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Constraint ranking, Government Licensing and the fate of final empty nuclei[*]

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Abstract

Government Phonology is a principles-and-parameters approach where principles are inviolable and language-specific facts are expressed by parameters. Some analyses, however, have been proposed which involve a conflict between different principles, resolved on a language-particular basis (cf. Charette 1990, 1992, Cyran 1994). In this paper, using Government Licensing as an example, I propose that such conflicts can be resolved by Optimality Theoretic ranking of the given 'principles', rather than 'turning them off' in a parametric style. This not only makes the grammar simpler, but it also allows the lower ranked constraints to have an effect in a non-conflict situation. In addition, I propose to get rid of the (controversial) parameter licensing final empty nuclei, and show how this move, apart from other advantages, also simplifies the account of final consonant clusters.

1 Introduction

Government Phonology (GP) is a principles-and-parameters approach (cf. Kaye, Lowenstamm & Vergnaud 1985, 1990), where principles are inviolable and language-specific facts are expressed by parameters. Some analyses, however, have been proposed which involve a conflict between different principles, resolved on a language-particular basis (cf. Charette 1990, 1992, Cyran 1994). In this paper, using Government Licensing (GL) as an example, I propose that such conflicts can be resolved by Optimality Theoretic (OT) ranking of the given 'principles' (cf. Prince & Smolensky 1993), rather than 'turning them off' in a parametric style. This not only makes the grammar simpler, but it also allows the lower ranked constraints to have an effect in a non-conflict situation. In

[*]I would like to thank Monik Charette, John Harris, Harry van der Hulst and participants of the SOAS Phonology Workshop for their comments and discussion of earlier versions of this paper. All remaining errors are, of course, my own.

addition, I propose to get rid of the (controversial) parameter licensing final empty nuclei, and show how this move, apart from other advantages, also simplifies the account of final consonant clusters.

The project of combining GP with OT can also be of interest from a more general point of view, because both theories work with constraints, but they concentrate on different aspects of the grammar. Namely, GP concentrates on issues of representation, while OT on issues concerning derivation. Or in other words, GP deals with the nature of constraints, while OT with their ranking. Since these issues are interconnected, paying attention to both can only be for one’s advantage. In such an investigation, several questions arise. For example, which of the principles of GP remain inviolable and which become violable constraints in a combined approach, and is there any principled basis for such a distinction? Another question might be whether there are any parameters left at all. I will attempt to answer some of these questions below.

2 Government Licensing

According to Charette (1990, 1992), languages exhibiting vowel~zero alternations fall into three types on the basis of their treatment of properly governable empty nuclei following a consonant cluster. The three types, exemplified by French, the Billiri dialect of Tangale and Polish, are illustrated in (1). As can be seen from these examples, French chooses to phonetically realise the empty nucleus even though it could be properly governed by the following full vowel, Billiri – after vowel syncope – deletes the second consonant from the cluster, and Polish treats empty nuclei following consonant clusters the same way as those following single consonants.

(1)	a.	*French*		
	(i)	suvv^{0}nirv^0	[suvnir]	‘to remember’
	(ii)	parvv^{0}nirv^0	[parvənir]	‘to reach’
		librv^{0}ment	[librəmã]	‘freely’
	b.	*Billiri*		
	(i)	sana+do	[sando]	‘her food’
	(ii)	landa+zi	[lanzi]	‘your (f.) dress’

c.	*Polish*		
(i)	kopv^{0}ra	[kopra]	‘dill’
(ii)	plastv^{0}ra	[plastra]	‘plaster’
	ubrv^{0}dacv^0	[ubrdac]	‘imagine’

Charette analyses the difference between these types of languages by the two principles in (2).

(2) a. An empty nucleus is properly governed by a head-adjacent unlicensed nucleus. (Proper Government)[1]

b. A governing consonant must be government licensed by an unlicensed nucleus governing it. (Government Licensing)

According to her analysis, Billiri then opts to preserve (2a), proper government of empty nuclei, while French opts for (2b), government licensing. Polish on the other hand has a different parametric setting for government licensing, namely, in this language properly governed empty nuclei are also government licensers.

There are a number of problems with this analysis. One is that it is misleading to say that Billiri opts for proper government over government licensing, since the phonetic forms in Billiri in fact obey both of these principles, although at the expense of violating a third constraint, namely the one prohibiting deletion of segments. It only makes sense here to talk about violation of government licensing, if we have a step-by-step derivation, or we employ a constraint-and-repair strategy, and we have an intermediate stage that we can refer to which violates this constraint, but which is later repaired by deleting the consonant.

