1

A Licensing Theory for Finnish

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1.1 Introduction*

The notion of argument structure and thematic roles is by now commonplace in linguistic theory. Although the details vary, theories as diverse as Government and Binding Theory and Minimalism (Chomsky, 1981, 1986, 1995) on the one hand, and Lexical Functional Grammar (Kaplan and Bresnan, 1982; Bresnan, 2001; Dalrymple, 2001) and Head-driven Phrase Structure Grammar (Pollard and Sag, 1994; Ginzburg and Sag, 2001) on the other, posit some syntactic/semantic representation which specifies a predicate's arguments and provides equivalence classes of argument types, which I will here call thematic roles.

However, it is not enough to merely state a predicate's argument structure. An adequate theory must also explain how arguments of a predicate are syntactically realized. There must be a statement of how thematic roles are *mapped* onto grammatical functions. There is also a well-established relationship between grammatical functions and morphosyntactic case, which is realized morphologically. Therefore, a good linguistic theory should make generalizations and predictions about the relationship between thematic roles, grammatical functions, and morphosyntactic case and its morphological realization (morphological case). Let us call a theory of the bipartite relation between argument structure and grammatical functions a *mapping theory* and a theory of

*I would like to thank Ted Briscoe, Ann Copestake, Beth Levin, Line Mikkelsen, Diane Nelson, Chris Potts, Ivan Sag, Peter Sells, Barbara Stiebels, and the audience at my LSA 2002 presentation for comments and discussion. I owe a huge debt to Ida Toivonen for extensive discussion and help with the Finnish data, and especially to Paul Kiparsky whose work initiated this research and who provided much supervision and support. All examples are from his work or adapted and checked with Ida's help, unless otherwise noted. Lastly, I would like to thank my reviewer, who was extremely insightful and helpful. I accept full responsibility for any errors. This research was partly funded by SSHRC Doctoral Fellowship 752-98-0424.

Generative Approaches to Finnic and Saami Linguistics.
Diane C. Nelson and Satu Manninen (eds.).

the tripartite relation between argument structure, grammatical functions and case a *licensing theory*.[1]

Kiparsky (1996, 1997) presents a licensing theory based on the relational features [± H(ighest) R(ole)] and [± L(owest) R(ole)]. These features cross-classify thematic roles, grammatical functions, and case (morphosyntactic and morphological). This yields a simple, unified featural analysis of the various components of licensing. Kiparsky shows how this theory makes striking generalizations and predictions about typologically diverse case systems, as well as fine-grained predictions about licensing in particular languages, such as German, Finnish, and Dyirbal. But, in more recent work Kiparsky (2000, 2001) has abandoned this strictly unification-based model in favour of an Optimality Theory (OT; Prince and Smolensky 1993) formalization. This move was made in large part due to various problems with unification failure in the older model.

In this paper I present a modified version of Kiparsky's original licensing theory (Kiparsky, 1996, 1997). My modifications, in terms of Lascarides and Copestake's (1999) default logic for feature unification, result in a licensing theory which does not use the non-monotonic optimization of Optimality Theory, while avoiding unification failure where necessary. Optimization in OT is non-monotonic because, due to markedness constraints, the winner of a competition may lack information which is specified in the input. The analysis presented here makes a much more limited appeal to non-monotonic constraints: information is destroyed only as a last resort.[2] Furthermore, it is possible to view default versus non-default specification for a given feature as another aspect of typological variation, rather than merely as a formal device. I will argue that the typological space predicted by the default theory of licensing is much more restrictive than that predicted by OT, despite typology being adopted as a prime motivation for the latter style of analysis. Lastly, I will discuss the emergence of the unmarked on the default theory. This is another motivation for optimality-theoretic analyses, but I will argue that the default licensing theory presented here actually derives emergence of the unmarked while using a more restrictive and better motivated set of constraints than the OT analysis of Kiparsky (2001), which nevertheless uses only the usual type of OT constraints. Thus, the theory I present has the predictive high points of Kiparsky (1996), yet it is a largely monotonic formalization that results in a more restrictive theory than the optimality-theoretic model, although it too makes predictions regarding typology and the emergence of the unmarked. I demonstrate the modified licensing theory with an analysis of object licensing

[1]In the original generative literature, licensing theory was typically called *linking theory* (Ostler, 1979), but the latter term is now normally taken to be a synonym for mapping (see, e.g., Butt et al., 1997).

[2]See the discussion of Conservativity in section 1.5.

in Finnish. This was a case which Kiparsky's (1996) unification-based approach had problems with and was one motivation for the OT reformalization of the theory. I also present an analysis of Finnish subject licensing and discuss how the same analysis derives genitive-marked possessors.

Section 1.2 presents and motivates the licensing theory I will be modifying (Kiparsky, 1996, 2001). Then I present the salient aspects of the default unification formalism I use to modify Kiparsky's licensing theory in section 1.3. Finally, I present the modified licensing theory (section 1.4) and how it deals with the Finnish data (sections 1.5 and 1.6).

1.2 Kiparsky's Licensing Theory

The licensing theory presented in (Kiparsky, 1996, 2001) posits a ternary relation between thematic roles or arguments, grammatical functions (which he calls "abstract case") and morphosyntactic case. In this section I review this licensing theory, save for the optimality-theoretic analysis (Kiparsky, 2001), which I reject in favour of an analysis using default unification, which is closer in spirit to Kiparsky (1996, 1997).

1.2.1 Abstract Case

Kiparsky follows Bierwisch (Bierwisch, 1986; Bierwisch and Schreuder, 1992) in assuming a level of Semantic Form to represent a word's lexical semantics.[3] Semantic Form is made up of semantic constants and variables:

(1) *show*: $\lambda z \lambda y \lambda x$ [x CAUSE [CAN [y SEE z]]]

The constants in (1) are the primitives CAUSE, CAN, and SEE, while the variables are x, y, and z. The lambda-abstracted variables are equivalent to thematic roles, and their depth of embedding (starting inside out) directly encodes the thematic hierarchy. Thus, in (1), λx abstracts over the highest ranking thematic role, and λz over the lowest ranking one.

Kiparsky uses the relational features [$\pm$ H(ighest) R(ole)] and [$\pm$ L(owest) R(ole)] to define the abstract cases, with each abstract case bearing a value for both features[4] (see also the work of Barbara Stiebels and Dieter Wunderlich and colleagues for a closely related approach; e.g., see Stiebels 2000 and Wunderlich and Lakämper 2001 and references therein). These are assigned to the thematic roles according to their relative position in Semantic Form. Thus, [+ HR] is assigned to the highest role and [+ LR] is assigned to the lowest role. The rest of the case matrix is filled in implicationally. Since

[3] For related theories of lexical semantics, see for example Lexical Conceptual Semantics (Jackendoff, 1990), Lexical Decomposition Grammar (Joppen and Wunderlich, 1995) and the HPSG linking theory of Davis and Koenig (Davis and Koenig, 2000; Koenig and Davis, 2001).

[4] The value may be underspecified by leaving the case matrix blank for the underspecified feature.

the features are relational, a predicate can and must have one [+ HR] role and one [+ LR] role, if it has any roles that project into the syntax (unless it is listed as exceptional in the lexicon).[5] Thus, any thematic role that does not bear [+ HR] must bear [− HR] (as it is not the highest role) and any thematic role that does not bear [+ LR] must likewise bear [− LR]. For the predicate in (1) this yields the following feature matrices.

(2) *show*:

$$\lambda z \begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix} \quad \lambda y \begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix} \quad \lambda x \begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix} \quad \text{[x CAUSE [CAN [y SEE z]]]}$$

Two features with two values each yields four possible abstract cases:

(3)

S	[+ HR, + LR]
A	[+ HR, − LR]
O	[− HR, + LR]
D	[− HR, − LR]

S and A are mnemonic for Dixon's (1979) pivots, where S is the subject of an intransitive and A is the subject of a transitive. Similarly, O is the object of a transitive, while D is a mnemonic for dative, the second object of a ditransitive. Thus, there are four possible abstract cases, and their featural make-up is derived automatically from assigning the two relational features to the various thematic roles in Semantic Form.

