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## DECLENSION CLASSES IN LIVONIAN – A LANGUAGE-USER ABSTRACTIVE APPROACH

**Abstract.** This paper aims to present an abstractive study of Livonian declension classes which lends support to the pedagogical analyses offered in Viitso, Ernštreits 2012. In this study I identify and discuss additional inflexional patterns in the language which may aid in a language-user's deduction of novel inflected forms. These, I suggest, may be exploited alongside the abstract patterns encapsulated by the principal parts and exemplary paradigms given in the Livonian dictionary.

**Key words:** Livonian, declension classes, abstractive approach.<sup>1</sup>

### 1.0. Introductory remarks

This study is intended to provide a supplementary analysis of Livonian declension classes, drawing from pedagogical work conducted by Viitso and Ernštreits (2012), much of which is summarized in Viitso 2012. In the approach outlined by these authors, nominals (which in Livonian includes nouns, adjectives, pronouns, demonstratives and numerals) belong to major declensions, which are further split into sub-types. The exact number of declensions differ — Viitso and Ernštreits (2012) identify thirteen, whilst Viitso (2012) outlines five — as do the number of sub-types, but the basic pedagogical assumptions remain the same: exemplary paradigms provide models of the types of inflexional variation found in the nominal system;<sup>2</sup> new lexemes are listed in the dictionary (Viitso, Ernštreits 2012) along with their principal parts which permit the language-user to associate vocabulary items with the relevant exemplary paradigms and thus analogically deduce previously-unencountered inflected forms.

Here, I hope to identify some of the more general inflexional patterns that cross-cut the types of morphophonological variation found in the exemplary paradigms outlined in the Livonian-Estonian-Latvian (henceforth the

<sup>1</sup> My thanks to two anonymous reviewers for extensive insightful suggestions on an earlier draft of this paper. Any errors that remain are entirely my own.

<sup>2</sup> N.B., the term *nominal* in this study refers only to nouns and adjectives, though many of the observations offered here may be extended to pronouns, demonstratives and numerals.

Livonian) dictionary (Viitso, Ernštreits 2012), both in its printed and online versions.<sup>3</sup> This is not to say that the patterns identified by Viitso and Ernštreits (2012) and Viitso (2012) are not useful. On the contrary, the Livonian dictionary is an essential source for any learner of the language. However, just as outlined by Blevins (2005; 2008) in reference to the related Finnic variety Estonian, recognizing implicative patterns that cut across the traditionally-identified declensions and sub-types can offer a more complete picture of the many means available to a language-user in the deduction of a novel inflected form.<sup>4</sup>

Many of the observations offered in this study actually provide support for the psychological reality of the analyses put forward in Viitso, Ernštreits 2012. That is, a language-user-orientated view of the Livonian data suggests that, for many speakers, the exemplary paradigms identified in a pedagogical approach are actually utilized in the production of novel forms. It should be noted that there are no longer any native speakers of Livonian living. The hypotheses offered here are therefore intended to capture the many means utilized by proficient language-users in the production of novel inflected forms.

The structure of the rest of this paper is as follows: in §2 I will outline the basic principles of an abstractive model of grammatical description, focusing in particular on the essential differences between pedagogical and language-user approaches. In §3 I will offer a brief overview of the work already conducted on the Livonian data, whilst §4 will be concerned with outlining my own observations about the types of implicational patterns that can be exploited by language-users in the deduction of novel inflected wordforms. Finally, concluding remarks and avenues for future research will be offered in §5.<sup>5</sup>

## 2.0. An abstractive perspective

Abstractive models of morphological description contrast with constructive approaches, which differ morphotactically in terms of the status that they assign to different units in language.<sup>6</sup> In constructive models – including morphemic approaches and stem- or root-based perspectives – fully-inflected wordforms are considered to be built up from sub-word recurrent partials. In these approaches, these sub-word elements are

<sup>3</sup> For ease of reference for the reader, I will refer largely to the online version of this dictionary, which is still being updated and is therefore the more current of the sources cited here. Available in Livonian, Estonian and Latvian: <http://www.murre.ut.ee/liivi/>.

<sup>4</sup> Throughout this study, I will be concerned solely with the means of producing novel forms, rather than interpreting the functions encoded by previously-unencountered wordforms, since clues as to what meanings these forms express will also be provided by syntactic and other contextual information.

<sup>5</sup> Throughout, *q, t, l, r, n, r, š* and *ž* mark palatalized consonants; *õ* is used for the high central vowel; *o* for the mid-high back vowel and *ō* for the long mid-central vowel. A macron distinguishes long vowels from short; long consonants are written as geminate. An apostrophe is used to indicate a broken tone "which is rising-falling or predominantly falling and articulated with laryngealization (*stød* or creaky voice)" (Viitso 2007 : 47). The plain tone is not marked, but occurs on primary stressed syllables where the broken tone does not.

<sup>6</sup> The terms *constructive* and *abstractive* are from Blevins 2006.

morphotactically minimal. As has been extensively demonstrated by recent work in the modern abstractive framework,<sup>7</sup> the (re-)construction of inflected wordforms from sub-word partials often requires additional information (such as class diacritics or other assembly instructions) in the combining of these elements to form fully-inflected forms — information that is not required when these sub-word elements are not considered basic.

In an abstractive approach, on the other hand, "[t]he word is a more stable and solid focus of morphological relations than the component morpheme by itself" (Robins 1959 : 128, emphasis added). Inflected wordforms are considered to be more informative than sub-word units about the inflexional patterns exhibited by a lexeme. Informative patterns exist only between two or more related forms (whether they belong to the lexeme's paradigm, its wider morphological family or to the lexical neighbourhood).<sup>8</sup> Once these patterns are recognized they can then be exploited by speakers in language use. In this way, an abstractive model does not meet with the problems associated with constructive perspectives.

True abstractive approaches are *u n i t - a g n o s t i c*, meaning that these models recognize that patterns exhibited by units of varying size — for instance, below the level of the word, at the level of the periphrastic construction or even the idiom — can be exploited by speakers in the production of novel inflected forms. Stems and inflexional exponents, for instance, where they provide a language-user with relevant information about the shape of a novel form, can be abstracted away from surface wordforms as units of analysis. These sub-word entities are therefore not *m e a n i n g f u l* units, but they may in certain instances be *a s s o c i a t e d* with particular functions. Importantly, "it is the properties of forms that realize particular paradigm cells, rather than the properties of forms in isolation, that is of value in identifying class and deducing new forms" (Blevins 2006 : 262). That is, it is the word-form *i n a d d i t i o n* to the function(s) it encodes which provides the speaker with the information required to produce novel forms.<sup>9</sup>

Two main abstractive perspectives are identified in this study: the pedagogical and the language-user approach. The first of these is frequently utilized by grammars for the purposes of aiding L2 language acquisition and is sometimes referred to as the classical or traditional abstractive perspective. In this model, words and paradigms in particular are considered central to the correct deduction of novel inflected forms: a small number of paradigms, which represent the vast majority of inflexional patterns that other items in the language can follow, are given in full. Lexemes that are not inflected in full are listed with a small number of other fully-inflected forms of the lexeme which provide sufficient infor-

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<sup>7</sup> In particular, Blevins 2016.

