AN INTEGRATED REPRESENTATION OF
ROMANIAN 3RD PERSON DECLENSIONS

John S. Lumsden[*]

Abstract: This paper proposes an analysis of the data of thirteen Romanian declensions. The analysis is constrained by the premise that regular and productive grammatical forms and structures are processed by a task-specific procedural memory, while declarative memory processes only the root forms that carry the conceptual content of nouns, verbs and adjectives and the irregular and non-productive grammatical forms (cf. Paradis and Gopnik 1994, Ullman and Gopnik 1994, 1999, Ullman 2001, 2004, Paradis 2004, 2009, etc.). This premise predicts that these grammatical data must be a single cognitive system. The evidence here strongly supports this view. Furthermore, the hypothesis requires an analysis that makes no appeal to declarative principles. The analysis conforms to this constraint.

Keywords: inflection, procedural, network, Romanian, oddments

1. Introduction

Romanian inflection has many 3rd person nominal paradigms that are differentiated by their various stem forms. Nonetheless, all these declensions signal the same set of grammatical features or a subset of this set, and they have essentially the same set of affix forms, with only a few exceptions. This paper proposes to account for these differences and similarities from a cognitive perspective.

I assume that linguistic competence is embedded in general cognition. It is therefore notable that various studies of a number of different cognitive systems have discovered two kinds of human knowledge that are essentially different because they are represented in different formats and processed in different ways (cf. Mandler 2004). While a series of task-specific **procedural memories** deal with strictly intuitive information such as perceptual and motor skills, the **declarative memory** deals with knowledge that is accessible to consciousness (i.e. conceptual knowledge). In particular, since the declarative memory can process knowledge explicitly through conscious attention, this knowledge can be processed sequentially and selectively.[1] This kind of processing is relatively context free and easily transferred from one domain to another. In contrast, the processing of procedural knowledge is necessarily implicit. A procedural memory takes in all the data that is presented in the appropriate format and processes it in parallel in a uniform way. Since procedural knowledge cannot be processed selectively, it tends to be context-bound, "making it difficult to get at separate parts of the information or to transfer it from one situation to another" (Mandler 2004: 54-5).

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[1] Note that the declarative memory can also develop implicit knowledge systems. In particular, Paradis (2004, 2009) argues that second language learners set up declarative parallels to procedural systems to process the grammar of their second languages. With time and application, such a declarative system can become a reasonable replica of the procedural system of a native speaker, and with practice, the system may be run implicitly at a reasonable speed.

Recent neurolinguistic and psycholinguistic studies have provided reason to believe that the distinction between declarative and procedural knowledge is pertinent to the account of natural language (cf., Paradis and Gopnik 1994, Ullman and Gopnik 1994, 1999, Ullman 2001, 2004, Paradis 2004, 2009, etc.). Taken together, these studies converge on a remarkable conclusion: all regular and productive grammatical forms and structures are processed by a task-specific procedural memory, while declarative memory deals with the root forms that carry the conceptual content of nouns, verbs and adjectives and the irregular and non-productive grammatical forms. This conclusion imposes two strong constraints on the account of the Romanian declensions: first, since these grammatical data clearly have a common format, they must all be processed as a single unified system; second, since grammatical data must be processed implicitly, the account of these declensions cannot be directed by explicit declarative principles. Both of these constraints depart from the standard assumptions concerning the analysis of inflectional systems. Nevertheless, as will be seen below, an account that responds to these constraints leads to interesting and useful conclusions.

2. A preliminary description of the data

The analysis proposed in this paper conforms to a general methodological principle of parsimony in that each minimal unit of information is represented uniquely and the various combinations of these units are encoded in the structure of the neural network.[2] Such a principle is pragmatically motivated in that experience has shown that unnecessarily complicated analyses typically lead to confusion.

In Romanian, only grammatical adjectives, pronouns and determiners are declined.[3] The grammatical properties of nouns and descriptive adjectives are manifested in the determiners with which they appear. The declensions contrast number (singular versus plural) and gender (feminine versus masculine/neuter in the singular and masculine versus feminine/neuter in the plural). Although traditional descriptions of these data speak of four distinct cases (Nominative, Accusative, Genitive and Dative), the oppositions that are extant in nominal declensions make a single binary contrast (i.e. Nominative/Accusative versus Genitive/Dative). The contrast between Nominative and Accusative Case and the contrast between Genitive and Dative Case are manifested by other means. Traditional accounts also include vocative markers (2nd person markers), but I will put these aside because they clearly constitute an additional level of affixation.

As Jakobson (1984/1931: 1) points out, the interpretation of grammatical categories is always asymmetric, "If Category I announces the existence of A, then Category II does not announce the existence of A, i.e. it does not state whether A is present or not. The general meaning of the unmarked Category II, as compared to the

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[2] The redundancy of the system that is apparent in cases of neural damage when patient recover lost memories is arguably a redundancy of connections. That is, it is not that the information in question has been destroyed; rather, it is network access to the information that has been lost. Presumably the network offers more than one path to link information together.

[3] The details of these declensions are provided in the appendix.

marked Category I, is restricted to the lack of 'A-signalization'". The following examples of present-day English illustrate the point (cf. Lumsden 1987):

(1)   a. # If **anyone**_i asks for me, tell **her**_i I'm in the library.
        b.   If **anyone**_i asks for me, tell **him**_i I'm in the library.
        c.   **My doctor**_i is competent, but I don't like **him**_i.
        d.   If **anyone**_i asks for me, tell **them**_i I'm in the library.

