

(36) and (31), though connected, are in section 3 that (31) alone cannot explain anaphors. By the same token, (36) alone predicts the BP anaphors: (36) predicts the junction of the difference between their same language; but this difference is would, then, predict the EP and the BP try to fact.

What is in common: both associate LOCAL-aphoric forms, stating that LOCALITY is the level of feature specification of a set of other forms (36).<sup>7</sup> This implies that (36) favored a subspecified or 'economical' system. This supports the conclusion that locality is related to economy of morphology, as also Menuzzi 1995, 1996).

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2004, 'Schematic for learnability, since the child would learn the anaphors before it can start using these forms (36) to hold in every stage of acquisition, the forms in each stage depends on which forms the child is aware of. I am unaware of any result refuting this

## Dutch orthography: a near-optimal phonological transcription?

Anneke Nunn and Anneke Neijt

### 0. Introduction

There are two different views on the nature of the correspondence between sound and spelling. On the one hand, Saussure warned us that spelling may have its flaws: 'Writing, though unrelated to its inner system, is used continually to represent language. We cannot simply disregard it. We must be acquainted with its usefulness, shortcomings, and dangers' (Saussure 1959:23). Chomsky on the other hand, assumes that 'conventional English orthography in its essentials appears to be a near-optimal system for representing the spoken language' (Chomsky 1970:4). This statement is motivated by the fact that both spelling and underlying sound representations abstract from predictable variation. A similar claim has been made for Dutch by Wester (1987).

It is important to establish which view is correct; not only for the sake of insight into the spelling system, but also because spelling tends to influence our perception of sounds. One consequence of this influence is the existence of so-called spelling pronunciations (for instance, Dutch [se-vən-təx] ('seventy') is often pronounced with a [z] because of the spelling *zeventig*). Furthermore, differences between spelling and pronunciation caused by writing conventions may be misinterpreted as the effect of a sound rule. For instance, the difference between [s] and <t> in words like *actie* ([ɑk-si], 'action'), has led phonologists to postulate a sound rule that changes /t/ to [s]. Van Zonneveld (1983:36), however, shows that this rule is the result of an incorrect interpretation of the convention to write /s/ as <t>.

Most linguists abandoned Chomsky's view on English orthography, because it implies that historical sound changes like the Great Vowel Shift must be duplicated in the phonological competence of speakers (cf. Derwing 1992:194). It is unlikely that speakers are able to learn such intricate rule sets and abstract representations, especially as spelling is not available when children learn to speak. However, the pronunciation of Dutch has hardly changed since spelling was first formalised in 1804, so Wester's claim for Dutch may still be right.

The facts in (1) show that Dutch orthography abstracts from the effect of sound rules like nasal assimilation, final devoicing and glide insertion:

(1)	<b>pronunciation</b>	<b>spelling</b>	<b>gloss</b>
	[ɪn]-[ɪmpɑkə]	in-inpakken	'in'-'wrap up'
	[hɑnt]-[hɑndə]	hand-handen	'hand'-'hands'
	[ze]-[zejə]	zee-zeeën	'sea'-'seas'

This situation is schematically represented in (2): a difference between the pronunciation ([A]) and the spelling (<B>) is the effect of a sound rule that modified the underlying representation (/B/), while the spelling is the same as that underlying representation:

(2)	phonology	/B/ → [A]	Example: /n/ → [n]
		↓	↓
	spelling	<B>	<n>

However, there are also cases in which differences between the pronunciation and spelling of Dutch words are caused by speech-to-text-conversion rules (writing conventions). An example is the spelling of schwa. This sound is written as <e>, just like the sound /e/. The fact that these sounds have the same spelling suggests that one of them may be derived from the other. In fact there is a vowel reduction rule in Dutch that changes /e/ to schwa. For instance, /person/ becomes [pərsən] (*persoon*, 'person'). However, not all schwas are reduced vowels. The schwa in [ovən] (*oven*, 'stove') is an example of an underlying schwa. In this case, the difference between pronunciation and spelling is not the effect of a sound rule, but of a writing convention. There simply are not enough letters to uniquely represent all sounds, so /ə/ and /e/ have the same spelling <e>. This situation is represented in (3):

(3)	phonology	/A/ → [A]	Example: /ə/ → [ə]
		↓	↓
	spelling	<B>	<e>

Situation (3) holds for many vowel representations: lack of letters has also led to one spelling for long and short vowels: *hamer* ([hɑmər], 'hammer'), *janmer* ([jɑmər], 'a pity'). As the context usually shows which sound is meant, one may still claim that spelling is an almost ideal representation of the underlying representation in these cases. However, in this article we will discuss a type of words whose spelling is more problematic for Wester's assumption.