<sup>8</sup> It is generally accepted that inflected forms of a given lexeme aid in the deduction of the rest of the paradigm; recent work indicates that the derivational family (Bonami, Boyé 2005; Bonami, Strnadová 2016) as well as the lexical neighbourhood (Blevins, Milin, Ramscar 2017) may also provide relevant implicational information about novel inflected forms.

<sup>9</sup> Throughout, I will refer largely to the forms of inflected nominals, though it should be understood that I am implicitly referring to the form ~ function combination, not to form alone.

mation for the language-user to deduce the remaining forms given knowledge of the exemplary paradigms.

The language-user abstractive approach, on the other hand, is a perspective which is represented by the more recent advances in capturing the assumptions implicit in the pedagogical abstractive model frequently found in grammars. These models look beyond the "expository convenience" (Blevins 2006 : 265) of exemplary paradigms and principal parts and instead attempt to identify, explain and calculate the various ways in which language-users actually recognize and exploit meaningful patterns.

## 2.1. The discriminative nature of sub-word variation

As was mentioned in the previous section, sub-word variation is not considered to encode particular meanings in abstractive approaches. Instead, variation is considered to play a discriminative function in language use. That is, it distinguishes one wordform from another in the paradigm. The differences between two or more fully-inflected forms are usually sufficient to determine what function(s) a given form encodes. Although such a perspective is implicit in pedagogical approaches, modern abstractive models aim to formulate this important insight more explicitly.

The claim that variation plays a discriminative role in language use is supported by models of language learning such as those developed by Ramscar and Dye (2010), Ramscar, Yarlett, Dye, Denny and Thorpe (2010) and Ramscar (2013). These models suggest that "the main function of phonology is to discriminate between semantic alternatives" (Ramscar, Dye 2010 : 28). Thus, where a language-user encounters variation within a paradigm, they associate it with some difference in function. Even where forms are not consistently distinguished by the same sub-word forms — for instance, where genitive plural functions are differentiated from other forms in the paradigm by means of a suffixal marker *-ārum* in one declension and *-um* in another (as in Latin), it does not matter that these sub-word elements are phonologically distinct. Instead, it matters that the implicational relationship between *pvellārum* and *pvellae* is the same as that between *militum* and *militēs* — that is, genitive plural ~ nominative plural in the first and third declensions respectively. In this way, phonologically distinct sub-word units may discriminate the same functional distinctions in a given language.

Furthermore, "[e]lements that serve principally to discriminate larger forms need not have a single function or meaning in all of the contexts in which they occur, but may perform different discriminative functions in different contexts" (Blevins 2016 : 211). In Livonian, for instance, the suffix *-õ* encodes different functions depending on the shape of other inflected forms in the paradigm. In examples such as *sieldõ* 'clear', *aššõ* 'sudden, abrupt' and *drū'ošõ* 'brave', this final sound *-õ* is found in the nominative/genitive/partitive singular forms. These forms contrast with other forms distinguished by additional suffixal markers which signal differences in function, e.g., *aššõ-n* — dative singular of *aššõ*, *drū'ošõ-d-õks* — translative-comitative plural of *drū'ošõ*. Elsewhere, in the paradigms of lexemes such as nominative singular *rikāz* 'rich' and *āmbaz* 'tooth', the final *-õ*, along with an alternation in the stem shape, serves to discriminate the geni-

tive singular from the nominative singular form, i.e., genitive singular *rikkõ* and *ambõ*. Finally, the partitive/illative singular *ka'llõ* 'fish' is distinguished from other forms in the paradigm by means of a stem change in addition to the suffix *-õ*. Compare the nominative/genitive singular form *kalā*. It is not a desinence *-õ* itself which encodes particular functions, but the relationship between a form ending in *-õ* and other forms in the lexeme's paradigm which enables a language-user to interpret a form ending in *-õ*.

The pressure of discriminability competes with a second pressure in language use: that of regularity. Consideration of the pressures of discriminability and regularity is essential to understanding the means utilized by language-users in the production of novel inflected forms. The first pressure of discriminability enhances the differences between the formal expression of distinct functions, making it easier for the language-user to detect that one form is distinct from another and that it therefore encodes different meanings. The second pressure of regularity favours the more general and common patterns found in a language. Invariance is an extreme type of regularity, where knowledge of one form of a lexeme is sufficient to use it in the language. Regularity aids in the prediction of novel forms, and thus permits a language-user to solve the "Paradigm Cell Filling Problem": "What licenses reliable inferences about the inflected (and derived) surface forms of a lexical item?" (Ackerman, Malouf 2013 : 54). Highly discriminated forms, on the other hand, can impede the deduction of correct inflected forms but approach the discriminative ideal of a one-to-one form-function mapping. They are therefore often very informative about the functions a form encodes, but are not always easy to predict using reference to regular patterns of inflexional variation.

The competing pressures of regularity and discriminability provide a language-user with predictive and communicative information respectively, and both play key roles in language learning and use. Investigating the ways in which they interact is essential to understanding why we find certain inflexional patterns in natural language. For instance, the fact that Viitso and Ernštreits (2012) capture the vast majority of inflexional variation by identifying only thirteen declensions indicates that there are instances of regularity in Livonian which provide predictive information for language-users. Thus, this pedagogical model captures, to some extent, what speakers appear to recognize implicitly: that different functions are discriminated by sub-word variation and that patterns of sub-word variation can be extended to other nominals.

## **2.2. Abstractivism and pedagogy**

The main point of departure for this study from that of the work already conducted on the Livonian nominal system has to do with the purposes for which they are intended. The analysis of Livonian nominals offered by Viitso and Ernštreits (2012) aims to aid L2 learners in the production of unfamiliar forms of lexemes by listing principal parts. The pedagogical strengths of an abstractive approach have long been recognized, since this approach permits a language-user to deduce novel fully-inflected word-forms "in exactly the same way the native user of the language produces or recognizes them — by analogy" (Hockett 1967 : 221).

However, as was argued towards the end of the previous section, some of the more recent developments in abstract models can offer further quantitative support for the patterns captured by exemplary paradigms and principle parts. In fact, because modern abstractive perspectives do not need to limit themselves to recognizing only inflexional paradigms as informative in language use, they can identify other informative patterns that exist in language which are utilized by speakers. These patterns often provide supplementary information which may aid in the deduction of just one target form even where there is not sufficient information to deduce the declension or sub-class to which it belongs. After all "[w]hile speakers of morphologically complex languages do often have to produce word forms that they have never heard before, they rarely have to predict all forms of a given lexeme. On the contrary, speakers must produce some subset of the complete paradigm of a lexeme given knowledge of some other subset, a task that often will not require completely resolving a lexeme's inflectional class membership" (Ackerman, Malouf 2013 : 437, emphasis added).

This study aims to offer some initial observations on the usefulness of modern abstractive approaches for the Livonian nominal system. I will here provide some support for the discussion already offered, by Viitso and Ernštreits (2012) in particular, by presenting more evidence for the psychological reality of the abstract informative patterns that are captured in the principle parts and exemplary paradigms of the Livonian dictionary. I will do this by taking a broader perspective of the data, identifying implicational patterns that do not hold only within a particular sub-type or declension, but which may hold across the entire language or across just a small part of it. As Blevins (2008 : 242) points out in reference to the Estonian nominal system: "[a]t one extreme are highly general patterns, which predict the variation in form inventories and paradigm structure that defines traditional declension classes. At the other extreme are idiosyncratic patterns, which characterize small subclasses or even individual items. Between these extremes lie patterns that characterize subtypes or cut across classes." It is this third type that I am concerned with here.

