the ItWac corpus. The position of the head in N-N compounds is claimed to show a strong correlation with "tight" and "loose" orthography. In conclusion, possible explanations of this phenomenon as well as open questions for future research are suggested.

KEYWORDS

word compounding, N-N compounds, learned compounding, Italian

1. INTRODUCTION

The position of the head in compounds has been a widely discussed subject in recent literature. In the eighties, generative grammar presumed that the parameter of directionality — and thus, the location of the head — remains the same in compounding as well as in other morphosyntactic processes of a given language. Accordingly, the position of the head in compounds would be guided by the setting of this parameter and one language could have either only left-headed or only right-headed compounds.² Since then several studies have argued that one language can have both leftheaded and right-headed compounds: Packard (2000) claims that in Chinese, verbal compounds are right-headed, while nominal compounds are leftheaded.³ Pepper (2010:35–41) has recently shown that in Nizaa (a language spoken in Cameroon), both

¹ This text was produced as part of the GAČR Grant No. 13–00496S (N-N Compounding in Contemporary Italian).

² Cf. Scalise (1990) for a detailed discussion of this topic, especially in the chapters concerned with the "Righthand head rule". In his later work, the same author (Scalise, 1994:194) states overtly that at the current state of knowledge, it does not seem possible for a language to form freely both left-headed and right-headed compounds.

³ Cf. a detailed discussion in Scalise S. — Fábregas A. (2010:116–118) and Scalise S. and Masini F. (2012:81–82).

compound types coexist and the position of the head is motivated by the semantic features (semantic class) of the compound.

According to the earlier generative assumptions, contemporary Italian compounding has been described as uniformly left-headed, while the "few" right-headed compounds in use were considered either as relics of Latin morphological processes or as calques from foreign languages (Scalise, 1994:194–195).⁴ However, some data suggest that in spite of its *learned* origin, right-headed compounding could represent a vital process in contemporary Italian, entering in competition with the "Romance" left-headed compounding. This point emerges in a particular way for the so-called "mirror-compounds" like *radiogiornale* vs. *giornale radio* (*radio news*). As these compounds have the same internal structure (N-N) and — being often synonymous — the same semantic features, the question arises as to which factor determines or bears the mark of the head position in such a compound.

The paper is structured as follows: in section (2), a recent typology of productive Italian N-N compounds by Sergio Scalise and Antonio Fábregas is presented and discussed in contrast with data drawn from the Gradit dictionary, allowing us to make a hypothesis about the distinction between right-headed and left-headed types. Section (3) is concerned with the "mirror" N-N compounds; the data from the ItWac corpus are used in order to verify the hypothesis presented in section (2). Finally, conclusions are drawn and further research perspectives are proposed in section (4).

2. AVAILABLE PATTERNS OF ITALIAN SUBORDINATE N-N COMPOUNDS

One of the most recent typologies of contemporary Italian N-N compounds has been given by Sergio Scalise and Antonio Fábregas (2010). The following table presents only the types considered as productive by these authors.

Туре	Head position	Example	Translation
1	Right-headed	gasdinamica	gas dynamics
2a		ufficio viaggi	travel agency
2b	Left-headed	uomo rana	frog man
2c		studente lavoratore	student worker

TABLE 1 — Current Italian N-N compounds, according to Scalise S. — Fábregas A. (2010:119)

Types (2a-c) are considered as regular and productive patterns, while Type (1) would represent "only one case of an 'Italian' right-headed compound, which, furthermore, belongs to a specific lexical domain and also has equivalents in English" (Scalise S. — Fábre-

⁴ Cf. also Scalise (1990:263), where it is suggested that the possibility of a language — Italian at least — having both right-headed and left-headed compounds is only illusory: right-headed ed and left-headed compounds would in fact correspond to two different diachronic layers, connected with the basic syntactic order of Latin and Italian respectively.

gas A., 2010:119). In fact, we agree that the *gasdinamica* type could be plausibly interpreted as a new evolution stage of the so-called *learned compounding*, which has become a vital word-formation process in all Romance (and also other European) languages especially in the domain of terminology. But is it really so marginal, from both the quantitative and sociolinguistic point of view?