In (1a), even though the pronoun *her* has an indeterminate antecedent (i.e. *anyone*), it can only refer to a female. For this reason, the example seems odd. In the absence of a very specific pragmatic context, the speaker cannot know that *anyone* will be a female. In the parallel example (1b), however, the referent of the pronoun *him* is not necessarily male. That is, while the pronoun *her* announces that its referent is female, the pronoun *him* does not identify the sex of its referent. Nonetheless, when the pronoun *him* has a specific antecedent, as in (1c), then the referent is understood to be male. In this context, the speaker is expected to know whether the antecedent is male or female. In choosing not to use the marked form *her*, the speaker implies that the antecedent of the pronoun *him* is not female and may therefore be assumed to be male.

     This asymmetric interpretation is not confined to natural gender. The example in (1d) avoids the "sexist" use of masculine pronouns in indeterminate contexts by using the plural form, *them*, which is gender-neutral. But notice that the speaker who utters this sentence does not mean to say that *anyone* will necessarily be more than one person. The pronouns *her* and *him* announce that their referents are singular, but the pronoun *them* is not marked for number. Thus, in the context of an indeterminate antecedent, *them* may be understood as singular or plural. The same pronominal form, however, is necessarily interpreted as plural in specific contexts because in these contexts it stands in contrast with the singular pronouns.[4]

     To explain the asymmetrical interpretations of grammatical markers, Trubetskoy (1969/1939) proposed that the binary contrasts of grammatical properties should be represented as privative features (i.e. univalent or unary features).[5] A privative feature provides for a binary opposition in a domain where categories may or may not be specified for the feature in question (i.e. the contrast is between the presence of the feature and its absence). It is further notable that privative binary features are naturally represented in binary-branching structures, where one branch leads to the feature in question and the other does not, as in (2) (cf. Lumsden 1987):

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[4] An anonymous reviewer protests that this use of the plural pronoun is "impersonal" and that the number opposition should be treated differently that the seemingly parallel gender opposition. However, if gender in pronouns is represented as a feature, it seems to me that number in pronouns should also be represented as a feature. Since grammatical meanings are inflexible (cf. Talmy 2000, I, chap.1), it follows that all the grammatical features in a representation must be interpreted. In short, a pronoun that has a plural specification must have a plural interpretation. I therefore await a theory of "impersonal usage" with an explicit account of grammatical systems that justifies distinct analyses for gender and number interpretations.
[5] Bivalent features are more complex, opposing a positive feature value [+Feature] to a negative feature value [−Feature]. See Harris and Lindsey (1995) for an informed discussion of these feature types in phonological representations.

(2)

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          FEAT.1
            FEAT.2              (etc.)
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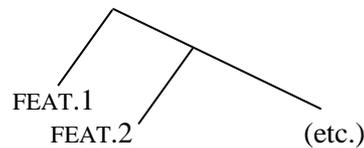
This structural representation of features has two particular properties will be crucial to the formal account of the declensions. First, it requires that grammatical features be ordered in a hierarchy. Second, it provides an explicit marker of a default specification (i.e. a branch of structure that does not lead to a grammatical interpretation). These properties are crucial to the strictly mechanical account of derivations that is provided in the formal analysis of the declensions developed below.[6]

2.1 The grammatical generalization

There is a clear grammatical generalization in the data. All the declensions make the following seven oppositions, or a subset of these oppositions:

(4)   The grammatical generalization

	SINGULAR		
	MASCULINE	*NEUTER*	*FEMININE*
NOM./ACC.	1		2
GEN./DAT.	3		4
	PLURAL		
NOM./ACC.	5	6	
GEN./DAT.	7		

Since the traditional description of the data posits three genders, two numbers and two case groups, we expect to find twelve oppositions (i.e. 3 x 2 x 2 = 12). That some oppositions could be lost due to phonological reductions or other diachronic accidents cannot be denied. Yet if each of the declensions is an independent system, then it would seem to be an odd coincidence that these diachronic forces have affected them all in such a uniform way. Why did they all lose the same five oppositions? However, if these declensions are a single grammatical system, then grammatical specifications are represented in the grammar only once, and this uniformity is not odd at all. The loss of a grammatical specification necessarily affects the whole system.

In order to represent these oppositions formally, let us assume that there is case feature (let us say, [OBLIQUE) that is common to Genitive and Dative Cases and opposes them to the unmarked Nominative and Accusative Cases. Let us further assume a number

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[6] Note that the structural representation of privative features in (2) suggests that the account of binary contrasts in grammatical properties proposed by Trubetskoy might be subsumed in Kayne's (1984) hypothesis that syntactic (grammatical) structures are strictly binary branching.

feature (say, [PLURAL]) that stands in opposition the unmarked singular, and two gender features (say [FEMININE] and [MASCULINE]), that are opposed to each other (by their incompatible interpretations), as well as to the unmarked neuter gender.

Since knowledge of grammatical features is procedural knowledge, in follows that these features must be acquired by associative learning - a strictly procedural mechanism that does not require awareness or thought. Therefore, I suppose that there is a one-to-one relation between feature and interpretation; a simple associative link. Thus a given form of inflection is only specified for those features that are always pertinent to the interpretation of the form in question. That is, if a form is specified for [OBLIQUE] it only appears in Genitive or Dative positions, etc., and if a form sometimes appears in a Dative position and sometimes in a Nominative position, then it cannot be specified for [OBLIQUE]. Given this link, the oppositions shown in (4) must be specified as in (5):

(5)   The feature specifications (a preliminary version)

	SINGULAR		
	MASCULINE	*NEUTER*	*FEMININE*
NOM./ACC.			**[FEMININE]**
GEN./DAT.	**[OBLIQUE]**		**[OBLIQUE, FEMININE]**
	PLURAL		
NOM./ACC.	**[PLURAL, MASCULINE]**	**[PLURAL]**	
GEN./DAT.	**[PLURAL, OBLIQUE]**		

The gender specifications in (5) respond to the three gender classes of Romanian nouns. Masculine nouns are lexically specified as [MASCULINE], feminine nouns are lexically specified as [FEMININE]. Neuter nouns are not lexically specified for either gender. Since there is no form of inflection that signals the feature [MASCULINE] in the singular and no form of inflection that signals [FEMININE] in the plural, both masculine and neuter nouns appear with the default form in the singular in opposition to the feminine singular form, while both feminine and neuter nouns appear with the simple plural form in opposition to the masculine plural form. Notice that if the various declensions were really independent grammatical entities, then the generality of this distribution would be surprising. Why should [MASCULINE] never be specified in the singular and [FEMININE] never be specified in the plural. However, if these declensions are the manifestation of a single grammatical entity (i.e. if grammatical specifications are represented in the grammar only once), then the general nature of this distribution is not surprising at all.