The relevant data set consists of loan words with a [z] following a long vowel or sonorant consonant that is written as an <s>:

(4)	<b>pronunciation</b>
	[menza]
	[owazə]

The question is whether this speech-to-text conversion rule applies to words as in (2). In that case the underlying representation of the lexical item would be rejected in favour of the spelling.

#### 1. Accounting for sound-spell.

The first way to account for the spelling of words like *mensa*, is to assume that the pronunciation is [menza]. The derivation way to explain the difference between pronunciation and spelling is to assume that a long vowel, always followed by a [z] and

(5)	[menza] / *[mensə]
-----	--------------------

According to Wester this can be explained by the fact that the vowel which becomes voiced in the

Although this analysis seems to show that *mensa* cannot have that point in the other direction, that stem final fricative is *v* otherwise the suffix would be ('to commute') behave just like *lil* ([forenstā]). A word like *fo* (diachronically) to words like *mensa* has a similar sound structure.

There are only a few words which have been an underlying /s/ at some

<sup>1</sup> In fact, Wester's rule is more general: it applies to *lieve* and *vrees-vrezen*. As shown in the text, *lieve* is pronounced with [f], not with [v].

gloss  
 'in'-'wrap up'  
 'hand'-'hands'  
 'sea'-'seas'

(4)	pronunciation	spelling	gloss
	[menza]	mensa	'restaurant'
	[owazə]	oase	'oasis'

The question is whether this difference is caused by a sound rule as in (2) or by a speech-to-text conversion rule as in (3). Wester (1987) proposed to analyze the words as in (2). In that case the spelling of the words in (4) would be the optimal representation of the lexical representation. We will argue that this analysis must be rejected in favour of the second option.

Example: /n/ → [m]  
 ↓  
 <n>

#### 1. Accounting for sound-spelling differences by means of a sound rule

The first way to account for the difference between the pronunciation and spelling of words like *mensa*, is to assume that spelling represents the underlying pronunciation. The derivation of spelling then becomes trivial, but we must find a way to explain the difference between underlying representation and surface pronunciation. Such an analysis has been proposed by Wester (1987). Wester observed that a long vowel, or a vowel followed by a sonorant consonant, is always followed by a [z] and never by an [s]:

(5)	[menza] / *[mensa]	[owazə] / *[owasə]
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According to Wester this can be accounted for by postulating an underlying /s/, which becomes voiced in the contexts just mentioned.<sup>1</sup>

Although this analysis seems plausible, there is no compelling evidence which shows that *mensa* cannot have an underlying /z/. On the contrary, there are facts that point in the other direction. For instance, the past tense suffix [dā] shows that stem final fricative is voiced in indigenous words like *vreesde* ('feared'), otherwise the suffix would be pronounced as [tā]. Non-native verbs like *forensen* ('to commute') behave just like native words in this respect: it is [forenzda], not [forenstā]. A word like *forensisch* ('forensic') which is related (at least diachronically) to words like *forens(de)* probably also has an underlying /z/. As *mensa* has a similar sound structure, the fricative may be voiced in this word as well.

There are only a few words in which we can be sure that there must have been an underlying /s/ at some point. Examples are listed in (6):

Example: /ə/ → [ə]  
 ↓  
 <e>

Examples: lack of letters has also led to *hamer* ([hamər], 'hammer'), *jammer* shows which sound is meant, one may say: lexical representation of the underlying sound. In this article we will discuss a type of orthography or Wester's assumption. Words with a [z] following a long vowel <ɔ>:

<sup>1</sup> In fact, Wester's rule is more general: it applies to /v/ as well, and also causes alternations like *lief-lieve* and *vrees-vrezen*. As shown in (Nunn 1992), the fricatives in *lief* and *vrees* are underlyingly voiced, so voicing is not needed there. Voicing within words does not affect *f*: the name *Alfons* is pronounced with [f], not with [v].

