Graphemic Complexity for the New Romance Phonemes in Italian

Some Reflections

Stefano Presutti

Abstract. The grapheme-phoneme correspondence (GPC) is considered the essential factor to classify the spelling consistency of world languages that also use a writing system to communicate. This paper focuses on cases of graphophonological inconsistency in a shallow writing system such as Italian. Particularly, this is an in-depth study of new Romance grapheme-phoneme correspondence complexity. This study attempts to explain why this inconsistency in Italian specifically involves these seven grapho-phonemes and does so by examining similar characteristics related to their historical development, which include some unsuccessful spelling reforms, phonological markedness, and language acquisition processes. In doing so, this paper examines the phenomenon of grapheme-phoneme correspondence consistency through original perspectives which therein provide a more complete picture of the possible motivations that led to these inconsistencies. The findings show that the surviving complexity related to these seven target consonants could indicate the effort that natives and non-natives should make to speak and write the standard language properly. Thus, at the grapho-phonological level, the etymological and national identity creation and preservation processes could be more important than the need to improve the language consistency.

1. Introduction

The correspondence between graphemes and phonemes of a language system is used as the main unit to classify the spelling consistency of all written languages. Particularly, by virtue of the Orthographic Depth Hypothesis (Frost, Katz, and Bentin, 1987; Katz and Frost, 1992), world languages have been classified in the last few decades according to their grapheme-phoneme correspondence (GPC) consistency degree along an axis with two extremes: orthographic depth and transparency.

Much of the research regarding GPC consistency has focused largely on English, a strong example of a language with high orthographic

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depth, to the detriment of other languages (Besse, 2007; Share, 2008; Ziegler, 2018). One of the main innovative elements of this study concerns the target language. Instead of analysing the grapho-phonological consistency of a deep writing system, and focusing instead on that of Italian, this paper has studied an inconsistent grapheme-phoneme correspondence present in a highly transparent writing system.

I sought to understand why Italian has a GPC inconsistency with specific new Romance phonemes, which were the hindmost institutionalized elements within the Italian phonological system, and why this has persisted as one of the primary unsolved problems of correspondence between sound and spelling.

Research on graphemic complexity has consistently preferred a synchronous study of the target language. In contrast, this paper has highlighted the grapheme-phoneme correspondence consistency through different perspectives, with the main goal of understanding what possible linguistic factors may affect the correspondence between graphemes and phonemes. Firstly, this study is one of the first attempts to clarify the history of target language grapho-phonemes in order to understand why there is GPC inconsistency in Italian despite its shallow orthography and the several attempted spelling reforms that have been made over time. Secondly, I have identified some compelling similarities between the seven inconsistent grapho-phonemes while considering their markedness degree, their diachronic period of sociopolitical acceptance into the grapho-phonological system, and their acquisition times in mother tongue (L1) and non-native (L2) contexts.

The remainder of this paper is organized as follows: in order to lay a foundation for the discussion of grapheme-phoneme correspondence consistency, especially in Italian, I discuss some grapho-phonological preliminaries. Following that, I describe the main characteristics of Italian graphematics, and then discuss how the grapho-phonological system has developed over time, particularly with regard to the seven new Romance target grapho-phonemes. I also show how several attempted spelling reforms failed. Moreover, I highlight similarities concerning the phonological markedness, the diachronic institutionalization, and the L1 and L2 learning processes. I distinctly describe the main feature of one of the grapho-phoneme targets: the palatal lateral approximant in Italian. The paper closes with a brief conclusion in which I summarise the findings and offer some suggestions for possible future proposals.

2.   The GPC Consistency

In order to delve deep into one of the main Italian GPC inconsistencies, it is essential to clarify the main theoretical terms used in this paper—namely, the *spelling-sound consistency* and *orthographic depth*.

The orthographic consistency of a language is characterized by a more or less exact correspondence of the sublexical units between the phonological and the graphematic systems. Orthographic consistency does not exclusively concern the GPC (grapheme-phoneme correspondence) or the PGC (phoneme-grapheme correspondence), but additionally the larger parts of a word, such as syllable, coda, and rhyme. Consistency—or transparency—can be measured in both directions: from sound to spelling or from spelling to sound. In addition, the concept of consistency can be partially complemented by that of orthographic depth. As Richlan recently identified, the orthographic depth is "the complexity, consistency, or transparency of grapheme-phoneme correspondences in written alphabetic language" (Richlan, 2014, p. 1). Therefore, this term only refers to the minimal units of language.