They may be easy to acquire, but the feature specifications provided in (5) are not in themselves sufficient to explain the distribution of the affixes that have these specifications. Why does a feminine plural noun appear with the affix that is specified [PLURAL] and not with the affix that is specified [FEMININE]? Why does a feminine plural noun in a Dative Case position appear with the affix that is specified [PLURAL, OBLIQUE] and not with the affix that is specified [OBLIQUE, FEMININE]? Why doesn't the affix that is specified only as [PLURAL] appear on all of the plural nouns?

In order to further constrain the distribution of partially specified forms of inflection, morphological theories have typically appealed to declarative principles. Perhaps the most commonly cited is the "Elsewhere Condition" first formulated in Panini's grammar of Sanskrit (cf. Kiparsky 1973). The essence of this principle is presented in (6):

(6)   The Elsewhere Condition:
       The most specified vocabulary item takes precedence over items that are less specified.

To apply such a principle, of course, it is necessary to compare the vocabulary items in question in order select the one that is most specified. If grammar is indeed being processed by a procedural memory, then an account of these declensions that cannot appeal to a process of conscious selection. Grammatical derivations must depend entirely on the unconscious, automatic mechanisms of a procedural memory.

Moreover, as Lumsden (1987: 94) has pointed out, a principle based on complexity is not sufficient to account for the distribution of partially specified affixes. For example, the principle in (6) has nothing to say about a situation where there are two affixes that have different specifications, both of which are compatible with the specifications of a given position and both of which have the same number of features. To account for such situations, Lumsden proposes that grammatical features are organized in a hierarchical ranking, so that feature specifications that are higher in the hierarchy have priority in derivations.[7] Thus, for example, the fact that a feminine plural noun appears with an affix that is specified [PLURAL], rather than an affix that is specified as [FEMININE], would follow if the feature [PLURAL] were higher on the feature hierarchy than the feature [FEMININE], etc. Thus the feature hierarchy handles the data that the Elsewhere Condition does not. On the other hand, suppose that two affixes are both specified for the highest feature on the hierarchy, but only one of them is specified for a second feature. Why does the most specified item have priority? Indeed, what prevents the use of the affix that is not specified for any features in all or any positions? Lumsden (1987) concludes that both an Elsewhere condition and a feature hierarchy are necessary to regulate the distribution of partially specified affixes.

It is argued here that the feature hierarchy hypothesis can provide a complete account of the data and that the derivations are all quite unconscious and automatic. Crucially this account calls for a revision of the notion of "default" affix, a notion that is necessary to all theories that allow partial feature specifications. In theories that present feature specifications as bundles of features (typically using a square bracket notation, [feature 1, feature 2,…]), the specification of the default affix is an empty bundle (a bracket without any features, [ ]). As was mentioned above, however, privative features find a natural expression in binary-branching structures and at the same time, these structures impose a hierarchical order on the features that they encode. It was also noted that the lowest branch of this structure has no feature at all. I now propose that this lowest branch of the structure should be included in the feature hierarchy. In order to make this

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[7] A very similar proposal was made in Noyer (1992).

notion explicit, let us suppose that there is a feature in this position, but that this feature has no interpretive content (i.e. it is **the default feature**). Since the default feature is the lowest feature in the feature hierarchy, affixes that are specified for the default feature must give precedence in the derivation to affixes that are specified for one of the other features.

There is a limit on the number of features that are possible in a given specification. Obviously, all things being equal, this limit would be the number of features with interpretive content that are available to the system (i.e. in Romanian declensions, four features). However, given the features proposed above and the simple principle that regulates the feature specifications of the affixes according to their observed distribution, it is notable that there is no form of inflection that is specified for more than two features.[8] For the convenience of the presentation, let us suppose that the affixes of the Romanian declensions are specified for only two features.

The preliminary features specifications shown in (5) can now be revised as in (7):

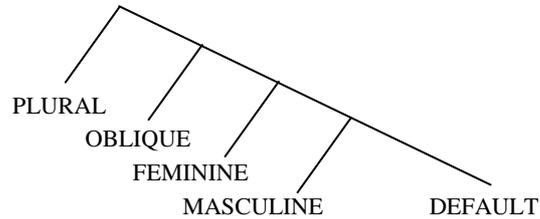(7)　　The feature specifications (final version)

	SINGULAR		
	MASCULINE	*NEUTER*	*FEMININE*
NOM./ACC.	[DEFAULT, DEFAULT]		[FEMININE, DEFAULT]
GEN./DAT.	[OBLIQUE, DEFAULT]		[OBLIQUE, FEMININE]
	PLURAL		
NOM./ACC.	[PLURAL, MASCULINE]	[PLURAL, DEFAULT]	
GEN./DAT.	[PLURAL, OBLIQUE]		

Thus the specifications that had only one feature in (5) have two features in (7) – the second feature being the feature [DEFAULT]. Similarly the default specification, which had no features at all in (5), is here represented with two instances of the feature [DEFAULT].