Let us examine from this angle a sample of 1390 recent Italian compounds collected in Radimský (2006); this sample contains all lemmas marked as "compound" in the *Gradit* dictionary (De Mauro, 1999), first attested between 1980–1999. Considering that *Gradit* is the biggest modern Italian dictionary with an open editorial policy and an accurate treatment of etymology, the sample can be considered as representative of compounds created between 1980 and 1999, including low-frequency items and terminology, but involving obviously only compounds written by convention as one graphic word (i.e. without a blank or hyphen between the internal elements).

As far as the N-N compounds are concerned, the sample contains 9 left-headed and 91 right-headed items, which corresponds to 0.6% and 6.5% respectively. Thus, the left-headed compounds (Radimský J., 2006:90) can hardly be said as representing a vital paradigm: six of them belong to the very productive, but limited, paradigm in *capo-5* and among the remaining three, one is in reality probably exocentric (*frescolana*), one has an internal preposition (*punkabbestia < punk <u>a</u> bestia*), and the last (*discogay*) has one element of English origin (*gay*, attested in Italian since 1959 according to the *Gradit*).

On the other hand, the right-headed compounds in the sample seem to be good examples of the *gasdinamica* paradigm. Their complete list is given in the following table.

autopattuglia; autosoccorso; aviosuperficie; cicloalpinista; cicloamatore; cicloambientalismo; cicloambientalista; cicloraduno; cineautobiografia; cronoscalata; discobar; discocultura; discopub; eurozona; fotobiografia; fotodisco; fotogiornalismo; fotogiornalista; fotolaboratorio; fotolibro; fotopiano; fotosafari; fotoservizio; fotostoria; infospettacolo; laserchirurgia; macrolinguaggio; macroprogramma; motoalpinismo; mototurismo; ortovivaista; pornoattore; pornocassetta; pornoconsumatore; pornodiva; pornodivo; pornoeroe; pornofan; pornofestino; pornogruppo; pornoromanzo; pornosala; pornotelefonata; pornotelefono; radarriflettente; radarschermo; radarsonda; radiodrammaturgia; radiosveglia; sciescursionismo; sciescursionista; siloporto; spazionave; totogol; turbodiesel; turborazzo; vetrocamera; vetrometallo; vetroresina; videobar; videocamera; videocatalogo; videoconferenza; videocontrollo; videodipendenza; videoenciclopedia; videofilm; videogioco; videogiornalismo; videogiornalista; videoimpaginatore; videoinformazione; videolettore; videolibro; videonoleggio; videopirateria; videoproiettore; videoreporter; videorivista; videorock; videoscrittura; videosimulazione; videosistema; videoterminale; videoverbalizzazione

TABLE 2 — Right-headed N-N compounds in Radimský (2006)⁶

5 Viz. capoarea, capocarro, capocommessa, capolevate, capomensa, capozona (Radimský, 2006:90).

⁶ The right-headed N-N compounds are not presented explicitly in Radimský (2006), because of a different terminology adopted in that book. We have obtained a list of these items by filtering the electronic version of the complete sample in Radimský (2006:197–255).

Many of these compounds contain a first element etymologically related to a learned stem, but attested in the present day language (generally with a new sense) both as a compound element and as an independent noun. Thus, the paradigm can be observed as a new evolution stage of learned compounding. Nevertheless, it has also to be pointed out that not *all* first elements have learned origin: the first position also contains ordinary Italian nouns of Italian (*vetro, spazio*) or foreign (*sci, radar, laser, disco*) origin or abbreviated Italian nouns (*aviazione > avio, informazione > info*).⁷

From the sociolinguistic point of view, these compounds would be expected to be specialized terms, like *gasdinamica*. However, the Gradit dictionary states that only 42 of them (46%) are of a terminological nature, while 39 belong to the common lexicon (43%), 3 are marked as both common and terminological and 7 would be of rare use ("di basso uso").

These data allow us to make the following assumption: right-headed N-N compounding is becoming a vital word-formation paradigm in contemporary Italian. It can be interpreted as a direct continuation of the learned compounding paradigm (common to most of Standard Average European languages), but it seems to be breaking two traditional limits of the learned compounding, i.e. usage of a limited set of compound elements with learned origin on one hand, and a highly terminological nature of the compounds on the other hand.