The language which does in fact violate government licensing is instead Polish. I am against the view that Polish is different in that here empty nuclei are government licensers too, because this amounts to saying that in Polish a governing onset must be licensed by a nucleus of any type, which is already required of any onset, governing or not. That is, this is equal to saying that Polish simply lacks the Government Licensing constraint, or

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[1]The relation of proper government is defined as follows:

A properly governs B iff:

(i) A governs B (adjacent on its projection) from right to left;
(ii) there is no intervening governing domain;
(iii) A is not properly governed.

if it has it, it is not important enough not to violate it. However, setting a parameter within the constraint does not express this fact.

In addition, it is not clear how the Billiri alternation could be derived without violating the Projection Principle. I turn to this problem in the next section.

3 Billiri and the Projection Principle

Charette (1990) analyses the derivation of a form like (1bii) in Billiri as given in (3), where the surface representation in (3b) is derived from the lexical representation in (3a).

(3) a.

	N		O	N —— <——		N
	$\vert$		$\vert$	$\vert$		$\vert$
O	R_1		O	N_2	O	N_3
$\vert$	$\vert$ \		$\vert$	$\vert$	$\vert$	$\vert$
x	x	x <–	x	x	x	x
$\vert$	$\vert$	$\vert$	$\vert$	$\vert$	$\vert$	$\vert$
l	a	n	d	v^0]	z	i

b.

	N			N —— <——		N
	$\vert$			$\vert$		$\vert$
O	N_1	O		N_2	O	N_3
$\vert$	$\vert$	$\vert$		$\vert$	$\vert$	$\vert$
x	x	x	x	x	x	x
$\vert$	$\vert$	$\vert$	$\vert$	$\vert$	$\vert$	$\vert$
l	a	n	d	v^0]	z	i

[lanzi]

Notice, however, that such a derivation violates the Projection Principle (cf. Kaye, Lowenstamm & Vergnaud 1990), given in (4), since the *n* is resyllabified from a lexical rhymal position into a surface onset, and the originally following onset is deleted, thus the coda-onset governing domain disappears.

(4) *Projection Principle*
Governing relations are defined at the level of lexical representation and remain constant throughout a phonological derivation.

We could try to remedy the situation by syllabifying the *n* in onset position already lexically, as in (5a). In this case, both N_2 and O_3 would be deleted by the time we reach the surface (a dubious move itself). This means that there cannot be a governing relation between O_2 and O_3 underlyingly, since then this relation would disappear during the derivation, again in violation of the Projection Principle. Consequently, Government Licensing has no role to play in this derivation at all.

At this point, however, the question arises why, instead of (3b), we do not get (5b) on the surface, that is, the usual alternating pattern of phonetically null and realised empty nuclei. A surface form like (5b) would not violate any of the constraints discussed so far, and would not need to employ the additional, and powerful, mechanism of deletion.

(5) a.

	N		N		N		N
	|		|		|		|
O_1	N_1	O_2	N_2	O_3	N_3	O_4	N_4
|	|	|	|	|	|	|	|
x	x	x	x	x	x	x	x
|	|	|	|	|	|	|	|
l	a	n	v^0	d	v^0]	z	i

b.

	N		N		N ——	< ——	N
	|		|		|		|
O_1	N_1	O_2	N_2	O_3	N_3	O_4	N_4
|	|	|	|	|	|	|	|
x	x	x	x	x	x	x	x
|	|	|	|	|	|	|	|
l	a	n	v^0	d	v^0]	z	i
			|				
			U				

*[lanudzi]

Comparing (3b) with (5b) suggests that unparsing a consonant (and an empty nucleus), i.e. the derivation of (3b) from (5a), is still better than phonetically realising an empty nucleus, and arriving at (5b). This suggestion is, however, again refuted by the parallel –though morphologically more complex– Billiri forms that surface exactly with the pattern of (5b) and have an alternating sequence of phonetically null and contentful empty nuclei, as shown in (6a-b). In these particular cases it might be argued that deleting the *n* from O_3 and O_4 from (6a) and (6b) respectively (together with the preceding empty nucleus) would cause deletion of a boundary as well, which we want to avoid.

(6) a.

	N		N		N	—— < ——	N
	|		|		|		|
O_1	N_1	O_2	N_2	O_3	N_3	O_4	N_4
|	|	|	|	|	|	|	|
x	x	x	x	x	x	x	x
|	|	|	|	|	|	|	|
d	o	b	v^0]	n	v^0]	g	o
			|				
			U				

[dobungo] ‘called me’

b.