This concept has been mentioned in an array of research throughout the 1980s and early 1990s (Lukatela, Popadić, Ognjenović, and Turvey, 1980; Liberman, Liberman, Mattingly, and Shankweiler, 1980; Katz and Feldman, 1981; I. Y. Liberman, 1989; A. M. Liberman, 1992; Seidenberg, 1992), but it acquires a more definitive value when referencing the reliability of spoken and written language correspondences, apropos of the aforementioned Orthographic Depth Hypothesis. Notably, a shallow or transparent orthography will have a more direct spelling-sound correspondence, as is the case with Serbo-Croatian, while a deep orthography will exhibit a less direct one-to-one single grapheme-phoneme correspondence, as is the case with English (Katz and Frost, 1992).[1] However, the degree of transparency is often variable, even within the same language. Because of this, some languages, such as Spanish and Italian, have a high consistency from spelling to phonology, but also a lower consistency in the opposite direction (cf. for Spanish Landerl, 2006; for Italian Neef and Balestra, 2011).[2]

3.   Characteristics of Italian Writing System

I describe herein the main features of the target language of this study and, more specifically, the new grapho-phonemes introduced later in Italian.

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1. It should be noted, however, that the measure of the complexity of the relationship between the orthographic and phonological systems of a language remains particularly complex and does not constitute a universal value. Indeed, each modality for classifying orthographic depth is based on a partial choice of rules to be considered (cf. Schmalz, Marinus, Coltheart, and Castles, 2015; Ziegler, 2018).

2. As a general rule, we can say that when there is a difference in consistency between spelling and sound, phoneme-to-grapheme correspondence tends to be less transparent than grapheme-to-phoneme correspondence (Cook and Bassetti, 2005, pp. 9–10).

When considering the primary rules of Italian GPC and comparing them to those of other European languages (cf. Table 1), Italian emerges as being more transparent than others, such as English or French, because it has fewer rules for phoneme-grapheme correspondence. Thus, Italian has a shallow writing system to the extent that it is mostly written as it is pronounced (Maraschio, 1993).

TABLE 1.   Measures of complexity and unpredictability for Dutch, English, French, German and Italian (Schmalz, Marinus, Coltheart, and Castles, 2015)[3]

	Dutch	English	French	German	Italian
Total number of rules	104	226	340	130	59
Single-letter rules	51	38	46	44	19
	(49.0%)	(16.9%)	(13.5%)	(33.8%)	(32.2%)
Multi-letter rules	42	161	218	55	8
	(40.4%)	(71.2%)	(64.1%)	(42.3%)	(13.6%)
Context-sensitive rules	11	27	76	31	32
	(10.6%)	(11.9%)	(22.4%)	(23.8%)	(54.2%)

As illustrated in Table 2, there are some cases in contemporary Italian in which a phoneme is represented by a complex grapheme, wherein a grapheme changes depending on the context. Additionally, a few complex correspondence rules with some graphemes also exist. In each of these circumstances, with the exception of double consonants (in the fifth line) and vowel ortho-epic characteristics (in the third line), the same graphic signs are always used: <g> (also used for <gl> and <gn>), <z>, <s>, <c>, and the diacritical letter <i>. The following paragraph shows how all of them have been adopted to represent the new Romance phonemes introduced in the Italian phonological system.

3.1.   Complex Graphemes of New Romance Phonemes

The elements institutionalized last in the Italian grapho-phonological system consist of seven consonants, as reported in Table 3: four dental affricates (alveolars /ts - dz/ and prepalatals /tʃ - dʒ/), the prepalatal fricative /ʃ/, and the palatals (the nasal /ɲ/ and lateral /ʎ/).

The alveolar affricates /ts/ and /dz/ are represented by the same single-letter <z>, which creates a homographic situation, while the

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3. Measures of complexity and unpredictability are based on the Dual-Route Cascaded Model (or DRC, see Ziegler, Perry, and Coltheart, 2000; Rastle and Coltheart, 1998; Paap and Noel, 1991). For the DRC model, the numbers represent the number of rules of each type, and the percentage out of the total number of rules in brackets.

