

## A view of the morphome debate

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### Abstract

This paper surveys the current debate on the morphome, drawing attention to underexplored theoretical possibilities and underexploited empirical tools. We distinguish three related but separate claims made by proponents of the morphome: that there exist morphological patterns mapping arbitrary sets of exponenda onto arbitrary sets of exponents; that such patterns do not suffer from a learnability disadvantage; and that all patterns of exponence are mediated by purely morphological categories belonging to an autonomous level of linguistic representation. We review the problems caused by the lack of positive criteria for morphomicity and by disagreements over the application of negative criteria. We present arguments for a learning bias in favour of realization patterns involving natural classes, and we call for greater use of wug-tests and artificial grammar learning experiments in research on this question. Competing morphological theories turn out to exhibit a surprising amount of empirical overlap, and their implications for the learnability of morphomic patterns are less straightforward than usually assumed.

### Keywords

Morphome, autonomous morphology, arbitrariness, stem, inflectional class, falsifiability, operational definition, natural class, learning bias, artificial grammar learning.

### Contents

1. <i>Introduction</i>	2
2. <i>The existence claim</i>	4
3. <i>The diagnosis problem</i>	12
3.1. Lack of positive criteria	12
3.2. Disagreement over negative criteria	15
3.3. Repercussions of the diagnosis problem	20
4. <i>The no-bias claim</i>	22
5. <i>The analysis question and the morphomic-level claim</i>	28
6. <i>Conclusion</i>	32
<i>References</i>	33

## 1. Introduction

The concept of the morphome (Aronoff 1994) is one of the most contentious and polarizing ideas in contemporary morphology: at the extremes of the spectrum of opinion, some hail it as a revelation of the fundamental nature of linguistic exponence, whilst others decry it as an enervating proposal that undermines the search for scientific explanation in morphology. In this collection we have deliberately brought together scholars who hold diametrically opposed views on the morphome, not in the vain hope that the resulting clash of arguments might eventually lead to a theoretical rapprochement, but rather with the more modest goal that, by elucidating the causes of the disagreement, the volume might foster new lines of research.

In pursuit of this goal, this paper adopts both a retrospective and a prospective stance. Retrospectively, we provide a synoptic statement of the *état de la question* as it appears to us in the light of the preceding chapters. Prospectively, we identify theoretical options that seem to us to deserve greater attention in future work, and we highlight the potential of research tools that, in our view, have so far remained underexploited. In the following pages, therefore, the reader will not find an exhaustive and impartial summary of the contents of the book; we have attempted to provide that in the introduction.<sup>1</sup> In this chapter, rather, we intervene in the debate, not with the aim of adjudicating between the parties, but rather with the intention of clarifying the argument and moving the question forward.

Accordingly, we distinguish three separate claims advanced by proponents of the morphome, and identify attendant questions and problems:

- (1) a. The EXISTENCE CLAIM is the assertion that there exist morphomes in the narrow sense, i.e. systematic patterns of linguistic exponence whereby an arbitrary set of exponenda is mapped onto an arbitrary set of exponents.<sup>2</sup> The existence claim leads to a DIAGNOSIS PROBLEM, arising from the fact that morphomicity is defined negatively, and to an ANALYSIS QUESTION, posed by the task of providing grammatical descriptions of putatively morphomic patterns.
- b. The NO-BIAS CLAIM holds that there is no learnability asymmetry between morphomic and nonmorphomic patterns: *ceteris paribus*, the former can be acquired as easily as the latter.

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<sup>1</sup> As in the introduction, we follow the convention of referring to chapters in this volume using the author's name in **bold**.

<sup>2</sup> Morphomes in the narrow sense correspond to Aronoff's 'polyvalent polymorphous morphomes'. In this chapter we use the terms 'morphome' and 'morphomic' always in this narrow sense. For discussion of morphomes in the broad sense, see section 5.

- c. The MORPHOMIC-LEVEL CLAIM emerges from one possible answer to the analysis question: it is the hypothesis that there exists a purely morphological level of linguistic representation such that all patterns of exponence, whether morphomic in the narrow sense or not, are mediated by purely morphological categories existing at this level.

Our paper charts the intimate connections between all these issues, whilst insisting on their separateness. For example, we highlight the fact that one can grant the existence claim and yet emphasize the severity of the diagnosis problem (e.g. **Koontz-Garboden**). More generally, one can accept the existence claim without endorsing either the no-bias or the morphomic-level claim (e.g. Vincent 2013, Nevins *et al.* 2015, Trommer 2016). We further argue that the no-bias claim should be investigated using tools that have so far been underutilized in the morphomic literature, such as wug-tests and artificial grammar learning experiments (e.g. Nevins *et al.* 2015, Pertsova 2014).

Finally, we reflect upon the fact that scholars opposed to the no-bias and morphomic-level claims often approach putatively morphomic patterns using a BASI strategy (in the sense of Stewart & Stump 2007: 414, who borrow the term from Zwicky 1986): in the standard rule-based version of Distributed Morphology (Halle & Marantz 1993, 1994), for example, morphomic patterns can be derived by means of extensive transformations of initial nonmorphomic representations.<sup>3</sup> The additional derivational complexity of morphemes may then be invoked to explain their putative learnability disadvantage (Trommer 2016). In contrast, morphologists who endorse the no-bias and morphomic-level claims typically propose DEFO analyses, in which morphomic patterns of exponence block nonmorphomic alternatives but do not involve longer derivations. On this point, we again draw attention to alternative scenarios. In section 4 we present several arguments that cast doubt on the no-bias claim, suggesting instead that exponence patterns targeting natural classes enjoy a learnability advantage. Yet the acquisition bias against morphemes need not reflect greater derivational complexity; it may rather arise from a domain-general preference for conjunctively defined categories (Pertsova 2014). In turn, if this is true, then the postulation of a purely morphological level of linguistic representation will do nothing to mitigate the learner's bias against morphemes.

Our overall conclusion is that lack of dialogue across schools of morphological thought is holding back research into apparently morphomic patterns. Understanding such patterns is crucial to ascertaining the status of morphology within the overall architecture of grammar; but, more than two decades after the publication of Aronoff (1994), many interesting possibilities remain underexplored, and many helpful tools remain underused.

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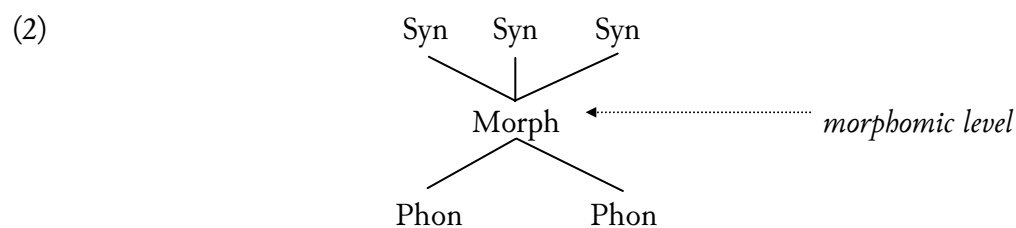
<sup>3</sup> Zwicky's abbreviation 'BASI' stands for 'General as Basic': in BASI analyses, 'one case is taken to be basic, deep, or underlying; its rule applies "first", and another rule alters the basic forms for another case' (Zwicky 1986: 305). In contrast, 'DEFO' stands for 'General as Default': in DEFO analyses, 'one case is viewed as the otherwise, or elsewhere, contingency; its rule applies "second", and it is overridden by the rule for another case' (Zwicky 1986: 306).

## 2. The existence claim

Morphology is the crossroads of grammar: phonological, syntactic, semantic, and lexical factors all have a say in the selection of linguistic exponents. Yet, though few would dispute the central position of morphology in the language faculty, there is wide disagreement on its precise status. Does morphology constitute an autonomous grammatical module with a representational vocabulary of its own? If so, does each linguistic expression have a purely morphological parse alongside its syntactic structure and phonological form?