	N		N	—— < ——	N		N	—— < ——	N
	|		|		|		|		|
O_1	N_1	O_2	N_2	O_3	N_3	O_4	N_4	O_5	N_5
|	|	|	|	|	|	|	|	|	|
x	x	x	x	x	x	x	x	x	x
|	|	|	|	|	|	|	|	|	|
t	u	n	v^0	d	v^0]	n	v^0]	g	o
					|				
					U				

[tundungo] ‘delayed me’

However, if we look at French, there is no reason why [parvənir] should not be pronounced [parəvnir] instead, if derived from the underlying /parv^{0}vv^{0}nir/ containing two empty nuclei, since the latter surface form does not violate the constraint Proper Government, while the former does. In Polish too, [plastra] could just as well surface as [plasetra], if it was derived from underlying /plasv^{0}tv^{0}ra/. However, both in French and Polish, these forms will surface with their actual realisation (i.e. not like (5b)), provided there is an interconstituent governing relation contracted between the two relevant consonants (those flanking the first empty nucleus). This is so, because inserting, or simply phonetically realising an empty nucleus between the two consonants would destroy the underlyingly existing governing relation between them, which is ruled out by the Projection Principle.

In contrast, in Billiri, the existence of such a governing relation is prohibited altogether, since lexical forms containing such a relation simply cannot surface without violating the Projection Principle, as we have seen in the derivation of (3b) from (3a). Apart from this strange restriction, forms such as (5a) also surface radically differently from their correspondents in French or Polish, where they would surface with the pattern of (5b) instead of (3b). I suspect that the consonant~zero alternation in Billiri in fact should not be analysed as phonologically conditioned, but as a frozen regularity in the lexicon, similarly to for example Closed Syllable Shortening in English in pairs like *keep~kept* (cf. Kaye 1990, Harris 1994a). Deriving the English alternation would also violate the Projection Principle, and the forms resulting from the alleged derivation pattern together with underived forms of the language, just as they do in Billiri.

In any case, even if derived dynamically, the relevant forms in Billiri do not contain an interconstituent governing relation, thus the principle of Government Licensing is not applicable to them. Consequently, they do not constitute a minimal pair with the French and Polish examples given in (1), and therefore the Billiri alternation does not directly figure in the typology to be discussed here. Thus from now on I will concentrate on the French-type and Polish-type languages, and examples involving true consonant clusters.

4 French vs. Polish, and Optimality Theory

It seems thus that there are only two types of languages when it comes to the behaviour of properly governable nuclei following a consonant cluster. There is French which satisfies government licensing from (2b), and Polish which violates it in order to satisfy proper government of empty nuclei. These two possibilities can be illustrated as in (7a-b).

(7) a. *French*

	N			N		N		N
	|			|		|		|
O_1	R_1		O_2<<	N_2	O_3	N_3	O_4	N_4
|	| \		|	|	|	|	|	|
x	x	x <-	x	x	x	x	x	x
|	|	|	|	|	|	|	|	|
p	a	r	v	v^0	n	i	r	v^0

[parvənir]

