

# COMPARING INFLECTIONAL STRUCTURE ACROSS A DIALECT GROUP: VERB MORPHOLOGY IN THE ‘CROISSANT LINGUISTIQUE’

MAXIMILIEN GUÉRIN<sup>1</sup>, LOUISE ESHER<sup>2</sup>,  
JEAN LÉO LÉONARD<sup>3</sup>, SYLVAIN LOISEAU<sup>4</sup>

**Abstract.** Our paper illustrates the application of tools developed for the formal modelling of individual inflectional systems (in particular, stem space analysis), to the description of inflection across a dialect group, in this case the transitional area between northern and southern Gallo-Romance varieties, traditionally termed ‘Croissant linguistique’. Such tools provide a means of direct and efficient comparison between the paradigmatic distribution of exponents in different speech varieties: in the case of the Croissant, the organisation of roots, desinences and thematic material all indicate consistent subgroupings of varieties. The study demonstrates the practicality and value of such descriptors even in a minority or endangered language context where data may be scarce and highly variable.

**Keywords:** verb inflection; stem spaces; dialect continuum; morphology; dialectology; Croissant linguistique; Gallo-Romance.

## 1. INTRODUCTION<sup>5</sup>

Our paper explores how tools developed for the formal modelling of individual inflectional systems may be fruitfully applied to the description of inflection in a dialect group. Traditional dialectology and current theoretical frameworks within inflectional morphology overlap in seeking to account for the phonological realisation of inflectional exponents, and the inventory of functional (morphosyntactic and morphosemantic) categories available in inflection. However, theoretical approaches to inflection additionally seek to capture the structure of the inflectional system itself, by attending to phenomena such as the paradigmatic

<sup>1</sup> CNRS-HTL laboratory (Histoire des Théories Linguistiques, UMR 7597), [mguerin.ling@gmail.com](mailto:mguerin.ling@gmail.com).

<sup>2</sup> CNRS-LLACAN laboratory (Langage, Langues et Cultures d’Afrique, UMR 8135), [louise.esher@cnrs.fr](mailto:louise.esher@cnrs.fr).

<sup>3</sup> Université Montpellier 3 & Dipralang laboratory (EA 739), [jean.leonard@univ-montp3.fr](mailto:jean.leonard@univ-montp3.fr).

<sup>4</sup> Université Sorbonne Paris Nord & CNRS-Lacito laboratory (Langues et civilisations à tradition orale, UMR 7107), [sylvain.loiseau@univ-paris13.fr](mailto:sylvain.loiseau@univ-paris13.fr).

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distribution of exponents and the organisation of lexemes into inflectional classes (see e.g. Stump 2001, 2016, Bonami 2014). Consideration of such phenomena is equally of value to dialectological research: formal descriptors of the organisation of inflectional systems provide an illuminating basis for typological comparison (Stump & Finkel 2013), including for minority and less-resourced languages, as our paper illustrates.

Our case study focuses on the central Gallo-Romance area traditionally termed *Croissant linguistique* (i.e. ‘Linguistic Crescent’, in reference to its roughly crescent-like shape), a transitional zone between Oc and Oïl varieties (Tourtoulon & Bringuier 1876, Ronjat 1913, Brun-Trigaud 1990). For each of six survey points located across the Croissant area, we describe the inflectional morphology of the verb, using analytical methods and schematic representations inspired by stem space analysis (Bonami & Boyé 2002, 2003, 2014, Bonami 2014). The individual formalisations identify key structural principles of the inflectional system in each variety; comparing these formalisations highlights how these principles group varieties together, and thus provides a genuinely morphological perspective on relations among dialects.

## 2. DATA AND METHODS

### 2.1. Data

The data used for our study were elicited in fieldwork interviews conducted between 2016 and 2019 as part of a wider project documenting the varieties of the Croissant (see e.g. Esher *et al.* 2021), which are today highly endangered. The use and transmission of Croissant varieties has drastically reduced in favour of French, due to a combination of language policy and rural exodus (Guérin 2022). Currently, the majority of native speakers are aged 70 or over, all speakers are fully bilingual with French, and speakers are sparsely distributed across geographical localities. As well as having limited contact with other speakers, fieldwork informants typically did not perceive their individual varieties as forming part of a wider language group, and thus speaker intuitions about the structure of the dialect continuum were limited to perception of difference between their own variety and any other.

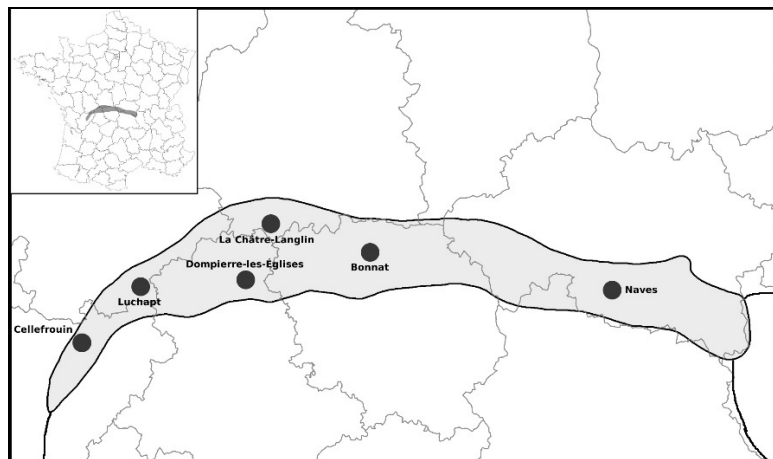


Figure 1 – Location of the Croissant within France; survey points within the Croissant.