Some schools of linguistics answer these questions in the negative. One current line of research, for example, conceives of morphology as an interface processor in the sense of Jackendoff (1997): in this view, morphology has no proprietary categories, but deals only in morphs, understood as pieces of phonological material lexically specified with instructions for their use as exponents of syntactic properties (e.g. Trommer 2011, Bermúdez-Otero 2012, Bye & Svenonius 2012, Haugen & Siddiqi 2016). In stark contrast, Aronoff's (1994) influential theory of the morpheme—explored and developed in a large number of works including collections like Goldbach *et al.* (2011), Cruschina *et al.* (2013), and the present volume—makes a strong case for the existence of purely morphological categories.

Aronoff's argument is most conveniently stated in terms of a realizational conception of morphology (Stump 2001: 2).<sup>4</sup> From this perspective morphology is seen as specifying functions from syntactic feature arrays to phonological realizations. The crucial empirical claim, then, is that an exponence function may associate an arbitrary set of syntactic exponenda with an arbitrary set of phonological exponents: in Aronoff's terms, such a function will be both polyvalent and polymorphous. The existence of polyvalent polymorphous exponence patterns—of morphemes in the narrow sense—is in turn taken to motivate a hidden, purely morphological level of representation: the morphomic level.



The flagship example of the morpheme is the ‘third stem’ of Latin verbs<sup>5</sup> as analysed in a long tradition of morphological thought going from Priscian’s *Institutiones grammaticae* (early 6<sup>th</sup> century AD) through Matthews (1972) to Aronoff (1992, 1994: ch. 2); see further Maiden

<sup>4</sup> According to Trommer (2012: 3), our times have witnessed ‘the triumph of Realizational Morphology’. The realizational approach is thus common ground between many scholars on both sides of the morpheme debate.

<sup>5</sup> There is no theory-neutral label for this entity. Steriade calls it the ‘*t*-stem’ for reasons that will become apparent below. Traditional grammars refer to it as the ‘supine stem’. Here we use Aronoff’s (1994: 37) label for convenience.

(2013a). The third stem occurs in a highly heterogeneous set of inflectional and derivational forms. Following Steriade, in (3.b) below we provide illustrations based on the verb *caedō* ‘cut’, supplemented with derivatives of two other verbs where necessary.

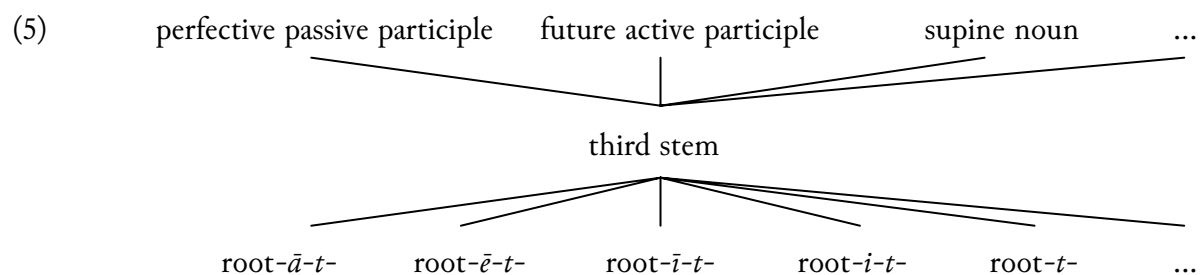
(3) a.	principal parts of the base	<i>caedō, caedere, cecidī, caesus</i>	‘cut’
		<i>claudō, claudere, clausī, clausus</i>	‘close’
		<i>edō, edere, ēdī, ēsus</i>	‘eat’
b.		‘cut’	‘close’
	perfective passive participle	<i>caesus</i>	
	future active participle	<i>caesūrus</i>	
	supine noun	<i>caesum</i>	
	masculine agent noun	<i>caesor</i>	
	feminine agent noun		<i>ēstrīx</i>
	event noun	<i>caesiō</i>	
	event/result noun	<i>caesūra</i>	
	instrument noun		<i>claustrum</i>
	desiderative verb		<i>ēsurīō</i>
	intensive verb	<i>caesō</i>	
	frequentative verb	<i>caesitō</i>	
	adjective	<i>caesīvus</i>	
	adverb	<i>caesim</i>	

The forms in (3.b) have so far defied all attempts at characterization as a single syntactically or semantically motivated natural class. From this, Aronoff infers that the third stem has no meaning of its own: it does not make a consistent contribution to the semantics of the items for which it provides the base.

At the same time, the realization of the third stem involves a wide range of exponence mechanisms. Most first- and fourth-conjugation verbs exhibit what may be regarded as the default pattern, attaching the suffix *-t-* outside the same theme vowel as is found in the imperfective stem. In many other instances, however, notably in the second and third conjugations, but also in exceptional members of the first and fourth, *-t-* attaches outside an unpredictable theme vowel or directly to the root. In the latter case, adjustments with various degrees of synchronic predictability may be triggered, from automatic phonology up to weak suppletion (see Steriade §2.5). In the limit, the third stem can be strongly suppletive.

(4)	conjugation	infinitive (imperfective stem)	participle (third stem)	
1 <sup>st</sup>		<i>amāre</i>	<i>amātus</i>	‘love’
		<i>stāre</i>	<i>status</i>	‘stand’
		<i>iuvāre</i>	<i>iūtus</i>	‘help’
2 <sup>nd</sup>		<i>docēre</i>	<i>doctus</i>	‘teach’
		<i>habēre</i>	<i>habitus</i>	‘have’
		<i>implēre</i>	<i>implētus</i>	‘fill up’
		<i>augēre</i>	<i>auctus</i>	‘increase’
		<i>movēre</i>	<i>mōtus</i>	‘motus’
		<i>vidēre</i>	<i>vīsus</i>	‘see’
		<i>sedēre</i>	<i>sessus</i>	‘sit’
3 <sup>rd</sup>		<i>canere</i>	<i>cantus</i>	‘sing’
		<i>crēdere</i>	<i>crēditus</i>	‘believe’
		<i>petere</i>	<i>petītus</i>	‘seek’
		<i>scrībere</i>	<i>scrīptus</i>	‘write’
		<i>vertere</i>	<i>versus</i>	‘turn’
		<i>cēdere</i>	<i>cessus</i>	‘yield’
		<i>solvere</i>	<i>solūtus</i>	‘loosen’
		<i>vincere</i>	<i>victus</i>	‘win’
		<i>quiēscere</i>	<i>quiētus</i>	‘rest’
		<i>pellere</i>	<i>pulsus</i>	‘push’
4 <sup>th</sup>		<i>audīre</i>	<i>audītum</i>	‘hear’
		<i>invenīre</i>	<i>inventus</i>	‘find’
irregular		<i>esse</i>	<i>futūrus</i>	‘be’
		<i>ferre</i>	<i>lātus</i>	‘carry’

According to Aronoff, this state of affairs forces us to recognize the third stem as a purely morphological category mediating between unnatural classes of exponenda and exponents:



More generally, arguments of this sort furnish the bulk of the evidence for the existence claim as stated in (1.a).

In this volume, however, **Steriade** argues that the Priscianic tradition misdescribes the Latin facts, failing to account for crucial generalizations. **Steriade** enlarges the empirical remit of the discussion by studying the behaviour of Latin derivational suffixes when added to bases other than verbs. She finds that, in such nonverbal uses, some derivational suffixes require the presence of a *t*-extension, while others either select different stem-extensions (*-b-*, *-c-*) or do not take an extension at all.

(6)	nonverbal base		derivative	
a. <i>t</i> -extension	<i>iānua</i>	‘door’	<i>iānitor</i>	‘male door-keeper’
	<i>iānua</i>	‘door’	<i>iānitrīx</i>	‘female door-keeper’
	<i>luscus</i>	‘one-eyed’	<i>luscitiō</i>	‘dimness of sight’
	<i>littera</i>	‘letter’	<i>litterātūra</i>	‘writing in letters’
	<i>tālus</i>	‘knucklebone’	<i>tālitrum</i>	‘flip of the finger’
	<i>Sulla</i>	(proper name)	<i>Sullāturiō</i>	‘to play Sulla’
	<i>prīmus</i>	‘first’	<i>prīmitīvus</i>	‘first of its kind’
	<i>fur</i>	‘thief’	<i>furtim</i>	‘like a thief’
b. <i>b</i> -extension	<i>pestis</i>	‘pest’	<i>pestibilis</i>	‘pestilential’
	<i>aerumna</i>	‘trouble’	<i>aerumnābilis</i>	‘full of trouble’

Strikingly, the set of derivational suffixes in (6.a) precisely matches that in (3.b), supporting the following generalization:

- (7) Latin derivational suffixes that select a *t*-extension in nonverbal use select the third stem in deverbal use.