(6)	a	nasa	id.
		fenoso	'veteran organisation'
	b	biels-bielzen	'tie-ties'
	c	spons-sponsen/sponzen	'sponge-sponges'
		nies-nieste/niezde	'to sneeze'

The examples in (6a) are acronyms. *NASA*, for instance, is the abbreviation of *National Aeronautics and Space Administration*. In (6b) the plural suffix *-s* has been reanalysed as part of the stem. The words in (6c) have inflected forms with a /z/ next to the original forms with an /s/. However, words like those in (6b) and (6c) are rare, and voicing is probably not the effect of a synchronic rule here. The facts in (6) thus do not form strong evidence for a voicing rule.

Support for a voicing rule may also be found in pairs such as (7):

(7)	[s]	[z]	gloss
a	pulsen	pulseer	'pulses-pulsate'
	impulsen	impulsief	'impulses-impulsive'
	perverse	perversie	'perverse-perversion'
	intense	intensief	'intense-intensive'
b	solutie	resolutie	'glue-resolution'
	serveren	reserveren	'serve-reserve'
	signeren	resigneren	'sign-resign'

However, we will see in (15) below that pairs of Romance words like those in (7) must not be considered synchronically related, so (7) does not constitute evidence for a synchronic voicing rule. Furthermore, there are similar pairs in which there is no voicing:

(8)	[s]	[s]	gloss
a	balansen	balanceren	'scales'-'to balance'
	cadansen	cadanceren	'rhythm'-'give rhythm to'
b	sequentie	consequent	'sequence'-'consistent'
	significant	insignificant	'significant'-'insignificant'
	suppositie	presuppositie	'supposition'-'presupposition'

Therefore, the only real evidence for a voicing rule consists of the words in (6), and these words do not illustrate a general pattern (with the exception of the facts in (6a) to which we will return below). We can conclude that there is not much evidence for underlying /s/ and a voicing rule.

Another problem with Wester's analysis is the fact that the asymmetry in (5) is not perfect. There are words with voiceless fricatives after long vowels or sonorant consonants. Some examples are given in (9):

(9)	pronunciation	sp
	[persel]	pe
	[ambylansə]	an
	[provinsi]	pr
	[dosera]	do

Wester acknowledged this, and of 'Notice that 'c' behaves as 'a kir 1987:79).<sup>2</sup> Wester therefore assumed as orthography is concerned, and the rule that voices fricatives' reading process. How can we explain (9)? In line with Wester's analysis underlying plosive /k/ in these writing convention):

(10)	pronunciation	u
	[z]	← /
	[s]	← /

To account for surface fricative rule. The (extrinsic) ordering of then explain the difference in voicing

- (11) i /s/ → [z]  
ii /k/ → [s] before ordering: i applies to

The facts in (12) seem to support

(12)	pronunciation
	[myziser-mysikənt]
	[rybrik-rybriserə]
	[fizika-fizisi]

However, in most words [s] is in (13):

<sup>2</sup> Wester proposes something similar (*mensch* before 1954): <sch> encc

id.  
 'veteran organisation'  
 'tie-ties'  
 'sponge-sponges'  
 'to sneeze'

for instance, is the abbreviation of *on*. In (6b) the plural suffix *-s* has *ds* in (6c) have inflected forms with *ds*. However, words like those in (6b) are not the effect of a synchronic rule, but the evidence for a voicing rule. *ds* and in pairs such as (7):

gloss  
 'pulses-pulsate'  
 'impulses-impulsive'  
 'perverse-perversion'  
 'intense-intensive'  
 'glue-resolution'  
 'serve-reserve'  
 'sign-resign'

of Romance words like those in (6b) are related, so (7) does not constitute a synchronic rule. Furthermore, there are similar pairs in

gloss  
 'scales'-'to balance'  
 'rhythm'-'give rhythm to'  
 'sequence'-'consistent'  
 'significant'-'insignificant'  
 'supposition'-'presupposition'

g rule consists of the words in (6), (7) and (8). We can conclude that there is not much

is the fact that the asymmetry in (5) is less fricatives after long vowels or *n* in (9):