The survey points chosen for this study, shown in Figure 1, are Dompierre-les-Eglises (Haute-Vienne), Cellefrouin (Charente), Bonnat (Creuse), Luchapt (Vienne), La Châtre-Langlin (Indre) and Naves (Allier), representing a range of varieties across the Croissant area for which fieldwork data were available. For each survey point, complete inflectional paradigms were obtained for 22 verb lexemes via bilingual elicitation. The fieldwork questionnaire comprised the French items *chanter* ‘sing’, *lier* ‘bind’, *couver* ‘incubate’, *acheter* ‘buy’, *aller* ‘go’, *blanchir* ‘whiten’, *couvrir* ‘cover’, *partir* ‘leave’, *vendre* ‘sell’, *avoir* ‘have’, *être* ‘be’, *pouvoir* ‘be able’, *vouloir* ‘want’, *savoir* ‘know’, *devoir* ‘have to’, *faire* ‘do’, *venir* ‘come’, *tenir* ‘hold’, *dire* ‘say’, *croire* ‘believe’, *prendre* ‘take’ and *voir* ‘see’, selected to illustrate a range of frequent and/or prominent conjugational types occurring in central Gallo-Romance; in practice, all responses were cognate with the French items. Interviews were recorded by the fieldworkers, and our analysis is based on broad IPA transcriptions of the recorded forms. For the purposes of the study, we exclude non-finite forms (i.e. the infinitive and participles) from consideration, as the morphological behaviour of these items is liable to show idiosyncratic divergence from that of finite forms (see e.g. Bach & Esher 2013). We nevertheless recognise that empirical investigation of the behaviour of non-finite forms constitutes a topic of potential interest and value for future research.

## 2.2. Theoretical analysis

Our analysis is based on the concept of stem spaces (Bonami & Boyé 2002, 2003), developed for French as a means of visualising the paradigmatic distribution of root allomorphy and the default inheritance relationships between roots. Stem space diagrams identify areas of the inflectional paradigm which are perfectly predictable across all lexemes (typically because they share a root), and thus furnish a practical characterisation of the distribution of root allomorphy. Because stem space diagrams focus on exceptionless generalisation, they are not equipped to capture contrasting implicational relationships which are true for subsets of lexemes, although stem graphs or default inheritance trees can be used to visualise relationships between the individual partitions of the stem space (see Bonami 2014 for a critical review of this approach, also Stump & Finkel 2013).

For the purposes of the analysis, we isolate maximally general root, desinential and thematic allomorphs, the distribution of which would be described via blocks of competing rules within a realisational framework such as Paradigm Function Morphology (Stump 2001, 2016). Note that our study is concerned with the paradigmatic distribution of exponents as opposed to sub-word-level relationships between form and function, and thus our segmentation should be understood purely as an abstract, analytical device scaffolding consistent and principled comparison between the inflectional systems examined here: the segmented units are simply phonological substrings.<sup>6</sup>

<sup>6</sup>See Spencer (2012) for the lack of empirical criteria discriminating between stems and desinences; and Blevins (2006) for the view that inflectional exponents conventionally referred to as ‘stems’ and ‘desinences’ exist not as distinct objects but as abstract generalisations across multiple wordforms.

### 3. THE INFLECTIONAL SYSTEM OF THE VARIETY OF BONNAT

We illustrate our method with reference to the variety of Bonnat. Illustrative paradigms for [ʃãta] ‘sing’, [bjãfir] ‘whiten’ and [døvre] ‘have to’ are shown in Tables 1, 2 and 3 respectively: note that stress is phrase-final, as in French, and is thus not pertinent for inflection in synchrony; and that clitic subject pronouns are ordinarily required for finite verb forms in the absence of a full noun subject.

These lexemes represent the three major conjugational types traditionally distinguished for southern Gallo-Romance: the a-type continuing the Latin first conjugation, the i-type continuing the Latin fourth conjugation, and the r-type collapsing reflexes of the Latin second and third conjugations. The exemplar lexemes also illustrate the different extents to which root allomorphy is present: some lexemes, such as [ʃãta] ‘sing’, display little or no root allomorphy, while others, such as [døvre] ‘have to’, display extensive root allomorphy.

Table 1

Finite synthetic forms of [ʃãta] ‘sing’

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i ʃãt	i ʃãtɔv	i ʃãt	i ʃãte	i ʃãtes	i ʃãtre	i ʃãtri
2SG	tə ʃãt	tə ʃãtɔva	tə ʃãt	tə ʃãtera	tə ʃãtesa	tə ʃãtra	tə ʃãtərja
3SG	u/al ʃãt	u/al ʃãtɔv	u/al ʃãt	u/al ʃãte	u/al ʃãtes	u/al ʃãtər	u/al ʃãtri
1PL	nə ʃãtẽ	nə ʃãtɔvẽ	nə ʃãtẽ	nə ʃãterẽ	nə ʃãtesẽ	nə ʃãtrẽ	nə ʃãtərjẽ
2PL	u ʃãte	u ʃãtɔve	u ʃãte	u ʃãtere	u ʃãtese	u ʃãtre	u ʃãtərje
3PL	u/al ʃãtẽ	u/al ʃãtɔvẽ	u/al ʃãtẽ	u/al ʃãterẽ	u/al ʃãtesẽ	u/al ʃãtrẽ	u/al ʃãtərjẽ

Table 2

Finite synthetic forms of [bjãfir] ‘whiten’

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i bjãfi	i bjãfis i bjãfisɔv	i bjãfis	i bjãfise	i bjãfises	i bjãfire	i bjãfiri
2SG	tə bjãfi	tə bjãfisja tə bjãfisɔva	tə bjãfis	tə bjãfiserà	tə bjãfisesa	tə bjãfira	tə bjãfirja
3SG	u/al bjãfi	u/al bjãfis u/al bjãfisɔv	u/al bjãfis	u/al bjãfise	u/al bjãfises	u/al bjãfir	u/al bjãfiri
1PL	nə bjãfisẽ	nə bjãfisjẽ nə bjãfisɔvẽ	nə bjãfisẽ	nə bjãfiserẽ	nə bjãfisesẽ	nə bjãfirẽ	nə bjãfirjẽ
2PL	u bjãfise	u bjãfisje u bjãfisɔve	u bjãfise	u bjãfiserè	u bjãfisesè	u bjãfire	u bjãfirje
3PL	u/al bjãfisẽ	u/al bjãfisjẽ u/al bjãfisɔvẽ	u/al bjãfisẽ	u/al bjãfiserẽ	u/al bjãfisesẽ	u/al bjãfirẽ	u/al bjãfirjẽ

Table 3

Finite synthetic forms of [dəvre] ‘have to’

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i dø	i dəv	i dœv	i dədøe	i dədøes	i dəre	i dəri
2SG	tə dø	tə dəvja	tə dœv	tə dədøera	tə dədøesa	tə dəra	tə dərja
3SG	u/al dø	u/al dəv	u/al dœv	u/al dədøe	u/al dədøes	u/al dər	u/al dəri
1PL	nə dəvẽ	nə dəvjẽ	nə dœvẽ	nə dədøerẽ	nə dədøesẽ	nə dərẽ	nə dərjẽ
2PL	u dəve	u dəvje	u dœve	u dədøere	u dədøese	u dərè	u dərjè
3PL	u/al dəvẽ	u/al dəvjẽ	u/al dœvẽ	u/al dədøerẽ	u/al dədøesẽ	u/al dərẽ	u/al dərjẽ

Based on comparison of the forms across verbs, the rightmost elements emerge as personal desinences: exponents which are not systematically shared across members of a single TAM category, but which are shared across TAM categories for the same combination of person and number values.