Having thus motivated a distinction between *t*-selecting suffixes like *(-t)-or* and other suffixes like *(-b)-ilis*, **Steriade** goes on to examine the syntax and semantics of Latin deverbal derivatives. First, she observes that suffixes like *(-b)-ilis* often combine with the root or imperfective stem of a verb, but they can also attach to the third stem. When derived from the root or imperfective stem, the adjective may refer to any argument of the verb, crucially including the agent-denoting subject of a nondeponent transitive verb that takes a theme-denoting direct object in the accusative, like *alō* ‘feed’ or *penētrō* ‘penetrate’.

(8) (-b)-*ilis* adjectives derived from the root or the imperfective stem

a.	verb	{	2SG.PRES.IND	<i>alis</i>	‘you feed’	
PASS.PTCP			<i>al(i)tus</i>	‘having been fed’		
	adjective		<i>alibilis</i>	{	‘feeding’	e.g. Varro <i>Rust.</i> 2.11
					‘easy to feed’	e.g. Varro <i>Rust.</i> 3.9
b.	verb	{	2SG.PRES.IND	<i>penētrās</i>	‘you penetrate’	
PASS.PTCP			<i>penētrātus</i>	‘having been penetrated’		
	adjective		<i>penetrābilis</i>	{	‘penetrating’	e.g. Verg. <i>G.</i> 1.93
					‘penetrable’	e.g. Ov. <i>Met.</i> 12.166

In contrast, Steriade reports that, when (-b)-*ilis* is added to the third stem, the derived adjective may only refer to the same participant as the verb’s passive participle: in the case of ordinary transitive verbs (e.g. *comprehendō* ‘grasp’) this corresponds to the object in an active clause, but in the case of deponents (e.g. *patior* ‘endure’) it corresponds to the subject.<sup>6</sup>

(9) (-b)-*ilis* adjectives derived from the third stem

a.	verb	{	2SG.PRES.IND	<i>comprehendis</i>	‘you grasp’	
PASS.PTCP			<i>comprehensus</i>	‘having been grasped’		
	adjective		<i>comprehensibilis</i>		‘graspable’, *‘capable of grasping’	
b.	verb	{	1SG.PRES.IND	<i>patior</i>	‘I endure’	(deponent!)
PASS.PTCP			<i>passus</i>	‘having endured’		
	adjective		<i>passibilis</i>		‘capable of enduring’, *‘endurable’	

The divergence between (8) and (9) would suggest that the third stem is not meaningless: in contrast with the unmarked root or imperfective stem, it has passive semantics (*modulo* deponency), and this constrains the interpretation of derivatives like *comprehensibilis* and *passibilis*. In turn, the suffix (-t)-*or* never combines with the imperfective stem; in compliance with generalization (7), it always selects the third stem. Yet derivatives in (-t)-*or* are not constrained to refer to the same participant as the passive participle; indeed, they are typically agentive.

<sup>6</sup> Steriade notes a small set of exceptions such as *persuāsibilis* ‘persuasive’ (e.g. Quint. *Inst.* 2.15.13), but asserts that these are largely confined to postclassical texts.



(10)	verb	{	2SG.PRES.IND	<i>docēs</i>	‘you teach’
			PASS.PTCP	<i>doctus</i>	‘having been taught’
			adjective	<i>doctor</i>	‘teacher’, *‘one who is taught’

Cumulatively, these observations lead to the following generalization:

- (11) The third stem of Latin verbs has passive semantics (*modulo* deponency), except when combining with derivational suffixes that select a *t*-extension in nonverbal use.

In this light, **Steriade** concludes that the surface distribution of the so-called ‘third stem’ is not arbitrary, but rather results from phonologically conditioned syncretism. The opportunity for syncretism arises because Latin has a set of derivational suffixes that select bases expanded by means of a *t*-extension (6.a), and at the same time Latin verbs have a passive participial stem marked by a *t*-suffix, alternating with minimally different *-s* (4). The syncretism goes through in deverbal derivation as derivatives containing *t*-selecting suffixes are pushed to copy the form of the already existing, independently similar *t*-stem (7). This phonological requirement trumps semantics, but in all other cases the *t*-stem has its expected passive value (11). In **Steriade**’s view, therefore, the distribution of the third stem reflects a phonologically motivated effect superimposed upon a semantically motivated distribution. If this is correct, the third stem is not a morpheme; its arbitrariness is merely apparent.

**Steriade** regards the Latin facts as an instance of a more general crosslinguistic tendency towards similarity-based syncretism whereby inflectional or derivational forms that are phonologically similar are driven to become identical. Burzio (2001: 664) uses the term ‘gradient attraction’ to refer to the same idea: ‘similarity between representations generates pressure for further similarity’.<sup>7</sup> Whether or not this is the right interpretation, the empirical argument against the morphomic approach to the third stem of Latin verbs turns on an apparent loss of generalization: the morphomic analysis says nothing about the behaviour of the relevant suffixes when added to nonverbal bases.

Loss of generalization is also central to Bermúdez-Otero’s (2013) critique of another of Aronoff’s choice examples of morphomicity: inflectional class features in Spanish nouns and adjectives (Aronoff 1994: 67-72). Most Spanish nouns and adjectives fall into one of three major stem classes, characterized by the theme vowels *-o*, *-a*, and *-e*. All three theme vowels occur both in masculine and in feminine forms, but *-a* is the default option in the feminine and *-o* is the general default.

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<sup>7</sup> See Burzio (2002) for a more detailed statement.

- (12) a. *pal-o negr-o*      *sill-a negr-a*  
 stick black      chair black  
 gender      M      M      F      F  
 class      *o*      *o*      *a*      *a*
- b. *coch-e negr-o*      *nub-e negr-a*      *dí-a negr-o*      *man-o negr-a*  
 car black      cloud black      day black      hand black  
 gender      M      M      F      F      M      M      F      F  
 class      *e*      *o*      *e*      *a*      *a*      *o*      *o*      *a*      *a*

This state of affairs yields to a very simple description in which lexical redundancy rules (Jackendoff 1975) directly referring to gender features control the phonological content of the theme vowel position (13), whilst marked items like the nouns in (12.b) are listed in the lexicon with their nondefault theme vowels.

- (13)  $\left\{ \begin{array}{l} \text{TH} \rightarrow /-a/ \text{ / [Feminine] } \_\_ \\ \text{TH} \rightarrow /-o/ \end{array} \right\}$

This straightforward analysis encounters a difficulty over the fact that, on the surface, the theme vowels of noun and adjective stems fail to appear before most derivational suffixes.

- (14) a. *sueñ-o*      b. *sueñ-az-o*      c. *\*sueñ-o-az-o*  
 dream-TH<sub>o</sub>      dream-AUG-TH<sub>o</sub>      dream-TH<sub>o</sub>-AUG-TH<sub>o</sub>

Many studies, notably including those of Harris (e.g. 1991, 1992), assume that surface forms like (14.b) precisely mirror the underlying distribution of nominal theme vowels. If that is the case, then one cannot store full stems with their theme vowels in the lexicon; rather, it becomes necessary to annotate stems with inflectional class features that control the selection of theme vowels in those morphological environments where their presence is required. Following Harris, therefore, Aronoff (1994: 68-69) rejects the direct mapping of syntactic features onto morphs encoded in (13), and argues instead for the two-step derivation in (15). Here, a set of purely morphological objects consisting of the features [class 1], [class 2], and [class 3] defines an intermediate, strictly morphomic level of representation.

- (15) a. Masculine → class 1  
 Feminine → class 2
- b. <[N, class 1], (X → Xo)>  
 <[N, class 2], (X → Xa)>  
 <[N, class 3], (X → X)>

According to Bermúdez-Otero (2013), however, this account misses a key phonological generalization. The way in which the theme vowels of verbs behave under derivational suffixation motivates a phonological process of deletion targeting unstressed stem-final vowels before vowel-initial suffixes.