(9)	pronunciation	spelling	gloss
	[persel]	perceel	'lot'
	[ɑmbylɑnsə]	ambulance	id.
	[provinsi]	provincie	'country'
	[dosərə]	doceren	'to teach'

Wester acknowledged this, and observed that these words are written with <c>: 'Notice that 'c' behaves as 'a kind of s' that does not undergo voicing' (Wester 1987:79).<sup>2</sup> Wester therefore assumes that 'c must be considered a plosive as far as orthography is concerned, and is converted to *s* or *k* after the application of the rule that voices fricatives' (Wester 1987:76). This remark concerns the reading process. How can we explain the phonological behaviour of the words in (9)? In line with Wester's analysis, we might assume that [s] is derived from the underlying plosive /k/ in these cases ('←' represents a sound rule, and '→' a writing convention):

(10)	pronunciation	underlying representation	spelling	example
	[z]	/s/ ←	→ <s>	doserēn
	[s]	/k/ ←	→ <c>	doceren

To account for surface fricatives in words like *doceren*, we need a spirantisation rule. The (extrinsic) ordering of this rule with respect to fricative voicing would then explain the difference in voicedness between *doceren* and *doserēn*:

- (11) i /s/ → [z] (/doserən/ → [dozerə])  
 ii /k/ → [s] before a front vowel (/dokerən/ → [doserə])  
 ordering: i applies before ii

The facts in (12) seem to support this analysis:

(12)	pronunciation	spelling	gloss
	[myziser-mysikɑnt]	musiceer-muzikant	'make music'-'musician'
	[rybrik-rybriserə]	rubriek-rubriceren	'section'-'rubricade'
	[fizika-fizisi]	fysica-fysici	'physics'-'physicists'

However, in most words [s] never alternates with [k], see (9) and similar words in (13):

<sup>2</sup> Wester proposes something similar for the spelling <sch> in *logisch* (and also in words like *mensch* before 1954): <sch> encodes an /s/ that cannot be devoiced.

(13)	[s]	[k]	gloss
	perceel	—	'lot'
	annonceren	*annoncatie	'to announce'

In such cases, there is no reason to postulate an abstract phonological representation that differs from the surface pronunciation.

Furthermore, note that (11ii) is not a general rule but a morpholexical rule. Some exceptions are listed in (14):

(14)	<b>pronunciation</b>	<b>spelling</b>	<b>gloss</b>
	[mɑrkərə]	markeren	'to mark'
	[frɑŋkərə]	frankeren	'frank'
	[viskøs]	viskeus	'viscous'
	[hipotekɛ:r]	hypothecair	'mortgage'

We may only posit (11ii) as a synchronic rule if Romance words like *provoecer-provocatie* were derived from each other or from a common base in the Dutch language (and not historically). This is not likely as we cannot predict the pronunciation of such 'derived' forms (cf. Booij and Van Santen 1995:45). As shown in (15a), apart from rule (11ii) other irregular changes may or may not occur. Even if the formal relation is clear, the semantic relation may be obscure as in (15b).

(15) a	provocatie-provoceren	'provocation'-'provoke'
	produkt-*producteren/produ[s]eren	'product'-'produce'
	fictie-*ficeren/*fictieren/fingeren	'fiction'-'invent'
b	radicaal-eradiceren	'radical'-'root out'
	directeur-dirigeren	'manager'-'conduct'

Therefore, rule (11ii) is at the most a historical rule. Speakers of Dutch still use it as a 'via-rule', but not to relate pre-existing pairs (cf. Booij 1995:79). Consequently, we may not posit an underlying /k/ for [s], so the fact that voicing does not apply in words like *provoceren* remains problematic. Furthermore, there is hardly any evidence for an abstract /s/ and voicing.

We saw that there are some phonological problems associated to Wester's analysis. The only advantage of the assumption of abstract /s/ and /k/ is the fact that we may easily derive the spelling from the lexical representation. This is suspicious, because the spelling was part of the motivation of the postulation of these abstract sounds in the first place. Furthermore, even predicting spelling does not work out well. If Wester's analysis were correct, we would predict that /s/ is always written as <s>. However, this is not the case. Next to words written with an <s> in (16a), there are also words with a similar phonological representation that are written with a <z> in (16b). In (16c) we see that some

words that have an underlying expected <z> as in (16d).