1.2.2 Morphosyntactic Case

The same two relational features are used to specify morphosyntactic grammatical case (as opposed to semantic case, which is not defined using these features). For example, dative case gets the feature matrix [− HR, − LR]. It therefore typically unifies with the middle thematic role in a ditransitive. Although there can be generalizations made about cases cross-linguistically based on these features, the grammatical case inventories of languages are specific to the language in question and can be determined by examining the syntactic distribution of the various cases. For example, Finnish has four grammatical cases: nominative, genitive, accusative, and partitive. These cases can mark various grammatical functions and certain adverbials. In section 1.4.2 below I motivate a particular featural make-up for these cases.

There are two essential conditions that govern the association of morphosyntactic case with case-marked thematic roles (i.e., with abstract case) (Kiparsky, 1996):

[5] For example, Kiparsky (1996) suggests that impersonal verbs have no thematic roles, and therefore do not get assigned these features. We will also see exceptional lexical assignment by certain atelic predicates (section 1.5) and VP-internal subjects (section 1.6).

(4) a. **Unification**
Associated feature matrices must be non-distinct.
$[+\text{ F}] \sqcup [+\text{ F}]$
$[-\text{ F}] \sqcup [-\text{ F}]$
$[-\text{ F}] \not\sqcup [+\text{ F}]$

b. **Specificity**
Specific rules and morphemes block general rules and morphemes in shared contexts.
$[\alpha\text{ F}_1, \alpha\text{ F}_2]$ is more specific than $[\alpha\text{ F}_1]$
$[\alpha\text{ F}_1, \alpha\text{ F}_2]$ is more specific than $[\alpha\text{ F}_2]$
$[\alpha\text{ F}]$ is more specific than [ ]
Every (type of) feature matrix is equally specific to itself

Thus, morphosyntactic case matrices can only be associated with abstract cases if they are not featurally distinct. And more specific morphosyntactic cases must be selected over less specific ones, where either can unify with a given abstract case. However, cases may encode information beyond the grammatical function/thematic role information specified through HR and LR. In section 1.6 below we will see in particular that partitive and genitive case can encode the semantics of possession and nominal partition respectively. Note that Specificity is in effect a formalization of the Elsewhere Condition (Kiparsky, 1973). We will revisit these conditions in section 1.3, in light of considerations from defaults.

1.2.3 Morphological Case

The morphosyntactic cases that are characterized in terms of [± HR] and [± LR] are realized as morphemes. Furthermore, zero morphemes are maximally underspecified for case features. Thus, there can only be one zero case in a language, and this case will be [ ]. This corresponds to nominative/absolutive (Kiparsky, 1996, 2001).

1.2.4 Positional Licensing

Lastly, the same relational features can be assigned to positions in languages with positional licensing. For Finnish, Kiparsky (2001) assigns [+ HR] to the specifier of IP and [− HR] to the complement of V. In other words, [Spec, IP] licenses subjects (S and A), while [Comp, V] in general licenses objects (O and D).

1.2.5 Summary and Discussion

In the licensing theory that I have just presented, two relational features, [± HR] and [± LR] are used to cross-classify abstract case (i.e., grammatical functions), morphosyntactic case and positional licensing. Furthermore, as required of a licensing theory, these case matrices are associated with thematic roles (in this case, at the level of Semantic Form).

However, since unification and specificity are the only principles governing association of abstract and morphosyntactic case, there are certain instances of case assignment in Finnish which are problematic. For example, Kiparsky (2001) motivates a case paradigm in which there is no accusative case for nouns, only for pronouns (see section 1.4.1 below). Singular noun objects are marked with genitive case,[6] as are subjects of nonfinite verbs. Plural noun objects are marked with nominative case, and so are subjects of finite verbs. But, subjects are [+ HR], whereas objects are [− HR]. Thus, genitive and nominative case must not be specified for HR. However, transitive subjects are [+ HR, − LR], while intransitive subjects are [+ HR, + LR]. Thus, genitive and nominative case must be unspecified for LR as well. This is a problem, though, as both cases would then have the case feature matrix [ ] and would be nondistinct. However, there is a clear difference in morphology associated with the two cases and there are syntactic generalizations which show them to be distinct.

These problems, among other considerations, motivated the move by Kiparsky (2001) to an optimality-theoretic treatment, which allows featural mismatches between input abstract cases and their morphosyntactically realized outputs. Thus, unification is abandoned. I propose instead that this move is unnecessary and that the OT analysis is less perspicuous and less well-motivated than an analysis which uses *default* unification. In the next section I very briefly review the default unification theory of Lascarides and Copestake (1999).

1.3 Default Unification

Lascarides and Copestake (1999) present a default logic which meets the following desiderata for default unification (Lascarides et al., 1996):

(5)
a. Nondefault information is always preserved.
b. Default unification only fails if there is conflicting nondefault information.
c. Default unification behaves like monotonic unification where monotonic unification would succeed.
d. Default unification should deterministically return a single result.
e. Default unification can be described using a binary, order-independent operation.

Although I will not go into the formal details here, the gist of default unification is that if a default is not overridden, then the default value will emerge and in

[6] Modulo Jahnsson's Rule. See section 1.5.

a unification conflict between a default and a nondefault value, the nondefault value overrides the default value.

Default unification in this system is noted by putting a slash before the value, as in $[/+\text{ HR}]$. According to the conditions in (5), we get the following default unification patterns, as well as the nondefault unification patterns in (4a), repeated below as (7).

(6) **Default unification**

$$\begin{array}{lcccl}
[/+\text{ F}] & \sqcup & [-\text{ F}] & = & [-\text{ F}] \\
[-\text{ F}] & \sqcup & [/+\text{ F}] & = & [-\text{ F}] \\
[/-\text{ F}] & \sqcup & [+\text{ F}] & = & [+\text{ F}] \\
[+\text{ F}] & \sqcup & [/-\text{ F}] & = & [+\text{ F}] \\
[/+\text{ F}] & \sqcup & [/+\text{ F}] & = & [/+\text{ F}] \\
[/-\text{ F}] & \sqcup & [/-\text{ F}] & = & [/-\text{ F}] \\
[/-\text{ F}] & \sqcup & [/+\text{ F}] & = & [\pm\text{ F}]^{7}
\end{array}$$

The reader can check that all five desiderata in (5) are met here.

In using default unification, we preserve normal unification (as used in Kiparsky's (1996; 1997) system), which I repeat here:

(7) **Unification**

$$\begin{array}{l}
[+\text{ F}] \sqcup [+\text{ F}] \\
[-\text{ F}] \sqcup [-\text{ F}] \\
[-\text{ F}] \not\sqcup [+\text{ F}]
\end{array}$$

Recall from (4b) that the other ingredient in Kiparsky's original unification analysis was Specificity, or the Elsewhere Condition. First, notice that although it seems that Specificity should in some sense come for free in a default unification theory, this is a mistaken first impression. Default unification concerns the featural values in morphemes, but Specificity applies at the level of rules and whole morphemes, selecting between rules and morphemes based on their information content. Thus, defaults and Specificity apply at different loci and Specificity is an addition to the Lascarides and Copestake (1999) default unification theory, not a consequence of it. Second, we need to consider how Specificity interacts with defaults and how blocking works. In particular, does Specificity apply to the actual featural information borne by morphemes or to the amount of potential information they have specified? It seems intuitively clear that a default value for a feature is not as specific as a non-default value. That is, we might expect that $[\alpha\text{ F}_1]$ blocks $[/\alpha\text{ F}_2]$, $[/\beta\text{ F}_1]$, $[/\beta\text{ F}_2]$, etc. If Specificity is a relationship between morphemes, then this seems arbitrary, as the morphemes in question each have one feature with some value:

[7] We get this because $[/-\text{ F}] \sqcup [/+\text{ F}] = [/-\text{ F}] \vee [/+\text{ F}]$ and we can move the disjunction in the result inside to get $[/-\text{ F}] \sqcup [/+\text{ F}] = [/+\vee-\text{ F}]$, which is equivalent to $[\pm\text{ F}]$ or the underspecified value [ ].

the morphemes are equally informative. The basis of the intuition becomes clear if we consider Specificity as applying not to the actual featural information on a morpheme but rather to the potential information that the morpheme determines. In other words, [α F$_1$] is more specific than, for example, [/β F$_1$], because the result of unifying with [α F$_1$] can *only* be [α F$_1$], whereas the result of unifying with [/β F$_1$] can be either [β F$_1$] (maintaining the default) or [α F$_1$] (overriding the default). By the same token, then, [/α F$_1$] and even [/α F$_1$, /α F$_2$] are no more specific than [ ], because all these feature matrices allow the same results. Notice also that morphemes that encode conflicting information are no more specific than each other, since specificity is inherently a subsumption relationship, and is therefore inapplicable in situations where subsumption does not hold (i.e., when there is unification failure between any subset of morphological features borne by the morphemes in question). Third, it is worth repeating that the HR/LR information is not the only information encoded morphologically. In particular, semantic information is also encoded in this fashion: for example, in the nominal domain partitive case encodes the semantics of partition (e.g., *a piece of pie*) and genitive case encodes possession. Thus, even if two cases are equally specific with respect to HR/LR, other conflicting information can make them equally specific.