The hierarchical organization of the grammatical features of Romanian declensions is represented as in (8):

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[8] This might seem to be an accident of history, were it not true that a similar observation can be made in the account of more complex inflectional systems (for example, the account of Old English in Lumsden in preparation). This suggests that there is some aspect of the derivation that limits the number of feature specifications to a maximum of two features per form. Since the data of Romanian offer only weak support for this point, the limit of two features is merely stipulated in the present discussion.

(8)

PLURAL
OBLIQUE
FEMININE
MASCULINE   DEFAULT

Together the feature specifications of (7) and the feature hierarchy of (8) provide for a complete account of the distribution of affixes in Romanian 3rd person declensions.

2.2   The morphological generalization

The grammatical generalization has a morphological parallel. As the reader may see on examining the 13 declensions displayed in the annex, aside from suppletions (i.e. arbitrarily exceptional morphological forms) and aside from particular phonological adjustments, these oppositions are consistently signalled by the following morphological forms:

(9)   The morphological generalization

	SINGULAR		
	MASCULINE	NEUTER	FEMININE
NOM./ACC.	+ Ø		+ a
GEN./DAT.	+ ui		+ ei
	PLURAL		
NOM./ACC.	+ i	+ e	
GEN./DAT.	+ or		

These two broad generalizations, the uniform grammatical specifications and the uniform morphological forms of the declensions, provide very strong evidence to support the claim that all these declensions are a single cognitive system; a conclusion that is predicted by the hypothesis that all regular and productive grammatical forms and structures are processed by a task-specific procedural memory.

The next section will show how the derivations of these forms and specifications within their different declensions can be accomplished without appeal to declarative principles.
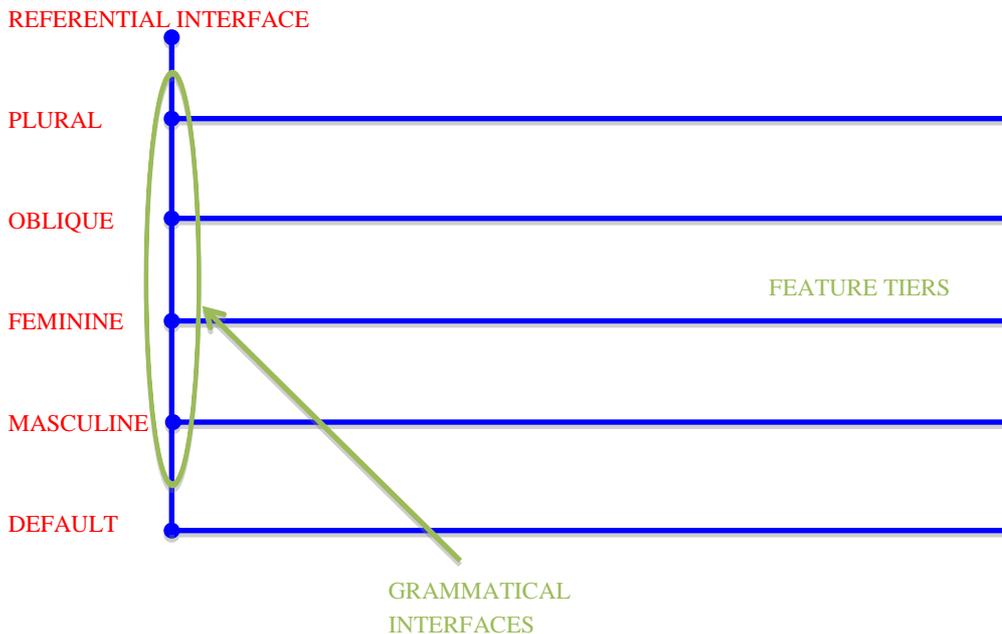
3.   A formal account of derivations

In this formal account, grammatical features are to be understood as interface points that relate the structures of the procedural memory to the various cognitive networks that generate the content of these features and categories. The default feature is

exceptional in that it does not have such an interface point. Similarly, affixes and stem forms are interface points that link the grammar to the cognitive networks that generate the articulatory and acoustical elements of phonological forms. The procedural memory is a cognitive structure that knits these various interface points together.

3.1 The grammatical derivation

The **referential interface** is an interface point that links the procedural memory to the cognitive network that generates the speaker's perception of the referent at the moment of the speech act. The referential interface is the initial point of a line in the procedural memory; the **grammatical line**. Grammatical features appear as a sequence of points on the grammatical line. The sequence of features on the grammatical line is the formal statement of the feature hierarchy described above (cf., (8). The highest feature of the hierarchy is the feature that is nearest to the referential interface. Furthermore, each of these features is the initial point of another line in the paradigm structure, a **feature tier**. This configuration is illustrated in (10):

(10)   A partial representation of the procedural memory of grammar

REFERENTIAL INTERFACE

PLURAL

OBLIQUE

                                                FEATURE TIERS

FEMININE

MASCULINE

DEFAULT

GRAMMATICAL
INTERFACES

The feature specifications of the paradigm will be represented by **tier connectors**; that is, lines of structure that link feature tiers together. The feature specification [PLURAL, OBLIQUE], for example, is represented by a tier connector that links the grammatical tier PLURAL to the grammatical tier OBLIQUE, while the specification [FEMININE, DEFAULT] is a tier connector that links the FEMININE tier to the DEFAULT tier. The seven specifications that are extant in the paradigm are illustrated in (11). The

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grammatical derivation is entirely regulated by the hierarchy of features on the grammatical line. In (11), however, the feature hierarchy has also been represented in the left to right order of the tier connectors in order to make the exposition as clear as possible to the reader.