TABLE 2. Graphemic Complexity for the New Romance Phonemes in Italian (Neef and Balestra, 2011)

Number of letters	21	
Fixed letter combinations	3	(<gl>,<gn>, <sc>)
Undetermined	5	(<e>, <i>, <o>, <s>, <z>)
Context-dependent	6	(<c>, <g>, <gl>, <i>, <s>, <sc>)
Inherently ordered	13	(<b>, <c>, <d>,<f>, <g>, <l>, <m>, <n>, <p>, <r>, <s>, <t>, <v>)
Complex correspondence rules	4	(<c>, <g>, <i>, <s>)

TABLE 3. Graphemes representing the seven new Romance consonants in Italian

	Followed by /a, o, u/	Followed by /e/	Followed by /i/
/ts/	z	z	z
/dz/	z	z	z
/tʃ/	ci	c	c
/dʒ/	gi	g	g
/ʃ/	sci	sc	sc
/ɲ/	gn	gn	gn
/ʎ/	gli	gli	gl

palatal nasal is always represented by a digraph. All other cases present heterographic situations: the affricates' graphemes are both a single-letter grapheme and a digraph, while the prepalatal /ʃ/ and the palatals /ɲ – ʎ/ are always written with complex graphemes (digraphs or tri-graphs). Furthermore, the graphic representation of the affricates and palatals changes depending on the following vowel. Finally, the spelling of the three prepalatals /tʃ – dʒ – ʃ/ is somewhat ambiguous (see Table 4) because, in the Italian writing system, they can be easily confused with velar stops and the consonant sequence /sk/. In fact, these phonemes are graphically differentiated from each other simply by using the dia-critical letters <i> and <h>.

TABLE 4. Graphemes representing Italian prepalatals (2 affricates and 1 frica-tive), velar stops and a consonant cluster (fricative + stop)

/tʃ/	c – ci	/k/	c - ch
/dʒ/	g – gi	/g/	g - gh
/ʃ/	sc – sci	/sk/	sc - sch

4.   Diachronic Development

Italian is a Romance language spoken today primarily in Italy, and it is derived from the vernacular spoken in Florence in the fourteenth century. Like other contemporary Romance languages, such as French, Spanish, Portuguese, and Romanian, Italian is a linguistic continuation of Latin. At the beginning of its language development path, from the tenth to the fifteenth century, a linguistic pastiche indicated the lack of a real linguistic border between Latin and Romance Italian. In fact, if we compare the Romance languages according to their diachronic typology, the Florentine-based Italian represents one of the linguistic systems that are the least distant from the initial Latin matrix, and therefore more conservative compared to Romance languages such as French and Romanian, whose evolutions are the most marked (Banniard, 2008).

Until the sixteenth century, Latin remained as the main written language in the Italian states. For a long time, the Romance language struggled to have enough distance from its language of origin, an attribute vital to create a new sociolinguistic identity for the same community. Although a number of Florentine and non-Florentine intellectuals eventually succeeded in making Italian independent of Latin, their initial proximity is the main cause of the GPC inconsistencies still present in Italian today. Particularly in the first period of time, different structures of language were influenced by other Romance languages, especially French and Provençal, even at the grapho-phonological level. They were uniquely appreciated and used in the northern regions of Italy, close to the Alpine border, but their success and prestige also had considerable influence on Italo-Romance languages geographically more distant, such as the formal Sicilian used by several poets at the court of the Holy Roman Emperor Frederick II. In the first centuries of Italian diachronic development, there were numerous spelling variations at the individual, local, and regional levels (cf. Cornagliotti, 1988; Maraschio, 1993; Presutti, 2019). Within the same text, it was even possible to use multiple alphabets apart from Latin, such as Hebrew, Greek, and Arabic (cf. Coluccia, 2002).

In the sixteenth and seventeenth centuries, a substantial debate developed around the creation of a single standard language, both oral and written, for all Italo-Romance communities. This common objective of most Italian scholars was supported by the printing revolution as well. For that reason, a common writing system was institutionalized, fixed by a set of rules. The written language played a pivotal role in the standard oral language development. Writing was considered the basis for speech, serving as its model and its point of departure, rather than one of its subsequent steps (a trajectory unlike those of other European languages).