The personal desinences identified for Bonnat are shown in Table 4. On the left are the series of desinences observed in each TAM category; on the right, the three individual series attested in the paradigm overall. As can be seen from these data, there is no variation across TAM categories for the third person singular and all plural persons, while variation in the first person singular is limited to an opposition between /e/ in the future (series  $\gamma$ ) and no exponent elsewhere, and variation in the second person singular is limited to an opposition between no exponent in the present indicative and subjunctive (series  $\beta$ ), and /a/ elsewhere. The personal desinences are identical for all conjugations.

Table 4

Personal desinences in the variety of Bonnat

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND	$\alpha$	$\beta$	$\gamma$
1SG	—	—	—	—	—	e	—	—	—	e
2SG	—	a	—	a	a	a	a	a	—	a
3SG	—	—	—	—	—	—	—	—	—	—
1PL	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ
2PL	e	e	e	e	e	e	e	e	e	e
3PL	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ	ẽ

From comparison across lexemes and inflected forms, the leftmost exponents of inflectional forms emerge as roots: exponents which are shared across (a subset of) paradigm cells for the same lexeme, but which are not shared across lexemes (with the exception of the formative [i], [is] in the [bjãʃir]-type, which will be considered part of the root). Among the consequences of this segmentation is that it isolates certain exponents as neither roots nor desinences. Such exponents will be termed ‘thematic elements’ or ‘stem formatives’, and include the sequence [əv] found in the imperfect indicative of most

lexemes<sup>7</sup>; a formative with context-sensitive variants [i] and [j] found in the imperfect indicative of other lexemes and the conditional of all lexemes; the formative [r] found in the future and conditional; the formatives [e], [er] found in the preterite; and the formative [ɛs] found throughout the imperfect subjunctive. The distribution of thematic elements is discussed in more detail in section 6.

The distribution of roots in the variety of Bonnat is illustrated in Table 5: note that the symbol [ə] is used as in French, to indicate a mid vowel variably realised [ø] or [œ] according to phonological context, but ordinarily deleted; present subjunctive forms for cognates of *pouvoir* and *vouloir* were not available; present indicative forms for cognates of *être* and, in the singular, *savoir* and *avoir*, were not segmentable and are given in full.

Table 5

## Distribution of root allomorphy in the variety of Bonnat

	PRS.IND. SG	PRS.IND. PL	IPFV.IND	PRS.SBJV. SG	PRS.SBJV. PL	PRT	IPFV.SBJV	FUT	COND
<i>chanter</i>	fāt	fāt	fāt	fāt	fāt	fāt	fāt	fāt	fāt
<i>blanchir</i>	bjāf'i	bjāf'is	bjāf'is	bjāf'is	bjāf'is	bjāf'is	bjāf'is	bjāf'i	bjāf'i
<i>devoir</i>	dø	døv	døv	døv	døv	dødɔ	dødɔ	dø	dø
<i>venir</i>	vē	vən	vən	vən	vən	vədɔ	vədɔ	vē	vē
<i>tenir</i>	tē	tən	tən	tən	tən	tədɔ	tədɔ	tē	tē
<i>dire</i>	di	diz	diz	diz	diz	dis	dis	di	di
<i>prendre</i>	prē	pœrn	pœrn	pœrn	pœrn	prədɔ	prədɔ	prē	prē
<i>voir</i>	vø	vəz	vəz	vəz	vəz	vødɔ	vødɔ	vø	vø
<i>faire</i>	fē	faz	faz	fas	faz	fadɔ	fadɔ	fa	fa
<i>croire</i>	kre	kærz	kærz	kre	kærj	kærdɔ	kærdɔ	kre	kre
<i>pouvoir</i>	pø	pud	pu	—	—	pudɔ	pudɔ	pø	pø
<i>vouloir</i>	vo	vul	vu	—	—	vudɔ	vudɔ	vo	vo
<i>savoir</i>	se/sa/sa	sav	sa	saʃ	saʃ	sadɔ	sob	so	so
<i>avoir</i>	e/a/a	av	a	as	as	adɔ	adɔ	o	o
<i>être</i>	se/e/e	sō/ate/sō	ɛr	sj	sj	fudɔ	fudɔ	sə	sə

A schematic representation of the distribution of roots is provided in Figure 2, in which phonological forms are replaced by abstract, arbitrary indices (i.e. for a given lexeme, each distinct root is represented by a different letter; there is no conventionalised relationship between any given index and the form of the root it represents).

<sup>7</sup> This formative is etymological in reflexes of the Latin first conjugation, e.g. CANTABAM> [fātəv] ‘I sang’. In Bonnat, it is undergoing progressive generalisation across verb lexemes, hence the overabundance in the imperfect indicative of [bjāf'ir] (Table 2) between forms with etymological yod (<(I)EBA-) and forms with analogical /əv/.

	PRS.IND.SG	PRS.IND.PL	IPFV.IND	PRS.SBJV.SG	PRS.SBJV.PL	PRT	IPFV.SBJV	FUT	COND	
<i>chanter</i>	A									
<i>blanchir</i>	A	B						A		
<i>devoir</i>	A	B	C	B	D	A				
<i>venir</i>	A	B	C	B	D	A				
<i>tenir</i>	A	B	C	B	D	A				
<i>dire</i>	A	B				C	A			
<i>prendre</i>	A	B				C	A			
<i>voir</i>	A	B	C	B	D	A				
<i>faire</i>	A	B	C	B	D	E				
<i>croire</i>	A	B	C	D	E	A				
<i>pouvoir</i>	A	B	C	—	—	D	A			
<i>vouloir</i>	A	B	C	—	—	D	A			
<i>savoir</i>	[se/sa/sa]	A	B	C		D	E	F		
<i>avoir</i>	[e/a/a]	A	B	C		D	E			
<i>être</i>	[se/e/e]	[sõ/ate/sõ]	A	B		C	D			

Figure 2 – Schematic representation of stem distribution in the variety of Bonnat.