(11)   The tier connectors
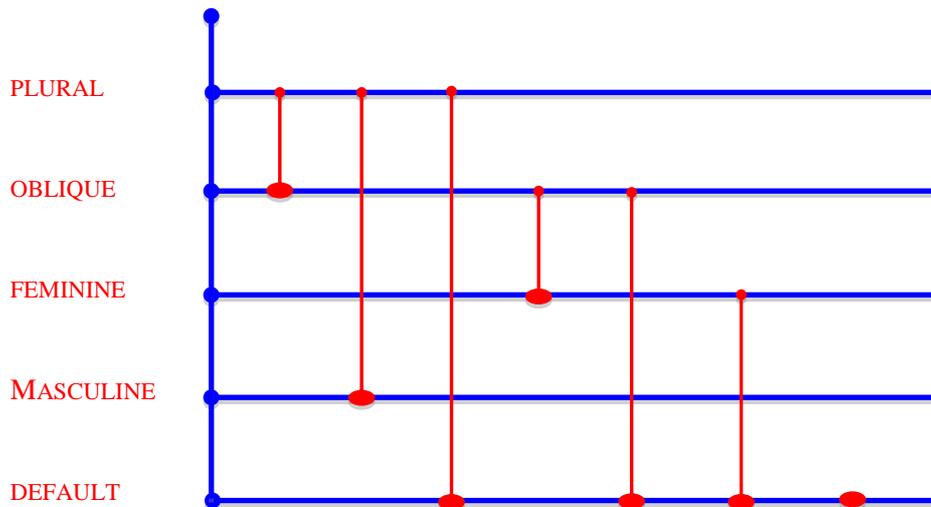
The grammatical derivation begins when the speaker's perception of the intended referent activates the referential interface of the procedural grammar. At the same moment, the various cognitive networks that represent the interpretive content of grammatical features prime (i.e. partially activate) all those features that have content that is pertinent to the referent in question. The weight of the activated referential interface spreads down the grammatical line. A feature that has already been primed will become fully activated by this weight, but a feature that has not been primed will not. The default feature however, has a lower activation threshold and it is fully activated if it receives the weight of the activated referential interface. Feature tiers are activated when their corresponding features are activated.

In each derivation, the two features of the specification are identified in two steps. As soon as the weight of the referential interface activates a feature tier that includes the initial point of a tier connector, the first step of the derivation has been accomplished. The feature that corresponds to this tier is the first feature of the grammatical specification in question. For example, if the feature PLURAL is activated, then the specification will be defined by one of the tier connectors that begin on the feature tier PLURAL. If the feature PLURAL is not activated and the feature OBLIQUE is activated, then the derivation will be defined by one of the tier connectors that begin on the feature tier OBLIQUE, and so on.

The weight of the activated referential interface continues to spread down the grammatical line, bringing the pertinent features and their corresponding tiers to full activation. As soon as the derivation activates a tier that includes the terminal point of one of the tier connectors that is begins on the feature tier of the first feature of the specification, then the second step of the derivation has been accomplished. The feature

that corresponds to this tier will be the second feature of the grammatical specification in question. For example, if the feature PLURAL is the first feature of the grammatical specification, then if the feature OBLIQUE is activated, the specification is [PLURAL, OBLIQUE]. If OBLIQUE is not activated derivation continues. If FEMININE is activated, the derivation still continues, for there is no tier connector that links PLURAL and FEMININE. If the feature MASCULINE is activated, however, the specification is [PLURAL, MASCULINE]. If PLURAL is not activated, the derivation begins on the highest feature of the hierarchy that is activated. If there are no primed grammatical features, then the DEFAULT feature is activated.