(16) a	meson	id.
b	horizon	id.
c	diffuse	'diffu
d	precieze	'exac

In some words of type (16a), language. For instance, *faze* since 1954 (like nearly all dictionary of 1995). However sounds which are written d spellings should converge. I assume an additional writt Alternatively, we could assu Furthermore, we also need a /z/ to an <s> in words like rules, suggests that something not seem to be much regula <z>.

It would be an advantag undergo voicing if all voice shown in (17a), this is not exceptions to voicing, the suffice in these contexts wh we see that even when there <c>.

(17) a	consideratie, carr	regisseur, mousse
b	succes, abces	
c	fabrikant-fabricee	rubriek-rubriceer

The facts in (17) show that th so <c> cannot be the unic introduced abstract /k/ and /s/ abstract segments cause mor sound-to-spelling correspond conclude that option A is no problems.

j	gloss
	'lot'
annoncie	'to announce'

son to postulate an abstract phonological surface pronunciation, not a general rule but a morphological rule.

ling	gloss
keren	'to mark'
keren	'frank'
eus	'viscous'
theccair	'mortgage'

nic rule if Romance words like *provoceer* derive from a common base in the Dutch lexicon is not likely as we cannot predict the other irregular changes may or may not occur, the semantic relation may be obscure.

	'provocation'-'provoke'
sjeren	'product'-'produce'
ren	'fiction'-'invent'
	'radical'-'root out'
	'manager'-'conduct'

historical rule. Speakers of Dutch still use re-existing pairs (cf. Booij 1995:79). Voicing /k/ for [s], so the fact that voicing remains problematic. Furthermore, there are problems associated to Wester's postulation of abstract /s/ and /k/ is the fact that the motivation of the postulation of /k/ is not the case. Next to words like *fabrikant* and *rubricceer* so words with a similar phonological structure in (16b). In (16c) we see that some

words that have an underlying /z/ are written with an <s>, instead of the expected <z> as in (16d).

(16) a	meson	id	censuur	'censorship'
b	horizon	id.	azuur	'azure'
c	diffuse	'diffuse'	forensen	'commuters'
d	precieze	'exact'	accijnzen	'taxes'

In some words of type (16a), <z> is the result of a spelling change in the Dutch language. For instance, *faze* has been an allowed spelling variant of *fase* ('fase') since 1954 (like nearly all allowed variants, it is abolished in the spelling dictionary of 1995). However, in Wester's analysis /s/ and /z/ are separate sounds which are written differently, and there is no reason why these two spellings should converge. To account for the facts in (16b), we would have to assume an additional writing convention which changes an /s/ to a <z>. Alternatively, we could assume that the underlying representation has changed. Furthermore, we also need a complementary writing convention which changes a /z/ to an <s> in words like *forensen*. The fact that we need these two opposite rules, suggests that something is wrong with the analysis. In any case there does not seem to be much regularity: both /s/ and /z/ may be written as <s> and <z>.

It would be an advantage to use <c> to represent sibilants that do not undergo voicing if all voiceless sibilants were written this way. However, as shown in (17a), this is not the case. Furthermore, if <c> were to represent exceptions to voicing, the <c> seems redundant in (17b). <s> would also suffice in these contexts where voicing is impossible anyway. Finally, in (17c) we see that even when there is [k]/[s]-alternation, the [k] is not always written as <c>.

(17) a	consideratie, carrousel	'consideration', 'carousel'
	regisseur, mousseren	'director', 'to fizz'
b	succes, abees	'success', 'abscess'
c	fabrikant-fabriceer	'manufacturer'-'manufacture'
	rubriek-rubriceer	'section'-'rubricate'

The facts in (17) show that there is no one-to-one relation between /k/ and <c>, so <c> cannot be the unique representation of a voiceless sibilant. Wester introduced abstract /k/ and /s/ to account for sound-spelling relations, but these abstract segments cause more problems than they can solve. It turns out that sound-to-spelling correspondences are quite complicated after all. We can conclude that option A is not ideal; it has both phonological and orthographical problems.