After that period of time, the standardized version of the Italian writing system did not change until recently, despite linguistic and political unification and the beginning of the mass literacy phase.

4.1.   Attempted Spelling Reforms

To further explicate the previous section, I present an in-depth analysis of the language reforms which tried to improve the Italian GPC inconsistency throughout the centuries, from its origins to the present day.

Distinguished scholars have proposed many attempted spelling reforms over time; however, there were two particular types of spelling reformers: the etymologists, who wanted to reduce the distance of the Latin roots of words, and the phoneticians, who wanted to improve the Romance grapheme-phoneme correspondence and to accelerate the written comprehension and production. In these ways, they tried to solve the homographic and heterographic complexity derived from the use of the Latin alphabetical system, the language of origin with a different phonological system. Despite their attempts, none of the proposals to change spelling were accepted. It is for this reason that the Italian language still presents the same spelling-sound inconsistencies of the sixteenth century, the period in which its spelling was standardized. This was not so much due to a conservative tendency of the written language in relation to the oral one[4], but rather to a form of inertia in the Italian alphabetical system.[5]

Below, I give three examples of spelling reform proposals in Italian.[6] The first one was suggested in 1435 by the Florentine intellectual and architect Leon Battista Alberti who was the same author of the first Italian grammar. Alberti suggested listing the alphabetical letters (standard and new graphemes) in a different order based on the graphic complexity: from the easiest to write to the most difficult (cf. Fig. 1). However, his spelling reform proposal was incomplete because he did not consider all the phonemes present in Italian, and thus it did not solve the GPC inconsistency.

During the standardization period between the sixteenth and seventeenth centuries, many literates such as Trissino, Bartoli, Tolomei, and Fiorenzuola, attempted to improve the grapheme-phoneme correspondence consistency. The Italian spelling institutionalization period was

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4. For centuries, the development of the Italian writing system followed a different path from that of pronunciation.

5. There have been several forms of resistance: socio-educational, economic and aesthetic. For further details, see Maraschio, 1993.

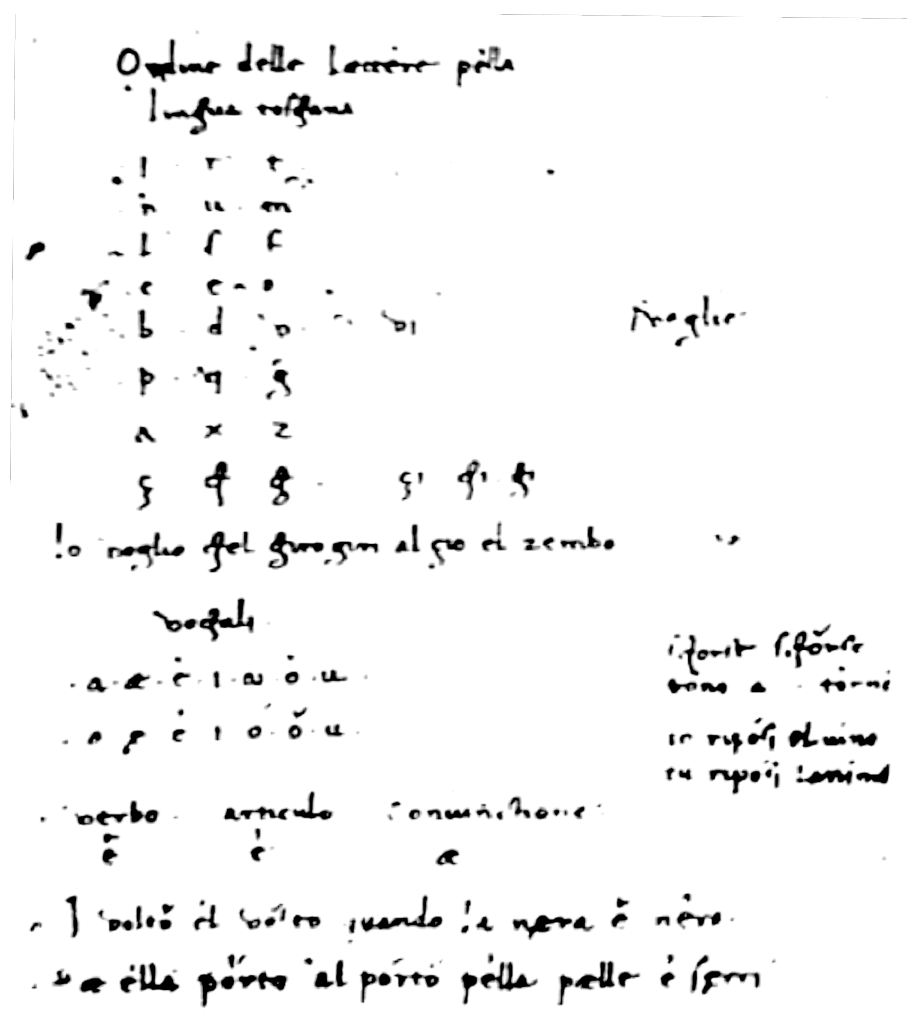6. For a more detailed description, see Maraschio, 1992b; Presutti, 2019.