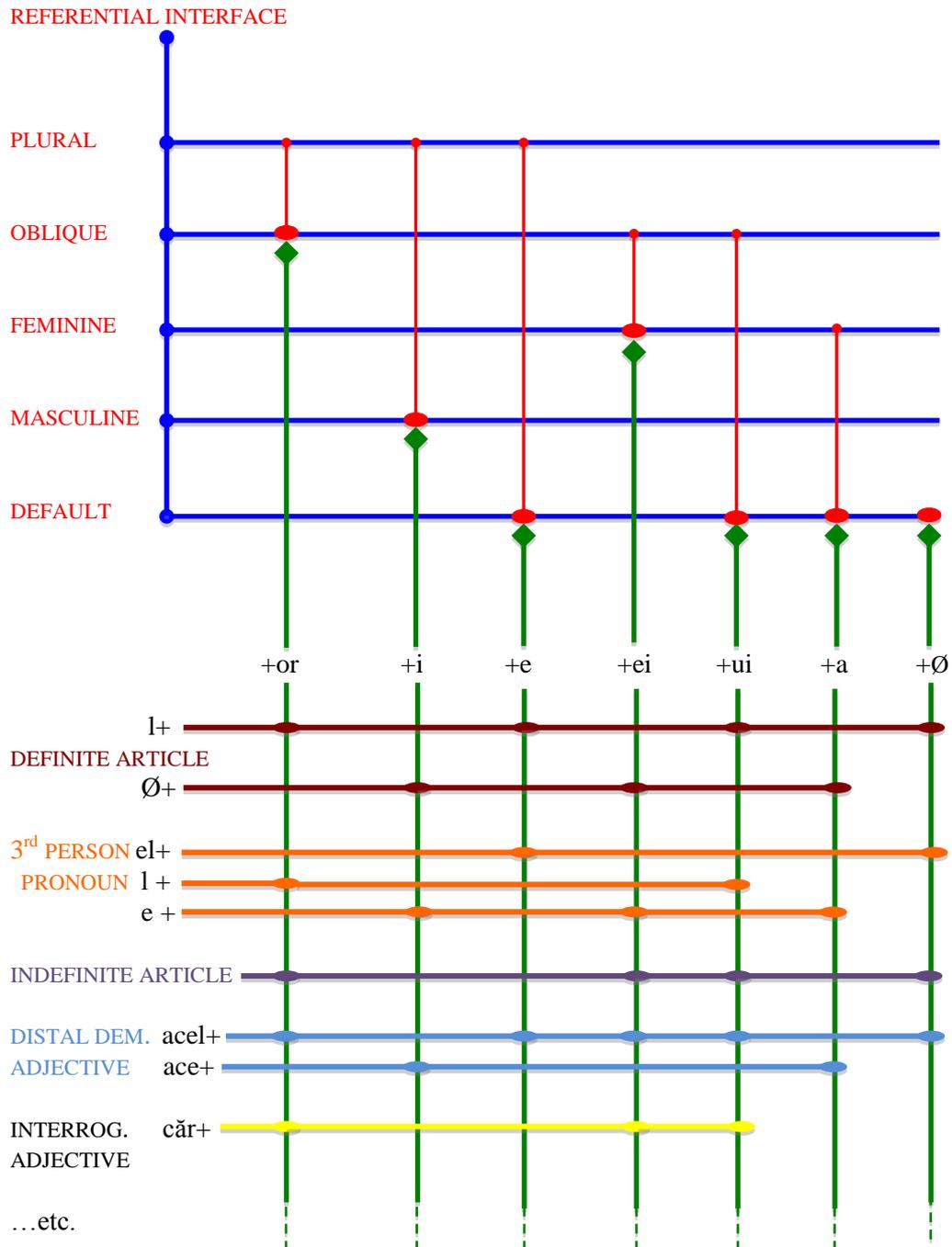### 3.2   The morphological derivation

The affixes of inflection appear in the formal representation as interface points on **morphological lines**. Each morphological line is linked to a tier connector by a **morpho-grammatical interface**. This is the interface that brings phonological form and grammatical content together. In speech production, the activation of a tier connector activates a specific morpho-grammatical interface and this activates the morphological line where the appropriate affix appears. This structure is shown in (12).

(12)   The morphological interfaces

Stems and affix forms are combined by **morphological line connectors**; that is, lines of structure that link the morphological lines of syntactic categories to the morphological lines of the grammatical specifications. These connections complete the formal representation. Thus the general structure of the paradigm can be seen in (13).

(12)   The morphological derivation

REFERENTIAL INTERFACE

PLURAL

OBLIQUE

FEMININE

MASCULINE

DEFAULT

	+or	+i	+e	+ei	+ui	+a	+Ø

l+

DEFINITE ARTICLE

Ø+

3rd PERSON el+

PRONOUN l +

e +

INDEFINITE ARTICLE

DISTAL DEM. acel+

ADJECTIVE ace+

INTERROG. căr+

ADJECTIVE

…etc.

Recall that it is the declarative memory the processes the irregular and non-productive grammatical forms. Presumably syntactic features are activated by a process that is similar to derivation of the grammatical declension. Notice that only one morphological line will be activated in any derivation and only one syntactic category. If a syntactic category has more than one stem form then each stem form has a morphological line connector and the connections that these lines make with the morphological lines are in complementary distribution. Thus, for each category there is only one morphological line connector that will intersect with the activated morphological line. The activation morphological line connector combines the appropriate stem form with the appropriate affix, completing the derivation in question. Crucially, this derivation was completely mechanical, depending only on the network structure of the grammatical memory and the cognitive interfaces within this network.

4.   Conclusions

This paper has shown that the hypothesis that all regular and productive grammatical forms and structures are processed by a task-specific procedural memory has strong support in the data of Romanian inflection. In this language, the unity of the grammatical specifications and the common inventory of morphological shapes in the various nominal declensions provide strong, direct support for the main prediction of this hypothesis. The data of Romanian nominal inflection must be processed as a single cognitive system. The paper has also developed an account of the derivations of these data that has no need of the declarative principles that encumber all other current accounts of inflectional morphology.

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Appendix

I assume that the prenominal particle *pe* marks person and accusative.

I assume that the affix +a is a pronominal marker (i.e. adjective/article + a = pronoun).

The general pattern in the declensions (features and forms) is as follows:

[DEFAULT, DEFAULT]	-	+ Ø
[OBLIQUE, DEFAULT]	-	+ ui
[PLURAL, DEFAULT]	-	+ e
[PLURAL, OBLIQUE]	-	+ or
[PLURAL, MASCULINE]	-	+ i
[OBLIQUE, FEMININE]	-	+ ei
[FEMININE, DEFAULT]	-	+ a

The exceptions to the general pattern (i.e. the suppletive forms) are as follows:

for the specification [FEMININE, OBLIQUE], in declensions 9a and 10a *această*, in declensions 9b and 10b *astă*, in declension 11a *aceea*, and in declensions 11b and 12b *aia*;

for the specification [PLURAL, DEFAULT], in declension 5 *nişte* 'some';

for the specification [FEMININE, DEFAULT], in declension 5 *o*;

and for the specification [DEFAULT, DEFAULT], in declensions 13 and 14 *care*.