### **3.0. Previous work on Livonian declension classes**

The most comprehensive work on Livonian declension classes is found in Viitso, Ernštreits 2012, a lot of which is summarized in Viitso 2012.<sup>10</sup> In this literature, the central aim is to identify and list inflexion classes and to assign nominals to declensions. This is a useful approach for the L2 language learner, who may use the Livonian dictionary to rote-learn vocabulary alongside principal parts which allow them to assign lexemes to the relevant inflexion class, and thus to deduce the remaining forms in the paradigm.

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<sup>10</sup> There are a few differences between these two studies. For instance, the number of main declensions that are identified is greater in the Livonian dictionary than in Viitso 2012. This does not affect the discussion offered here, since it simply highlights the somewhat arbitrary nature of the identification of declensions (and inflexional sub-types). I opt to follow the analysis given in the Livonian dictionary.

Of the Finnic languages, Livonian in many ways exhibits the most complicated morphological alternations in its nominals. In Finnish, for instance, suffixal markers are, for the most part, invariant across the system (particularly for the non-grammatical cases), and inflexion classes tend to be identified on patterns of stem alternations.<sup>11</sup> In Livonian, on the other hand, we find "complicated variation of inflectional suffixes and a complicated system of morphophonological alternations" (Viitso 2012 : 12).

Livonian has the fewest morphological case forms of any Finnic language: eight productive case forms are usually identified (in addition to some fossilized forms, the adessive, allative, ablative, instructive and abessive, which are "learned and reproduced" (Viitso 2012 : 22). These will not be considered in any further detail here). Table 1 lists the inflexional markers of the productive case feature values in Livonian:

Table 1

Livonian case allomorphs <sup>12</sup>		
	Singular	Plural
Nominative	Ø	-d, -õd, -t
Genitive	Ø	-d, -õd, -t
Partitive	-tā, -dā, -ta, -da, -ṭa, -dõ, -tõ, -t, -õ, Ø	-di, -ti, -i, -ṭi, -i
Dative	-n, -õn	-ddõn, -dõn, -õdõn, -tõn
Illative	-zõ, -(õ)z, -õ(z)	-ži, -iž, -iž, -ž, -iz, -iz
Inessive	-s(õ), -õs(õ), -š(õ)	-ši, -is(i), -is(i)
Elative	-st(õ), -(õ)st, -õst(õ)	-šti, -ist(i), -ist(i)
Translative-comitative <sup>13</sup>	-kõks, -ks, -õks	-dkõks, -tkõks, -dõks, -tõks

These suffixes do not encode particular case functions; these are the sub-word units which, in certain paradigms, serve to *discriminate* other fully-inflected forms. That is, as was discussed in §2.1, the form *ka'llõ*, partitive singular of the lexeme 'fish', is not partitive singular because it ends in a form *-õ* (listed in table 1 above as one of the partitive singular markers), but because the form exists in a particular implicational relation with other inflected forms in the paradigm.

Moreover, most Livonian nominals exhibit allomorphy in the stem, though the extent to which the stem shapes differ from one another phonologically varies across the system. We find a few examples of invariant stems (e.g., *kĩndõr* 'elbow') and stems that differ solely in the palatalization of their final consonant before *-i* (e.g., *pēgal* 'thumb'):

<sup>11</sup> See Karlsson 2008 : 61–82. However, in a similar way to the Livonian language, in Finnish "[t]here is no consensus on how many inflectional classes there are for nominals" (Karlsson 2006 : 476).

<sup>12</sup> Table adapted from Viitso, Ernštreits 2012 : 393f.

<sup>13</sup> In Viitso, Ernštreits 2012 : 393f., the translative suffix is listed as *-ks* whilst the comitative is listed with the desinences *-ks*, *-õks* and *-kõks*. In most lexemes in the Courland Livonian dialect, on which the written language is based, the translative and comitative functions are encoded by the same form, which is why this is given as a single translative-comitative case feature value throughout this study (after Grünthal 2003). N.B., Viitso (2012 : 22) calls this form the instrumental.

Table 2

<i>kīndōr</i> and <i>pēgal</i> fully inflected				
	<i>kīndōr</i> 'elbow'		<i>pēgal</i> 'thumb'	
	Singular	Plural	Singular	Plural
<b>Nominative</b>	<i>kīndōr</i>	<i>kīndōrd</i>	<i>pēgal</i>	<i>pēgald</i>
<b>Genitive</b>	<i>kīndōr</i>	<i>kīndōrd</i>	<i>pēgal</i>	<i>pēgald</i>
<b>Partitive</b>	<i>kīndōrt</i>	<i>kīndōri</i>	<i>pēgalt</i>	<i>pēgaļi</i>
<b>Dative</b>	<i>kīndōrōn</i>	<i>kīndōrdōn</i>	<i>pēgalōn</i>	<i>pēgaldōn</i>
<b>Illative</b>	<i>kīndōrō</i>	<i>kīndōriž</i>	<i>pēgalō</i>	<i>pēgaļiž</i>
<b>Inessive</b>	<i>kīndōrōs</i>	<i>kīndōris</i>	<i>pēgalōs</i>	<i>pēgaļis</i>
<b>Elative</b>	<i>kīndōrōst</i>	<i>kīndōrist</i>	<i>pēgalōst</i>	<i>pēgaļist</i>
<b>Translative-comitative</b>	<i>kīndōrōks</i>	<i>kīndōrdōks</i>	<i>pēgalōks</i>	<i>pēgaldōks</i>

It is also common that nominals exhibit different stem grades within the paradigm. This so-called gradation or grade alternation in Livonian "concerns words having both a short nuclear vowel and a heavy coda in the first syllable of strong-grade forms. A heavy coda is produced with the broken tone or it contains a phonetically half-long or full-long vowel or consonant in syllables with the plain tone. In weak-grade forms coda is either absent or light. [W]eak-grade forms have a long vowel in the second syllable if the first syllable is short or in the first syllable if this syllable is long" (Viitso 2007 : 45).

Consider, for instance, the forms in table 3:

Table 3

#### Comparing weak and strong stems in Livonian nominals<sup>14</sup>

Nom. sing.	Nom./gen. pl. Weak stem	Part. sing. Strong stem	Gloss
<i>kalā</i>	<i>kalā-d</i>	<i>ka'll-ō</i>	'fish'
<i>aigā</i>	<i>aigā-d</i>	<i>a'ig-ō</i>	'edge; shore'
<i>lil</i>	<i>lilō-d</i>	<i>lill-ō</i>	'stem of an umbellifer'
<i>ouk</i>	<i>ōkō-d</i>	<i>ouk-ō</i>	'hole; pit'

In these examples, gradation can involve alternations in: the length of a stem consonant (*ka $\bar{l}$ ād ~ ka'llō*); the length of the stem vowel in the first syllable (*l $\bar{l}$ ōd ~ lillō*); the length of the stem-final vowel and that of the case(/number) ending (*aigād ~ a'igō*); the quality of a vowel in the first syllable (*ōkōd ~ oukō*) and in tone (*aigād ~ a'igō*). Many lexemes exhibit more than one of these alternations. Importantly, on consideration of the extensive discussion in Viitso 2007, it does not appear as though it can be predicted with certainty whether a lexeme exhibits grade alternation, or what the different stem shapes of a nominal are, with knowledge of a single form alone. Instead, gradation differences are inherently referential; the existence of different grade forms and their distribution can be known only with reference to (certain) other wordforms in the inflexional paradigm.