b. *Polish*

```
               N               N ——<—— N
               |               |       |
O1             R1          O2  N2  O3  N3
|  \           |  \        |   |   |   |
x -> x         x     x <-  x   x   x   x
|     |        |     |     |   |   |   |
p     l        a     s     t   v0  r   a
[plastra]
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In (7a), N_3 does not properly govern N_2 so that the ungoverned nucleus can government license O_2 (indicated by “<<” here). Since the empty N_2 is not properly governed, it will receive phonetic content. In (7b), on the other hand, N_2 is properly governed by N_3 (and remains uninterpreted), and it is thus not capable of giving the acquired license for O_2 to govern. Notice, however, that O_2, though not licensed, still governs the preceding rhymal complement. This is a legitimate state of affairs, if constraints are violable. This situation can be compared to driving a car without a sufficient driving license. Such a driver breaks a rule, but he is not deprived of his ability to drive. This is what happens in Polish, in (7b). In other places, however, the requirement for having a driver’s license might be so strong that it is impossible to violate it. Then drivers without a license will have to find another solution, and take the bus or find themselves a driver with a license.[2] In an OT-style analysis, in such a “repair” situation the given constraint is satisfied vacuously, for instance if there is no governing relation, then there is no need for a license to govern. In a derivational approach, the implication is reversed, thus if there is no license, then no governing relation is possible. However, this requirement is too strong, as we have seen in the Polish example in (7b) which shows that constraints can in fact be violable.

In addition, the contrast between (7a) and (7b) demonstrates that we have a genuine constraint conflict here, resolved in different ways in different languages. These facts

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[2]An example of such a situation is described in Cyran 1996. Contrary to his claims, (Proper) Government Licensing in Irish is never violated, since such potential violations are always repaired by compensatory lengthening. This case is in a way parallel to the Billiri example, the difference being that syllable structure is underlying and thus any attempted repair will violate the Projection Principle, whereas relations of Proper Government are added during the derivation, and thus repair simply means failing to add such a relation.

invite for an Optimality Theoretic analysis in terms of constraint ranking. The two (violable) constraints needed for the analysis are given in (8).

(8) a. PROPER GOVERNMENT (PG)
An ungoverned Nucleus properly governs a preceding empty Nucleus.

b. GOVERNMENT LICENSING (GL)
A governor Onset must be licensed by a Nucleus which is not properly governed.

The constraint PROPER GOVERNMENT works in conjunction with an inviolable, representational principle, the Empty Category Principle, or the Principle of P-Licensing (which is presumably part of Gen)[3], given in (9).

(9) *Empty Category Principle (ECP)*
An empty Nucleus is phonetically interpreted iff it is not properly governed.

This principle is violated if (a) an empty nucleus remains empty even though it is not properly governed, or if (b) it is properly governed, nevertheless it is phonetically interpreted.

The constraint PROPER GOVERNMENT is standardly not a separate constraint of GP, but it is supposed to fall out of the ECP. However, I think that it is necessary to formulate it separately, since the two constraints perform different functions. The ECP tells us something about the governee, the nucleus which is (or is not) properly governed, whereas the PROPER GOVERNMENT constraint refers to the governor, the nucleus which is (or is not) the proper governor. Moreover, it seems that the ECP is inviolable, while –as we have seen– PROPER GOVERNMENT is violated in French.

The two possible systems resulting from the two different rankings of the constraints in (8) are given in (10).

[3]Although see Gussmann (in press) on Polish, where morpheme-internally we find examples of sequences of empty nuclei without phonetic content, in apparent violation of the ECP.

(10) a. French – empty N realised after C cluster

parvv^{0}nirv^0	GL	PG
☞ parvənir		*
parvnir	*!	

b. Polish – no “illicit” filling of empty nuclei

plastv^{0}ra	PG	GL
plastera	*!	
☞ plastra		*

In the first candidates (represented as in (7a)), PROPER GOVERNMENT is violated, since N_2 is not properly governed by N_3. As a result, N_2 can government license O_2. And the ECP will make sure that N_2 receives phonetic interpretation. In the second examples (represented as in (7b)), on the other hand, proper government ensues, thus by the ECP N_2 remains empty, and GOVERNMENT LICENSING is violated accordingly. As we have seen, French chooses to preserve GOVERNMENT LICENSING, while Polish chooses for PROPER GOVERNMENT. That PROPER GOVERNMENT is not ‘turned off’ in French, is evidenced by the fact that before single consonants (i.e. in the absence of a conflict), proper government does apply, and the empty nucleus remains silent.[4,5]

Before turning to the analysis of the behaviour of word-final clusters, I first discuss the status of domain-final empty nuclei.