FIGURE 1. Alphabetical reform proposed by Leon Battista Alberti (Gorni, 2012)

accompanied by the same enthusiasm and several radical reform propos-
als. In fact, many grammarians criticized the use of the Latin alphabet
as inadequate for Italian phonology, which led to debates about possible
changes to the old writing system.

   Another example of spelling reform was proposed by Giorgio Bar-
toli in 1584 (cf. Fig. 2). According to him, the main aim of spelling
was to maintain perfect clarity in the one-to-one relationship between
phoneme and simple grapheme, thus avoiding homographic and het-
erographic solutions and the use of digraphs or trigraphs. He urged

for an alphabet comprising thirty-five phonemes and corresponding graphemes. In reality, his proposal did not present a perfect bilateral correspondence for the seven target consonants of this paper. Instead, the two prepalatal affricates /tʃ/ and /dʒ/ as well as the velar stops /k/ and /g/ were represented by two or three graphemes. Nonetheless, this was one of the best examples of attempted consistent bi-directionality between graphemes and phonemes in Italian. Yet because his proposal was not welcomed by the politicians, grammarians, or other intellectuals, the Italian writing system, again, did not change.

a	animo		1	i	io		19
b	bontà		2	j	jerico	ierico	20
c	cera		3	l	leone		21
ϙ	ϙane	cane	4	m	mare		22
q	diϙo	dico	5	n	nero		23
h	pehe	pesce	6	ɲ	veɲto	vento	24
ƅ	peƅe	pece	7	o	moro		25
ɕ	ɕaue	chiaue	8	ɔ	ɔra	ora	26
d	dono		9	p	pane		27
e	il mele		10	r	riua		28
ɛ	mɛlo	melo	11	s	casa		29
f	fiore		12	ʃ	roʃa	rosa	30
ʒ	ʒente		13	t	terra		31
g	girlanda	ghirlanda	14	u	umile		32
ʀ	maʀo	maglio	15	v	via	uia	33
G	maGo	magno	16	ӡ	ӡelo		34
ð	ðaccio	ghiaccio	17	z	zana	zana	35
ʓ	aʓo	agio	18				

Figure 2. Alphabetical reform proposed by Giorgio Bartoli (Maraschio, 1992b)

Following this period of time, the interest in innovating the writing system was considerably reduced. Only the Italian political unification in the nineteenth century, and its related socio-political changes, again fueled the importance of improving the Italian spelling learning process in school education programs.

A third and final example of attempted spelling reform was suggested by the politician and glottologist Goidanich in 1910. Fig. 3 exhibits

five out of seven reported target graphemes and excludes the alveolar affricates. He created one distinctive sign for each of the seven new Romance consonants, basically merging lines and curves of digraphs and trigraphs into just one single sign. Thus, he ultimately resolved the biunivocity of these seven new consonants. Yet again, however, Goidanich's and other similar orthographic reforms did not succeed in radically changing the writing system's inconsistencies.
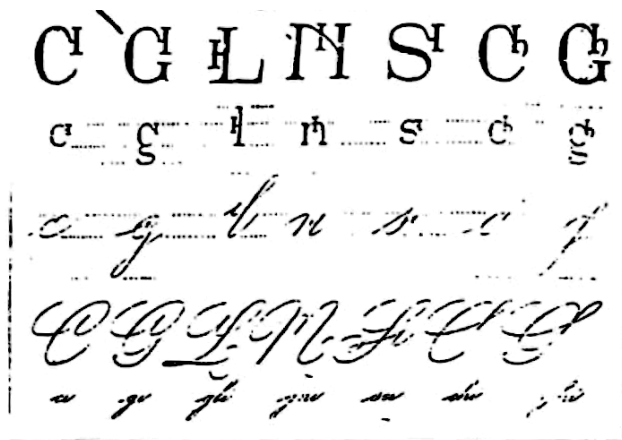