Viitso and Ernštreits (2012) take into account all the inflexional variation that is found within a paradigm — both suffixal and stem alternations

<sup>14</sup> Table adapted from Viitso 2007 : 46.

— and use this to identify different inflexion classes. For instance, the inflexion patterns in the exemplary paradigm of *kalā* 'fish' are also found in lexemes such as *arā* 'area', *bolā* 'high, tall' and *munā* 'egg'. Despite apparent similarities in the nominative singular form (ending in *-ā*), however, lexemes such as *tubā* 'room; house' and *aigā* 'edge' follow slightly different inflexional patterns:

Table 4

Livonian nominals <i>kalā</i> , <i>tubā</i> and <i>aigā</i> fully declined						
	<i>kalā</i> 'fish'		<i>tubā</i> 'room; house'		<i>aigā</i> 'edge'	
	Singular	Plural	Singular	Plural	Singular	Plural
Nominative	<i>kalā</i>	<i>kalād</i>	<i>tubā</i>	<i>tubād</i>	<i>aigā</i>	<i>aigād</i>
Genitive	<i>kalā</i>	<i>kalād</i>	<i>tubā</i>	<i>tubād</i>	<i>aigā</i>	<i>aigād</i>
Partitive	<i>ka'llō</i>	<i>ka'ļđi</i>	<i>tu'bbō</i>	<i>tu'd i</i>	<i>ai'gō</i>	<i>a'ig i</i>
Dative	<i>kalān</i>	<i>kalādōn</i>	<i>tubān</i>	<i>tubādōn</i>	<i>aigān</i>	<i>aigādōn</i>
Elative	<i>kalāst</i>	<i>ka'ļšti</i>	<i>tubāst</i>	<i>tu'bšti</i>	<i>aigāst</i>	<i>a'igšti</i>
Inessive	<i>kalās</i>	<i>ka'ļši</i>	<i>tubān</i>	<i>tu'bši</i>	<i>aigās</i>	<i>a'igši</i>
Illative	<i>ka'llō</i>	<i>ka'ļži</i>	<i>tu'bbō</i>	<i>tu'bži</i>	<i>ai'gō</i>	<i>a'igži</i>
Translative-comitative	<i>kalāks</i>	<i>kalādōks</i>	<i>tubāks</i>	<i>tubādōks</i>	<i>aigāks</i>	<i>aigādōks</i>

On the model of *kalā*-type nominals, the full paradigm of *munā* can be deduced with certainty. On the model of either *tubā* or *aigā*, on the other hand, some forms may be incorrectly deduced. For instance, in *kalā*-type nominals, we find the lengthening of the stem consonant *-l-* before the inflexional exponent in the partitive and illative cells in the singular (with attendant alternation in tone), and the palatalization of this (short) consonant in the partitive, elative, inessive and illative cells in the plural. In the paradigm of *tubā*, on the other hand, whilst we find the lengthening of the stem-final consonant and the alternation in tone in the second stem, in the partitive, elative, inessive and illative cells in the plural the consonant *-b-* does not palatalize. On the other hand, in the paradigm of *aigā*, we find no length alternations in the stem-final consonant in the relevant singular forms and no palatalization in the relevant plural forms. In this way, where a language-user inflects *munā* on the model of either *tubā* or *aigā*, they will produce (certain) incorrect forms. For instance, the correct illative plural form of *munā* is *mu'ņži*, but on the model of *tubā* or *aigā* the form *\*mu'nži* might instead be produced.

Where a learner looks up the lexeme *munā* in the Livonian dictionary, of course, the principal parts offered as part of the entry will provide sufficient information to determine that this nominal belongs to the *kalā* declension.<sup>15</sup>

What should be clear from the three different sub-types discussed briefly here is that they may be analysed as belonging to a larger declension class, in which the following archistructure may be identified:

<sup>15</sup> In the online version of the dictionary, a link is provided with lexical entries which takes the student to the exemplary paradigm on the model of which other forms of the lexeme may be deduced.

Archistructure for <i>kalā</i> , <i>tubā</i> and <i>aigā</i> nominals		
	Singular	Plural
Nominative	[STEM1]	[STEM1]- <i>d</i>
Genitive	[STEM1]	[STEM1]- <i>d</i>
Partitive	[STEM2]- <i>õ</i>	[STEM2]- <i>i</i>
Dative	[STEM1]- <i>n</i>	[STEM1]- <i>d-õn</i>
Elative	[STEM1]- <i>st</i>	[STEM2]- <i>šti</i>
Inessive	[STEM1]- <i>s</i>	[STEM2]- <i>ši</i>
Illative	[STEM2]- <i>õ</i>	[STEM2]- <i>ži</i>
Translative-comitative	[STEM1]- <i>ks</i>	[STEM1]- <i>d-õks</i>

Although this structure does not give us sufficient information about some of the exact stem shape alternations exhibited by the forms in these paradigms, it does provide a template which, given knowledge of two principal parts which are characterized by different stem shapes, may be exploited in the deduction of the rest of the forms in the inflexional paradigm. The declensions identified by Viitso and Ernštreits (2012) capture these sorts of archistructure.

Pedagogically, this is a concise way to capture the extensive inflexional variation found in the Livonian nominal system. However, as has been demonstrated in the more recent literature on the production and interpretation of morphologically-complex forms, this sort of description, whilst very useful for L2 learners, does not necessarily accurately capture the means that are actually utilized by language-users in the production of novel forms. Moreover, as has already been pointed out in §2.2, the task of the language-user is slightly different to that of the learner, a distinction not captured in a classical abstractive approach. It should be noted, therefore, that the pedagogical paradigms identified in the Livonian dictionary are themselves *a b s t r a c t i o n s*, and that "[c]lass assignment [of lexemes] is a meta-task performed by linguists for descriptive and pedagogical purposes" (Blevins 2016 : 180). As I will suggest in the following section, language-users may use non-optimal patterns or even utilize more than one type of exemplary model in the production of certain inflected forms. Whilst the work conducted by Viitso and Ernštreits (2012) is of vital use to the L2 language learner, the more proficient language-user must make use of whatever inflexional patterns they are able to, given that they will not (always) learn new lexemes along with their diagnostic principal parts.

#### 4.0. A language-user abstractive perspective on Livonian nominals

The abstractive perspective of Livonian declension classes outlined here complements that of Viitso and Ernštreits (2012). The perspective presented here intends to more accurately identify some of the less optimal implicative means that might nonetheless be exploited by language-users in the production of novel forms and which are therefore not necessarily captured in previous work.

#### 4.1. Errors in the extension of analogical patterns

In §3 it was mentioned that the lexeme *munā* has to be assigned to the *kalā*-class of nominals in order for the language-user to deduce all other forms in the paradigm correctly. Certainly, it is likely that an L2 language learner will make extensive reference to a dictionary such as that of Viitso and Ernštreits (2012) and therefore rote-learn sufficient information to assign *munā* to the correct declension class. However, in real life situations, where a language-user does not have a dictionary to hand, they may have to deduce novel inflected forms from whatever information is known to them, even if this does not include diagnostic principal parts. In fact, there is evidence to suggest that "a speaker's knowledge of a range of linguistic phenomena is at least in part probabilistic in nature" (Blevins 2006 : 193, emphasis added). That is, speakers do not always have access to all the information required for the deduction of the expected novel inflected form, and must instead rely on other means of producing a form (whether or not it is the 'correct' one) which is likely, but not guaranteed, to be correct.