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[4] In fact, in sequences of two consecutive empty nuclei, either nucleus can remain silent, and a word like *devenir* ‘to become’ can be pronounced either as [dəvnir] or as [dvənir] (cf. Charette 1991), with the second form violating PROPER GOVERNMENT, without any obvious reason. Although such forms as yet await further explanation, the fact that they are considered more marked than the ones with the first nucleus interpreted indicates that the constraint PROPER GOVERNMENT still manifests itself here.

[5] Cyran 1996 also proposes (for Irish) to *rank* Government Licensing above Proper Government instead of turning Proper Government off completely. However, he still follows Charette (1990, 1992) in claiming that the conflict only arises as a result of particular licensing properties of word-internal nuclei, and he furthermore suggests that this ranking is universal, claims I have been arguing against in this paper.

5 Domain-final empty nuclei

As argued by Kaye 1990, word-final consonants behave differently from word-internal codas in several respects (e.g. they do not trigger Closed Syllable Shortening, they are usually extrametrical with respect to stress assignment, etc.), and they in fact can be argued to pattern together with word-internal onsets. To account for this fact, Kaye proposes the principle of Coda Licensing, given in (11a). Onsets in turn must be followed by a nucleus, as a consequence of the principle of Onset Licensing (cf. Harris 1992), given in (11b). Consonant-final words thus in fact end in an onset followed by an empty nucleus. Since such empty nuclei cannot be properly governed, the only way to make sure they remain silent is to add the extra clause in (11c) to the ECP which parametrically licenses domain-final empty nuclei. Thus languages that have this parameter switched on allow words to end in a consonant (or rather in an empty nucleus), while languages having this parameter in the 'off' setting oblige their words to end in a full vowel.

(11) a. *Coda Licensing Principle*
Post-nuclear rhymal positions must be licensed by a following onset.

b. *Onset Licensing Principle*
An onset head position must be licensed by a nuclear position.

c. *ECP Domain-final Parameter*
A domain-final empty nuclear position is licensed: YES/NO

Harris (1994b) sets out to replace the parameter in (11c) by OT-type constraint rankings. (I present his proposal with certain modifications which are not crucial to the idea.) A language with underlying consonant-final morphemes has the three possibilities listed in (13) for the surfacing of these forms. Note that the underlying representation of such morphemes satisfies both the Coda Licensing and the Onset Licensing principles and ends in an onset followed by an empty nucleus. Each possible surface representation, however, violates one of the universal (faithfulness) constraints defined in (12). (Square brackets stand for morpheme boundaries.)

(12) a. PARSE
Segments are parsed.

b. *ELEMENTS[6]
Elements are prohibited.

c. FILL[7]
Empty positions are prohibited.

Depending on which of the constraints is lower ranked than the others, we get two types of languages. In one type every word ends on a vowel, in the other words can also end on a consonant phonetically. The first type in fact has two subtypes. One subtype is represented in (13a), where the morpheme-final consonant is unparsed to satisfy the other two constraints (as in Samoan for example). (Notice that here the empty nucleus had to be deleted, otherwise FILL would be violated as well.) In the second subtype, an epenthetic vowel surfaces, violating *ELEMENTS, as in (13b) (like in Zulu). Finally, when FILL is ranked lowest, we get a language where domain-final empty nuclei are licensed, as in (13c), and words are allowed to end in a consonant phonetically (like in English, for instance).

[6] This constraint replaces *INSERT (F) proposed in the OT literature, a global constraint that needs comparison of input and output to be evaluated. In a monotonic theory, where nothing can be deleted, *ELEMENTS picks out the candidates where some elements have been inserted (without resorting to comparison), since all the other candidates will have an equal number of violations, caused by the elements that were already present underlyingly.

[7] This constraint is slightly different from the one usually bearing this name in OT, since it is also violated by empty positions that actually remain empty as a consequence of being properly governed by a following full nucleus. Thus for instance the examples in (10) all violate FILL, containing underlying empty nuclei. But since every relevant candidate has the same number of violations, this constraint is irrelevant for the decision between the candidates.

(13)

<table>
<tr><td>N O N
| | |
x x x]
| |
α β</td><td>Parse</td><td>*Elements</td><td>Fill</td></tr>
<tr><td>a. N O
|
x x]
| |
α<β></td><td>*</td><td></td><td></td></tr>
<tr><td>b. N O N
| | |
x x x]
| | |
α β γ</td><td></td><td>*</td><td></td></tr>
<tr><td>c. N O N
| | |
x x x]
| |
α β</td><td></td><td></td><td>*</td></tr>
</table>

Apart from having to delete the final empty nucleus in (13a), there is another problem with Harris' analysis. If Fill is low-ranked in a language, it means that nuclei are allowed to surface empty. However, even in such a language, when we find sequences of empty nuclei, every other of them has to receive phonetic interpretation. That is, we still need the ECP demanding uninterpreted empty nuclei to be properly governed, and this constraint will probably be inviolable, or at least very highly ranked. The empty nucleus in (13c) is, however, not properly governed, thus it either has to surface, or we still need to add the extra clause to the ECP about domain-finally licensed empty nuclei. And not only that, but now we express the same thing twice in our grammar, once in the ECP, and once by ranking Fill below the other constraints.