(16)	verb		agentive derivative	
			UR	SR
a.	<i>cont-a-r</i>	‘count’	[ <sub>N</sub> [ <sub>V</sub> koNt-a] dor-∅]	[kɔ̃nt̪aˈðɔr]
	<i>coc-e-r</i>	‘boil’	[ <sub>N</sub> [ <sub>V</sub> koθ-e] dor-∅]	[koθeˈðɔr]
	<i>sent-i-r</i>	‘feel’	[ <sub>N</sub> [ <sub>V</sub> seNt-i] dor-∅]	[sẽnt̪iˈðɔr]
b.	<i>acus-a-r</i>	‘accuse’	[ <sub>N</sub> [ <sub>V</sub> akus-a] on-∅]	[akuˈson]
	<i>respond-e-r</i>	‘answer’	[ <sub>N</sub> [ <sub>V</sub> respoNd-e] on-∅]	[respõnˈðɔn]
	<i>ped-i-r</i>	‘ask for’	[ <sub>N</sub> [ <sub>V</sub> pid-i] on-∅]	[piˈðɔn]

Bermúdez-Otero argues that, without further stipulation, the deletion process at work in (16.b) captures the behaviour of theme vowels in noun and adjective stems too. This removes the empirical obstacles to an analysis in which stems are lexically stored with their theme vowels, in which default patterns of gender exponence are captured by lexical redundancy rules like (13), and in which there are no inflectional class features and there is no morphomic level. Bermúdez-Otero goes on to argue that this analysis is corroborated by several sources of evidence: the presence of an underlying theme vowel before the derivational suffix in forms like (14.b) is confirmed by phonological diagnostics involving the distribution of palatal consonants, and storing units of stem size makes correct predictions about the effect of token frequency on recognition latencies, about locality conditions on allomorph selection (Bermúdez-Otero 2016, cf. **Embick**), and about the role of lexical category boundaries in analogical levelling.

The Latin and Spanish phenomena discussed by **Steriade** and by Bermúdez-Otero (2013) constitute a mere fraction of the putative morphemes that have by now been identified in the literature. Indeed, inflectional class features are used routinely in current descriptive and theoretical practice; the number of analyses that rely on them may well run into the hundreds. Accordingly, **Steriade**’s and Bermúdez-Otero’s challenge to the morphome draws its force not from breadth of coverage, but from the fact that it raises a diagnosis problem: if their arguments are right, then two choice examples of morphomicity have turned out to be invalid. This would suggest that the criteria for identifying morphemes are unreliable. In turn, if no individual diagnosis of morphomicity can be trusted because the relevant criteria are unsafe, how do we know that morphemes in general exist?<sup>8</sup>

<sup>8</sup> Note that this diagnosis problem involves more than local underdetermination, such as occurs when there are diagnostic criteria that are reliable but can only be used in a subset of candidate cases; Bermúdez-Otero (2012: 72)

Needless to say, how urgent one feels this question to be will depend not only on one's approach to the Latin third stem and to Spanish inflectional classes, but also on how persuaded one is by all the other examples of morphomicity adduced in the literature. Arguably, however, the diagnosis problem calls for attention even from those whose confidence in the existence claim remains unshaken.

### 3. The diagnosis problem

#### 3.1. Lack of positive criteria

The diagnosis problem is the central concern of **Koontz-Garboden's** chapter. In line with our conclusion in the preceding paragraph, **Koontz-Garboden** does not directly challenge the existence claim; he concedes that 'there *do* seem to exist convincing cases of morphomes'. His contention is, rather, that morphomic theory as presently constituted is unsatisfactory because the operational definition of morphomicity is purely negative: the morphome is defined as a systematic pattern of syncretism that lacks semantic, syntactic, or phonological motivation. In turn, this negative characterization of the morphome yields only negative typological predictions: if an exponence pattern is morphomic, it is predicted not to recur across genetically and areally unrelated languages (see **Maiden's** third proposition in this volume).<sup>9</sup> **Koontz-Garboden** regards this as falling short of the desired epistemological standard, which is that a diagnosis of morphomicity should make falsifiable positive predictions about the language in which the putative morphome occurs.

**Koontz-Garboden** illustrates his argument with a case study from the endangered Misumalpan language Ulwa. In Ulwa, the 3SG suffix *-ka* appears both on the possessed noun in possessive noun phrases (17.a) and as a marker of attribution or predication on words naming property concepts (17.b).

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argues that a useful linguistic concept cannot be rejected simply because there is local underdetermination in its application. In addition, the diagnosis problem undermines the existence claim only because, as we saw above, the latter is built by induction; mathematicians often find themselves in the position of being able to demonstrate the existence of a certain number without being able to specify a procedure for finding it—but mathematical proof relies on deductive logic.

<sup>9</sup> For convenience, we repeat **Maiden's** five propositions here:

- (i) Diachrony can provide evidence for the psychological reality of putative morphomes.
- (ii) Diachrony can be used as a diagnostic of the synchronically morphomic nature of some pattern of alternation.
- (iii) Typological comparison can serve to falsify the putatively morphomic status of some pattern of alternation.
- (iv) Speakers do not especially prefer 'non-morphomic' over 'morphomic' patterns.
- (v) An alternation pattern can be morphomic even when it appears to be phonologically conditioned.

- (17) a. Alberto pan-**ka**  
 Alberto stick-3SG.POSS  
 ‘Alberto’s stick’
- b. Al adah-**ka** as tal-ikda.  
 man short-3SG.POSS INDEF see-1SG.PST  
 ‘I saw a short man.’

Using the same diachronic methods as Maiden (2005) in his well-known study of allomorphy in the Romance verb,<sup>10</sup> **Koontz-Garboden** demonstrates that the syncretism in (17) is systematic, rather than accidental, by showing that it conditioned morphological innovation in Ulwa’s sister language Mayangna. In the history of Mayangna, Proto-Misumalpan 3SG markers, including *-ka*, were replaced with originally 1PL.INCL markers like *-ni*.<sup>11</sup> Crucially, Mayangna’s innovative 3SG suffix *-ni* continues to mark both possession and property predication.

Having shown that the exponence pattern in (17) is systematic, **Koontz-Garboden** asks whether it is morphomic. In principle this looks like a viable option, as the theory of the morpheme incorporates no formal restrictions precluding the possibility. In addition, no language has yet been found to have the exact pattern of syncretism instantiated by Ulwa *-ka*. Nonetheless, **Koontz-Garboden** argues that the behaviour of *-ka* is semantically motivated, and so it would be a mistake to treat as morphomic. The key lies in a typological generalization established by Francez & Koontz-Garboden (2015): languages in which property-concept words are lexicalized as nouns often use the grammar of possession to effect property predication. In such languages, the translational equivalents of the English sentence ‘She is strong’ could be paraphrased as ‘She has strength’, ‘There is strength at her’, ‘She is with strength’, etc.<sup>12</sup>

Why should this be a problem for morphomic theory? After all, individual diagnoses of morphomicity have turned out to be empirically corrigible: in section 2 we saw that they can be challenged by internal evidence of loss of generalization; in this section we have seen how they can be challenged by typological evidence. Is this not enough? On this point, **Koontz-Garboden**’s complaint is that, whilst purely negative predictions do indeed suffice to render a particular morphomic analysis falsifiable, they nonetheless endow it with very limited empirical content and, consequently, with little heuristic power. From this perspective a morphomic analysis looks like an empirical dead end: it fails to stimulate further enquiry by making positive predictions about other

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<sup>10</sup> See also Maiden’s first proposition in the previous note.

<sup>11</sup> Citing Benedicto & Hale (2000), **Koontz-Garboden** speculates that the transition from 1PL.INCL to 3SG may have been mediated by impersonal uses of the 1PL.INCL markers. The connection between 1PL and impersonal markers is well attested: cf. colloquial French *on*. **Koontz-Garboden** reports that a shift from impersonal to 3SG value is found in Athabaskan (Jung 1999: 153).