How should we interpret the absence of left-headed N-N compounds in this sample? Recent literature⁸ clearly shows that left-headed N-N compounds like those in Table 1 belong to vital Italian word-formation paradigms. Therefore, their absence in our sample must be due to the fact that the sample is limited by an orthographic convention: it contains only compounds written as one graphic word. On the other hand, studies which (implicitly) take into account Italian compounds written as two graphic words (both hyphenated and unhyphenated)⁹ do not mention any right-headed N-N compounds. These facts suggest that, despite the assumptions shared in Romance word compounding since the pioneer studies of Arsène Darmesteter (1894) and Federico Tolemache (1945), an orthographic convention may play a role as an indicator of internal morphosyntactic structure in contemporary Italian compounds.¹⁰

Let us now examine this assumption by a quantitative study of the "mirror" N-N compounds.

We have observed that in these right-headed compounds, some of the first elements appear quite frequently in the first position; a similar phenomenon has been observed by Pepper (2010:38) for left-headed Nizaa compounds. However, neither in Nizaa nor in Italian, the simultaneous presence of left-headed and right-headed compounds can be accounted for by this family size effect (cf. Radimský, 2011).

⁸ Cf. Baroni, Guevara, Pirelli (2007); Baroni, Guevara, Zamparelli (2009).

⁹ Cf. Scalise and Masini (2012:79).

¹⁰ Since Italian orthography does not have a normalized shape, it is essentially governed by implicit mechanisms based on language in use.

3. POSITION OF THE HEAD IN "MIRROR COMPOUNDS"

The so-called "mirror" N-N compounds may not be central in terms of frequency in Italian word formation processes, but they represent an interesting central point of contact between right-headed and left-headed N-N compounding. Migliorini (1963) noticed almost fifty years ago that some compounds could be either left-headed or right-headed, producing "mirror pairs" like *radiogiornale* vs. *giornale radio* (*radio news*) or *radiostazione* vs. *stazione radio* (*radio station*). These pairs are mostly synon-ymous¹¹, they have the same internal structure (N-N) but a different position of the head. From the diachronic point of view, the "tight" right-headed member (*radiogiornale*) represents the latest evolution stage of the neoclassical (learned) compound patterns (the above mentioned *gasdinamica* type), while the "loose" left-headed member (*giornale radio*) is a fruit of native Romance morphosyntactic processes.¹²

In these prototypical examples, traditional orthography seems to reflect the position of the head, as the tight member is right-headed and the loose member is left-headed. The crucial question is whether this correlation could be observed as significant in large text corpora and with lower-frequency compounds. In order to perform this verification, we have taken into account a basic set of nominal "mirror effect items" (like *radio* in the above-mentioned example) identified in previous studies (Radimský 2007, 2011): *audio, auto, avio, bici, foto, laser, meteo, moto, porno, radar, radio, turbo* and *video*. Then, the compounds these items allow to form were observed in the ItWac corpus.

Hypothesizing that tight N-N compounds are systematically right-headed (RH) and loose N-N compounds are left-headed (LH) allows us to assume that only two of the four possible combinations are predicted, as shown in Table 3:

Predicted forms		Non-predicted forms		
Tight	Loose	*Loose	*Tight	
right-headed	left-headed	right-headed	left-headed	
audio cassetta	cassetta audio	* audio cassetta	* cassett(a) audio	

TABLE 3 — Predicted and non-predicted forms

In quantitative terms, non-predicted forms should have a significantly lower frequency of occurrence than the predicted ones. The proportion between the two predicted forms should thus be accidental (cf. Radimský 2007, 2011 for the last point).

¹¹ The synonymy is frequent, but not necessary: *audiocassetta* and *cassetta* audio are synonymous, while *radiocomando* and *comando radio* not necessarily (both terms can mean *remote control*, but *comando radio* could also mean *order given through a radio transmitter* or it can refer to a special type of control of a car radio receiver, situated near the steering wheel; cf. Radimský, 2011:120–121). However, the synonymy of a mirror-pair is not required in our analysis as far as all the interpretations attested respect the predicted position of the head.