We can get rid of this duplication (by really getting rid of the extra clause of the ECP), if we make the principle of Onset Licensing violable. Let us call this constraint Nucleus and define it as (14). Underlying forms will now come without the final empty nucleus, as in (15).

(14) NUCLEUS
An onset is licensed by a following nucleus.

(15)

<table>
<tr><td>N O
| |
x x]
| |
α β</td><td>PARSE</td><td>*ELEMENTS</td><td>FILL</td><td>NUCLEUS</td></tr>
<tr><td>N O
| |
x x]
| |
α β</td><td></td><td></td><td></td><td>*</td></tr>
</table>

Languages that allow word-final consonants will then in fact allow them, and will rank NUCLEUS under the faithfulness constraints. Since there is no final empty nucleus in such cases, the extra clause of the ECP can be dispensed with. Thus under the present approach, languages differ in whether words have to end in a nucleus or not (instead of differing in whether they allow a final empty nucleus or not). This in fact results in a perfect parallel to the difference between languages concerning the necessary presence (or not) of initial onsets (expressed by the ONSET constraint in OT). That is, the NUCLEUS and ONSET constraints together express the generalisation that word edges like to coincide with syllable edges (a fact usually accounted for by a member of the ALIGN family).

Note that to preserve domain-internal empty nuclei in languages with word-final consonants (i.e. where NUCLEUS is ranked below FILL), we need an inviolable representational constraint which prohibits consecutive constituents of the same type within a domain. This does not mean adding an extra constraint, however, since such a constraint has always been needed to separate nuclei in hiatus by an empty onset.

Also, now the addition of empty nuclei becomes necessary in certain configurations, but if we regard the Projection Principle as a monotonicity requirement, instead of forbidding both the deletion and the addition of structure, then this will cause no problems. In fact, it removes a problem, by making it unnecessary to delete stipulated final empty nuclei (as in (13a), or when they come to precede an empty onset, as a result of suffixation). The latter operation was introduced under the name Reduction by Gussmann & Kaye 1993, and has often been used in the GP literature, without mentioning the fact that it strictly speaking violates the Projection Principle. In the absence of final empty nuclei, these problems disappear by themselves.

In addition, this analysis avoids the problem that was caused by parametrically licensed final empty nuclei in languages such as Turkish, where unlicensed empty nuclei surface phonetically as the colourless vowel (*ɨ* in this case). Since Turkish allows words to end on a consonant, it seems to license final empty nuclei. Thus the colourless vowel should never appear in domain-final position, a prediction which turns out to be false.[8] If, however, consonant-final words in Turkish end on an onset, then words ending in the colourless vowel can perfectly end in an (unlicensed) empty nucleus underlyingly which consequently will have to receive phonetic interpretation.

Note that by making the principle of Onset Licensing violable, the more general Licensing Principle (cf. Kaye 1990), given in (16a) becomes violable as well. The most important aspect of this principle, namely that every domain must have a head, however, can be retained under a modified version of the Licensing Principle, given in (16b). It is enough to say 'nucleus' in this principle, since in the absence of a proper governor, a sole nucleus will always receive phonetic interpretation.

(16) a. *Licensing Principle*
All phonological positions save one must be licensed within a domain. The unlicensed position is the head of this domain.

b. *Licensing Principle (new version)*
Every domain must have a head, i.e. a nucleus.

There is another issue here, that of catalexis, that deserves attention. This phenomenon fitted very well in an account with final empty nuclei, where these nuclei could become "visible" in languages that have previously been analysed by means of a final dummy syllable. However, since the ECP might prove to be violable independently (cf. sequences of phonetically null empty nuclei in Polish, Gussmann (in press)), it could be suggested that catalexis be a result of some higher ranking constraint as well. This issue requires further consideration.

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[8] Kaye 1990 argues that the possessive suffix -*ɨ* in Turkish is in fact -v^0nv^0 underlyingly, where the *n* is not realised phonetically for some reason when no other suffixes follow it. This, however, does not solve the problem completely, because there are plenty of lexical words in Turkish ending in the ominous ɨ, where there is no evidence of a following latent consonant.