Thus, the revised version of Specificity, taking defaults into account will be:[8]

(8) **Specificity (default version)**
Specific rules and morphemes block general rules and morphemes in shared contexts.
[α F$_1$, α F$_2$] is more specific than [α F$_1$]
[α F$_1$, α F$_2$] is more specific than [α F$_2$]
[α F] is equally specific to [β F]
[α F] is more specific than [ ]

[α F$_1$] is more specific than [/α F$_1$]
[α F$_1$] is more specific than [/β F$_1$]
[α F$_1$] is more specific than [/α F$_2$]
[α F$_1$] is more specific than [/β F$_2$]
[/α F] is equally specific to [ ]
Every (type of) feature matrix is equally specific to itself

In the analysis that I present in the following sections, defaults are used to avoid the unification problem noted in section 1.2.5 above, while allowing genitive and nominative case in Finnish to be represented as featurally distinct. The instances of default unification all involve overriding a default, as in the

[8]Note that this is not meant to be an exhaustive list of possibilities, but it should provide the basis for extrapolating any missing combinations.

first four cases in (6), or identical default unification, as in cases five and six.

1.4 Licensing in Finnish Using Defaults

1.4.1 Morphological Case

Finnish has four grammatical cases: nominative (-∅), accusative (*-t*), genitive (*-n*), and partitive (*-(t)a*) (Kiparsky, 2001). I assume the paradigm in (9), which is motivated extensively by Kiparsky (2001).

(9)

	'bear'		'he, they'	
	Singular	Plural	Singular	Plural
Nominative	karhu	karhu-**t**	hän	he
Accusative	—	—	häne-**t**	he-i-dä-**t**
Genitive	karhu-**n**	karhu-j-**en**	häne-**n**	he-i-dä-**n**
Partitive	karhu-**a**	karhu-j-**a**	hän-**tä**	he-i-**tä**

By contrast, the traditional paradigm posits that there is an accusative case for nouns and that it is -∅ or *-n* in the singular and *-t* in the plural.

(10)

	'bear'		'he, they'	
	Singular	Plural	Singular	Plural
Nominative	karhu	karhu-**t**	hän	he
Accusative	karhu karhu-**n**	karhu-**t**	häne-**t**	he-i-dä-**t**
Genitive	karhu-**n**	karhu-j-**en**	häne-**n**	he-i-dä-**n**
Partitive	karhu-**a**	karhu-j-**a**	hän-**tä**	he-i-**tä**

In other words, in this paradigm there is case syncretism between the accusative singular and nominative singular or genitive singular on the one hand, and between accusative plural and nominative plural on the other hand.

The paradigm in (9) treats these facts as no coincidence and instead posits that there simply is no accusative case ending for nouns. There are theoretical and empirical reasons for preferring (9) to the traditional paradigm. The theoretical reasons are as follows. First, the traditional paradigm treats -∅ and *-n* accusatives as a case of suppletive allomorphy. However, the distribution of these allomorphs is conditioned by Jahnsson's Rule (see section 1.5 below), which is a syntactic generalization. But, allomorphy is not normally conditioned by syntax. The paradigm in (9) treats this instead as nominative versus genitive case assignment, and case assignment can obviously be conditioned syntactically. Second, (9) eliminates the *-t*/*-n*/-∅ allomorphy entirely, which is desirable since Finnish generally lacks suppletive morphology (Kiparsky, 2001, 318). Third, the paradigm in (9) is simpler as the only case syncretism left is for the form *-t*, which marks accusative pronouns and nominative singular nouns. Fourth, as mentioned above, it avoids the suspicious fact that all accusative noun endings are exactly the same as some other case ending.

The empirical reasons for preferring (9) include 1) case identity under gapping, and 2) the behaviour of the interrogative pronoun *kuka* 'who'. A shared, gapped argument in a coordination structure must have identical abstract case:

(11) Mikko pyörty-i ja (Mikko) kanne-ttiin ulos.
Mikko.NOM faint-PAST.3SG and (Mikko.NOM) carry-PAST.3SG out
Mikko fainted and (Mikko) was carried out.

The argument of the active verb *pyörtyi* gets nominative case, while the argument of the "passive"[9] verb *kannettiin* gets morphological nominative case if it is a noun and morphological accusative case if it is a pronoun, according to the paradigm (9). If we assume that there must be identity of abstract case for gapping in coordination, the ungrammaticality of the following sentence with gapping follows directly, as one pronoun gets nominative case, whereas the other one gets accusative case.

(12) Hän pyörty-i ja *(häne-t) kanne-ttiin ulos.
3SG.NOM faint-PAST.3SG and (3SG.ACC) carry-PAST.3SG out
He fainted and he was carried out.

According to the traditional paradigm, the argument of *kannettiin* is accusative in both (11) and (12), and (11) would be wrongly predicted to be ungrammatical. This shows empirical support for the paradigm in (9), which treats the singular noun -∅ ending as nominative only, predicting the grammaticality of (11), but posits an accusative form for pronouns, predicting the ungrammaticality of (12) with gapping.[10]

The morphology of the interrogative pronoun *kuka* 'who' provides an empirical argument for the singular noun ending *-n* being solely genitive, rather than being syncretic between genitive and accusative singular. This interrogative pronoun has various stems and can take nominal or pronominal case inflection, in certain cases:

(13) a. Kuka näh-tiin?
who.NOM see-PASS.PAST
Who was seen?

b. Kene-t näh-tiin?
who-ACC see-PASS.PAST
Who was seen?

However, if *kuka* agrees with a noun or adjective, the accusative is excluded. Thus *kuka kumma* 'who on earth' (lit. 'what strange (one)') and *kuka muu*

[9] Finnish only has an impersonal passive, which is not clearly a true passive (Kiparsky, 2001; Shore, 1988).

[10] Note that the same empirical phenomenon could be used to establish that the *-t* ending on plural nouns (e.g., *karhut* 'bears') is a nominative rather than accusative ending.

'who else', but **kenet kumman* and **kenet muun*:

(14) a. Kene-n kumma-n hän näk-i?
who-GEN strange-GEN s/he see-PASS.PAST
Who on earth did s/he see?

b. *Kene-t kumma-n hän näk-i?
who-ACC strange-GEN s/he see-PASS.PAST
Who on earth did s/he see?

If, as in (9), the singular noun case ending *-n* is exclusively genitive, then (14b) is straightforwardly predicted to be ungrammatical due to lack of case concord. However, if *-n* is also accusative, as per the traditional story, the ungrammaticality of (14b) is unexplained.

Thus, the paradigm in (9) is well-motivated both theoretically and empirically. There is simply no accusative case ending for nouns. But, the discussion so far has focused on morphological case. Next, I turn to a consideration of the featural make-up of Finnish morphosyntactic grammatical case in terms of the features [± HR] and [± LR].