¹² Cf. Migliorini (1963:33–34), Antonelli (1996:292–293), Iacobini (2004:75), Radimský (2007), Radimský (2011).

Nevertheless, the verification cannot be only mechanical, because some compounds can be interpreted in "both" directions, which means that the apparently "non-predicted" combinations are in reality predicted, because they bear a different interpretation. This is the case of *fotoarchivio* and *foto archivio* in the following example:¹³ *fotoarchivio* — *archive of photographs* (Gradit): tight, right-headed.

foto archivio — photograph of/from an archive (interpretation supported by occurrences from the Itwac corpus): loose, left-headed.

The verification of this second property presupposes a qualitative interpretation of each occurrence in context.

These hypotheses have been tested on the Itwac corpus by assembling all predicted and unpredicted compounds (types) for each "mirror effect element" and calculating the sum of the frequencies of these types. The frequency lists were obtained from the Itwac corpus by the following CQL queries.

Type of compound		Query (for the item auto)		
А	Tight right-headed	[lemma="auto*" & tag="NOUN"]		
В	Loose left-headed	[tag="NOUN"] [word="auto"]		
С	Loose right-headed	[word="auto"] [tag="NOUN"]		
D	Tight left-headed	[lemma="*auto" & tag="NOUN"]		

TABLE 4 — Queries

Since these frequency lists contained a lot of noise, they were filtered automatically using the Marco Baroni's "Morph-it!" database of inflected Italian nouns. In this way, the filtered frequency lists contain only words (word forms) that can be a possible n-gram combination of a nominal "mirror item" (such as *audio, auto,* etc.) with any Italian noun.¹⁴ As the "tight" forms (type A and D) also contain hyphenated forms, we have calculated their rate.

The overall results based on the filtered frequency lists are given in Table 5.

In total, about 384 872 tokens (from 13 961 different word forms) were taken into account. These data obviously still contain some noise, because it was not possible to control all 13961 word forms individually. However, the overall rate of non-predicted tokens was of 3.23% only, which means that the general tendency reveals a strong support for the initial hypothesis.

¹³ In this respect, it is interesting to observe the orthography of the non-predicted form *fototessera* (*passport-format picture*, tight and left-headed). According to Zingarelli's dictionary (2011), the tight orthography has been lexicalized since 1966, but in the Itwac corpus, there is a strong concurrence between this lexicalized tight form (307 sg. + 119 pl.) and the predicted, but non-lexicalized loose form (337 — *foto tessera* and 79 — *foto-tessera*).

¹⁴ The list of nominal word-forms from Baroni's database contained 32.779 words which graphically differ one from another.

There	I	4	В	Total (pred	l A+B icted)	с		D		al C+D oredicted)	Rate
Item	All	Hyphen.		Total	Rate A — hyphen.		All	Hyphen.	Total	Rate D — hyphen.	of non- predicted
audio	2987	828	15752	18739	27.72%	371	29	25	400	86.21%	2.09%
auto	134528	7840	9978	144506	5.83%	2946	260	251	3206	96.54%	2.17%
avio	642	8	89	731	1.25%	31	0	0	31	—	4.07%
bici	163	65	370	533	39.88%	115	0	0	115	—	17.75%
foto	35740	632	1483	37223	1.77%	1200	23	19	1223	82.61%	3.18%
laser	201	43	5064	5265	21.39%	284	17	12	301	70.59%	5.41%
meteo	292	112	3988	4280	38.6%	77	6	4	83	66.67%	1.90%
moto	21666	127	783	22449	0.59%	930	8	4	938	50.00%	4.01%
porno	4973	117	2501	7474	2.35%	242	11	10	253	90.91%	3.27%
radar	55	24	4036	4091	43.64%	97	37	29	134	78.38%	3.17%
radio	28806	916	14282	43088	3.18%	1538	174	136	1712	78.16%	3.82%
turbo	1745	70	321	2066	4.01%	126	6	6	132	100.00%	6.01%
video	64218	2645	17763	81981	4.12%	3758	160	135	3918	84.38%	4.56%
Total	297745	13427	76410	374155	4.51%	11715	731	631	12446	86.32%	3.23%

TABLE 5 — Rate of predicted and non-predicted tokens in Itwac¹⁵

It is also interesting to observe the rate of hyphenated forms for Types A and D: while for Type A, the overall rate of hyphenated forms is only of 4.51%, it reaches 86.32% for Type D. However, Type D (tight left-headed) is very marginal in quantitative terms, as shown in Table 6.