Consider, for instance, the information required to deduce the correct partitive singular form of the lexeme *kūja* 'dryness'. Utilizing the Livonian dictionary, one would simply locate the lexical entry and make reference to the relevant exemplary paradigm. In the Livonian dictionary online, this would lead the reader to the exemplary paradigm number 21 for the lexeme *lēba* 'bread'. The patterns exhibited by this nominal provide sufficient information for a language-user to identify a proportional or four-part analogy from which the partitive singular of *kūja* might be deduced: *lēba* : *leibō*, *kūja* : *X*, *X* = *kuijō*. In the paradigm of *lēba*, we find an alternation of the final *-a* with a final *-ō*, whilst the stem undergoes an alternation whereby the long vowel found in the nominative singular form alternates with a diphthong *-ei-* in the partitive singular form. These inflexional variations may be identified and the abstract patterns may be extended to the novel form *kūja*.

However, as mentioned above, the language-user may not always have knowledge of precisely the right forms in the paradigm that are informative about the production of other target forms in the paradigm. For instance, the lexeme *lōja* 'boat', although it belongs to the same declension (though not the same sub-type) as *lēba*, does not provide the correct sort of implicative information in the formation of the partitive singular form of *kūja*: *lōja* : *laijō*, *kūja* : *X*, *X* = *\*kaijō*.<sup>16</sup> It is for precisely this reason that Viitso and Ernštreits (2012) identify sub-classes within larger declensions, since these capture the more specific types of inflexional variation exhibited by Livonian nominals.

Here, therefore, consideration of the nominative singular form *kūja* alone does not indicate with certainty whether this nominal should not follow the same inflexional pattern as *lēba* or *lōja*. Only reference either to a dictionary (and therefore to the principal parts of this lexeme) or to another (diagnostic) form in the paradigm permits a language-user to determine that *\*kaijō* is not the correct partitive singular form. It is therefore not always possible for language-users to determine the inflexion class of a given knowledge of a single form in a lexeme's paradigm.<sup>17</sup>

<sup>16</sup> My thanks to an anonymous reviewer for bringing this example to my attention.

<sup>17</sup> Such as assumption is, of course, implicit in the work conducted by Viitso and Ernštreits (2012), hence the necessity of identifying principal parts.

I suggest that it is unlikely that the proficient language-user in particular will be familiar with only one form of a given lexeme. Instead, it is possible, and even probable, that, for many nominals, more than a single form will have been encountered and/or stored, and that these, though they may not be diagnostic (and may not therefore permit the language-user to perfectly determine the inflexion class to which the lexeme belongs), will provide at least some information about other inflected forms in the paradigm. In fact, depending on the forms that are stored, I suggest it is even likely, given the presence of cross-cutting patterns of inflexional variation in Livonian, that just two forms will permit a language-user sufficient information to have a good go at determining an unknown form.

Firstly, consider the nominative and genitive functions in the singular. For most lexemes, these functions are encoded by the same form and there are no sub-word discriminative alternations which differentiate nominative singular from genitive singular. Where these two functions are distinguished, it is not by affixal material, but by means of full-form alternations.<sup>18</sup>

In the Livonian dictionary, reference to an exemplary paradigm would provide sufficient information to determine whether or not a novel lexeme exhibits morphophonological alternations in the genitive singular and nominative singular cells. However, without ready reference to pedagogical material, the language-user is presented with some uncertainty regarding the formation of the genitive singular with knowledge of only the nominative singular form of a lexeme.

Table 6

**Nominative singular and genitive singular forms of selected Livonian nominals<sup>19</sup>**

Gloss	'rooster'	'fish'	'top'	'hand'	'fire'	'hot'	'woman'	'axe'
Nom.sg.	<i>kik</i>	<i>kalā</i>	<i>ladā</i>	<i>ke'ž</i>	<i>tu'l</i>	<i>tu'ļļi</i>	<i>nai</i>	<i>kīraz</i>
Gen.sg.	<i>kik</i>	<i>kalā</i>	<i>ladā</i>	<i>kā'd</i>	<i>tu'l</i>	<i>tuļiz</i>	<i>naiz</i>	<i>kīrř</i>

Four of the eight lexemes given here do not distinguish nominative singular and genitive singular functions morphologically. That is, in 50% of instances presented in table 6, knowledge of the nominative singular form determines absolutely the shape of the genitive singular form. In this way, for four of the lexemes given above, the genitive singular form can be deduced for certain given knowledge of the nominative singular form alone. In the other lexemes in table 6, on the other hand, this is not possible. As a result, it is equally likely that: a) the genitive singular form will be different from the nominative singular, and b) the two functions will be encoded by the same form. Thus, if a speaker wants to produce a genitive singular the same shape as the nominative singular, they are likely to guess the correct form only half of the time. On average, therefore, the likelihood

<sup>18</sup> The difference in forms such as nominative singular *nai* 'woman' and genitive singular *naiz* might be analysed as the suffixation of a genitive exponent *-z*. In traditional accounts this is not analysed as an affix (since the *-z* historically descends from a distinct stem shape); it is not clear on consideration of the evidence available what status it has for Livonian speakers in the modern language.

<sup>19</sup> Adapted from Viitso 2007 : 52.

that a speaker will correctly determine whether the genitive singular form is the same as or distinct from that of the nominative singular is decreased.<sup>20</sup>

This observation, however, glosses over the different types of alternation found in the paradigms of individual lexemes where the nominative singular and genitive singular forms are distinct. That there are various inflexional differences exhibited by these lexemes will only increase the uncertainty of determining the shape of an unknown genitive singular form. For instance, there is a large declension of nominals which exhibit an alternation  $-\emptyset/-z$  (as exemplified by *nai* in table 6) in the nominative singular and genitive singular forms respectively. In other forms with nominative singulars ending in *-i*, although a speaker may deduce that the genitive singular form ends in a *-z*, there will be less certainty about the attendant shape of the lexical stem:

Table 7

<i>i</i> -stem nominative singular and genitive singular forms					
	'woman'	'hot'	'holey'	'insect'	'suitable'
Nom.sg.	<i>nai</i>	<i>tu'ļļi</i>	<i>ouki</i>	<i>kukki</i>	<i>paṛī</i>
Gen.sg.	<i>naiz</i>	<i>tuļiz</i>	<i>ōkiz</i>	<i>kukīz</i>	<i>paṛīz</i>

In the paradigms of *nai* and *paṛī*, there are no stem alternations, and so only the marker *-z* discriminates nominative singular from genitive singular. In the paradigms of other lexemes, on the other hand, there are also alternations in the stem grade, where the nominative singular is in the strong grade (shaded) and the genitive singular is in the weak grade. Furthermore, in the example *tu'ļļi*, the broken tone alternates with the level tone along with degemination of *-ļļ-*; in *ouki*, the diphthong found in the nominative singular alternates with a long *ō-* in the genitive singular form; finally, in *kukki*, the long *-kk-* of the nominative singular alternates with a short *-k-* in the genitive singular form, and the short vowel *-i-* in the second syllable of the nominative singular alternates with a long vowel *-ī-* in the genitive singular. In this way, there are no consistent stem alternations, across these different lexemes, which co-occur with the alternation of the final sound  $-\emptyset/-z$  which distinguishes the two case functions.