The indexical representation in Figure 2 facilitates identification of the distributional generalisations which emerge from the data in Table 5. For example, it is systematically the case that the categories future and conditional share a root, which is ordinarily, though not always, shared by the singular present indicative. Consistently, the plural present indicative forms share a root; all imperfect indicative forms share a root; and these two groups of cells commonly have the same root as each other. Singular present subjunctive forms share a root; plural present subjunctive forms share a root; in most verbs, these two groups of cells have the same root as each other, a root which may be unique to the subjunctive, or, more commonly, shared with the imperfect indicative and plural present indicative. All preterite and imperfect subjunctive cells share a root, excepting in a single lexeme, the cognate of *savoir*, for which imperfect subjunctive cells have a unique root. Based on these generalisations, we can set up a stem space for this variety as shown in Table 6, in which each numbered zone represents a group of cells which share a root (even if not contiguous); note that the numbers themselves are merely arbitrary indices. The stem space diagram reveals the extent to which contrasts of root allomorphy in the variety of Bonnat map onto morphosemantic feature contrasts between TAM categories, and the morphosyntactic feature contrast between singular and plural forms.

Table 6

Stem space diagram for the variety of Bonnat

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	1	3	4	6	7	8	
2SG							
3SG							
1PL	2	3	5	6	7	8	
2PL							
3PL							

As noted in section 2.2, the stem space diagram indicates areas of perfect interpredictability between paradigm cells, which apply across all verb lexemes as near-exceptionless generalisations (the only exceptions occurring within the present indicative forms of isolated, high-frequency lexemes: in Bonnat, the cognates of *savoir*, *avoir* and *être*). The stem space analysis thus focuses exclusively on distributional patterns valid for the inflectional system as a whole, partitioning an idealised inflectional paradigm into indivisible sets of interpredictable cells. In practice, the number of distinct zones identified in the stem space is greater than the number of distinct roots observed for any individual lexeme (for example, the stem space for Bonnat is divided into 8 zones, but individual lexemes exhibit between 1 and 6 distinct roots), and the distribution of a given root typically encompasses two or more zones of the stem space.

The stem spaces set out above are not, in isolation, equipped to capture higher-order paradigmatic generalisations about which zones may share a root within the paradigm of a given lexeme, or finer-grained lexical information about patterns of stem distribution characteristic of subsets of verb lexemes (inflectional classes). Yet attempts to capture such generalisations by means of hierarchical diagrams describing default stem inheritance ultimately prove either inadequate or too powerful (see Bonami 2014 for detailed critique). The problem is magnified for the Croissant dataset under examination here: the dataset contains a relatively low number of individual lexemes, many of which instantiate unique groupings of the stem space partitions. In such a context, few if any reliable generalisations can be drawn about the overall or typical relationships between partitions. For this reason, our analysis focuses instead on the stem space, as an empirically robust basis for comparison between varieties.

#### 4. COMPARISON OF DESINENTIAL SYSTEMS WITHIN THE CROISSANT AREA

##### 4.1. Overview of desinential systems

Comparison of the desinential systems observed (illustrated for the cognate of *chanter* ‘sing’ in Tables 7-11)<sup>8</sup> reveals a high degree of uniformity in personal desinences for all six varieties. For a given TAM category, the series of personal desinences identified showed no variation across lexemes, and for a given person/number value, variation of exponents across TAM categories is extremely limited. The modern distributions thus contrast markedly with the Latin system from which they have developed, and in which personal desinences vary consistently with inflectional class and TAM categories. The uniformity of personal desinences across lexemes in Croissant varieties argues for the inflectional class system in these varieties being based principally or solely on stem distribution, as proposed by Stump & Finkel (2013) for French (compare also Martinet 1958, Dubois 1958).

A further immediately striking property of the Croissant systems is the high incidence of SYNCRETISM (Baerman 2007) observed between personal desinences. We hypothesize that the extent of syncretism with respect to person and number values, and the widespread

<sup>8</sup> Note that in several varieties the simple past and imperfect subjunctive are no longer in regular use and could not be elicited for all verbs during fieldwork.



absence of distinctive desinences in singular forms, has been favoured by the obligatory nature of subject pronouns in Croissant varieties.

Table 7

## Finite synthetic forms of [ʃãta] 'sing', Cellefrouin

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i ʃãt	i ʃãtav	i ʃãt	i ʃãti	—	i ʃãtre	i ʃãtri
2SG	ty ʃãt	ty ʃãtav	ty ʃãt	ty ʃãti	—	ty ʃãtra	ty ʃãtri
3SG	u/a ʃãt	u/a ʃãtav	u/a ʃãt	u/a ʃãti	—	u/a ʃãtrɔ	u/a ʃãtri
1PL	nə ʃãtã	nə ʃãtavã	nə ʃãtã	nə ʃãtirã	—	nə ʃãtrã	nə ʃãtərjã
2PL	və ʃãte	və ʃãtave	və ʃãte	və ʃãtire	—	və ʃãtre	və ʃãtərje
3PL	u/a ʃãtã	u/a ʃãtavã	u/a ʃãtã	u/a ʃãtirã	—	u/a ʃãtrã	u/a ʃãtərjã

Table 8

## Finite synthetic forms of [ʃãta] 'sing', Luchapt

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i ʃãt	i ʃãti	i ʃãt	—	—	i ʃãtre	i ʃãtri
2SG	ty ʃãt	ty ʃãti	ty ʃãt	—	—	ty ʃãtra	ty ʃãtri
3SG	ø/al ʃãt	ø/al ʃãti	ø/al ʃãt	—	—	ø/al ʃãtrɔ	ø/al ʃãtri
1PL	nə ʃãtã	nə ʃãtjã	nə ʃãtã	—	—	nə ʃãtrã	nə ʃãtərjã
2PL	u ʃãte	u ʃãtje	u ʃãte	—	—	u ʃãtre	u ʃãtərje
3PL	i/al ʃãtã	i/al ʃãtjã	i/al ʃãtã	—	—	i/al ʃãtrã	i/al ʃãtərjã