Notice that we cannot distinguish between three different surface forms, as represented by the contrast between (13b, c) and (15). Harris (1994b) chooses to make (13c) and (15) indistinguishable, whereas I propose to do the same with (13b) and (13c). That is, if final empty nuclei can never be licensed, then they have to surface either under the force of the ECP, or as a result of inserting some elements. As far as we are concerned here, these two solutions are indistinguishable (and thus we cannot determine the ranking between *ELEMENTS and FILL). In fact, I suspect that insertion of elements should be prohibited for Gen altogether, and that the constraint *ELEMENTS can be made redundant. (In the following tables, therefore, I restrict myself to the use of the constraint FILL.)

Now we can return to the story of government licensing, more precisely to the behaviour of word-final consonant clusters.

6 Word-final clusters and Government Licensing

According to Charette 1992, the government licensing properties of domain-final empty nuclei are subject to parametric variation, as illustrated in (17). In French, words may end both in a coda-onset cluster and in a complex onset. In Wolof, a schwa is inserted after morpheme-final consonant clusters. In Korean, one of the consonants of a word-final cluster is deleted. And finally in English, words may end in a coda-onset cluster, but not in a complex onset. Charette analyses these facts by setting the parameter of potential government licensers differently in these languages. Namely, in Wolof and Korean, domain-final empty nuclei are not government licensers, while in French they are. Whereas in English, they are, but only directly and not indirectly.

(17) *Word-final consonant clusters*

a. *French*

carte	[kart]	‘card’
table	[tabl]	‘table’
castre	[kastr]	‘castrate’

b. *Wolof*

nak		‘cow’
lɛkkə	*lɛkk	‘to eat’
rabbə	*rabb	‘to weave’

c. *Korean*
hulk [hul]/[huk] ‘earth’

d. *English*
card
post
*catr

Apart from the problem that this parameter setting in itself does not explain the difference between (17b) and (17c) (epenthesis vs. deletion), this proposal cannot be adopted in the present analysis, since here there are no domain-final empty nuclei. However, I am going to show that the variation illustrated in (17) can be analysed to result from different constraint rankings, which in addition account for the above mentioned difference between (17b) and (17c), and thus simplify the overall analysis.

Let us start with French. As we have seen in (10a), in French GOVERNMENT LICENSING is ranked above PROPER GOVERNMENT. And since there are word-final consonants in this language, we know that NUCLEUS is ranked below PARSE and FILL. The existence of word-final consonant clusters shows that GOVERNMENT LICENSING is not inviolable. Since no epenthesis or deletion occurs in these cases, this provides evidence that GOVERNMENT LICENSING is ranked below PARSE and FILL. The interaction of these constraints is illustrated in (18).

(18) French

/tabl/	PARSE	FILL	GL	NUC	PG
☞ tabl			*	*	
tabl□		*!			
tab<l>	*!			*	

Wolof and Korean choose to preserve GOVERNMENT LICENSING even word-finally, although in different ways, Wolof by epenthesis, i.e. lower ranking of FILL, while Korean by deletion, i.e. lower ranking of PARSE, as illustrated in (19a-b) respectively.

(19) a. Wolof

/rabb/	PARSE	GL	FILL	NUC
rabb		*!		*
☞ rabb□			*	
rab<b>	*!			*

b. Korean

/hulk/	GL	Fill	PARSE	NUC
hulk	*!			*
hulk□		*!	*	
☞ hul<k>			*	*

Notice that Korean, with underparsing, looks like Billiri at first glance, and thus should also violate the Projection Principle. The difference, however, is that here we are still within one domain, and if underlyingly only nuclear nodes are associated to skeletal positions, then what happens is that the given (consonantal) skeletal positions will not get incorporated into any syllabic consituent by the time the form exits the lexicon, and thus no non-nuclear governing relation will be established (but we do not need to destroy such a relation).[9]

As can also be seen from the examples in (19), the ranking of GOVERNMENT LICENSING with respect to PARSE and FILL is an independent issue from its ranking with respect to PROPER GOVERNMENT, the same way it is in Charette's analysis. That is, the behaviour of final clusters is independent of the behaviour of internal ones.

Now let us turn to English. English looks like a case in between French and Wolof, since it allows word-final consonant clusters of the coda-onset type, but not of the complex onset type. In fact, if we look at words like *cycle*, *fibre* or *centre* more closely, we see that English treats these the same way as Wolof, at least if syllabic sonorants are

[9]Thanks to Monik Charette for clarifying this point.

analysed as the presence of an empty nucleus, i.e. as a violation of FILL. I suggest to analyse this language by splitting the constraint GOVERNMENT LICENSING into two, one requiring licensing of coda-onset clusters (GL(C,O)), the other of complex onsets (GL(O_1,O_2)), and ranking the two separately, as illustrated in (20). Since FILL is sandwiched in between the two, violating it will be fatal in the case of a coda-onset cluster, but optimal in the case of a complex onset.

(20) English

/kard, saikl/	PARSE	GL$^{(O1,O2)}$	FILL	GL$^{(C,O)}$	NUC
☞ kard				*	*
kard□			*!		
kar<d>	*!				*
saikl		*!			*
☞ saikl□			*		
saik<l>	*!				*

The French dialect spoken in Saint-Etienne mentioned by Charette (1992) provides interesting extra evidence for splitting GOVERNMENT LICENSING. But in this case the two parts are ranked differently with respect to another constraint, namely, it is PROPER GOVERNMENT which is sandwiched in between; that is, this dialect represents a case in between standard French and Polish. The facts are illustrated in (21).

(21) Saint-Etienne French

	GL$^{(O1,O2)}$	PG	CL$^{(C,O)}$
parvənir		*!	