FIGURE 3. Alphabetical reform proposed by Pier Gabriele Goidanich (Goidanich, 1910)

5.   New Romance Grapho-Phoneme Similarities

After describing the main diachronic steps of the seven target consonants' inconsistency, I discuss the similarities between them in this chapter.

I noticed previously (cf. section 3.1) that from an orthographic point of view, they present a complex graphemic unit. From a phonetic point of view, they have a high markedness because they are less common than other sounds in world language phonetic classifications (Ladefoged and Maddieson, 1996; Maddieson, 1984).

When also considering the phonological hierarchy proposed by Jakobson (1968), the appearance of phonemes in language learning follows a precise universal hierarchy, dividing the vocal tract into smaller and smaller sections in order to create the phonemic identified by Trubetzkoy (1971). If compared with other consonants such as stops, the

seven new Romance target phonemes are more difficult to produce (and to hear, according to the Quantal theory by Stevens, 1989[7]). Thus, they appear later or do not appear at all in the distinctive phonetic process that is the basis of the phonological system of each language. Considering the Italian learning process specifically, these phonemes are produced last both in mother tongue and second language context.[8] In Table 5, I report the results of a recent experiment conducted by Italian speech therapists on the phonological development of Italian-speaking children (Tresoldi et al., 2018). They measured the average age of customary production, acquisition, and mastery of Italian consonants in an L1 context. The results, based on a large sample of participants aged 3 to 7 years old and representative of different geographical areas, showed that consonants such as plosives were mastered early by Italian children, while our seven target phonemes were the hindmost acquired segments.

To consider the writing as well, among the most common spelling mistakes made by native children and illiterates are again the complex graphemes representing these seven Romance phonemes. In Table 6, there are some examples of common spelling errors collected by Dardano (1993) and Tressoldi, Cornoldi, and Re (2017). The index of a recent Italian L2 textbook, reported in Fig. 4, show the same situation found in the mother tongue context. The textbook *Domani 1* (Guastalla and Naddeo, 2010) was targeted to beginners, particularly adult non-native speakers. First of all, the Italian second language pronunciation is taught toward the alphabet instead of the phonemes' acquisition; this spelling dominant approach is detrimental for learning all phonemes not represented by one single letter. Furthermore, complex graphemes are avoided, and they are only proposed later in various stages (particularly on chapters 3, 9 and 11; cf. Fig. 4). In the beginning, non-native students who study with this textbook can learn the grapheme-phoneme bilateral correspondences represented by the alphabet; however, they have to wait several units before learning the complex graphemes. Notably, in the third unit, they start using the contrast between affricates and velar stops, in the ninth unit the fricative, and finally, in the eleventh unit, they learn the nasal and lateral palatals.

In summary, the phonological learning order follows a precise hierarchy: in the beginning, it seeks the GPC consistency with the alphabet acquisition, and then it follows word frequency and phonological markedness parameters for the remaining phonemes represented by digraphs and trigraphs.

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7. The notions of ease of articulation and auditory distinctiveness as influences on the phonetic structure of languages were suggested also by Martinet (1964), Lindblom (1990), Lindblom and Maddieson (1988).