Type of compound		Frequency	Rate	
А	Tight right-headed	296016	76.91%	
В	Loose left-headed	76410	19.85%	
С	Loose right-headed	11715	3.04%	
D	Tight left-headed	731	0.19%	
Total		384872	100.00%	

TABLE 6 — Rate of compound types, based on frequency count

Since the frequency lists with all the corresponding types are too long and would exceed the space of the present text, a shortened frequency list of compounds is given as an example by *video* in Appendix. The example reveals at first sight that the paradigm of predicted forms has a significantly more vital curve.

¹⁵ A = tight right-headed (*audiocassetta*); B = loose left-headed (*cassetta audio*); C = loose right-headed (*audio cassetta*); D = tight left-headed (*cassetta/a/udio*).

4. CONCLUSION

A quantitative verification of current typologies of Italian compounds suggests that the traditional "tight" left-headed N-N compounding (as in *pescecane*) is no longer an available morphological process. Instead, a new right-headed N-N pattern (as in *gasdinamica*) has been developing as a direct continuation of learned compounding patterns. Data from the Gradit dictionary show that the latter type seems to be breaking the two traditional limits of the learned compounding, since it ceases to combine only a set of compound elements of learned origin on one hand, and it begins to produce a significant number of non-terminological compounds on the other hand. This tendency should be explored more deeply on large language corpora and by taking into account especially forms that are neither of learned origin nor of a terminological nature (e.g. *pescaturismo* — litt. "fishing tourism").

In this state of affairs, Italian seems to have both left-headed and right-headed vital N-N compounding patterns. Therefore, the question arises as to which factor determines or bears the mark of the head position in such a compound. Our research shows that in the Itwac corpus, the location of the head in N-N "mirror" compounds (*radiogiornale* — *giornale radio*) presents a high correlation with the orthography, as the right-headed N-N compounds appear as "tight" and left-headed N-N compounds as "loose".

As the Italian orthography of neologisms is steered by implicit language rules rather than by explicit rules of a language policy, we think that the orthography of N-N compounds could reflect the fact that right-headed and left-headed N-N compounds correspond to different mental word-formation models in the mind of language users. There are also reasons to think that it may reflect a possible phonetic distinction between "tight" and "loose" compounds. According to a traditional point of view expressed in the classical handbook of Žarko Muljačić (1969:474–475), the difference would involve the relative strength of the two stresses concerned, as shown in Table 7.

Tight compound (= right-headed)	Loose compound (= left-headed)			
fotoarchivio	archivio foto			
[,fotoar'chivjo]	[ar'chivjo'fo:to]			

TABLE 7 — Phonetic difference between tight and loose compounds

While tight compounds would have one main stress and one secondary stress, loose compounds would have two main stresses, which could also have an impact on other correlated phenomena such as vowel length. Such a view is supported for instance by Sugeta (1989), whilst Nespor (1993) claims that there is no significant difference between the two stresses. However, neither of these hypotheses is based on material evidence from real phonetic research¹⁶ and the most recent sources (Krämer M.,

¹⁶ This view is supported by my personal communication with Marina Nespor.

2009:194–195) reveal that the question of the "secondary stress" in Italian compounds and (free) noun phrases is far from being understood at the current state of knowledge. The question thus remains to be further verified by phoneticians.