2. Accounting for sound-spelling differences by means of a writing convention

The second way to account for the difference between the pronunciation and spelling of words like *mensa* is to assume that the surface pronunciation corresponds to the underlying representation. That is, words such as *mensa* have an underlying /z/. In that case, the derivation of the surface pronunciation (e.g. [forenzd̥ə] and [forenzis]) is straightforward; nothing changes. Furthermore, we do not need an abstract /k/ to distinguish *doceren* from *doserem*; /s/ and /z/ suffice to derive the surface pronunciation variants:

(18)	pronunciation		underlying representation	spelling	example
	[z]	←	/z/	→ <z>	azuur
	[z]	←	/z/	→ <s>	mensa
	[s]	←	/s/	→ <s>	consideratie
	[s]	←	/s/	→ <c>	doceren

Of course, this analysis removes all phonological problems of Wester's analysis. However, now we must account for the fact that we write an <z> instead of a <z> in *forensen*, *mensa*, *diffuse* etc. The explanation is easily found. We are dealing with an etymological spelling here, a relict of Latin spelling that did not use a <z> (except in Greek loans like *zefier* 'zephyr'). However, in some cases we do write a <z>. This is not problematic, as an etymological spelling may be replaced by a regular spelling, and the regular spelling of /z/ in native words is <z>, e.g. *zaal* ('hall'), *deze* ('this').

The spelling is not always adapted: we write *precieze* with a <z> but *precisie* ('precision') with an <s>. This alternation, however, is quite regular: <z> occurs at the end of a word and before a native suffix. In the other contexts we write <s>. The formulation 'at the end of words and before native suffix' suggests that words composed with non-Germanic suffixes like *-ie* do not constitute suffixes in their own right: *precisie* is considered monomorphemic just like *precies*. This assumption is supported by the fact that the morphological principle (the requirement that morphemes always have the same spelling) apparently does not prohibit the different spelling of [i] in *precies* and *precisie*. This follows if both words are considered separate morphemes to which the morphological principle does not apply. Therefore the term 'morpheme' will be used to refer to native morphemes only in the remainder of this article.

The spelling of sounds like /i/ and /e/ is also adapted morpheme finally:

(19)	stem
a	natie 'nation' fabriek 'factory' Fries 'frisian'
b	trochee 'trochee' - -

The spelling of /z/ works in course, there are some words of this type from the There are also words in which native suffix or within the wo

(20)	a	abstruse (id.), 'apologies', dioc 'commuters', di
	b	markizaat ('marqu stop'); poëzie ('pc

The analysis proposed here c adaptation has taken place b suffixes (e.g. \**markiesin-mark*

If we assume that words l <s> is the effect of an ety between sounds and spelling i the etymological spelling <s <z>, starting at the end of longer necessary to account spelling. The fact that <c> n rule that changed /k/ to [s] b even though the effect is lexi non-native words are given in

<sup>5</sup> It is not clear why the words in (2) [s] like *balansen*, but this is no long



- (21) Write /z/ after long vowels or sonorant consonants
- i as <z> at the end of morphemes (preciez<sup>4</sup>, precieze)
  - ii as <s> elsewhere (precisie)
- Exceptions:
- i: *diffuse* etc. (cf. (20a))
  - ii: *acacia; coulisse; florissant; markizaat; poëzie; -zoen (seizoen)* and *-zijn (rozijn)* etc.<sup>5</sup>
- (22) Write /s/ after long vowels or sonorant consonants
- i as <c> before front vowels (docent)
  - ii as <s> elsewhere (persoon)
- Exceptions:
- i: *carrousel; consideratie* etc.; *regisseur; mousseren* etc.; *discipel; ensceneren* etc.<sup>6</sup>
  - ii: *reçu; façade* etc.; *palissade* etc.

We may conclude that the second way of accounting for the difference between spelling and pronunciation of words like *mensa* is to be preferred: there is no need for abstract representations with /s/ and /k/ which never surface, or for different underlying representations for words that have a similar pronunciation like *precisie-precieze* and *censuur-azuur*. Furthermore it offers more insight into the spelling system. Therefore we must reject Wester's proposal in favour of the analysis proposed here.