8. In addition, in chapter 4 we noticed that they were institutionalized late in the standard language.

▸ **indice**

comunicazione	grammatica	lessico	testi scritti e *orali*	cultura

unità 0 | come ti chiami?   pagina 11

comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
• Chiedere e dire il nome • Le espressioni *Che significa?, Come si scrive?, Come scusa?* • Le operazioni aritmetiche • Salutare	• L'alfabeto • I numeri da 1 a 30 • Il verbo *chiamarsi* (io, tu, lui/lei)	• I nomi propri • I saluti	• *I saluti* • *L'alfabeto*	• Modi per salutarsi • Nomi propri più diffusi

unità 1 | di dove sei?   pagina 18

comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
• Chiedere e dire la provenienza e la destinazione	• I verbi *andare* e *essere* (io, tu, lui/lei)	• Le espressioni *grazie, prego, scusa* • Stazione e aeroporto	• Scritte in luoghi pubblici • *Annunci alla stazione* • *Dialogo in treno*	• Città italiane • Fare conoscenza

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comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
• Chiedere e dare il numero di telefono • Chiedere l'età	• Il verbo *avere* (io, tu, lui/lei) • I numeri da 0 a 100	• Dati anagrafici	• *Dialogo in treno*	• Scambiare i dati anagrafici

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comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
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comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
• Salutare in modo informale e formale • Richiamare l'attenzione di qualcuno in modo informale e formale • Chiedere e dire il prezzo	• Gli articoli indeterminativi	• Cibi e bevande al bar • Tipi di acqua	• *Dialogo al bar* • Menù	• Andare al bar

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comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
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comunicazione	grammatica	lessico	testi scritti e *orali*	cultura
• Parlare della propria famiglia • Esprimere accordo o disaccordo • Fare una proposta e accettare • Incoraggiare • Introdurre un nuovo discorso	• Gli aggettivi possessivi e i nomi di parentela • *C'è / Ci sono* • I numeri dopo 1.000	• Nomi di parentela • Oggetti personali	• *Dialogo a casa* • Lettere ad un giornale	• La famiglia italiana

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▸ Fonetica I suoni [ʎ] e [ɲ] / Le doppie   pagina 92

FIGURE 4. Index of the Italian L2 textbook Domani 1 (Guastalla and Naddeo, 2010)

Table 5. Age of acquisition of Italian phonemes (years; months) (Tresoldi et al., 2018)

	Age of customary production (≥ 50 %)	Acquisition age (≥ 75 %)	Mastery (≥ 90 %)
[p]			≤ 3; 0
[t]			≤ 3; 0
[m]			≤ 3; 0
[n]			≤ 3; 0
[b]		≤ 3; 0	3; 6
[l]		≤ 3; 0	3; 6
[k]		3; 6	4; 0
[d]		≤ 3; 0	4; 0
[f]		≤ 3; 0	4; 0
[v]	3; 6	4; 0	4; 6
[g]	≤ 3; 0	4; 0	4; 6
[ɲ]	3; 6	4; 0	5; 6
[dʒ]	≤ 3; 0	4; 0	5; 6
[ʃ]	≤ 3; 0	4; 6	5; 6
[tʃ]	≤ 3; 0	4; 0	6; 0
[r]	4; 0	4; 6	6; 0
[z]	≤ 3; 0	3; 6	6; 6
[ts]		6; 0	6; 6
[dz]	3; 6	5; 6	7; 0
[ʎ]	5; 0	6; 0	7; 0
[s]	≤ 3; 0	5; 6	7; 6

Table 6. Illiterates and children's wrong spelling examples

<g> - <gi>	litigare > liti**gi**are
<c> - <ci>	arance > aran**cie**
<gli> - <gl>	figlia > fi**gl**a
<gn> - <gni>	montagna > monta**gni**a

6.   An Example: the Palatal Lateral Approximant

Now I focus on one of these seven new Romance phonemes in Italian: the palatal lateral approximant /ʎ/. A more in-depth examination of one of the target elements can help to better understand the possible and diversified motivations that led to the contemporary grapheme-phoneme correspondence inconsistency. Moreover, the palatal lateral's institutionalization and survival in Italian could serve as an ideal example of how the processes of etymological conservation and national identity creation can be more important than GPC consistency improvement.