In addition, there are no consistent grade alternations across the language. For instance, although in both *tu'ļļi* and *kukki* we find the degemination of the long consonant across the two cells given in table 7, in forms such as *rikāz* 'rich', the genitive singular form *rikkō* is characterized by a long consonant and the nominative singular by the short equivalent, rather than the other way around. Thus, where a speaker meets a nominative singular form ending in an *-i* and has knowledge of no other forms in the inflexional paradigm, even where it is known that the nominative singular and genitive singular forms are distinct, the uncertainty associated with producing the correct genitive singular form is very high.

<sup>20</sup> This discussion does not take into account the fact that these declensions: a) do not include all the inflexional variation found in all the declensions identified by Viitso and Ernštreits (2012); b) are not populated by the same number of lexical items, and c) certain inflected forms are likely to occur more frequently than others.

There are, however, other patterns which may be utilized in reducing this uncertainty. For instance, the phonological structure of certain forms may provide information about the declension to which a nominal belongs and therefore whether or not the nominative singular and genitive singular functions are encoded by distinct forms or not. For instance, on consideration of nominals in the Livonian dictionary, lexemes with a (bisyllabic) nominative singular form ending in *-a/-ā* all have an identical genitive singular form. In this way, although there is, according to the assessment given above, there is a 50/50 chance of correctly guessing whether the nominative singular and genitive singular forms will be distinct in the singular of the lexemes given in table 6, this uncertainty is completely reduced for *-a/-ā* nominals by reference to the phonological forms of other lexical items in the language. This is not to say, of course, that all nominals with a nominative singular form ending in *-a/-ā* follow exactly the same pattern, as was already discussed in reference to the lexeme *kūja*. However, knowledge of the nominative singular form, as well as reference to the inflexional paradigms of other forms with the same phonological structure, does provide sufficient information about the archistructure of the inflexion class (see table 5) and to know that the nominative singular and genitive singular functions are encoded by an identical form regardless of the sub-class to which the lexeme belongs.

For many lexemes, it is unlikely that language-users will have only one form to refer to in the deduction of novel items; knowledge of more than one inflected wordform in the paradigm can provide yet further information in the deduction of a target form. For instance, consider the following partial paradigms in which the dative singular form is not given in table 8. According to patterns which cut across different declensions, knowledge of the genitive singular (and/or translative-comitative singular) forms almost invariably provides sufficient information to determine the shape of the dative singular:<sup>21</sup>

Table 8

Deducing the dative singular form of certain nominals <sup>22</sup>							
Gloss:	'rooster'	'fish'	'woman'	'hand'	'fire'	'hot'	'axe'
Nom.sg.	<i>kik</i>	<i>kalā</i>	<i>nai</i>	<i>ke'ž</i>	<i>tu'l</i>	<i>tu'ļļi</i>	<i>kīraz</i>
Gen.sg.	<i>kik</i>	<i>kalā</i>	<i>naiž</i>	<i>kä'd</i>	<i>tu'l</i>	<i>tuļiz</i>	<i>kīrrõ</i>
Dat.sg.	??	??	??	??	??	??	??
Trans-com.sg.	<i>kikkõks</i>	<i>kalāks</i>	<i>naižõks</i>	<i>kä'ddõks</i>	<i>tu'lkõks</i>	<i>tuļizõks</i>	<i>kīrrõks</i>

Knowledge of the genitive singular and understanding of the distribution of the dative singular exponents *-n* and *-õn* provide sufficient information to deduce the dative singular form of a nominal. In those lexemes with a genitive singular form ending in a vowel, for instance, the form *-n* is simply concatenated to form the dative singular, e.g., *kalā* ~ *kalān*, *kīrrõ* ~ *kīrrõn*. Where the genitive singular ends in a consonant, the form *-õn*

<sup>21</sup> According to the "Murdekorpus" (<http://www.murre.ut.ee/mkweb/>), there are only 1475 dative singular forms compared to 6038 genitive singular forms. It may therefore be more realistic to suppose that the language-user will be familiar with the genitive singular form of a lexeme but not necessarily with its dative singular form. My thanks to an anonymous reviewer for bringing these counts to my attention.

<sup>22</sup> Adapted from Viitso 2007 : 52.

is found as the dative singular exponent, e.g., *naiz* ~ *naizõn*, *tuļiz* ~ *tuļizõn*.<sup>23</sup>

However, this analysis does not work for the lexemes *kik*, *ke'ž* or *tu'l*. In each of these examples, the rule 'add *-õn* when the genitive singular form ends in a consonant' produces the incorrect forms: *\*kikõn*, *\*kä'dõn* and *\*tu'lõn*, where *kikkõn*, *kä'ddõn* and *tu'llõn* are expected. Reference to the translative-comitative singular form in conjunction with the genitive singular form, however, provides a language-user with extra sufficient which may aid in the deduction of the dative singular, since the dative and the translative-comitative in the singular are almost invariably characterized by the same stem shape. By removing the translative-comitative singular desinence *-(õ)ks* and instead adding *-(õ)n*, the language-user will frequently produce the correct dative singular form:

*kä'ddõks* → *kä'ddõks* (genitive singular *kä'd*, not *\*kädõ* plus translative-comitative *-ks*; the translative-comitative exponent may here be analysed as *-õks*).

*kä'dd-* → *kä'ddõn* dative singular.

*kirrõks* → *kirrõks* (genitive singular *kirrõ*, not *\*kirr* plus translative-comitative *-õks*; the translative-comitative exponent may here be analysed as *-ks*).

*kirrõ* → *kirrõn* dative singular.

The lexeme *tu'l*, however, does not follow these rules:

*tu'lkõks* → *tu'lkõks* (genitive singular *tu'l*, not *\*tu'lk(õ)* plus translative-comitative *-(õ)ks*; the translative-comitative exponent may here be analysed as *-kõks*).

*tu'l* → *\*tu'lõn* (where *tu'llõn* is expected).

Although the patterns identified here hold across the majority of lexemes, therefore, the generalization that the shape of dative singular can be invariably deduced from knowledge of the genitive singular, the translative-singular or both does not hold absolutely. Nevertheless, it appears to hold for a large proportion of nominals and therefore may present an example of an abstract pattern which, although not maximally predictive, provides some information to a language-user about the inflexion of novel items.

Although it is less likely to be necessary (on consideration of the relative frequency of the forms), it is also possible to deduce the genitive singular form from the dative singular. For instance, removing the dative exponents *-n* or *-õn* from the dative singular form will provide a language-user with the genitive singular form (although it is less likely that a language-user will be familiar with the dative singular of a lexeme and not the genitive singular). There is therefore no need to rely on incorrect analogical patterns which lead to the deduction of the correct genitive singular form, such as: *pūraz* 'bite' : *kirrõ*, *puřřõ* : *X*, *X* : *\*tovvõ*. The correct genitive singular form of *tōvaz* 'sky; heaven' is *touvõ*, but the implicational relationship that exists between the nominative singular and genitive singular forms of another lexeme with a nominative singular ending in *-az* is not always sufficient to produce the correct form. However, knowledge of

<sup>23</sup> This patterned distribution of allomorphs may sound in some ways constructive. However, the analysis adopted here is that speakers recognize the regular distribution of these forms across the language and associate the two discriminative inflexional desinences *-õn* and *-n* with dative singular functions.

the dative singular form *touvõn* provides sufficient information about the stem shape that the genitive singular form is characterized by, and therefore does not lead to the application of incorrect proportional analogies.