1.   DEFINITE ARTICLE (a suffix)
        STEMS: +*l*+, +Ø+   +l+ → +ul / C___

+l+
 + Ø   [DEFAULT, DEFAULT]
 + ui [OBLIQUE, DEFAULT]
 + e   [PLURAL, DEFAULT]
 + or [PLURAL, OBLIQUE]
+ Ø +
 + a   [FEMININE, DEFAULT]
 + i   [MASCULINE, PLURAL]
 + ei [FEMININE, OBLIQUE]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	+l+Ø		+Ø+a
Gen./Dat.	+l+ui		+Ø+ei
	plural		
Nom./Acc.	+Ø+i	+l+e	
Gen./Dat.	+l+or		

2.   3ᴿᴰ PERSON PRONOUN
      STEMS: *el+*, *l+*, *e+*

$$e+ \rightarrow /y/ \ / \ \#\_\_\_$$
$$e+ \rightarrow \emptyset \ / \ e\_\_\_$$

el+
 + Ø   [DEFAULT, DEFAULT]
 + e   [PLURAL, DEFAULT]
l+
 + ui   [OBLIQUE, DEFAULT]
 + or   [PLURAL, OBLIQUE]
e+
 + a   [FEMININE, DEFAULT]
 + i   [MASCULINE, PLURAL]
 + ei   [FEMININE, OBLIQUE]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	el+Ø		e+a
Gen./Dat.	l+ui		e+i
	plural		
Nom./Acc.	e+i	el+e	
Gen./Dat.	l+or		

3.   INDEFINITE ADJECTIVE
      STEM: *alt+*

alt+
 + Ø   [DEFAULT, DEFAULT]
 + a   [FEMININE, DEFAULT]
 + ui   [OBLIQUE, DEFAULT]
 + ei   [FEMININE, OBLIQUE]
 + i   [MASCULINE, PLURAL]
 + e   [PLURAL, DEFAULT]
 + or   [PLURAL, OBLIQUE]

	singular		
	masculine	*neut*	*feminine*
Nom./Acc.	alt+Ø		alt+ă
Gen./Dat.	alt+ui		alt+ei
	plural		
Nom./Acc.	alț+i	alt+e	
Gen./Dat.	alt+or		

4.   INDEFINITE PRONOUN
      STEM: *alt+__+a* (the pronominal affix)

 "In contrast with the indefinite adjective, the indefinite pronoun in the nom/acc singular and plural always takes the definite article" (Pop 1948: 215-216).

$$a \rightarrow \emptyset \ /\_\_\_\_a$$

alt+
 + ui + a   [OBLIQUE, DEFAULT]
 + ei + a   [FEMININE, OBLIQUE]
 + or + a   [PLURAL, OBLIQUE]
 + Ø + l   [DEFAULT, DEFAULT]
 + i   + i   [MASCULINE, PLURAL]
 + a   + a   [FEMININE, DEFAULT]
 + e   + l + e [PLURAL, DEFAULT]

	singular		
	masculine	*neut.*	*feminine*
Nom./Acc.	altul+Ø		alt+a
Gen./Dat.	alt+ui+a		alt+ei+a
	plural		
Nom./Acc.	alț+i+i	altel+e	
Gen./Dat.	alt+or+a		

5.   INDEFINITE ARTICLE
      STEM: *un+*

un+
  + Ø   [DEFAULT, DEFAULT]
  + ui   [OBLIQUE, DEFAULT]
  + ei   [FEMININE, OBLIQUE]
  + or   [PLURAL, OBLIQUE]
    o   [FEMININE, DEFAULT]
  nişte   [PLURAL, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	un+Ø		o
Gen./Dat.	un+ui		un+ei
	plural		
Nom./Acc.	nişte		
Gen./Dat.	un+or		

6.   INDEFINITE PRONOUN
      Oblique STEM: *un+__+a* (the pronominal affix)
      Non oblique STEM   *un+__+* determiner

According to Pop (1948: 218) *unul* and *una* (for example) mean 'the one', "a person or thing among others of the same category".

$$a \rightarrow Ø / \underline{\quad} a$$

un+__+a
  + ui   + a [OBLIQUE, DEFAULT]
  + ei   + a [FEMININE, OBLIQUE]
  + or   + a [PLURAL, OBLIQUE]
un+__+DET.
  + Ø   + l [DEFAULT, DEFAULT]
  + i   + i [MASCULINE, PLURAL]
  + Ø   + a [FEMININE, DEFAULT]
  + e   + le [PLURAL, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	unul		un+a
Gen./Dat.	un+ui+a		un+ei+a
	plural		
Nom./Acc.	un+i+i		un+ele
Gen./Dat.	un+or+a		

7.   DEMONSTRATIVE-ADJECTIVAL ARTICLE (literary)
      STEMS: *cel+*, *ce*

cel+
  + Ø   [DEFAULT, DEFAULT]
  + ui   [OBLIQUE, DEFAULT]
  + ei   [FEMININE, OBLIQUE]
  + e   [PLURAL, DEFAULT]
  + or   [PLURAL, OBLIQUE]
ce+
  + a   [FEMININE, DEFAULT]
  + i   [PLURAL, MASCULINE]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	cel+Ø		ce+a
Gen./Dat.	cel+ui		cel+ei
	plural		
Nom./Acc.	ce+i		cel+e
Gen./Dat.	cel+or		

8. a   DEMONSTRATIVE ADJECTIVES (PROXIMATE)
STEM: *acest+*

acest+
 + Ø DEFAULT, DEFAULT]
 + ui [OBLIQUE, DEFAULT]
 + e [PLURAL, DEFAULT]
 + or [PLURAL, OBLIQUE]
 + ei [FEMININE, OBLIQUE]
 + i [PLURAL, MASCULINE]
această (expected: *acest+a*)
        [FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	acest+Ø		această
Gen./Dat.	acest+ui		acest+ei
	plural		
Nom./Acc.	aceşt+i		acest+e
Gen./Dat.	acest+or		