    This New Romance phoneme was mainly used in the Florentine dialect—which was the most influential Italo-Romance dialect and the

basis of standard Italian—and in formal contexts by Italian literates and nobles.[9] The palatal lateral presents an extremely high phonological markedness among world languages (Maddieson, 1984). When compared with the other more frequent Italian lateral, the alveolar /l/, the comprehension and production of the palatal are more complex (cf. Figs. 5 and 6). From both an acoustic and articulatory point of view, it can be easily misunderstood—by natives and others—with other sounds present in the Italian phonetic panorama such as the yod and the phonemic group /lj/ (Bladon and Carbonaro, 1978; Oliveira et al., 2016).
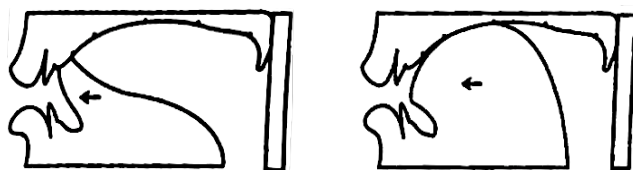

FIGURE 5. Sagittal sections of the lateral alveolar /l/ and palatal /ʎ/ (Canepari, 2004)

FIGURE 6. Transverse sections of the oral cavity: lateral articulation of /l/ and unilateral of /ʎ/ (Canepari, 2004)

To refer to the previous study reported in Table 5 (cf. Tresoldi et al., 2018), the palatal lateral is one of the last learnt phonemes by a native child, mastered at 6-7 years instead of 3-4 years like most of the other ones.

With regard to its spelling, the palatal lateral is still represented today by a digraph or a trigraph, depending on the following vowel (cf. Table 7). Before the standardized version of the sixteenth and seventeenth century, this phoneme was represented by a high number of graphemes (the most common ones are exhibited in Table 8). Additionally, there were several spelling alternatives proposed by scholar reformers over

_____

9. For further details of the diachronic development of the palatal lateral in Italian, see Presutti (2019).

time (some of them are represented in Fig. 7). As previously mentioned, all of them were ignored by the political institutions.

TABLE 7. Current graphemes of

<gli>	<gl>
followed by /a, e, o/	followed by /i/
i.e., *foglia, foglie, foglio*	*fogli*

TABLE 8. Graphemes representing the over time (in the word *moglie*, wife)

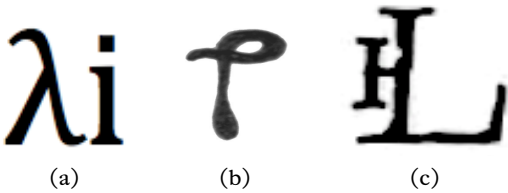|	<lli>	<gl>	<lgl>	<lg>
i.e., *molie*	*mollie*	*mogle*	*molgle*	*molge*
<lgi>	<lgli>	<ll>	<lh>	<lhy>
i.e., *molgie*	*molglie*	*mullere*	*mulhere*	*mulhyere*

(a)   (b)   (c)

FIGURE 7. Some graphic alternatives proposed over time by spelling reformers such as (a) Tolomei in 1525, (b) Bartoli in 1584 and (c) Goidanich in 1910

7.   Conclusion

This paper has presented some insights into grapheme-phoneme correspondence inconsistencies in a highly transparent spelling system such as Italian, particularly apropos of the seven last institutionalized elements in the Italian phonological system. These target consonants are among the most difficult grapho-phonemes to be learnt and mastered. This paper has demonstrated that the reasons why they represent the main grapheme-phoneme correspondence inconsistency in Italian are strongly linked with the diachronic language development and with similar characteristics of phonological markedness and learning.

In general, the Italian writing system's strong resilience to change and improvement can be explained with the positive concept of "relative imperfection" which, in an original way, resolves the complex linguistic-identity stratification of Italian-speaking communities. On one hand, this national writing system was considered a stable and common communication tool for a highly heterogeneous population. On the other hand, it was considered flexible as it was able to accept all regional and local dialectal oscillations. Those two features allowed the Italian people to maintain their multiple linguistic identities. From a semantic point of view, the oral and written complexity of these seven New Romance grapho-phonemes could represent the effort that even native Italian speakers should make in order to speak and write the dominant language correctly. Thus, future studies of the GPC of other languages should consider the importance of the etymological and national identity creation and preservation processes. In truth, they are vital to understanding grapheme-phoneme correspondence inconsistency. In conclusion, this paper has offered alternative paths to explain GPC inconsistencies in a shallow language such as Italian. It has done so in the hope that the diachronic language development, phonological markedness, and grapho-phonological acquisition processes will be considered for further academic discussion concerning the GPC consistency of deep and shallow writing systems.

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