<sup>12</sup> In turn, Francez & Koontz-Garboden suggest that property-concept words behave as nouns when they denote mass substances (in a technical semantic sense).

phenomena. By the same token, an incorrect morphomic diagnosis can be rectified only when we manage to learn by alternative means what further consideration of the facts might have told us all along: for example, the behaviour of the Ulwa suffix *-ka* provides evidence for a semantic connection between possession and property predication in languages without adjectives, but that evidence is only available to us as long as we do not treat *-ka* as a morpheme. Bermúdez-Otero (2013: 92–93) makes the same point about heuristic power using the concept of a ‘wildcard’, defined as a device that ‘save[s] the phenomena without making further empirical predictions’: ‘the theory of grammar,’ he states, ‘must not contain wildcards’, since ‘[o]ne cannot learn from the phenomena if a wildcard saves them for free’.<sup>13</sup>

More generally, even though individual morphomic analyses are indeed empirically corrigible, doubts remain about the falsifiability of the theory as a whole. As we saw in the conclusion to section 2, it would be logically possible to abandon the morphomic analyses of the Latin third stem and of Spanish theme vowels while still upholding the claim that morphemes exist. If, accordingly, the existence claim cannot be falsified by discussion of individual cases, how can it be falsified at all?

In this sense, the epistemological concerns voiced by **Koontz-Garboden** and Bermúdez-Otero (2013) echo a long tradition in the philosophy of science, including not only Popper (1935) but also Kuhn (1970) and Lakatos (1970), according to which it is the job of theories to generate predictions that may turn out to be false, i.e. predictions that may prove anomalous, for it is anomalies that drive progress by stimulating the search for new explanations when the old accounts turn out to be wrong. However, **Koontz-Garboden’s** anxieties about the morpheme do not merely reflect philosophical considerations.<sup>14</sup> His own work on lexical semantics is informed by the following general principle, which he credits to Paul Kiparsky:

(18) *Taking Morphology Seriously* (Koontz-Garboden 2007: 12)<sup>15</sup>

In the absence of evidence to the contrary overt morphological derivation signals lexical semantic derivation.

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<sup>13</sup> The concept of wildcards is not aimed at one theory of morphology in particular: Bermúdez-Otero (2013) uses it to criticize both Aronoff’s (1994: 67–72) use of inflectional class features in his theory of the morpheme and Embick’s (2012) use of readjustment rules in Distributed Morphology.

<sup>14</sup> Indeed, it would be naïve to attempt to rule the conduct of morphological research by philosophical prescription. Not surprisingly, scholars on both sides of the morpheme debate support their respective positions with metatheoretical considerations. For example, Aronoff (1994: 166) suggests that resistance to the morpheme smacks of reductionism (see also **Maiden**, §4) and argues that morphologists should rather ‘try to understand each system on its own terms’. Against this one might object that entertaining the hope of understanding a linguistic system on its own terms is a misleading illusion, as those terms are never given to us, so that deducing and testing predictions is our only defence against the theory-ladenness of observation. In **Aronoff’s** chapter in this volume, general reflections on the relationship between nature and culture are brought to bear on the concept of the morpheme, in terms that ultimately echo the ancient Greek debate on *φύσις* vs *νόμος*.

<sup>15</sup> See Koontz-Garboden (2007: 35–36) for a more detailed statement.

Koontz-Garboden regards (18) as an extremely valuable heuristic: for example, it plays a central role in his own research into anticausativization (Koontz-Garboden 2009). Yet this heuristic would have little force in a world where morphemes existed but had no positive characteristics: in such a world, (18) would have to be replaced by the tautology ‘Overt morphological derivation signals lexical semantic derivation except when it does not’.

### 3.2. Disagreement over negative criteria

Whilst **Koontz-Garboden** emphasizes the epistemological consequences of the absence of positive clues to morphomicity, the diagnosis problem has another equally important side: the negative definition of the morpheme can be very difficult to apply in practice because linguists often fail to agree on whether a phonologically, syntactically, or semantically motivated account correctly describes a given pattern of exponence. Several such debates have arisen in response to Maiden’s work on the Romance verb (e.g. 2005, this volume). There is disagreement, for example, on the extent to which the shared allomorphy of the future and the conditional submits to a synchronic semantic explanation: cf. Esher (2013) and Vincent (2013). The controversy is particularly intense over Maiden’s (2005: §5) ‘N-pattern’, which groups together the set of paradigm cells occupied by forms whose Latin ancestors were rhyzotonic. With relatively few exceptions, the incidence of rhyzotonic stress remains unchanged in present-day Romance verbs, and so instances of allomorphy putatively controlled by the N-morpheme often receive competing analyses relying on phonologically driven allomorph selection. Stem alternations in Rumantsch verbs are a case in point: cf. Anderson (2011, 2013) and Maiden (2013b). Here we shall illustrate the issues with the example of the diphthongal alternation in Spanish: cf. Bermúdez-Otero (2013: §3) and O’Neill (2014).

Present-day Spanish exhibits a fairly pervasive alternation between the diphthongs [je, we] and the monophthongs [e, o]; far less frequently, [je] and [we] alternate with [i] and [u]. An example of this alternation within a verbal paradigm is provided in (19).<sup>16</sup>

(19) *poder* ‘be able to’

	a. PRS.IND	b. PRS.SBJV	c. PST.IMPV
1SG	<i>puédo</i>	<i>puéda</i>	<i>podía</i>
2SG	<i>puédes</i>	<i>puédas</i>	<i>podías</i>
3SG	<i>puéde</i>	<i>puéda</i>	<i>podía</i>
1PL	<i>podémos</i>	<i>podámos</i>	<i>podíamos</i>
2PL	<i>podéis</i>	<i>podáis</i>	<i>podíais</i>
3PL	<i>puéden</i>	<i>puédan</i>	<i>podían</i>

<sup>16</sup> Examples are given in the standard orthography, but some nonstandard acutes have been added to indicate stress.

It has long been debated whether, synchronically, the monophthongal and diphthongal alternants derive from a single underlying representation or are rather weakly suppletive; Bermúdez-Otero (2013: §3.2) and O'Neill (2014: 184) agree on the latter option. What has not traditionally been in dispute, in contrast, is the idea that the distribution of the alternants is governed by stress, with the diphthongs [je, we] occurring in tonic syllables. Following suggestions in Maiden (2005: §5.3), however, O'Neill asserts that the Spanish diphthongal alternation is in fact not phonologically conditioned; rather, it is the N-morpheme that simultaneously controls both stress assignment and the diphthongal alternation. The relationship between the latter is, in O'Neill's view, one of correlation, rather than causation.

The nature of the generalizations governing stress assignment in present-day Spanish is certainly controversial. In contrast with O'Neill, Bermúdez-Otero (2013: 39-41) outlines an analysis in which the tenses that show alternations between rhyzotonic and arhyzotonic stress (19.a,b) reflect the default metrical regularities of the language, whereas nonalternating tenses (19.c) reflect underlyingly prespecified prosody. Be that as it may, the hypothesis that the Spanish diphthongal alternation involves phonologically conditioned allomorph selection receives support from a variety spoken in present-day Uruguay (Martínez-Paricio 2013; for similar dialects, see Alcoba Rueda 2013: §4.4 and the references therein). In Uruguayan, stress alternations have been levelled in the present subjunctive, which has become consistently rhyzotonic. Crucially, the diphthongal alternation changed at the same time, with the diphthongal alternant levelled across the present subjunctive but not the present indicative.

(20) Uruguayan<sup>17</sup>

	a. PRS.IND	b. PRS.SBJV	c. PST.IMPV
1SG	<i>puédo</i>	<i>puéda</i>	<i>podía</i>
2SG	<i>puédes</i>	<i>puédas</i>	<i>podías</i>
3SG	<i>puéde</i>	<i>puéda</i>	<i>podía</i>
1PL	<i>podémos</i>	<b><i>puédamos</i></b>	<i>podíamos</i>
3PL	<i>puéden</i>	<i>puédan</i>	<i>podían</i>

In a morphomic analysis, the fact that the N-pattern has simultaneously relinquished control of both stress and diphthongization in the present subjunctive must be a coincidence; under a phonological analysis, it is expected.