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Table 9

## Finite synthetic forms of [ʃãta] 'sing', Dompierre

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i ʃãt	i ʃãtev	i ʃãt	i ʃãte	i ʃãtes	i ʃãtre	i ʃãtri
2SG	tə ʃãt	tə ʃãteva	tə ʃãt	tə ʃãtera	tə ʃãtesa	tə ʃãtra	tə ʃãtrija
3SG	u/al ʃãt	u/al ʃãtev	u/al ʃãt	u/al ʃãte	u/al ʃãtes	u/al ʃãtrɔ	u/al ʃãtri
1PL	nə ʃãtã	nə ʃãtevã	nə ʃãtã	nə ʃãterã	nə ʃãtesã	nə ʃãtrã	nə ʃãtrijã
2PL	u ʃãte	u ʃãteve	u ʃãte	u ʃãtere	u ʃãtesε	u ʃãtre	u ʃãtrije
3PL	i/al ʃãtã	i/al ʃãtevã	i/al ʃãtã	i/al ʃãterã	i/al ʃãtesã	i/al ʃãtrã	i/al ʃãtrijã

Table 10

## Finite synthetic forms of [ʃãta] 'sing', La Châtre-Langlin

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i ʃãt	i ʃãtø	i ʃãt	i ʃãti	i ʃãtis	i ʃãtre	i ʃãtrø
2SG	ti ʃãt	ti ʃãtø	ti ʃãt	ti ʃãti	ti ʃãtis	ti ʃãtra	ti ʃãtrø
3SG	o/al ʃãt	o/al ʃãtø	o/al ʃãt	o/al ʃãti	o/al ʃãtis	o/al ʃãtr	o/al ʃãtrø
1PL	i ʃãtē	i ʃãtjē	i ʃãtē	i ʃãtjē	i ʃãtisjē	i ʃãtrē	i ʃãtərjē
2PL	u ʃãte	u ʃãtje	u ʃãte	u ʃãtje	u ʃãtisje	u ʃãtre	u ʃãtərje
3PL	i/al ʃãtã	i/al ʃãtjã	i/al ʃãtã	i/al ʃãtjã	i/al ʃãtisjã	i/al ʃãtrã	i/al ʃãtərjã

Table 11

Finite synthetic forms of [ʃɛ̃tɛ] ‘sing’, Naves

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i ʃɛ̃tu	i ʃɛ̃tʃjɔ	i ʃɛ̃tʃ	i ʃɛ̃ti	i ʃɛ̃tʃjas	i ʃɛ̃tre	i ʃɛ̃trijɔ
2SG	tə ʃɛ̃taj	tə ʃɛ̃tʃja	tə ʃɛ̃tʃja	tə ʃɛ̃tɛtaj	tə ʃɛ̃tʃjasja	tə ʃɛ̃tra	tə ʃɛ̃trija
3SG	o/lə ʃɛ̃t	o/lə ʃɛ̃tʃjɔ	o/lə ʃɛ̃tʃ	o/lə ʃɛ̃tɛ	o/lə ʃɛ̃tʃjas	o/lə ʃɛ̃trɔ	o/lə ʃɛ̃trijɔ
1PL	nə ʃɛ̃tɛ	nə ʃɛ̃tʃjã	nə ʃɛ̃tʃjɛ	nə ʃɛ̃tɛtɛ	nə ʃɛ̃tʃjasjɛ	nə ʃɛ̃trɛ	nə ʃɛ̃trijɛ
2PL	u ʃɛ̃tɛ	u ʃɛ̃tʃja	u ʃɛ̃tʃja/e	u ʃɛ̃tɛtɛ	u ʃɛ̃tʃjasje/a	u ʃɛ̃tre/a	u ʃɛ̃trija/e
3PL	i/lə ʃɛ̃tɔ	i/lə ʃɛ̃tʃjã	i/lə ʃɛ̃tʃjã	i/lə ʃɛ̃tɛtɔ	i/lə ʃɛ̃tʃjasjã	i/lə ʃɛ̃trã	i/lə ʃɛ̃trijã

#### 4.2. Paradigmatic distribution of desinenes

The distributions observed for personal desinenes fall into four distinct groups, corresponding to western, northern, central and eastern areas. The desinence-series, labelled with arbitrary indices  $\alpha$ ,  $\beta$ , ... are set out in Table 12.

Table 12

Comparison of desinence series in Croissant varieties

	western				northern		central						eastern					
	Cellefrouin		Luchapt		LaCh.L.		Dompierre			Bonnat			Naves					
	$\alpha$	$\beta$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\alpha$	$\beta$	$\gamma$	$\alpha$	$\beta$	$\gamma$	$\alpha$	$\beta$	$\gamma$	$\delta$	$\epsilon$	$\zeta$
1SG	—	e	—	ɛ	—	ɛ	—	—	e	—	—	e	u	i	ɔ	ɔ	—	e
2SG	—	a	—	a	a	a	a	—	a	a	—	a	aj	aj	a	a	a	a
3SG	—	ɔ	—	ɔ	—	—	—	—	—	—	—	—	—	ɔ	ɔ	—	ɔ	—
1PL	ã	ã	ã	ã	ɛ	ɛ	ã	ã	ã	ɛ	ɛ	ɛ	ɛ	ɛ	ã	ɛ	ɛ	ɛ
2PL	e	e	e	e	e	e	e	e	e	e	e	e	e	e	a	a/e	a/e	a/e
3PL	ã	ã	ã	ã	ã	ã	ã	ã	ã	ɛ	ɛ	ɛ	ɔ	ɔ	ã	ã	ã	ã

The western, northern and central varieties have in common the presence of a consistent series of plural desinenes across all TAM categories.