☞ parvnir			*
librmã	*!		
☞ librəmã		*	

Depending on the behaviour of word-final clusters, PARSE and FILL will be either ranked below, in between or above the GL constraints.

One question that arises here is whether the two parts of GL can be ranked in the opposite order with respect to each other. This would give a language where coda-onset clusters need more licensing than complex onsets do. Something that might provide an argument against such a possibility is the fact that in general the set of possible complex onsets is properly included in the set of possible interludes (or coda-onset clusters). That is, complex onsets are subject to stricter phonotactic restrictions, and are thus also more likely to require more licensing than coda-onset clusters do.

One way to express such facts is to formulate a specific constraint applying only to the relevant subset of the set the general constraint is applying to. In this case, we could split the GL constraint in a different way from what was suggested above, namely, by keeping the original formulation on the one hand, and adding a more specific constraint requiring licensing of the head of a branching onset on the other. In such a scenario, a form that violates the more specific constraint will also violate the more general one, but not the other way round. That is, the first examples in (20) and (21) remain unchanged, whereas the first candidates of the second examples will also violate the lower ranked GL constraint. This modification does not change any of the outcomes established so far, but it ensures that we do not get the hypothetical language described above, since by Panini's Theorem, when the more general constraint is ranked higher than the more specific one, the effect of the latter one becomes concealed.

7 Predictions and summary

Now let us see how many possible (relevantly distinctive) permutations the constraints introduced in this paper give. In medial contexts, different rankings between PROPER GOVERNMENT and GOVERNMENT LICENSING result in three different grammars (GL >> PG, e.g. Polish, PG >> GL, e.g. French and GL(O_1,O_2) >> PG >> GL, e.g. Saint-Etienne French). In word-final contexts, GOVERNMENT LICENSING can only come into play if NUCLEUS can be violated (and thus word-final consonants are allowed). In this case, we have to look at the rankings between GL and the faithfulness constraints, PARSE and FILL. Either GL is at the bottom (e.g. French or Polish), or one of the faithfulness constraints is in this position (e.g. Wolof or Korean), or a faithfulness constraint is sandwiched in between the two halves of GL (e.g. English). This leaves us with five possibilities. This, together with the two cases where NUCLEUS is inviolable (e.g. Zulu or Samoan), gives seven. Thus the total number of permutations, combining both contexts, is 3x7=21. The empirical testing of these predictions is waiting for further research.

As a matter of fact, the parametric approach does not fare any better, because in its present formulation direct and indirect licensing are two separate parameters, predicting four possibilities word-internally, in contrast to the present approach where GL and GL(O_1,O_2) predict only three. (Word-finally, the two approaches do not make different predictions.) However, an analysis employing ranking has certain further advantages over a parametric one. One such advantage is that it can account for cases of constraint conflict in an elegant way, a state of affairs that as yet has not received a principled solution in a parametric approach (where the only possibility is to turn constraints off completely, but they cannot be made violable).

Another advantage of a ranking approach is that it is more explicit. For example, in the case of Wolof, the ranking of FILL under GL expresses both the fact that GL cannot be violated and the means to rescue the situation, namely epenthesis. Whereas in a parametric approach, the parameter about domain-final empty nuclei only says that these are not capable of government licensing, and we need a separate parameter to distinguish between Wolof and Korean, i.e. between the epenthetic and the deletion cases. This also means that the same sort of parameters will appear again and again with different principles (to express epenthesis or deletion for example, caused by different forces in different contexts). Whereas by employing ranking, the generalisation needs to be expressed only once, and the same constraint (FILL or PARSE) ranked below several different constraints will express the similarity between these separate processes. That is, the present approach proves to be simpler than a parametric one.

Finally, as I have shown, by turning the Principle of Onset Licensing into a violable constraint, the controversial stipulation of phonetically always null final empty nuclei can be dispensed with. Moreover, all the parameters mentioned in this paper can be expressed by different rankings of violable constraints which, in turn, are needed anyway (among them Proper Government and Government Licensing). The principles that still seem to prove inviolable on the basis of this study are the Projection Principle (basically a monotonicity requirement), the (modified version of the) Licensing Principle, Coda Licensing and (probably) the Empty Category Principle. Further study will have to tell whether they are all really principles, or whether some of them can be violated under the pressure of other constraints.

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