1.4.2 Morphosyntactic Case

I propose the following featural analysis of the four morphosyntactic grammatical cases in Finnish:

(15)

Nominative	Accusative	Genitive	Partitive
$\begin{bmatrix} \ \end{bmatrix}$	$\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	$\begin{bmatrix} /+ & \text{HR} \end{bmatrix}$	$\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$

Genitive and nominative mark both objects and subjects, as will be spelled out in the rest of the paper. It is this fact that leads to the particular featural make-up of the Finnish nominative and genitive cases. Subjects are [+ HR], while objects are [− HR]. In addition, transitive subjects are [− LR], while intransitive subjects are [+ LR]. This means that both nominative and genitive must unify with [± HR] and [± LR]. One way that this is possible on this theory is by total underspecification, i.e., underspecification for both HR and LR. However, there can only be one totally underspecified case (see section 1.2.3 above). The natural choice for the underspecified case is nominative, as this also allows generalizations to be made about nominative and absolutive case together (Kiparsky, 2001). Since the genitive cannot be underspecified, it must bear some feature. The assignment of [/+ HR] allows it to appear in the right contexts, while predicting certain facts about nominative and genitive distribution due to the interaction of defaults with the three principles introduced in section 1.5. Thus, according to this proposal, nominative is the maximally underspecified case as discussed in section 1.2.3, and is not related to particular abstract cases, while genitive case is related to the S/A abstract subject cases. As for the remaining two grammatical cases, partitive is related to the abstract O case (see section 1.2.1), while accusative case is a realization of the D abstract case, and is thus not the primary object case. In effect partitive is what is normally called accusative, and accusative is a kind of dative. In the rest of this section I will motivate the featural assignment for these morphosyntactic cases, which departs somewhat from various versions of Kiparsky's analysis (Kiparsky, 1996, 2001).

Nominative case can appear in a multitude of contexts. It can appear on what Kiparsky (2001) refers to as 'R-objects' (resultative objects). These are the objects of aspectually bounded predicates, including all telic (i.e., resultative) ones, like *ampua* 'shoot' in (28a) below, and certain atelic predicates, such as *nähdä* 'see'. This latter class is exceptional,[11] and I must stipulate lexically that it has no lowest role (i.e., the object argument for these predicates is assigned [− LR]). Only plural, noun R-objects get nominative case, with the *-t* case ending:[12]

(16) (Sinä) näit karhu-t.
2SG see.PAST bear-NOM.PL
You saw the bears.

The semantic form for *nähdä* ('see') is:

(17) $\underset{\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}}{\lambda y} \quad \underset{\begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix}}{\lambda x} \quad [\text{ x SEE y }]$

The R-object is the lowest argument, y, which is exceptionally assigned [− HR, − LR], rather than [− HR, + LR].

The nominative also appears on certain VP-internal subjects (those without a semantically partitive interpretation; see Kiparsky, 1998), as in (18), as well as the subjects of finite intransitive verbs, as in (19), and the subjects of finite transitive verbs as in (20):

(18) Nyt tule-e uutise-t.
Now come-3SG news-NOM.PL
Now comes the news.

(19) (Sinä-∅) tulit.
2SG-NOM come.PAST
You came.

[11] The differences between these exceptional atelic predicates and other atelic predicates may ultimately be semantic (see Kiparsky, 1998).

[12] Recall that Finnish allows pro drop for 1st and 2nd person.

(20) (Sinä-∅) näit häne-t.
2SG-NOM see.PAST 3SG.ACC
You saw him/her.

The subject of the transitive is assigned [+ HR, − LR], as we would expect, while the subject of the intransitive receives the specification [+ HR, + LR] as the sole arguments of its predicates. Lastly, the internal subject in (18) is exceptionally assigned [− HR], giving it the case matrix [− HR, + LR]. The nominative must also be able to unify with all three feature matrices.

Therefore, the nominative must be able to unify with object feature matrices with form [− HR, − LR] and subject feature matrices with forms [+ HR, − LR], [+ HR, + LR], and [− HR, + LR]. In other words, it must unify with both [± HR] and [± LR]. It must either have default specifications for these features, or it must be completely underspecified. Cross-linguistic considerations force the latter choice. In the analysis of split ergativity proposed in Kiparsky (1996, 2001), absolutive and nominative cases are treated as identical. Since this nominative/absolutive case appears on both objects and subjects, it must be underspecified as [ ].

Next I turn to the accusative feature matrix. Accusative case should be specified as [− HR], because it never appears on subjects, which are always [+ HR]. Second, the accusative only appears on R-objects that are pronominal:

(21) Näit häne-t.
see.PAST.2SG 3SG-ACC
You saw him/her.

As discussed above, these objects are [− HR, − LR]. Therefore, the accusative must also be [− LR]. Thus, accusative has the feature matrix of a secondary object; primary objects, which Kiparsky (2001) calls 'I-objects' (irresultative objects), are [− HR, + LR].

In the verbal domain,[13] genitive case marks subjects of nonfinite verbs, as well as singular noun R-objects:

(22) Halus-i-n sinu-n näke-vä-n karhu-n.
want-PAST-1SG 2SG.GEN see-1PART-GEN bear-GEN
I wanted you to see a/the bear.

(23) Näit karhu-n.
see.PAST.2SG bear-GEN
You saw the bear.

Subjects can be either [+ LR] (intransitives) or [− LR] (transitives), therefore the genitive must be underspecified for [± LR]. More importantly, subjects are always [+ HR], but R-objects are [− HR]. Furthermore, the genitive only

[13]This is setting aside the obvious role of the genitive as the case for possessors. See the end of section 1.6 below.

marks objects as a last resort, when Jahnsson's Rule prohibits nominative object marking, as discussed in the following section. This, together with the fact that underspecifying the genitive for both HR and LR is not possible,[14] means that it must get the feature assignment [/+ HR], which means that it has default [+ HR] and is underspecified for LR.

Lastly, the partitive has the feature assignment [− HR, + LR]. The partitive marks I-objects and also certain internal subjects (see section 1.6), as in (24) and (25), which are both marked [− HR, + LR].

(24) Löit hän-tä.
hit.PAST.2SG 3SG-PART
You hit (at) him.

(25) Nyt tule-e uutis-i-a.
Now come-3SG news-PL-PART
Now comes (items of) news.

As noted by Kiparsky (2001, 327) the assignment of [− HR] captures the fact that partitive is the general complement case in Finnish, which has also been argued by Vainikka and Maling (1996), among others. On the other hand, partitive does not mark R-objects, which are [− HR, − LR]. Therefore, it gets the feature specification [− HR, + LR].

1.5 Licensing Finnish Objects

In this section I will illustrate how the relational theory of case specification together with default unification gives a restrictive account of the Finnish object case facts. I will be looking at three verbs, which serve to illustrate the various kinds of objects. The three verbs are: *nähdä* 'see', which takes a [− HR, − LR] R-object only, *lyödä* 'hit (at)' which takes a [− HR, + LR] I-object only, and *ampua* 'shoot', which alternates between an unbounded (i.e., 'shoot at') reading with an I-object and a bounded (i.e., 'shoot and hit') reading with an R-object. The semantic forms for these three verbs are given here; in each case it is the λy argument which is the object.[15]

(26) *nähdä* (exceptional atelic)

$$\lambda y \begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix} \quad \lambda x \begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix} \quad [\text{ x SEE y }]$$

[14] The nominative is underspecified for these features and only one case may be totally underspecified; see section 1.2.3.

[15] See section 1.4.2 for relevant examples.

(27) *lyödä* (unbounded only)

$$\lambda y \quad \lambda x \quad [\text{ x HIT y }]$$
$$\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix} \begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix}$$

(28) *ampua*

a. bounded alternant

$$\lambda z \quad \lambda y \quad \lambda x \quad [\text{ x SHOOT y \& RESULT z }]$$
$$\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix} \begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix} \begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix}$$

b. unbounded alternant

$$\lambda y \quad \lambda x \quad [\text{ x SHOOT y }]$$
$$\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix} \begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix}$$

The assignment of HR and LR to the thematic roles in these predicates works as per usual, save for exceptional atelic predicates like *nähdä* (see above). The highest role in semantic form (which is always *x* in these examples), gets [+ HR], the lowest role gets [+ LR], and the rest of the feature matrices are derived automatically. In the bounded predicate in (28a), the lowest role is the bounding eventuality. The result role in such predicates can always be realized overtly (Kiparsky, 2001), but can also be covert and simply understood. Therefore, the role y that surfaces as the object in active sentences is [− HR, − LR] in the exceptional atelic and bounded predicates and [− HR, + LR] in the unbounded ones.