8.b   *INFORMAL* DEMONSTRATIVE ADJECTIVES (PROXIMATE)
STEMS: *ăst+*, *ast+*   a → Ø /____a

ăst +
 + Ø   [DEFAULT, DEFAULT]
 + ui [OBLIQUE, DEFAULT]
 + or [PLURAL, OBLIQUE]
 + ei [FEMININE, OBLIQUE]
 + i   [MASCULINE, PLURAL]
ast +
 + e   [PLURAL, DEFAULT]
astă [FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	ăst+Ø		astă
Gen./Dat.	ăst+ui		ăst+ei
	plural		
Nom./Acc.	ăşt+i		ast+e
Gen./Dat.	ăst+or		

9.a   DEMONSTRATIVE PRONOUNS (PROXIMATE)
STEM: *acest+*

acest+
 + Ø + a [DEFAULT, DEFAULT]
 + ui + a [OBLIQUE, DEFAULT]
 + e + a [PLURAL, DEFAULT]
 + or + a [PLURAL, OBLIQUE]
 + ei + a [FEMININE, OBLIQUE]
 + i + a [MASCULINE, PLURAL]
aceasta [FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	acest+Ø+a		aceasta
Gen./Dat.	acest+ui+a		acest+ei+a
	plural		
Nom./Acc.	aceşt+i+a		acest+e+a
Gen./Dat.	acest+or+a		

9.b   *INFORMAL* DEMONSTRATIVE PRONOUNS (PROXIMATE)
STEM: *ăst+*   a → Ø /____a

ăst +
 + Ø + a [DEFAULT, DEFAULT]
 + ui + a [OBLIQUE, DEFAULT]
 + or + a [PLURAL, OBLIQUE]
 + ei + a [FEMININE, OBLIQUE]
 + i + a [MASCULINE, PLURAL]
 + e + a [PLURAL, DEFAULT]
 _+ a + a [FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	ăst+Ø+a		ăst+a+a
Gen./Dat.	ăst+ui+a		ăst+ei+a
	plural		
Nom./Acc.	ăşt+i+a		ăst+e+a
Gen./Dat.	ăst+or+a		

10.a DEMONSTRATIVE ADJECTIVES (DISTAL)
STEMS: *acel+*, *ace+*

acel +
+ Ø [DEFAULT, DEFAULT]
+ ui [OBLIQUE, DEFAULT]
+ or [PLURAL, OBLIQUE]
+ ei [FEMININE, OBLIQUE]
+ e [PLURAL, DEFAULT]
ace +
+ i [MASCULINE, PLURAL]
+ a [FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	acel+Ø		ace+a
Gen./Dat.	acel+ui		acel+ei
	plural		
Nom./Acc.	ace+i		acel+e
Gen./Dat.	acel+or		

10.b *INFORMAL* DEMONSTRATIVE ADJECTIVES (DISTAL)
STEMS: *ăl+*, *ă+*

ăl
+ Ø [DEFAULT, DEFAULT]
+ ui [OBLIQUE, DEFAULT]
+ or [PLURAL, OBLIQUE]
+ ei [FEMININE, OBLIQUE]
+ e [PLURAL, DEFAULT]
ă
+ i [MASCULINE, PLURAL]
<u>*aia*</u> *(*expected: *a / ăea)*
　　　[FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	ăl+Ø		a
Gen./Dat.	ăl+ui		ăl+ei
	plural		
Nom./Acc.	ă+i		ăl+e
Gen./Dat.	ăl+or		

11.a DEMONSTRATIVE PRONOUNS (DISTAL)
STEMS: *acel+*, *ace+*　　　　　　　　a → Ø / ____a

acel +
+ Ø + a [DEFAULT, DEFAULT]
+ ui + a [OBLIQUE, DEFAULT]
+ or + a [PLURAL, OBLIQUE]
+ ei + a [FEMININE, OBLIQUE]
+ e + a [PLURAL, DEFAULT]
ace +
+ i + a [MASCULINE, PLURAL]
<u>*aceea*</u>　　　[FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	acel+Ø+a		aceea
Gen./Dat.	acel+ui+a		acel+ei+a
	plural		
Nom./Acc.	ace+i+a		acel+e+a
Gen./Dat.	acel+or+a		

11.b *INFORMAL* DEMONSTRATIVE PRONOUNS (DISTAL)
STEMS: *ăl+__+a, ă+__+a*

ăl +__+a
  + Ø + a   [DEFAULT, DEFAULT]
  + ui + a   [OBLIQUE, DEFAULT]
  + or + a   [PLURAL, OBLIQUE]
  + ei + a   [FEMININE, OBLIQUE]
  + e + a   [PLURAL, DEFAULT]
ă +__+a
  + i + a   [MASCULINE, PLURAL]
<u>*aia*</u>   [FEMININE, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	ăl+Ø+a		aia
Gen./Dat.	ăl+ui+a		ăl+ei+a
	plural		
Nom./Acc.	ă+i+a		al+e+a
Gen./Dat.	ăl+or+a		

12.   INTERROGATIVE ADJECTIVES
STEM: *căr+*

căr +
  + ui   [OBLIQUE, DEFAULT]
  + ei   [FEMININE, OBLIQUE]
  + or   [PLURAL, OBLIQUE]
<u>*care*</u>   [DEFAULT, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	care		
Gen./Dat.	căr+ui		căr+ei
	plural		
Nom./Acc.	care		
Gen./Dat.	căr+or		

13.   RELATIVE PRONOUNS (ALSO INTERROGATIVE *WHICH*)
STEM: *căr+__+a*

căr+__+a
  + ui + a   [OBLIQUE, DEFAULT]
  + ei + a   [FEMININE, OBLIQUE]
  + or + a   [PLURAL, OBLIQUE]
<u>*care*</u>   [DEFAULT, DEFAULT]

	singular		
	masculine	*neuter*	*feminine*
Nom./Acc.	care		
Gen./Dat.	căr+ui+a		căr+ei+a
	plural		
Nom./Acc.	care		
Gen./Dat.	căr+or+a		