Faced with such data, O'Neill and Maiden respond that the coincidence is, after all, not surprising. Maiden (2010, 2012) provides data from several Romance varieties, including Ibero-Romance, in which segmental alternations have been levelled across the present subjunctive without levelling of stress. In O'Neill and Maiden's view, therefore, stress and segmental

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<sup>17</sup> Observe that in this dialect reference to 2PL is effected by the pronoun *ustedes*, which triggers 3PL agreement.



alternations can evolve independently of each other, and Uruguayan is simply a dialect in which the two analogical changes happen to coincide. This account, however, seems to predict the existence of Spanish dialects like Pseudo-Uruguayan in (21), where levelling has affected stress but not diphthongization.

(21)	Pseudo-Uruguayan					
	a.	PRS.IND	b.	PRS.SBJV	c.	PST.IMPV
	1SG	<i>puédo</i>		<i>puéda</i>		<i>podía</i>
	2SG	<i>puédes</i>		<i>puédas</i>		<i>podías</i>
	3SG	<i>puéde</i>		<i>puéda</i>		<i>podía</i>
	1PL	<i>podémos</i>		<b><i>pódamos</i></b>		<i>podíamos</i>
	3PL	<i>puéden</i>		<i>puédan</i>		<i>podían</i>

It is not clear that such varieties exist.

In addition, O'Neill's approach to Spanish diphthongization incurs massive loss of generalization, for the distribution of monophthongal and diphthongal alternants tracks stress with perfect regularity not just in verb inflection, but also in deverbal derivation.

(22)	a.	verb	{	INF	<i>revolcarse</i>	'to wallow'
			{	1SG.PRS.IND	<i>me revuélco</i>	'I wallow'
		derivatives	{	<i>revolcón<sub>N</sub></i>	}	'event of wallowing'
			{	<i>revuélco<sub>N</sub></i>		
	b.	verb	{	INF	<i>replegár</i>	'to withdraw, to retract'
			{	1SG.PRS.IND	<i>repliégo</i>	'I withdraw, I retract'
		derivatives	{	<i>replegable<sub>A</sub></i>	}	'retractable'
			{	<i>repliegue<sub>N</sub></i>		

The fact that the derivatives in (22) are deverbal and not deradical can be established by means of morphological and semantic criteria, such as the presence of verbal theme vowels and verbal argument structure (Bermúdez-Otero 2013: 36-38). In (23), for example, *repliegue* behaves like an argument-structure nominal (Grimshaw 1990).

- (23) Clausewitz observó el ordenado **repliegue** de las tropas rusas de Borodino a Moscú en siete días.  
 'Clausewitz observed the orderly withdrawal of the Russian troops from Borodino to Moscow in seven days.'

If deverbal derivation lies beyond the purview of the N-pattern, it follows that the morphomic analysis of the Spanish diphthongal alternation accounts for (19) but not (22), whereas an analysis assuming phonologically driven allomorph selection captures both.

However, **Maiden**'s fifth proposition (note 9) provides a possible response to such criticism. This relies on an argument of considerable subtlety and far-reaching implications. In effect, **Maiden** asserts that a pattern of allomorphy can be phonologically conditioned and morphomic at the same time; phonological motivation and morphomicity do not exclude each other. In support of this claim **Maiden** adduces evidence from the gerund of the Romanian verb *a fugi* 'run, flee' (see also Maiden 2013b: 38–41).

In Romanian, [k] and [g] followed by nonfront vowels alternate predictably with [tʃ] and [dʒ] before [i] or [e] in certain morphologically defined environments, including the root-final position of inflected verbs (see e.g. Chitoran 2001: 184ff). Virtually all of the affected verbs belong to the second and third conjugations, in which the gerund takes the suffix *-ând /-înd/*. Consequently, palatalization normally occurs in all paradigm cells except the 1SG.PRES.IND, the 3PL.PRES.IND, the 1SG.SBJV, the 3SG.SBJV, the 3PL.SBJV, and the gerund.

(24) *a plânge* 'to weep' (3<sup>rd</sup> conjugation)

	a. PRS.IND	b. SBJV	c. GERUND
1SG	<i>plân</i> [g]	<i>plân</i> [g]	
2SG	<i>plân</i> [dʒ]i	<i>plân</i> [dʒ]i	
3SG	<i>plân</i> [dʒ]e	<i>plân</i> [g]ă	
1PL	<i>plân</i> [dʒ]em	<i>plân</i> [dʒ]em	
2PL	<i>plân</i> [dʒ]eți	<i>plân</i> [dʒ]eți	
3PL	<i>plân</i> [g]	<i>plân</i> [g]ă	
			<i>plân</i> [g]ând

In contrast with second- and third-conjugation verbs, verbs of the fourth conjugation (which have 1PL.PRES.IND forms in *-im*) take the front-vowelled suffix *-înd* [-ind] in the gerund.

(25) *a dormi* 'to sleep' (4<sup>th</sup> conjugation)

	a. PRS.IND	b. SBJV	c. GERUND
1SG	<i>dorm</i>	<i>dorm</i>	
2SG	<i>dormi</i>	<i>dormi</i>	
3SG	<i>doarme</i>	<i>doarmă</i>	
1PL	<i>dormim</i>	<i>dormim</i>	
2PL	<i>dormiți</i>	<i>dormiți</i>	
3PL	<i>dorm</i>	<i>doarmă</i>	
			<i>dormînd</i>

It so happens that only one fourth-conjugation verb, *a fugi*, participates in the alternation between palatals and velars. Since fourth-conjugation verbs have gerunds in *-ind*, one expects *a fugi* to show the palatal alternant in the gerund, and this is indeed what happens in some dialects, including the standard norm:

(26) *a fugi* ‘to run, flee’ (4<sup>th</sup> conjugation)

	a. PRS.IND	b. SBJV	c. GERUND
1SG	<i>fú</i> [g]	<i>fú</i> [g]	
2SG	<i>fú</i> [ɟ̟]i	<i>fú</i> [ɟ̟]i	
3SG	<i>fú</i> [ɟ̟]e	<i>fú</i> [g]ă	
1PL	<i>fú</i> [ɟ̟]im	<i>fú</i> [ɟ̟]im	
2PL	<i>fú</i> [ɟ̟]iți	<i>fú</i> [ɟ̟]iți	
3PL	<i>fú</i> [g]	<i>fú</i> [g]ă	
			<i>fú</i> [ɟ̟]ind

Other dialects, however, display an innovative gerund *fugând* [fu'gînd], with a root-final velar consonant and the unexpected suffix *-ând*. According to **Maiden**, this innovation arises from the interaction of three patterns:

- (27)
- a. Velar alternants appear before nonfront vowels.
  - b. Velar alternants appear in the the 1SG.PRS.IND, the 3PL.PRS.IND, the 1SG.SBJV, the 3SG.SBJV, the 3PL.SBJV, and the gerund.
  - c. Fourth-conjugation verbs have gerunds in *-ind*.

Pattern (27.a) is phonological; patterns (27.b) and (27.c) are purely morphological. In the case of fourth-conjugation *a fugi*, however, it is impossible for all three statements to hold true simultaneously. **Maiden** argues that the innovative gerund *fugând* [fu'gînd] arises when (27.a) and (27.b) gang up together and defeat (27.c). If this is true, then the distribution of palatal and velar alternants in (24) is controlled by two separate regularities in the synchronic grammar of Romanian, acting simultaneously and in parallel: the phonological generalization in (27.a) and the morphomic pattern in (27.b).

There is a measure of independent support for **Maiden**'s suggestion that a single distributional pattern may be encoded more than once in the grammar. For example, Bermúdez-Otero (2015: 382-392) shows that the diachronic life cycle of phonological processes often produces ‘rule scattering’: i.e. it results in the synchronic superposition of different versions of the

same process applying in different components of the grammar (e.g. gradient phonetic rules, discrete phonological rules, and patterns of allomorphy).<sup>18</sup>

However, if **Maiden's** fifth proposition is accepted as true, this will have momentous methodological implications. Notably, the negative definition of the morpheme in section 3.1 will need to be relaxed, as morphomicity will no longer be ruled out by a synchronically active phonological motivation. In turn, this would mean that particular morphomic analyses would be even less empirically corrigible than **Koontz-Garboden** concedes. As a result, the prospects of settling the argument over the existence claim (and all the theoretical disputes that depend on it) by empirical means would recede further into the distance. Notice, for example, that the debates over the Latin third stem and over Spanish theme vowels in section 2, and over the Romance N-morpheme in this section, all concern phonological motivation. Of course, these methodological implications of **Maiden's** fifth proposition have absolutely no bearing on its truth or falsity: whatever is the case is the case, however awkward the epistemological consequences. On the other hand, it would seem fair to conclude that future work on morphemes ought to address the diagnosis problem as a matter of some priority.