These semantic forms are as indicated (implicitly or explicitly) in Kiparsky (2001). For my analysis, I only require these forms, normal and default unification and Specificity as described in section 1.3 above, and the following three principles.

(29) **Jahnsson's Rule:**
If the subject is an external nominative subject,[16] then the object must have a phonologically realized (i.e., non-zero) case ending. (Jahnsson, 1871; Nelson, 1998; Kiparsky, 2001)

(30) **Realizability:**
A morphosyntactic case is only available to the syntax if it can be realized morphologically by a case ending and every argument must bear morphosyntactic case.

[16] An "external nominative subject" is a subject that is in [Spec, IP], as opposed to VP-internal, and bears structural nominative case (Kiparsky, 2001, 333). See section 1.6 for a discussion of Finnish subjects and case assignment.

(31) **Conservativity:**
Override defaults only as a last resort.

These are admittedly stipulations, but each one can be motivated theoretically or empirically. Jahnsson's rule, although it surely has a deeper explanation, is a striking generalization about the distribution of nominative and genitive case in Finnish, and is one of the OT constraints used by Kiparsky (2001). Therefore, its use here loses no theoretical ground to that analysis. In particular, the formulation of Jahnsson's Rule presented here entails that if the object does not have a phonologically realized case ending (i.e., it is nominative), as in the following example from Nelson (1998, 20, (30b)), then the external subject must not bear nominative case.

(32) Naapur-ien täyty-y myy-dä talo.
neighbour-GEN.PL must-3SG sell-INF house.NOM.3SG
The neighbours must sell the house.

Notice that the verb bears default third person singular agreement and does not agree with the plural subject. The principles in (29)–(31) and the default theory of role assignment developed here will ensure that the subject in these cases gets genitive case (see section 1.6 below).

The principle of Realizability requires that abstract morphological information must be realized somehow. It essentially states that morphosyntactic case must be associated with some case morpheme (even the null (-∅) case). This is just a slightly revised version of the visibility condition of Kiparsky (1996). If the principle of Realizability did not hold, then the motivation for the lack of accusative case in the paradigm in (9) above would be considerably undermined. Lastly, the principle of Conservativity is a general constraint motivated by learning theoretic considerations.[17] Essentially, with respect to case assignment in particular, overriding a default creates an opaque representation, as a morphosyntactic case realized in a context that overrides its default will have a featural value that it does not have underlyingly. It is reasonable to expect languages learners to avoid positing opaque representations whenever possible,[18] and for grammars to avoid opacity as a result.[19] Thus, these three principles are simply ones that any licensing theory for Finnish that takes

[17]Ann Copestake (p.c.) has pointed out that this principle does not stem from the default logic itself. In fact, one way to think about Conservativity is as a default principle in the metalanguage of the licensing theory proposed here, as opposed to default unification which operates in objects the theory describes.

[18]Briscoe (1999) and Villavicencio (2000a,b) present models of language acquisition using Lascarides and Copestake's (1999) default logic which, for reasons related to those under discussion, minimize the amount of default overrides, based on the Minimal Description Length optimization algorithm (Rissanen, 1989).

[19]Notice that opacity is then an emergent property of language learning and the representations posited. I am not reifying the notion of opaque representation.

morphology and learnability seriously must countenance.

With all this in hand, we can now turn to the analysis of case assignment to objects. First, let us look at genitive objects as in the following sentences:

(33) Näit karhu-n.
see.PAST.2SG bear-GEN
You saw the bear.

(34) Ammu-i-n karhu-n.
shoot-PAST-1SG bear-GEN
I shot a/the bear.

The genitive object in both cases is an R-object (see above) and is therefore [− HR, − LR]. The object is in VP-internal object position which gets the feature [− HR] due to its position.

The charts in (35) below sum up the assignment of genitive case and lists the conditions that the other cases would violate. The selected case is outlined in the top chart, along with the abstract case and positional licensing. The bottom chart shows the cases that have been rejected and the principles responsible for their rejection.

(35) **Genitive Object**

Selected Case

Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
GEN: $\left[/+\ \mathrm{HR}\right]$	*-n* (gen.)	$\begin{bmatrix} - & \mathrm{HR} \\ - & \mathrm{LR} \end{bmatrix}$	$[_{\mathrm{VP}}$ V NP] [− HR][20]

Rejected Cases

Morphosyntactic Case	**Morphological Case**	**Principle Violated**
NOM: $\left[\ \right]$	-∅	**Jahnsson's Rule**
PART: $\begin{bmatrix} - & \mathrm{HR} \\ + & \mathrm{LR} \end{bmatrix}$	*-(t)a*	**[− LR] $\not\sqcup$ [+ LR]**
ACC: $\begin{bmatrix} - & \mathrm{HR} \\ - & \mathrm{LR} \end{bmatrix}$	—	**Realizability**

This table shows all the principles in (29)–(31) and normal and default unification at work. The nominative, although it could unify with the abstract case,

[20]Since [− HR] ⊔ [/+ HR] = [− HR].

is out due to Jahnsson's Rule, since there is an external nominative subject.[21] The partitive is out because of normal unification failure on the LR feature, as indicated. The accusative is out due to Realizability: there is no accusative morphological case ending for nouns, as discussed extensively in section 1.4.1 above. This leaves only the genitive case, which must be selected due to Realizability. This results in opacity, but Conservativity allows this as a last resort and in this instance there is no other grammatical case that could be selected.

Next I turn to accusative case, which occurs on R-objects when they are pronominal, as in the following sentences.

(36) Näit häne-t.
see.PAST.2SG 3SG-ACC
You saw him/her.

(37) Ammu-i-n häne-t.
shoot-PAST-1SG 3SG-ACC
I shot him/her.

Notice that in these cases we have true accusative morphology as per paradigm (9). Here are the charts for accusative objects:

(38) **Accusative Object**

Selected Case

Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	*-t* (acc.)	$\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	$[_{\text{VP}}\ \text{V}\ \underset{[-\ \text{HR}]}{\text{NP}}\ ]$

Rejected Cases

Morphosyntactic Case	**Morphological Case**	**Principle(s) Violated**
NOM: $\begin{bmatrix} \ \end{bmatrix}$	-$\emptyset$	**Jahnsson's Rule** **Specificity**
PART: $\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$	*-(t)a*	$[-\ \mathbf{LR}] \not\sqcup [+\ \mathbf{LR}]$
GEN: $\begin{bmatrix} /+ & \text{HR} \end{bmatrix}$	*-n*	**Conservativity** **Specificity**

The nominative is again excluded by Jahnsson's Rule, as in the genitive object derivation, but is also less specific than the accusative. The partitive is out

[21] Although the subject is not realized syntactically (i.e., sentences (33) and (34) both exemplify pro-drop), it will still get nominative case, as will be evident in section 1.6 below.

again because of unification failure for the feature LR. The accusative can be selected, since there is a morphological case ending *-t* for pronouns, and Realizability is thus satisfied in this case. Finally, the genitive is out due to Conservativity, because selecting the accusative means that the default [/+ HR] does not have to be overridden, and also due to Specificity.

The final instance of R-objects to consider is those that are marked as nominative. These are plural noun objects in bounded predicates:

(39) Sinä näit karhu-t.
2SG see.PAST bear-NOM.PL
You saw the bears.

(40) Ammu-i-n karhu-t.
shoot-PAST-1SG bear-NOM.PL
I shot the bears.

Here are the charts for nominative objects:

(41) **Nominative Object**

Selected Case

Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
NOM: $\begin{bmatrix} \ \end{bmatrix}$	*-t* (nom.)	$\begin{bmatrix} - & \mathrm{HR} \\ - & \mathrm{LR} \end{bmatrix}$	$[_{\mathrm{VP}}\ \mathrm{V}\ \ \underset{[-\ \mathrm{HR}]}{\mathrm{NP}}\ ]$

Rejected Cases

Morphosyntactic Case	**Morphological Case**	**Principle Violated**
ACC: $\begin{bmatrix} - & \mathrm{HR} \\ - & \mathrm{LR} \end{bmatrix}$	—	**Realizability**
PART: $\begin{bmatrix} - & \mathrm{HR} \\ + & \mathrm{LR} \end{bmatrix}$	*-(t)a*	$[-\ \mathbf{LR}] \ntrianglelefteq [+\ \mathbf{LR}]$
GEN: $\begin{bmatrix} /+ & \mathrm{HR} \end{bmatrix}$	*-n*	**Conservativity**

According to paradigm (1) there is no accusative case ending for nouns. Therefore, assigning accusative morphosyntactic case to the objects in (39) and (40) would violate the principle of Realizability. The partitive is again out due to unification failure on the feature LR. The nominative in this case can be selected because there is no violation of Jahnsson's Rule. That is, even though (39) and (40) have external nominative subjects (in the relevant sense), the nominative can also be selected as the object case because in the plural it does have a phonologically-realized case ending, namely *-t*. And, since we can select the nominative, selecting the genitive would not be a last resort and would result in opacity with no gain. Therefore, Conservativity rules out the genitive. Thus, these objects get nominative case.