The new view on sound-spelling relations also offers an alternative, non-phonological explanation for facts like *NASA*. Wester assumed that the surface [z] is caused by the voicing rule. However, words like *NASA* originate as follows: the initial graphemes of the (most important) words become phonemes, and these phonemes form a new word (cf. Reker and Streekstra 1988). Therefore, in order to pronounce an acronym, we have to apply speech-to-text conversion rules. The rule that is relevant here is the complement of rule (21ii):

- (23) Read <s> as /z/ between vowel letters (and as /s/ elsewhere)

<sup>4</sup> The spelling *precies* is the effect of a spelling rule, which is motivated by fact that <v> and <z> may not appear at the end of a syllable.

<sup>5</sup> *-oen* and *-ijn* are adapted versions of the French affixes *-on* and *-in(e)* or *-aine*, so it is not surprising to find that the spelling of /z/ is also adapted before these sequences. Other words with *-oen* are also written according to native rules: *kampioen* (champion), *miljoen* (million), *fatsoen* (façon), with the exception of *citroen*.

<sup>6</sup> Most of the exceptions to (21) and (22) are rare. Even the most frequent types, i.e. /z/ written as <z> and /s/ written as <s>, only occur in about ten and fifteen percent of the words, respectively (counts based on the Celex-database).

It is rule (23) which accounts for the spelling of *NASA*. This rule may also be responsible for the pronunciation of *NASA*. This rule may also be responsible for the pronunciation of *NASA*. This rule may also be responsible for the pronunciation of *NASA*. This rule may also be responsible for the pronunciation of *NASA*.

Deriving the spelling of /s/ at the end of a morpheme (cf. (21ii)) is not known. For words pronounced with a [z] instead of [s] (cf. (21i)), the spelling of /z/ is derived from the spelling of /s/ at the end of a morpheme (cf. (21ii)). However, there are some words with /z/ after long vowels and sonorants. There are some words like *procent* and *december* which do not longer realise or recognise a [z] at the beginning of words. For these words, the spelling of /s/ may be written as <s>, <z> or <c>. For example, *asperzieboom* ('haricot vert') for [z] is spelled with <s> for [z] pronunciation of /s/ and /z/ is spelled with <z> for [z] sound rules and writing conventions.

### 3. Conclusion

In the case of words which are spelled with /z/ and /s/, the spelling is not the visual for the pronunciation. Positing abstract underlying representations is more problems than it can solve. Instead, the difference between underlying representations and spelling is caused by a writing convention.

- (24) phonology /z/ →  
↓  
spelling <s>

Thus, contrary to current belief, in some cases, writing conventions are not formalised, although there have been attempts to formalise them. This is because at the moment words abstracted from the effect of the change from /k/ to [s] in words are not automatically assumed to be spelled with /s/ whenever there are spelling-to-sound correspondences. It should not be posited on the basis of spelling-to-sound correspondences words exclusively. If we do not do this, sound-spelling correspondences are not automatically assumed to be spelled with /s/ whenever there are spelling-to-sound correspondences.



changes in spelling and phonology. Another implication is that phonologists should be careful not to confuse writing conventions with phonological rules. We should take Saussure's warning to heart.

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## The nature of quantification 'very', 'many', and the excl

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### 0. Introduction

In this paper, we will reflect on meanings like 'many' and 'very'. Quantification of high-degree is 'el degree, such as 'all' and 'whole abstract representation to the el '80%' or as 'more than half', six publications of this institute were 50%' would be a contradiction, *q* doomed to failure. Neither can fuzzy. Although the extension (or a specific context may be fuzzy, meaning that we will study in this

Model-theoretical approaches. extensional in nature, have failed precision. Therefore, we will study from this point of view, that is, we investigate a configuration that underlies this abstract way, it is this syntactic 'many' be it English *many*, or Dutch of high degree.

A first indication that high-degree like (1a/b): although there is no responsible for it, the 'many'/'very'

- (1) a Een boeken dat Jan b  
      'John reads many bo  
      b Intelligent dat Jan is  
      intelligent that John i  
      'John is very intellig

<sup>1</sup> I am grateful to the audiences of OC Dutch Linguistic Society (Utrecht, J. Aafke Hulk, Marcel den Dikken, and

<sup>2</sup> There is another reading of this construction (i.e. 'John reads crazy books', EXCL