### 3.3. Repercussions of the diagnosis problem

One may of course ask if the diagnosis problem as described above really amounts to anything out of the ordinary in contemporary linguistics; in his chapter, **Koontz-Garboden** reports an exchange of views with Round on precisely this point. What is clear, at any rate, is that questions such as whether there is a synchronically active N-morpheme in present-day Romance have far-reaching implications for the theory of grammar. In particular, **Corbett** shows that key principles like Morphology-Free Syntax are at stake:

- (28) *Morphology-Free Syntax* (after Zwicky 1992: 354)  
 Syntactic rules have no access to purely morphological properties.

This principle captures fundamental intuitions such that the syntactic behaviour of Spanish nouns and adjectives (12) may be affected by their gender, but not by their inflection class (cf. Bernstein 1993, but see Alexiadou & Müller 2008: §5.3). However, **Corbett** draws attention to a curious syntactic construction in the western Sicilian dialect of Marsala, which, if analysed in terms of Maiden's N-morpheme, would violate Morphology-Free Syntax.

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<sup>18</sup> Note, however, that Bermúdez-Otero's diagnoses of rule scattering rely on positive criteria for properties such as phonetic gradience, phonological categoricity, and morphological conditioning, often applied to experimental data. These criteria include the presence of residual articulatory gestures, interactions with speech rate, bimodal distribution in phonetic space, etc (Bermúdez-Otero & Trousdale 2012: 694-696, Bermúdez-Otero 2015: 383). Moreover, the grammatical architecture that explains rule scattering makes strong empirical predictions, notably Morphology-Free Phonetics (Bermúdez-Otero 2015: 388-392; cf. the discussion of Morphology-Free Syntax in section 3.3). In this sense, the theory of rule scattering is nonreductionist but robustly falsifiable; cf note 14.

Like other Sicilian and southern Italian dialects, Marsalese has a monoclausal structure known as the ‘doubly inflected construction’, which contains two inflected verbs linked by the particle *a* ‘to’: the first member of the construction must be a form of one of the motion verbs *iri* ‘go’, *viniri* ‘come’, or *passari* ‘come by’; the second member is another verb inflected for the same features (Sornicola 1976, Cardinaletti & Giusti 2003, Cruschina 2013).

- (29) **Vaju** a **pigghiu** u pani.  
 go.1SG.PRS to fetch.1SG.PRS the bread  
 ‘I go and fetch the bread.’ (Cardinaletti & Giusti 2003: 34)

Interestingly, the construction is available only with certain forms of *iri*, *viniri*, and *passari*: namely, the 1/2/3SG.PRS, the 3PL.PRS, and the SG.IMP.

- (30) \***Emu** a **pigghiamu** u pani.  
 go.1PL.PRS to fetch.1PL.PRS the bread  
 ‘We go and fetch the bread.’ (Cardinaletti & Giusti 2003: 44)

Even more intriguing is the observation that, in the paradigms of *iri* and *viniri*, the forms that participate in the doubly inflected construction exhibit a different stem allomorph from all the other cells: *va-* and *ven-*, respectively.

(31)	<i>iri</i>	<i>viniri</i>	Doubly inflected construction?
1SG.PRS	<i>vaju</i>	<i>vegnu</i>	✓
2SG.PRS	<i>vai</i>	<i>veni</i>	✓
3SG.PRS	<i>va</i>	<i>veni</i>	✓
1PL.PRS	<i>emu</i>	<i>vinemu</i>	✗
2PL.PRS	<i>iti</i>	<i>viniti</i>	✗
3PL.PRS	<i>vannu</i>	<i>vennu</i>	✓
SG.IMP	<i>va</i>	<i>veni</i>	✓
PL.IMP	<i>iti</i>	<i>viniti</i>	✗

(Cruschina 2013: 272)

Exactly the same cells are involved in the case of *passari*, although there is no overt stem allomorphy.

Like Cruschina (2013: 265), **Corbett** draws attention to the fact that the forms that participate in the doubly inflected construction belong in Maiden’s N-morphome. Moreover, linguists like Thornton (2007) argue that the N-morphome splits the paradigm of all Italian verbs, even when, like *passari* in Marsalese, they are regular and do not exhibit overt stem alternations. If this is accepted, then the doubly inflected construction of Marsalese could be described as being under the control of the N-morphome: in this view, the syntax would license doubly inflected

structures only for N-pattern forms. Stating the generalization in this way, however, would result in a direct violation of Morphology-Free Syntax.

As it happens, comparative evidence adduced by Bjorkman (2016) indicates that this would be the wrong way of looking at the Marsalese facts. According to Bjorkman, the crucial property of the *iri* and *viniri* forms that participate in the doubly inflected construction is, rather, that they contain the elsewhere form of the verb stem, i.e. the syntactically least specified exponent. The elsewhere status of the allomorphs *va-* and *ven-* is demonstrated by the fact that they are found in the SG.IMP, which is often realized by bare unmarked stems in the languages of the world.<sup>19</sup> This generalization enables Bjorkman to unify the analysis of the Marsalese doubly inflected construction with that of other monoclausal two-verb structures that are only available with unmarked verb forms, like the English *go get* construction (Zwicky 1969: 430-440):

- (32) a. **Go get** a flue shot!  
 b. Let's **go get** a snack.  
 c. You have to **come visit** me soon.  
 d. On Mondays I **go buy** my groceries.  
 e. \*Yesterday I **went bought** a coffee.  
 f. \*Yesterday I **went buy** a coffee.

If Bjorkman's analysis is correct, then it is indeed the case that, in line with Maiden's and Thornton's proposals, the overt split in the paradigms of *iri* and *veniri* has been extended to *passari*, where it remains covert. Nonetheless, the split is able to cause syntactic effects precisely because it is not morphomic; rather, it is motivated, in this instance, by syntactic underspecification, *pace* Maiden (2005: 159). If so, **Corbett's** concerns are allayed, and Morphology-Free Syntax remains inviolate.

#### 4. The no-bias claim

In sections 2 and 3 we saw that, although the literature reports a large number of putative instances of morphomicity, some of which are widely regarded as impressive, none commands general assent.<sup>20</sup> Nonetheless, it is a useful exercise to set these disagreements aside and to ask

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<sup>19</sup> In Calabria and other regions of mainland Italy there are dialects in which the doubly inflected construction is found only in the imperative (Rohlf's 1969: §761). We are grateful to Delia Bentley for drawing our attention to this significant fact.

<sup>20</sup> So far we have not mentioned one of the most frequently cited candidates to morphomic status: the syncretism of passive and perfective participles in English and many other Indo-European languages (Aronoff 1994: 23-25). Aronoff describes this pattern as typologically isolated, but in this volume **Koontz-Garboden** wonders whether the crosslinguistic situation has been adequately investigated. Larsson & Svenonius (2013) note that Norwegian and Swedish have innovated a distinction between passive and perfective participles, and they use this evidence to argue that the syncretism 'is not simply morphological'. Nevins (2014: 13) reports preliminary evidence that the syncretism

what conclusions would follow if many or most of the existing morphomic diagnoses turned out to be correct. In that case, morphemes would appear to be common and remarkably long-lived. This leads **Maiden** to the formulation of the no-bias claim, which is crisply enunciated in his fourth proposition:

- (33) Speakers do not especially prefer ‘non-morphomic’ over ‘morphomic’ patterns.

For reasons that will become apparent below, our own statement in (1.b) assumes a specific interpretation of **Maiden**’s ‘speaker preferences’ as consisting of learning biases. In these terms, proponents of the no-bias claim assert that there is no learning bias in favour of exponence patterns referring to natural classes.

In the context of a broad discussion of the roles of nature and culture in human language, **Aronoff** advances arguments that can be taken to support the no-bias claim. Notably, he adduces evidence from grammatical gender as showing that human learners have no difficulty setting up linguistic categories whose membership is largely arbitrary. Citing Corbett (1991), he observes, in particular, that systems in which gender is assigned on strictly semantic grounds are very rare.