In the western group, a two-way contrast of desinence-series is found in the singular. A unique series of desinenes (labelled  $\beta$  in Table 12) occurs in the synthetic future, transparently continuing HABEO ‘have.PRS.IND.1SG’, HABES ‘have.PRS.IND.2SG’, HABET ‘have.PRS.IND.3SG’ respectively, while in all other TAM categories ( $\alpha$ ), person is marked only by subject clitics and no personal desinenes occur, due to the historical deletion of final unstressed vowels in regular sound change.

In the central group, a three-way contrast of desinence-series is found in the singular. Once again, a unique series (labelled  $\gamma$ ) occurs in the synthetic future, although in this group the third person singular form of the synthetic future has undergone stress retraction and deletion of the original final vowel,<sup>9</sup> a development characteristic of some Croissant

<sup>9</sup> At the time of writing, the nature of these changes (regular sound change or analogical innovation) remains to be established.

varieties (consider e.g. CANTARE HABET > \*[ʃɑ̃tœ'ra] > [ʃɑ̃'tœr] in the variety of Bonnat; likewise DEBERE HABET > [dœr], Table 3). In both Bonnat and Dompierre, no distinct personal desinences occur in the present indicative or present subjunctive (series labelled  $\beta$ ), again due to regular deletion of final unstressed vowels, as in French; in the other TAM categories, a desinence [ɑ] occurs in the second person singular.

Intermediate between these systems is the more northerly variety of La Châtre-Langlin, with a two-way contrast: the unique series of desinences occurring in the synthetic future ( $\beta$ ) is of the type found in Bonnat and Dompierre; in all other TAM categories, the first person singular and third person singular lack a distinct personal desinence, whereas a desinence [ɑ] occurs in second-person singular forms.

Finally, in the variety of Naves, the distribution of personal desinences is more effectively captured not via series of desinences, of which there are six, but via default/exception rules for each individual person/number combination, since for most person/number combinations only two possible exponents occur (excepting the first person singular, for which five possibilities occur). In this variety, the series of exponents found in the present indicative ( $\alpha$ ) and preterite ( $\beta$ ) differ only with respect to the first person singular; the series of exponents found in the imperfect indicative ( $\gamma$ ) and synthetic conditional ( $\delta$ ) differ in the first and second person plural; the synthetic future has a unique series ( $\zeta$ ); and only the present subjunctive and imperfect subjunctive share a series in full ( $\xi$ ).

In all six varieties, the distribution of personal desinences is constant across lexemes: variation is correlated with morphosyntactic and morphosemantic features, but not with arbitrary morphological features such as conjugational class.

## 5. THEMATIC ELEMENTS

The principles by which our analysis isolates exponents characterised as roots and personal desinences exclude from consideration certain inflectional formatives occurring between these items, namely 'thematic elements'. The lexical and paradigmatic distribution of such elements is briefly outlined here.<sup>10</sup> As will be seen, the groupings which emerge from this overview broadly correspond to the groupings indicated by root allomorphy and desinential systems.

In the preterite (absent in Luchapt), three types of system are found. One, occurring in Bonnat and Dompierre, involves a contrast between two inflectional sequences: [er] in the second person singular and all plural forms, [e] in the first person singular and third person singular forms. Another, found in Naves, is characterised by an exponent [et] in the second person singular and all plural forms (matching the distribution of [er] in Bonnat and Dompierre), but distinguishes between [ɛ] in the third person singular and [i] in the first person singular. The third, occurring in Cellefrouin and La Châtre-Langlin, involves a two-way contrast aligned with the singular/plural distinction which is so prominent throughout verb inflection in Croissant varieties: [i] in singular forms, and [ir] (Cellefrouin) or [ij] (La Châtre-Langlin) in plural forms.

<sup>10</sup> Analyses assigning thematic elements to stems or desinences could equally be envisaged. Recall that we do not claim any privileged empirical status for our segmentation, which is to be understood as a formal convenience facilitating comparison of inflectional exponents and their distribution.

For the imperfect subjunctive, all personal forms share a distinctive thematic formative: /ɛs/ in Bonnat and Dompierre, /is/ in Cellefrouin, La Châtre-Langlin and Luchapt. In Naves, imperfect subjunctive forms present a sequence [jas]: while the exponent [as] is unique to the imperfect subjunctive, yod also occurs systematically in a subset of present subjunctive forms (second person singular and all plural forms).

A formative [r] is found throughout the future and conditional forms of all varieties, as is typical for Romance languages. Conditional forms further display a formative realised variously [i], [j] or [ij]. The distribution of these variants is partly a matter of context-sensitive phonology, and partly a matter of morphological specification. In Cellefrouin, Luchapt and La Châtre-Langlin, the contrast aligns with number: [j] occurs in plural forms, while singular forms have [i] (in Cellefrouin and Luchapt) or [ø] (in La Châtre-Langlin). In Bonnat and Dompierre, the opposition is distributed as in the preterite: final [i] in the first and third person singular, and prevocalic [ij] (Dompierre) or [j] (Bonnat) in all other cells. In Naves, the contrast maps not to person but to the phonological shape of individual lexemes' stems: [ij] following a cluster [Cr], [j] following the sequence [Vr].

In some varieties, the conditional and imperfect indicative of all lexemes share a thematic element: this distributional pattern occurs in Luchapt, La Châtre-Langlin and Naves, varieties which ordinarily contrast. Other varieties show a contrast between lexemes in which the conditional and imperfect indicative share a thematic element, and lexemes in which a distinct exponent occurs in the imperfect ([av] in Cellefrouin, [ɔv] in Bonnat, [ɛv] in Dompierre). Although the contrast originates in an early Romance distinction between first-conjugation and non-first-conjugation lexemes, its modern distribution in the Croissant varieties is no longer readily characterised in terms of individual conjugational types.

The Croissant-internal groupings which emerge here thus correspond to those identified in the discussion of personal desinences: unique forms in the variety of Naves, strong similarity between the systems of Bonnat and Dompierre, and looser resemblance between the systems of Cellefrouin, Luchapt and La Châtre-Langlin.

## 6. COMPARISON OF STEM DISTRIBUTION PATTERNS

### 6.1. Illustration of stem distribution patterns

The examples reproduced in Tables 17–22 illustrate the inflected forms of [døvɛr] ‘have to’ in the six Croissant varieties under examination; this lexeme is chosen as one which exemplifies typical patterns of stem distribution and points of interest in the data.