In the paradigm of then lexeme *kīraz* we find a dative singular form *kīrrõn*. How, then, does a language-user know whether the genitive singular form is *\*kīr* (where long consonants are disallowed word-finally) or *kīrrõ*? Similarly, how do they determine that the genitive singular of the lexeme *kik* is *kik* rather than *\*kikkõ* from the dative singular form *kikkõn*? Here, reference to another form in the paradigm — specifically, the nominative singular, which is the most frequent case-form in Livonian — is essential:<sup>24</sup>

Table 9

<b>Deducing the genitive singular forms of <i>kik</i> and <i>kīraz</i></b>		
	<i>kik</i> 'rooster'	<i>kīraz</i> 'axe'
Nominative singular	<i>kik</i>	<i>kīraz</i>
Genitive singular	<i>kik</i>	<i>kīrrõ</i>
Dative singular	<i>kikkõn</i>	<i>kīrrõn</i>

Throughout the language, the nominative singular and genitive singular forms of nominals are characterized by the same number of syllables.<sup>25</sup> Recognizing this structural pattern, in addition to the implicative relations that exist between nominative, genitive and dative forms in the singular, permits a language-user to correctly deduce the genitive singular forms of both *kik* and *kīraz*. In the first example of *kik*, a speaker may recognize that the nominative singular form *kik* is found 'underlying' the dative singular form. On the model of other implicational patterns exhibited by nominals such as *reṇ* 'groove, gutter', *tām* 'oak' and *paṇ* 'bucket' (which belong to different sub-classes but which exhibit similar abstract patterns between inflected forms), a speaker may deduce that the dative singular form is characterized by a stem the same shape as the genitive singular form (although with a difference in the length of the stem-final consonant).

Table 10

<b>Implicational patterns in the partial paradigms of <i>reṇ</i>, <i>tām</i> and <i>paṇ</i></b>			
	<i>reṇ</i> 'groove, gutter'	<i>tām</i> 'oak'	<i>paṇ</i> 'bucket'
Nominative singular	<i>reṇ</i>	<i>tām</i>	<i>paṇ</i>
Genitive singular	<i>reṇ</i>	<i>tām</i>	<i>paṇ</i>
Dative singular	<i>reṇõn</i>	<i>tāmõn</i>	<i>paṇõn</i>

The genitive singular form has to be monosyllabic, as it must be characterized by the same number of syllables as the nominative singular, and so the dative singular exponent in *kikkõn* may be analysed as *-õn*. Removing this desinence leaves *\*kikk*. The constraint that disallows long word-final

<sup>24</sup> According to the "Murdekorpus" (<http://www.murre.ut.ee/mkweb/>), there are 10606 nominative singular forms. Compare this to 6038 genitive singular forms, for instance.

<sup>25</sup> In the Livonian dictionary online (<http://www.murre.ut.ee/liivi/noomenitybid.html>) I can find only two inflexional sub-types which do not obey this generalization: *neitst* ~ *neitst/neitsõ* 'virgin, maid' and *sīend* ~ *sīend/sīenõ* 'full, having eaten'. Incidentally, both of these subtypes contain only one or two lexemes.

consonants then permits a language-user to deduce that the genitive singular form of this lexeme is identical to that of the nominative singular.

In the paradigm of *kīraz*, there is an alternation in the shape of the stem found in the dative singular when compared to that found in the nominative singular. This stem shape is not predictable from knowledge of the nominative singular form alone, nor even from the implicational patterns exhibited by certain other nominals in the declension (as was discussed above in reference to *tōvaz*). However, knowledge of the dative singular provides sufficient information to determine the shape of the genitive, whilst reference to the nominative singular form, in a similar way to that discussed above in reference to *kik*, provides information about the number of syllables found in the genitive singular form (and therefore what to delete from the dative singular form in order to produce the correct genitive singular form). In this way, a speaker who knows the nominative singular *kīraz* may determine that the genitive singular must be disyllabic, but that it exhibits a stem shape the same as that which is found in the dative singular form *kirrõn*. This permits the language-user to abstract away the final *-n* of the dative singular form as the dative exponent and analyse what is left as the genitive singular form.

The patterns discussed here hold not only across smaller sub-types of nominals, but also across certain declensions. For many nominals, reference to certain fully-inflected forms in the paradigm provides at least some, if not all, necessary information about another form of the lexeme, even though this information is not always sufficient to determine the declension class to which the form belongs. In §4.3 I will offer a list of the other implicational relations which tend to hold across the declension classes identified in the Livonian dictionary.<sup>26</sup>

## 4.2. Alternating forms in Livonian nominals

In this section I hope to provide some evidence for the psychological reality of the cross-cutting patterns which, as was argued in the section above, exist in the Livonian nominal system. That is, I hope to demonstrate that language-users occasionally get confused about the inflexional patterns which a lexeme will follow, and introduce errors into the language which gradually become accepted. This is because the abstract patterns that are exploited in the production of novel forms are in some way real for speakers. This is reflected in the alternating behaviour found in certain cells of a handful of Livonian lexemes:

Table 11

Alternating forms in selected Livonian nominals				
Nom.sg.	<i>āiga</i> 'time'	<i>sīlma</i> 'eye'	<i>kānga</i> 'shoe'	<i>ārga</i> 'ox'
Nom./gen.pl.	<i>āigad</i>	<i>sīlmad</i>	<i>kāngad</i>	<i>ārgad</i>
Part. pl.	<i>aigi</i>	<i>sīlmi</i>	<i>keṅgi</i>	<i>eṅgi</i>
In.pl.	<i>āigis</i> ~ <i>aigši</i>	<i>sīlmis</i> ~ <i>sīlṃši</i>	<i>kāngis</i> ~ <i>keṅgši</i>	<i>ārgis</i> ~ <i>eṅgši</i>
El.pl.	<i>āigist</i> ~ <i>aigšti</i>	<i>sīlmist</i> ~ <i>sīlṃšti</i>	<i>kāngist</i> ~ <i>keṅgšti</i>	<i>ārgist</i> ~ <i>eṅgšti</i>
Ill.pl.	<i>āigiž</i> ~ <i>aigži</i>	<i>sīlmiž</i> ~ <i>sīlṃži</i>	<i>kāngiž</i> ~ <i>keṅgži</i>	<i>ārgiž</i> ~ <i>eṅgži</i>

<sup>26</sup> The discussion offered in this section could be recast in terms of the information-theoretic notion *entropy*. See, for instance, the work conducted by Ackerman, Blevins and Malouf (2009) and Milin, Kuperman, Kostić and Baayen (2009).