We should also consider what happens when there is a singular nominative object, as in sentence (32) above, which demonstrated Jahnsson's Rule:

(32) Naapur-ien täyty-y myy-dä talo.
neighbour-GEN.PL must-3SG sell-INF house.NOM.3SG
The neighbours must sell the house.

Here nominative case-marking for the object is available because there is no external nominative subject and Jahnsson's Rule is therefore not violated, as discussed above. All the other cases are out for the reasons just discussed.

Having seen case assignment to genitive, accusative and nominative objects, we are now in a position to consider an alternation discussed by Vainikka (2003):[22]

(42) Uolevi-n väitetään saavan palkankorotus.
Uolevi-GEN claim.PASS get.INF raise.NOM
Uolevi is claimed to receive a raise.

(43) Uolevi-n väitetään saavan palkankorotuks-en.
Uolevi-GEN claim.PASS get.INF raise-GEN
Uolevi is claimed to receive a raise

The matrix external subject in these sentences bears genitive case: it has been raised from the external subject of the embedded nonfinite verb *saavan* (Vainikka, 2003), which bears genitive case (see section 1.6 below). Therefore, Jahnsson's Rule does not apply and we would expect the nominative object as in (42), but not the genitive object as in (43), because the latter violates Conservativity, given the availability of the nominative. However, Vainikka writes "this particular non-finite verb form in Finnish prefers the genitive option." At this point, I do not have an account of the availability of genitive, which is unexpected.

Vainikka (2003) goes on to note that this variation is available only for singular full NP objects. Plural full NPs must receive nominative case and pronouns must receive accusative:

(44) Uolevi-n väitetään saavan palkinno-t/* palkintoj-en.
Uolevi-GEN claim.PASS get.INF awards-NOM/awards-GEN
Uolevi is claimed to receive the awards.

[22] I thank the reviewer for this paper for bringing these data to my attention. I have slightly modified Vainikka's glosses to make them consistent with the other examples in the paper. In particular, it should be noted that she is operating with the traditional paradigm in (10), so she glosses the NOM object in (42) and (44) as ACC/NOM and the GEN object in (43) as ACC/GEN.

(45) Uolevi-n väitetään omistavan sinu-t/* sinu-n/* sinä.
Uolevi-GEN claim.PASS own.INF you-ACC/you-GEN/you-NOM
Uolevi is claimed to own you.

This is exactly what would be predicted by the default licensing theory. The nominative object is not ruled out for plurals, since it has a morphological realization; it is therefore preferred to genitive and is selected, as accusative has no morphological case, violating Realizability, and partitive has unification failure for LR. As for pronominals, there is an accusative case ending and it is selected as shown in the charts for accusative objects (38).

It may at first blush seem that examples (42)–(45) are arguments for the traditional paradigm (10), which posits that the accusative singular is syncretic with nominative, as in (42) and (44), and with genitive, as in (43). The generalization seems to be that the object is always in the accusative. However, although the accusative on this account can either be realized with no ending or a *-t* ending (nominative-like) or with an *-n* ending (genitive-like), it is not true that the forms are normally in free variation:

(46) Ammuin karhun/* karhu.
shoot bear.GEN/bear.NOM
I shot the bear.

Indeed, traditional grammar labels the two accusatives Accusative 1 and Accusative 2; they are essentially two different cases which both happen to be called "Accusative".

We have so far seen that the system described here, which uses Kiparsky's theory of grammatical case but replaces the optimality-theoretic constraints with a smaller set of well-motivated principles and default unification, gets good results for R-objects, be they genitive, accusative, or nominative. The last case to consider is I-objects, which are always partitive and occur as the objects of unbounded predicates:

(47) Löit hän-tä.
hit.PAST.2SG 3SG-PART
You hit (at) him.

(48) Ammu-i-n karhu-a.
shoot-PAST-1SG bear-PART
I shot at a/the bear.

As discussed above, these are I-objects and are thus [− HR, + LR]. This is crucial in the analysis of partitive objects, because now the partitive case can unify with the object feature matrix, as shown in the charts for partitive objects:

(49) **Partitive Object**

Selected Case

Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
PART: $\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$	*-(t)a* (part.)	$\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$	$[_{\text{VP}}\ \text{V}\ \underset{[-\ \text{HR}]}{\text{NP}}\ ]$

Rejected Cases

Morphosyntactic Case	**Morphological Case**	**Principle(s) Violated**
NOM: $\begin{bmatrix} \ \end{bmatrix}$	*-∅* (sing.)	**Jahnsson's Rule** **Specificity**
NOM: $\begin{bmatrix} \ \end{bmatrix}$	*-t* (plur.)	**Specificity**
GEN: $\begin{bmatrix} /+ & \text{HR} \end{bmatrix}$	*-en*	**Conservativity** **Specificity**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	—	**$[-$ LR$]$ $\not\trianglelefteq$ $[+$ LR$]$** **Realizability** **(nouns)**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	*-t*	**$[-$ LR$]$ $\not\trianglelefteq$ $[+$ LR$]$** **(pronouns)**

In the previous charts, which were all for R-object case marking, the partitive was not selected due to unification failure for the feature LR. But, I-objects are [− HR, + LR] and the partitive can therefore unify for both the HR and LR features. When the object is singular, the zero nominative is out because of Jahnsson's Rule, as before, and also due to Specificity. When the object is plural, although the plural nominative with the *-t* ending is in principle possible as far as Jahnsson's Rule is concerned, it is blocked by Specificity. In other words, the partitive is selected because it is specified for HR and LR, whereas the nominative is underspecified. The genitive is similarly out due to Specificity, and since the partitive is available, also due to Conservativity. For accusative case there are two scenarios to consider. First, if the object is a noun, the accusative is barred by Realizability, since there is no morphological accusative case ending, and also due to straightforward unification failure for the feature LR. And if the object is a pronoun, the accusative is again out due to unification failure, although its selection would not violate Realizability.

1.5.1 Summary and Discussion

In this section I have shown how we can get a restrictive theory of object case-marking in Finnish without using Optimality Theory. The analysis presented here uses only well-motivated generalizations about Finnish, morphology in general, and learnability, in addition to normal unification and a restrictive theory of default unification (Lascarides and Copestake, 1999). In addition, it only needs three principles: Jahnsson's Rule, Realizability, and Conservativity. This is in contrast to the five or more (depending on the version) constraints used in Kiparsky's OT treatments (Kiparsky, 2001).

Furthermore, the constraints used in the OT model are not so well-motivated and are not very general. Jahnsson's Rule is invoked in both analyses, and to the extent that it is a robust generalization about Finnish case-marking, it is well-motivated. However, here it is presented only as a principle governing case assignment *in Finnish*. Even though the featural space introduced by the theory makes typological predictions (see below), there is nothing in the theory that entails that each principle is universal. The other principles appealed to here, Realizability and Conservativity, are general principles that would plausibly be appealed to in any generative theory of morphology that takes language acquisition as an explanandum. Thus, Realizability and Conservativity are motivated by factors that are common to all languages, and are therefore universal; Jahnsson's Rule is a descriptive generalization about Finnish and is not universal. By contrast, in the OT model, as the constraints are universal, Jahnsson's Rule putatively exists in *all* languages. This state of affairs is clearly problematic for the OT account.