Stem distributions are near-exceptionlessly correlated with the morphosyntactic opposition between singular and plural, and with TAM categories. In general, future and conditional forms share a stem; preterite and imperfect subjunctive forms, where attested, share a stem; singular present indicative forms share a stem; and plural present indicative forms share a stem with each other and with all imperfect indicative forms. For the present subjunctive, a single stem is found in all forms in the varieties of Luchapt and Naves, while a singular/plural contrast occurs in the varieties of Cellefrouin, Dompierre and Bonnat. Stem distributions sensitive to person contrasts are rare, limited to distinctive third person singular present indicative forms in Naves.<sup>11</sup>

<sup>11</sup> In the varieties of La Châtre-Langlin (Table 22) and Bonnat (Table 20[3]), the third person singular future form in some lexemes displays a root phonetically distinct from that occurring in the

The relationship between these basic distributional blocks varies between the survey points. Where the present subjunctive displays a singular/plural opposition, the plural forms ordinarily pattern with the imperfect indicative and plural present indicative, but the singular forms may be syncretic with the singular present indicative (Dompierre) or have a unique exponent (Cellefrouin, Bonnat). The future and conditional forms share their root with the imperfect indicative and plural present forms in Cellefrouin and Dompierre, but with the singular present indicative forms in Luchapt; while in Naves the synthetic future displays OVERABUNDANCE (Thornton 2011), one root being shared with the conditional and the third person singular present indicative, the other with all other paradigm categories. The preterite and imperfect subjunctive, where attested, may have a unique root (Luchapt, Dompierre, Bonnat) or share a root with additional categories including the imperfect indicative (La Châtre-Langlin, Naves).

Table 17

Finite synthetic forms of [døvɛr] 'have to', Cellefrouin

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i dø	i dævi	i dæv	—	—	i dævre	i dævri
2SG	ty dø	ty dævi	ty dæv	—	—	ty dævra	ty dævri
3SG	u/a dø	u/a dævi	u/a dæv	—	—	u/a dævrɔ	u/a dævri
1PL	nə dævã	nə dævã	nə dævã	—	—	nə dævã	nə dævriã
2PL	və dæve	və dævje	və dæve	—	—	və dævre	və dævrije
3PL	u/a dævã	u/a dævã	u/a dævã	—	—	u/a dævã	u/a dævriã

Table 18

Finite synthetic forms of [døvɛr] 'have to', Luchapt

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i dø	i dævi	i dæj	—	i dægis	i dørɛ	i døri
2SG	ty dø	ty dævi	ty dæj	—	ty dægis	ty døra	ty døri
3SG	ø/al dø	ø/al dævi	ø/al dæj	—	ø/al dægis	ø/al dørɔ	ø/al døri
1PL	nə dævã	nə dævã	nə dævã	—	nə dægisã	nə dørã	nə dørjã
2PL	u dæve	u dævje	u dæjɛ	—	u dægisjɛ	u dørɛ	u dørjɛ
3PL	i/al dævã	i/al dævã	i/al dævã	—	i/al dægisã	i/al dørã	i/al dørjã

Table 19

Finite synthetic forms of [døvɛr] 'have to', Dompierre

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i dø	i dævɛv	i dø	i dæge	i dægɛs	i dævre	i dævri
2SG	tə dø	tə dævɛva	tə dø	tə dægera	tə dægɛsa	tə dævra	tə dævrija
3SG	u/al dø	u/al dævɛv	u/al dø	u/al dæge	u/al dægɛs	u/al dævrø	u/al dævri
1PL	nə dævã	nə dævɛvã	nə dævã	nə dægerã	nə dægɛsã	nə dævã	nə dævriã
2PL	u dæve	u dævɛvɛ	u dæve	u dægerɛ	u dægɛsɛ	u dævre	u dævrije
3PL	i/al dævã	i/al dævɛvã	i/al dævã	i/al dægerã	i/al dægɛsã	i/al dævã	i/al dævriã

other person forms; the difference typically concerns root vowel quality, as in Table 22, and more rarely affects root-final consonant clusters, as in Table 20. For the purposes of the present study, we treat such alternations as a matter of phonology, since they are consistently correlated with alternation between stressed and unstressed roots, and between closed and open syllables.

Table 20[3]

Finite synthetic forms of [dəvɾe] ‘have to’, Bonnat

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i dø	i dəv	i dəv	i dədʒe	i dədʒes	i dəre	i dəri
2SG	tə dø	tə dəvja	tə dəv	tə dədʒera	tə dədʒesa	tə dəra	tə dərja
3SG	u/al dø	u/al dəv	u/al dəv	u/al dədʒe	u/al dədʒes	u/al dər	u/al dəri
1PL	nə dəvẽ	nə dəvjẽ	nə dəvẽ	nə dədʒerẽ	nə dədʒesẽ	nə dərẽ	nə dərjẽ
2PL	u dəve	u dəvje	u dəve	u dədʒere	u dədʒese	u dəre	u dərje
3PL	u/al dəvẽ	u/al dəvjẽ	u/al dəvẽ	u/al dədʒerẽ	u/al dədʒesẽ	u/al dərẽ	u/al dərjẽ

Table 21

Finite synthetic forms of [dəvɾ] ‘have to’, La Châtre-Langlin

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	i dø	i dəvø	—	i dəvi	i dəvis	i døvɾe	i døvɾø
2SG	ti dø	ti dəvø	—	ti dəvi	ti dəvisa	ti døvɾa	ti døvɾø
3SG	o/al dø	o/al dəvø	—	o/al dəvi	o/al dəvis	o/al dør	o/al døvɾø
1PL	i dəvẽ	i dəvjẽ	—	i dəvijẽ	i dəvisjẽ	i døvɾẽ	i døvɾijẽ
2PL	u dəve	u dəvje	—	u dəvijje	u dəvisje	u døvɾe	u døvɾijje
3PL	i/al dəvã	i/al dəvjã	—	i/al dəvijã	i/al dəvisjã	i/al døvɾã	i/al døvɾijã