Each of the plural internal local case forms of these lexemes is overabundant. That is, two forms occupy single cells where only one form is expected. Each of these forms is given in the Livonian dictionary online, which indicates that each variant must be grammatically acceptable to at least some degree. From consideration of the patterns exhibited by other nominals with a nominative singular in *-a/-ā*, it is clear that these forms are each derived on the model of different inflexional patterns belonging to different declensional sub-types. For instance, consider the plural paradigms of *amā* 'all, whole, entire' and *izā* 'father':

Table 12

<i>amā</i> and <i>izā</i> fully declined in the plural		
Nominative singular	<i>amā</i> 'all, whole entire'	<i>izā</i> 'father'
Nominative/genitive plural	<i>amād</i>	<i>izād</i>
Partitive plural	<i>ä'm i</i>	<i>i'ž i</i>
Dative plural	<i>amādõn</i>	<i>izādõn</i>
Inessive plural	<i>ä'mši</i>	<i>izīs</i>
Elicative plural	<i>ä'mšti</i>	<i>izīst</i>
Illative plural	<i>ä'mži</i>	<i>izīž</i>
Translative-comitative plural	<i>amādõks</i>	<i>izādõks</i>

It appears as though both of these inflexional patterns — one in which the internal local case forms in the plural occur with the strong stem (*amā*) and one in which the internal local case forms in the plural occur with the weak stem (*izā*) — are both real for speakers. Both inflexional patterns appear to be acceptable for the lexemes in table 11: one based on the strong stem (on the model of *izā*-type nominals) and one based on the weak stem (on the model of *amā*-type nominals):

Table 13

Inflexional patterns in the paradigms of <i>āiga</i> , <i>silma</i> , <i>kānga</i> and <i>ārga</i>								
Stem type:	strong	weak	strong	weak	strong	weak	strong	weak
In.pl.	<i>āigis</i>	<i>aigši</i>	<i>silmis</i>	<i>siļmši</i>	<i>kāngis</i>	<i>keņģši</i>	<i>ārgis</i>	<i>eŗģši</i>
El.pl.	<i>āigist</i>	<i>aigšti</i>	<i>silmist</i>	<i>siļmšti</i>	<i>kāngist</i>	<i>keņģšti</i>	<i>ārgist</i>	<i>eŗģšti</i>
Ill.pl.	<i>āigiž</i>	<i>aigži</i>	<i>silmiž</i>	<i>siļmži</i>	<i>kāngiž</i>	<i>keņģži</i>	<i>ārgiž</i>	<i>eŗģšti</i>

The pedagogical approach lists these nominal types as sub-classes, but this to some extent glosses over the underlying reason for the variation found in the paradigms of these lexemes. In the examples given in tables 11 and 13 above, the variation found in the plural internal local case forms indicates that, in certain instances, language-users do not always have sufficient information to determine whether these forms are characterized by the weak or strong stem of the nominal — that is, whether the lexeme will follow the inflexional patterns exhibited by *amā*- or *izā*-type nominals. Knowledge of one other plural internal local case form provides sufficient implicational information to determine the shape of the remaining internal local case forms in the plural, but where one of these is not known, the speaker has to choose between two equally valid options and will sometimes choose incorrectly. The result is the variation seen in the inflexional paradigms of these lexemes.

Examples such as these provide evidence for the suggestion presented here, that speakers do not and cannot just rely on exemplary paradigms and principal parts to deduce the remaining forms in a lexeme's paradigm, but instead must utilize whatever information they have available to them in the production of novel forms.

#### **4.3. Implicational generalizations in the Livonian nominal system**

To conclude this section, I will list some of the implicational patterns that are found across the Livonian nominal system which may provide information in the deduction of (certain) inflected wordforms, regardless of the declension to which the lexeme belongs. Further study may provide further insight into the sorts of information that is useful to Livonian speakers in language use.

1. the dative singular form is always characterized by a final  $-(\tilde{o})n$ ; the nominative/genitive plural form is always characterized by a final  $-D$ :  $-t$  follows a sibilant and  $-d$  occurs elsewhere;
2. the dative plural form is always characterized by a final form  $-\tilde{o}n$  which occurs with a stem the same shape as the nominative/genitive plural form;
3. the translative form always ends in  $-(\tilde{o})ks$  or  $-k\tilde{o}ks$  (the distribution of these forms is morphologically determined);
4. the partitive plural form always ends in  $-(D)i$ ;
5. in the plural, the sibilants found in the internal local case forms are palatalized, except where another palatalized sibilant precedes the inflexional ending;
6. the nominative singular and genitive plural forms are almost invariably characterized by the same number of syllables within a declension;
7. the nominative plural and genitive plural functions are always encoded by the same form;
8. where a partitive singular form ends in  $-\tilde{o}$  (not  $-D\tilde{o}$ ), the illative singular form will be identical;
9. where the genitive singular form ends in a final  $-\tilde{o}$  and the illative singular ends in  $-\tilde{o}$ , the illative singular form can take an optional final  $-z$ ;
10. the elative form can always be deduced from the inessive form by the addition of a  $-t$  immediately following the sibilant of the inessive form (in both singular and plural);
11. similarly, the inessive form can always be deduced from the elative form by the omission of the  $-t$  immediately following the  $-s/-\check{s}$  of the elative form (in both singular and plural).

Whilst the pedagogical approach of Viitso and Ernštreits (2012) captures the most informative patterns that may be used in production of novel inflected forms, the observations given in this study may be considered complementary, and represent at least some of the other means that are available to a language-user, who may be unfamiliar with the diagnostic forms of a lexeme, in the production of novel forms. Consideration of these supplementary informative patterns provides extra support for a pedagogical approach to the Livonian data, but may more accurately capture how proficient speakers deduce new forms.

## 5.0. Concluding remarks

Both the approach adopted here as well as that of Viitso and Ernštreits (2012) count as abstractive accounts of the Livonian nominal system. The purposes for which these studies have been undertaken, on the other hand, differ slightly. In Viitso and Ernštreits 2012, exemplary paradigms and principal parts are intended to capture patterns that exhaustively represent the types of variation found in nominals (as well as verbs, pronouns, etc.) in order to provide sufficient information for a student to analogically deduce the inflexion class of a novel item. The observations offered here, on the other hand, are intended to demonstrate that there are inflexional patterns intersecting those identified in the Livonian dictionary which often provide additional information that aids a language-user in the production of novel inflected forms.

It should be noted here that Viitso and Ernštreits (2012) do not suggest that their analysis represents perfectly the way that fluent (or native, while they were yet living) speakers of Livonian deduced unknown forms. Their work is intended as a tool for learning in a similar way to many other grammars. This study, therefore, hopes to situate the pedagogical approach within a more psychologically real analysis of the types of inflexional variation that might prove informative for a language-user.

The observations offered here represent an initial attempt to identify and describe the types of non-exemplary implicative information that may be used by speakers in language use. Future work might investigate the errors that are made by speakers in order to determine whether there are other inflexional patterns that are generalizing, perhaps to the detriment of others, in the language. Of course, with no native speakers living, such investigations may be limited, but those proficient in the language may still provide interesting subjects of study in mapping the ways in which speakers produce novel forms, particularly when only one form of a lexeme is known.

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*ЗЕПРИНА-ДЖАЗ ЭЙНСВОРТ* (Оксфорд)

#### **ТИПЫ СКЛОНЕНИЯ В ЛИВСКОМ ЯЗЫКЕ — АБСТРАКТНЫЙ ПОДХОД ПОЛЬЗОВАТЕЛЯ ЯЗЫКОМ**

В статье представлены результаты исследования словоизменительных типов ливского языка, которые подтверждают данные методико-педагогического анализа в Viitso, Ernštreits 2012. В исследовании выделены и проанализированы дополнительные словоизменительные модели, которые помогают обучающемуся при выведении новых словоформ. Данные модели могут использоваться наряду с абстрактными моделями, на которых основана система основных форм и образцы словоизменения, представленные в словаре ливского языка.