In addition, the general principles used in this analysis together with the paradigm in (9) which is also assumed in Kiparsky's analyses, clearly predict the noun/pronoun split for the accusative. In the OT analysis, though, the split is directly encoded in two constraints: MAX[−HR]/D and MAX[−LR]/N. The first constraint requires that the feature [− HR] on a thematic role in the input must be realized in the output (as morphosyntactic case), as long as the case is assigned to a pronoun. Similarly, the second constraint requires that a noun argument assigned [− LR] in the input must bear a morphosyntactic case with [− LR]. This simply reifies the split between pronouns and nouns. Furthermore, why should it be that these case features in particular must be realized? Surely, this is a fact about Finnish. Thus, under the typological assumptions of OT these constraints are problematic and they are arbitrary in any case.

In the analysis presented here, the split is not reified: there are no principles that refer to nouns versus pronouns. Rather, the split arises naturally as a result of positing no accusative morphology for nouns, and standard unification failure for I-object pronominal accusatives. In other words, it falls out of the system proposed here that accusatives can only mark pronominal R-objects. However, there is no reason why the hierarchical scale for nouns and pronouns assumed by Kiparsky (2001) could not be used in this theory. The details would vary, but it is just as feasible to state that pronouns should have such and such a feature composition while nouns have another. The lack of such a scale in this analysis is a theoretical decision, and not a necessity of the formalism used.

Lastly, the markedness constraints *[$-$HR] and *[αF] are also problematic. First, why does *[$-$HR] exist as a more specific instance of *[αF]? There is no motivation for *[$-$HR] in particular: why not *[+HR], or *[+LR], or *[$-$LR]? Second, these two constraints are *directly* responsible for selecting every nominative object and for selecting every nominative subject in Kiparsky's (2001) analysis.

On the other hand, the present analysis treats nominative precisely as the "unmarked" case, without appealing to any constraint or principle that directly favours it. In fact, Specificity mitigates *against* it. Despite this, the nominative is selected precisely when it is a better option than picking the genitive, due to opacity. Thus, we get the *emergence of the unmarked without Optimality Theory*, but rather due to a restrictive substantive theory of morphology and learning, and to an implementation using default unification. This is equivalent to emergence of the unmarked in OT, in the sense that a normally suppressed alternative is selected in the absence of other alternatives, but I have not invoked "markedness" as a formal, explanatory device; instead I have invoked the amount of featural information that is provided by morphemes and that results from their unification with other information in the grammar. In particular, I am not making the claim that nominative is somehow more frequent or bears less semantic information than other cases; but we have seen that it is the case that surfaces when more specific cases are unavailable. This does not preclude another case being the default case in a specific position or semantic considerations from further influencing the choice of available cases.[23]

Beside emergence of the unmarked, another virtue of Optimality Theory is that it makes predictions about typology, as the only difference between languages arises through a factorial reranking of the constraints. Because of this property, the analysis of one language makes predictions about other languages, as the constraint set is putatively universal and thus by positing constraints we are implicitly stating facts about other languages, as these arise simply through constraint reranking. Kiparsky's OT analysis thus makes predictions about other languages, and the constraints he postulates, with the exception of the constraint concerning Jahnsson's Rule, are cross-linguistically

[23] Both of these factors have been discussed with respect to partitive case (Vainikka and Maling, 1996; Kiparsky, 1998; Anttila and Fong, 2000).

plausible.

However, factorial reranking of constraints is not the only way to make typological predictions. In fact, the present analysis makes certain formal predictions too. Consider the feature matrices we have been using. There are two features, HR and LR. Each feature can have five values: $[+],[-],[/+],[/-]$, and [ ]. This means we get a feature space with 5^2 possibilities out of which languages can choose case specifications. However, since defaults persist unless overridden, this is somewhat misleading. There are in actuality only nine distinct cases,[24] but each value can be default or nondefault. Even if we take the larger feature space with twenty-five possibilities as our baseline of comparison, this is roughly equivalent to an OT analysis which posits 4 constraints, with factorial ranking ($4! = 24$). Now, Kiparsky's OT analysis, and indeed *all* OT analyses of any non-toy problem, posit more than 4 constraints to describe the data. Thus, the present theory also has advantages from the perspective of typology as it makes much more restricted predictions, even though typological prediction is one of the hallmarks of Optimality Theory.

There is one last aspect of Kiparsky's OT analysis which needs to be considered. As mentioned above, the constraints *$[-\text{HR}]$ and *$[\alpha\text{F}]$ are also used in deriving subject case marking. It remains to be shown that the current analysis can handle licensing of subjects. In the next section I will show that this analysis can do this successfully, providing we also bear in mind the semantics of the partitive and genitive and the role of finiteness in subject licensing.

1.6 Licensing Finnish Subjects

Finnish subjects can bear one of three grammatical cases: nominative, genitive, or partitive. Nominative case marks subjects of finite verbs, transitive or intransitive. It also marks internal subjects, under one possible semantic interpretation. Genitive case marks subjects of nonfinite verbs, transitive or intransitive. Lastly, partitive case marks internal subjects, under the other semantic interpretation. The semantic difference between nominative internal subjects and partitive ones concerns partition. Although partitive case is a structural case in Finnish, in certain contexts, such as this one, it also confers partitive semantics (i.e., reference to parts of a whole rather than the whole itself; see Kiparsky, 1998; Anttila and Fong, 2000). Here are some examples:

(50) **Nominative external subject**

a. **Finite transitive verb**

Sinä-∅ näit häne-t.
2SG-NOM see.PAST 3SG.ACC
You saw him/her.

[24] This number comes from the three non-default values for each feature: $[+]$, $[-]$, [ ] ($3^2 = 9$).

b. **Finite intransitive verb**
Sinä-∅ tulit.
2SG-NOM come.PAST
You came.

(51) **Nominative internal subject**
Nyt tule-e uutise-t.
Now come-3SG news-NOM.PL
Now comes the news.

(52) **Genitive external subject**

a. **Nonfinite transitive verb**
Halus-i-n sinu-n näke-vä-n minu-t.
want-PAST-1SG you-GEN see-1PART-GEN 1SG-ACC
I wanted you to see me.

b. **Nonfinite intransitive verb**
Halus-i-n sinu-n lähte-vä-n.
want-PAST-1SG you-GEN leave-1PART-GEN
I wanted you to leave.

(53) **Partitive internal subject**
Nyt tule-e uutis-i-a.
Now come-3SG news-PL-PART
Now comes (items of) news.

Due to the normal assignment of HR and LR according to depth of embedding in Semantic Form, external subjects of intransitives will be [+ HR, + LR], as they are the sole arguments of their predicates. External subjects of transitives, on the other hand, will be [+ HR, − LR], as there will be a lower role for the object. Lastly, internal subject are exceptionally specified [− HR, + LR], which explains why they are licensed at all as the complement to V.

Here are the case charts for external subjects of transitives:

(54) **External Subject of Transitive**

Selected Cases			
Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
NOM:$\begin{bmatrix} \; \end{bmatrix}$	-∅ (nom.)	$\begin{bmatrix} + & \text{HR} \\ - & \text{LR} \end{bmatrix}$	$[_{\text{IP}}$ NP I′] [+ HR]
GEN:$\begin{bmatrix} / + & \text{HR} \end{bmatrix}$	*-n*		

Rejected Cases		
Morphosyntactic Case	**Morphological Case**	**Principle(s) Violated**
PART: $\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$	-*(t)a*	**[− LR] ⋬ [+ LR]** **[− HR] ⋬ [+ HR]**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	—	**[− HR] ⋬ [+ HR]** **Realizability** **(nouns)**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	-*t*	**[− HR] ⋬ [+ HR]** **(pronouns)**

Partitive case is out due to straightforward unification failure for the features HR and LR. Similarly, accusative case is out due to unification failure on the feature HR. In addition, accusative case on a full noun subject cannot be realized, further violating Realizability. This leaves nominative and genitive case, exactly as required. Specificity does not choose between these alternatives, because a default specification and no specification are equally specific (see section 1.3 above). I take it that there has to be a principle invoking finiteness of the verb that selects for nominative versus genitive on finite verbs' subjects and nonfinite verbs' subjects respectively. The OT analysis presented in Kiparsky (2001) must make the same assumption, as noted therein (Kiparsky, 2001, 330–331). Notice that according to this analysis, partitive and accusative are simply excluded due to unification failure. Thus, there is no recourse to constraints which prefer nominative case. Rather, the subject as an argument must get some grammatical case, as per Realizability, and the only choices are nominative and genitive.