Table 22

Finite synthetic forms of [dyvajɾ] ‘have to’, Naves

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT A	FUT B	COND
1SG	i dyvu	i dyvjɔ	i dyv	i dyvi	i dyvjas	i dyvre	i dajre	i dajrjɔ
2SG	tə dyvaj	tə dyvja	tə dyvja	tə dyvetaj	tə dyvjasja	tə dyvra	tə dajra	tə dajrja
3SG	o/lə daj	o/lə dyvjɔ	o/lə dyv	o/lə dyve	o/lə dyvjas	o/lə dyvrɔ	o/lə dajrɔ	o/lə dajrjɔ
1PL	nə dyvẽ	nə dyvjã	nə dyvjẽ	nə dyvetẽ	nə dyvjasjẽ	nə dyvrẽ	nə dajrẽ	nə dajrjẽ
2PL	u dyve	u dyvja	u dyvja/e	u dyvete	u dyvjasje/a	u dyvre/a	u dajre/a	u dajrja/e
3PL	i/lə dyvõ	i/lə dyvjã	i/lə dyvjã	i/lə dyvetõ	i/lə dyvjasjã	i/lə dyvrã	i/lə dajrã	i/lə dajrjã

## 6.2. Stem space diagrams

Combining data from all verbs in the fieldwork questionnaire, we propose the stem space diagrams shown in Tables 23–27; Bonnat (Table 6) differs from Dompierre (Table 23) only in splitting the preterite and imperfect subjunctive. As illustrated in section 5.1, contrasts of root allomorphy are correlated principally with the morphosyntactic distinction between singular and plural, and with distinctions between TAM categories.

Table 23

Stem space, Cellefrouin

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	1	3	4		5		6
2SG							
3SG							
1PL	2						
2PL							
3PL							

Table 24

Stem space, Luchapt

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	1	3	4	absent	6	7	9
2SG							
3SG							
1PL	2		5			8	10
2PL							
3PL							

Table 25

Stem space, Dompierre

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	1	3	4		6		7
2SG							
3SG							
1PL	2		5				
2PL							
3PL							

Table 26

Stem space, La Châtre-Langlin

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	1	3	5	7	8	9	10
2SG							
3SG							
1PL	2		6				
2PL							
3PL							

Table 27  
Stem space, Naves

	PRS.IND	IPFV.IND	PRS.SBJV	PRT	IPFV.SBJV	FUT	COND
1SG	1	3	4	5	4	6	7
2SG							
3SG	2						
1PL	1						
2PL							
3PL							

Some varieties robustly retain inherited distributional patterns common to other Romance languages: for example, in Celledrouin and Dompierre, all forms of the preterite and imperfect subjunctive (i.e. surviving reflexes of Latin *perfectum* forms, Maiden 2001) pattern together, and all forms of the future and conditional (i.e. reflexes of infinitive+‘have’ periphrases) pattern together. In other varieties, such as that of Naves, both these groupings split along category lines differentiating the preterite from the imperfect subjunctive and the future from the conditional. In the variety of Luchapt, the future and conditional are further fragmented due to an additional singular/plural distinction in some lexemes. A property unique to Naves among the study varieties is the consistency with which the imperfect subjunctive and present subjunctive share an often unique stem, differentiated from the preterite.

In the imperfect indicative, the near-exceptionless tendency is for all person forms to share a stem (a singular/plural split is attested only in La Châtre-Langlin); in the present subjunctive, either all forms share a stem or there is a singular/plural contrast; and in the present indicative, a singular/plural contrast is found in all varieties except that of Naves, where the third person singular form is differentiated from the other five present indicative forms.

The innovation of singular/plural contrasts in TAM categories which do not typically present contrasts in other Romance varieties, and the prevalence of singular/plural contrasts or a uniform root in categories where comparative data create the expectation of a contrast between {1PL, 2PL} and {3SG, 3PL}, are characteristic features of the inflectional paradigm of Croissant varieties. Within the Croissant area, this contrast is most developed in La Châtre-Langlin and Luchapt; while the retention of inherited distributional patterns is greatest in Dompierre and Celledrouin, varieties which, together with Naves, also have the lowest number of distinct partitions of the stem space.

Overall, the stem space analysis reveals greater internal variation than the analysis of desinential and thematic elements: no two varieties display identical stem spaces, and the number of partitions ranges from 6 to 10. Naves is again isolated, lacking the singular/plural contrast and in grouping the two subjunctives into a single partition which contrasts with the preterite; and Dompierre and Bonnat once again cluster closely together. By contrast, La Châtre-Langlin, Luchapt and Celledrouin diverge considerably from each other: La Châtre-Langlin and Luchapt have each developed unique contrasts, while Celledrouin, retaining inherited Romance distribution patterns, has the fewest partitions of any variety.



## 7. DISCUSSION AND CONCLUSIONS

Our study departs from traditional dialectological practice in focusing on the distribution of inflectional exponents (i.e. the structure of the inflectional paradigm itself) as opposed to the phonological realisation of those exponents (see Weinreich 1954 for a similar approach to phonological contrasts). We compare the organisation of the inflectional system in each different variety, allowing points of similarity and divergence to be readily identified, and providing a genuinely morphological perspective on the internal structure of the dialect continuum.

Our analysis reveals several distinctive tendencies concerning the paradigmatic distribution of exponents in Croissant varieties. The distribution of root allomorphy is becoming increasingly systematised as an exponent of TAM and number: inherited patterns of interpredictability between individual TAM categories are split along category lines, and differentiation within individual TAM categories is aligned with the morphosyntactic contrast between singular and plural. Desinential allomorphy is also more strongly correlated with number than with person, TAM categories or inflectional class, and overall there is pervasive syncretism.

With regard to internal variation, there is a clear typological split, visible throughout the inflectional system, between the isolated variety of Naves, and the other five varieties. Within the larger group, the organisation of desinential elements indicates a central, close-knit group comprising Bonnat and Dompierre; a western group comprising Cellefrouin and Luchapt; and an intermediate group represented by La Châtre-Langlin, which shares some features with each of the other two. The organisation of stem distribution and thematic elements confirms the Bonnat-Dompierre group, but identifies disparities between all three remaining varieties.

Beyond its contribution to description of Croissant varieties, our study exemplifies the value of formal morphological descriptors for the comparison of multiple inflectional systems, and the practicality of such descriptors even in a minority or endangered language context with limited data and considerable variation.

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