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APPENDIX – FREQUENCY LIST (SHORTENED) OF PREDICTED AND NON-PREDICTED TYPES WITH VIDEO

	ed forms	Non-predicted forms					
Tight	Loose	Loose Tight					
right-heade	d (A)	left-headed	d (B)	right-heade	ed (C)	left-headed (D)	
Word	Fq.	Word	Fq.	Word	Fq.	Word	Fq.
videogiochi	13547	scheda video	2454	video conferenza	367	installazione- video	6
videogioco	5839	schede video	1050	video giochi	228	film-video	5
videogame	4523	home video	936	video sorveglianza	192	sala-video	5
videocassette	3860	qualità video	511	video cassette	174	terminali- video	5
videoclip	3774	file video	435	video cassetta	127	cassette-video	4
videocassetta	3732	formato video	406	video arte	124	intervista- video	4
videocamera	3108	memoria video	296	video conferenze	123	data-video	3
videocon- ferenza	2760	montaggio video	291	video proiettore	113	documentario- video	3
video- sorveglianza	2099	risoluzione video	268	video gioco	109	post-video	3
video- registratore	1938	immagini video	244	video scrittura	101	proiezione- video	3
videocamere	1649	riprese video	238	video proiezioni	86	proiezioni- video	3
videoteca	1321	segnale video	219	video messaggio	83	radio-video	3
videoscrittura	1195	sezione video	217	video camera	82	riprese-video	3
videoterminali	987	rumore video	213	video installazioni	81	rockvideo	3
videogiocatori	805	proiezioni video	208	video comunicazione	43	tele-video	3
video- conferenze	781	acquisizione video	202	video proiezione	43	uomo-video	3
video- registratori	679	produzione video	197	video camere	42	aula-video	2
videopoker	599	contenuti video	187	video installazione	39	catalogo-video	2
videoterminale	592	presentazione video	171	video intervista	37	contatto-video	2
video- proiettore	536	proiezione video	171	video interviste	34	flashvideo	2
videogiocatore	500	modalità video	161	video reportage	32	fumettivideo	2
video- comunicazione	495	ripresa video	151	video lezioni	28	messaggio- video	2
videotelefono	391	sequenze video	151	video messaggi	27	pagina-video	2

	ed forms		Non-predicted forms				
Tight		Loose		Loose Tig			
right-heade	d (A)	left-headed	l (B)	right-heade	d (C)	left-headed (D)	
Word	Fq.	Word	Fq.	Word	Fq.	Word	Fq.
videoteche	352	uscita video	145	video chiamate	26	pagine-video	2
video-	0.40		10.0	: 1 1. C	25		0
registrazione	343	traccia video	126	video telefono	25	pop-video	2
video-clip	302	compressione video	125	video box	23	scheda-video	2
videoarte	263	sala video	119	video prodotti	21	schede-video	2
video-	235	servizi video	118	video	21	televideo	2
proiezione	230	Servizi video	110	telefonata	21	televideo	2
videoproiettori	214	produzioni	117	video	21	televisione-	2
		video		telefonate		video	
video- proiezioni	205	clip video	113	video artisti	20	album-video	1
video-	168	registrazione	109	video controllo	19	artisti-video	1
registrazioni		video					
videotelefoni	167	segnali video	104	video disco	17	auto-video	1
video-	164	supporto video	103	video proiettori	17	box-video	1
conferenza				_			
video-	150	riproduzione	97	video	16	braccio-video	1
sorveglianza		video		performance			
videotelefonia	144	registrazioni video	95	video registrazione	16	carta-video	1
video-	126	collegamento	90	video server	16	cellulare-video	1
installazioni		video					
video-	121	presentazioni	90	video telefonia	16	cinema-video	1
messaggio		video			-		
videointervista	115	immagine video	87	video milioni	14	comando-video	1
videonoleggio	113	parte video	87	video artista	12	danza-video	1
video- installazione	110	cassette video	84	video dipendenza	12	dati-video	1
videomusica	103	schermo video	81	video girl	12	dato-video	1
video- dipendenza	101	sequenza video	77	video web	12	dichiarazione- video	1
videotelefonini	100	documenta- zione video	73	video blog	11	documenti- video	1
video-games	99	sistema video	72	video film	11	Viaco	
		contributi		1			
videocitofono	85	video	69	video giochini	11		
videogrammi	84	cattura video	68	video operatori	11		
video-arte	83	poker video	68	video rap	10		
videochiamate	78	installazioni video	67	video spot	10		