Now let us turn to the case charts for the [+ HR, + LR] external subjects of intransitives:

(55) **External Subject of Intransitive**

Selected Cases			
Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
NOM: $[\ \ ]$	-∅ (nom.)	$\begin{bmatrix} + & \text{HR} \\ + & \text{LR} \end{bmatrix}$	$[_{\text{IP}}$ NP I′] [+ HR]
GEN: $[/+ \ \ \text{HR}]$	-*n*		

Rejected Cases		
Morphosyntactic Case	**Morphological Case**	**Principle(s) Violated**
PART:$\begin{bmatrix} - & \mathrm{HR} \\ + & \mathrm{LR} \end{bmatrix}$	*-(t)a*	**[$-$ HR] $\not\sqcup$ [$+$ HR]**
ACC:$\begin{bmatrix} - & \mathrm{HR} \\ - & \mathrm{LR} \end{bmatrix}$	—	**[$-$ HR] $\not\sqcup$ [$+$ HR]** **[$-$ LR] $\not\sqcup$ [$+$ LR]** **Realizability** **(nouns)**
ACC:$\begin{bmatrix} - & \mathrm{HR} \\ - & \mathrm{LR} \end{bmatrix}$	*-t*	**[$-$ HR] $\not\sqcup$ [$+$ HR]** **[$-$ LR] $\not\sqcup$ [$+$ LR]** **(pronouns)**

Once again, accusative case is either ruled out due to having no case ending and violating Realizability, or due to unification failure, this time for both the HR and LR features. Unlike for transitive subjects, partitive case can unify with the feature LR. However, it still fails to unify with HR. As with transitive subjects, both nominative and genitive case can unify with the abstract case, and as before the default value of [$/+$ HR] for the genitive is not overridden. This means there is no opacity and no violation of Conservativity. As they are equal according to Specificity, both nominative and genitive case are available, and the selection of a particular case depends on whether the verb is finite or nonfinite.

Next I turn to internal subjects, which are motivated and differentiated from objects in Kiparsky (2001). As mentioned above these subjects sit in the normal object position, which normally receives [$-$ HR] due to positional licensing. The exceptional nature of internal subjects is captured by allowing the predicates that license these subjects to exceptionally assign [$-$ HR] to their sole argument, rather than [$+$ HR]. This allows their subjects to occupy the complement of V, which receives [$-$ HR] by positional licensing.

Another issue that arises with these subjects is that the partitive is also behaving somewhat like a semantic case, as it encodes partition of the nominal it marks. Recall (51) and (53), which are repeated here:

(56) Nyt tule-e uutise-t.
Now come-3SG news-NOM.PL
Now comes the news.

(57) Nyt tule-e uutis-i-a.
Now come-3SG news-PL-PART
Now comes (items of) news.

In this respect, the partitive is serving a semantic function that it also serves in the nominal domain, where complex factors determine whether partitive nominals are marked by the partitive or the elative (Anttila and Fong, 2000). Thus, the nominative is marking lack of partition, whereas the partitive is marking partition of the nominal. They are therefore encoding differing semantic information and as a result Specificity does not choose between them, since morphemes that encode conflicting information are not in a subsumption relation and are equally specific.

With this in mind, here are the charts for internal subjects:

(58) **Internal Subject**

Selected Cases

Morphosyntactic Case	**Morphological Case**	**Abstract Case**	**Positional Licensing**
NOM: $\begin{bmatrix} \ \end{bmatrix}$	-$\emptyset$ (nom.)	$\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$	$[_{\text{VP}}$ V NP] $[-\text{ HR}]$
PART: $\begin{bmatrix} - & \text{HR} \\ + & \text{LR} \end{bmatrix}$	*-(t)a*		

Rejected Cases

Morphosyntactic Case	**Morphological Case**	**Principle Violated**
GEN: $\begin{bmatrix} /+ & \text{HR} \end{bmatrix}$	*-n*	**Conservativity**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	—	$[+\textbf{LR}] \not\trianglelefteq [-\textbf{LR}]$ **(nouns)**
ACC: $\begin{bmatrix} - & \text{HR} \\ - & \text{LR} \end{bmatrix}$	*-t*	$[+\textbf{LR}] \not\trianglelefteq [-\textbf{LR}]$ **(pronouns)**

The accusative is out by unification failure for LR (and additionally by Realizability for nouns). Genitive, which is available on an external subject, is nonetheless blocked here by Conservativity, since internal subjects are permitted by virtue of being exceptionally marked [− HR] and the genitives default would have to be overridden to unify with [− HR]. This leaves both the nominative and the partitive, which can in fact mark internal subjects, as shown above. Due to their differing semantics, the nominative and partitive are equally specific.

Finally, note that this analysis predicts genitive possessors as well, such as:

(59) karhu-n pesä
bear-GEN den
the bear's den

(60) minu-n taloni
1SG-GEN house
my house

The possessor is assigned [+ HR], making it equivalent in this respect to a subject (S or A). Accusative and partitive case are barred for the same reasons as they were for external subjects (due to unification failure and/or Realizability). Since genitive encodes the possessor semantics, it contributes more specific information than nominative, leaving genitive as the only possible choice.

1.6.1 Summary

In this section, I have shown that the same principles and case specifications that license objects also license subjects, both internal and external, and possessors. Furthermore, this was accomplished without recourse to constraints which specifically target nominatives, such as *[$-$HR] and *[αF]. Rather, subject case marking falls out from the same general scheme, which is another desirable feature of this theory. Although subject selection depends partially on finiteness (for external subjects) and semantics (for internal subjects, also for possessors), any fully articulated theory of licensing in Finnish would have to countenance these facts.

1.7 Conclusion

I have presented an analysis of licensing in Finnish which uses default unification, rather than Optimality Theory. I have shown how normal and default unification permit a restrictive formulation of abstract case, morphosyntactic case, and positional licensing. Furthermore, the analysis uses only well-motivated generalizations and principles: Jahnsson's Rule, Realizability, and Conservativity. I have shown that the same morphosyntactic case specifications and principles derive object and subject licensing, as well as genitive possessors. Subject and possessor licensing have some further constraints having to do with finiteness of the verb and partitive interpretations of internal subjects.

The use of defaults adds another locus of typological variation. Thus, languages will have an inventory of grammatical cases, which are specified using the relational features [$\pm$ HR] and [$\pm$ LR] and the value can be either default or non-default. Since case features can be underspecified, with no defaults there can be up to nine different grammatical cases. With defaults there can seemingly be up to twenty-five grammatical cases. But, as noted in section 1.5.1, defaults persist unless overridden. For example, if [$/+$ F] is not overridden, it is equivalent to [+ F]. So, another way to think about the number of grammatical cases is that there are in actuality only nine distinct cases, but each value can be default or nondefault. No language has nine grammatical cases. But, this is only specifying the space of possibilities.[25] Default specification does not expand this set of grammatical cases. Rather, it modifies the behaviour of the members. For example, partitive is a grammatical case in Finnish, but it is not in many other languages. Also, another language could have partitive case but with no default specifications; the partitive case would behave slightly differently in such a language. It remains to be seen whether default unification can provide an interesting account of typological variation. But there is no reason per se why it could not. And in fact, whether we take the space of featural differences to have nine members or twenty-five members, this is a more restrictive space of variation than that which results from factorially ranking just five OT constraints. Thus, the consideration of typology in this theory remains an interesting avenue for future work, and for the language-specific analysis of Finnish, default unification has been used here in lieu of Optimality Theory to provide a more restrictive licensing theory.

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[25] There may be a cognitive/representational or learnability reason for the underutilization of structural case possibilities. Various recent treatments of case syncretization, where a phonologically ambiguous case can correspond to multiple abstract cases, have proposed complex case values such as {acc, gen} or acc&gen, depending on the theory (see, e.g. Dalrymple and Kaplan, 2000; Levine et al., 2001; Levy and Pollard, 2002). Levy and Pollard (2002) note that this leads to a proliferation of case values such that there will be $2^n - 1$ possible values, where n is the number of cases. For example, this means that a four case system like that of Finnish would have 15 case values, while a nine case system would have 511.

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