**Maiden**’s arguments for the no-bias claim are diachronic. In this volume he focuses on the evolution of the ‘L-pattern morpheme’, which groups together the 1SG.PRS.IND and the PRS.SBJV forms of Romance verbs (Maiden 2005: §4). **Maiden** reports that, although verbs exhibiting the L-morpheme (34.a) coexist in the Romance languages with verbs in which a special allomorph is confined to the PRS.SBJV (34.b), one does not observe paradigm extension expanding the latter pattern at the expense of the former.

(34)	a. Standard Spanish ‘fit’ <sup>21</sup>		b. Old Italian ‘give’		
		PRS.IND	PRS.SBJV	PRS.IND	PRS.SBJV
	1SG	<i>quepo</i>	<i>quepa</i>	<i>do</i>	<i>dia</i>
	2SG	<i>cabes</i>	<i>quepas</i>	<i>dai</i>	<i>dia</i>
	3SG	<i>cabe</i>	<i>quepa</i>	<i>dà</i>	<i>dia</i>
	1PL	<i>cabemos</i>	<i>quepamos</i>	<i>damo</i>	<i>diamo</i>
	2PL	<i>cabéis</i>	<i>quepáis</i>	<i>date</i>	<i>diate</i>
3PL	<i>caben</i>	<i>quepan</i>	<i>danno</i>	<i>diano</i>	

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is breaking down in present-day Brazilian Portuguese. In section 5 we discuss Trommer’s (2016) analysis of this syncretism by means of impoverishment rules in Distributed Morphology.

<sup>21</sup> Analogical forms like 1SG.PRS.IND *cabo* and 1/3SG.PRS.SBJV *caba* are common in present-day nonstandard varieties of Spanish. We know of no quantitative studies comparing the frequency of use of the innovative forms in the 1SG.PRS.IND and in the PRS.SBJV.

Rather, the opposite is true: **Maiden** identifies innovations whereby a new allomorph introduced in the 1SG.PRS.IND is extended to the PRS.SBJV, or a new allomorph introduced in the PRS.SBJV is extended to the 1SG.PRS.IND. The second scenario is illustrated with the contrast in the conjugation of ‘do, make’ between the Rhaeto-Romance dialects of Parsons and Pignia.

(35)	a. Parsons		b. Pignia	
	PRS.IND	PRS.SBJV	PRS.IND	PRS.SBJV
1SG	fatʃ	'fɛtʃa	fɛtʃ	'fɛtʃi
2SG	fa:st	'fɛtʃas	fas	'fɛtʃas
3SG	fɔ	'fɛtʃa	fa	'fɛtʃi
1PL	fa'zɑɲ	'fɛtʃɑn	fa'zain	fa'zɛjan
2PL	fa'zɛts	'fɛtʃas	fa'zɛts	fa'zɛjas
3PL	fɔn	'fɛtʃian	fan	'fɛtʃian

Estimating the weight of these arguments is a delicate business. For example, **Aronoff's** comparison of morphemes with grammatical gender appears to us to cut both ways. On the one hand, the evidence of gender categories does show that it would be illegitimate to infer the impossibility of morphemes from their arbitrary membership. It also indicates that, by seeking to maximize the natural component of grammatical patterns, one may sometimes end up with an analysis whose independent empirical justification may not be immediately apparent. For example, Sigurðsson (2015) decomposes gender agreement into two components: the narrow syntax distributes abstract ‘edge linkers’, and PF realizes them through gender marking in languages with gender. It remains to be seen whether Sigurðsson would have reason to analyse gender agreement in this way if he did not assume that narrow syntax is innate and universal.

On the other hand, gender systems differ from morphomic patterns in ways that are directly relevant to the assessment of the no-bias claim. To appreciate this fact, consider again Spanish nouns, discussed in section 2 above. As illustrated in (12), every Spanish noun bears a gender specification and also belongs to a stem class;<sup>22</sup> but, whereas gender is syntactically active, stem-class membership has no syntactic import. From the viewpoint of learnability, this difference has two important consequences. First, the fact that Spanish has gender distinctions manifests itself through alternations in the form of adjectives, determiners, and pronouns, whereas the only evidence for the existence of nominal inflection classes comes from the distribution of theme vowels.<sup>23</sup> Secondly, the gender of a particular Spanish noun can be cued by both intraparadigmatic

<sup>22</sup> This is true if one counts athematic stems as a fourth inflectional class, alongside *o*-stems, *a*-stems, and *e*-stems (Bermúdez-Otero 2013: 11ff). Note that we say that every Spanish noun **belongs** to a stem class, and not that it is **specified** for stem-class membership, because, as we saw in section 2, it is not necessary to assume that class affiliation is represented by means of morphomic features.

<sup>23</sup> Of particular importance is the fact that neither the linear position of the theme vowel *-e-* in singular forms nor its appearance in plural forms is phonologically predictable: see Bermúdez-Otero (2013: 10ff) and references therein.



and extraparadigmatic information, whereas the cues to its class membership are exclusively intraparadigmatic.

This asymmetry in the information available to learners of Spanish may account for some subtle and rarely discussed phenomena, notably the fact that Spanish nouns exhibit less variation in gender affiliation than in stem-class membership. Standard Spanish has a tiny handful of nouns with variable gender: e.g. *el mar* ‘the.M.SG sea’ ~ *la mar* ‘the.F.SG sea’.<sup>24</sup> Yet, largely as a result of borrowing, the language has an appreciably bigger set of nouns with fixed gender but variable class affiliation: for example, the nouns *menú* ‘menu’ and *bol* ‘bowl’, respectively borrowed from French and English, are consistently masculine (*el menú*, *el bol*), but oscillate between the athematic class (PL *menú-s*, *bol-s*) and the *e*-class (PL *menú-e-s*, *bol-e-s*). Strikingly, this is the case even though, at the time of borrowing, the gender of *bol* was semantically and phonologically arbitrary (cf. *el sol* ‘the.M.SG sun’, *la col* ‘the.F.SG cauliflower’), whereas its class membership was partially motivated, as foreignness correlates with athematic status (Bermúdez-Otero 2013: 12, 14-15). If correct, these observations suggest that, in a range of circumstances, morphomic distinctions may suffer from a learnability disadvantage in comparison with distinctions that have syntactic effects, like gender.<sup>25</sup>

Further consideration of **Maiden**’s diachronic evidence leads to similar conclusions. The evolution of the L-pattern in the history of Romance demonstrates that a putative morpheme can be acquired when it enjoys enough inductive support, but it does not tell us how much is enough. More specifically, the historical data do not tell us whether or not learning morphomic patterns requires stronger inductive support than learning nonmorphomic generalizations. In consequence, the diachronic survival of a morphomic pattern does not show that there is no bias against it, since, by definition, biases are defeasible. The evidence of the L-pattern is therefore logically consistent with rejecting the no-bias claim.

Admittedly, **Maiden**’s argument does prove that apparent morphomicity need not result in an immediate death sentence: the L-pattern did survive as a productive generalization in the Romance languages for some time. Nonetheless, wug-tests carried out by Nevins *et al.* (2015) indicate that the L-morpheme is quite dead in present-day European Portuguese, Italian, and Spanish. Nevins *et al.* exposed native speakers to nonce alternations like those in (36.a). Responses in both conditions showed a natural-class advantage: natural realizations of the target involving person-based or mood-based syncretism were clearly preferred to morphomic realizations abiding by the L-pattern.

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<sup>24</sup> The variation is heavily skewed: the feminine variant is relatively infrequent in the singular (*el mar* > *la mar*), and is completely ungrammatical in the plural (*\*las mares*).

<sup>25</sup> Further afield, computational research into phonological learning suggests that distributions and alternations may play different roles in acquisition. In general, neural networks are very good at discovering segmental categories through purely distributional learning (Boersma 2012). However, some neural networks fail to decompose segmental categories into features on the basis of phonetic similarity alone and can only acquire features (and so segmental equivalence classes) with the help of alternations (Boersma & Chládková 2013a).

(36)	IND-to-SBJV condition	SBJV-to-IND condition
a. triggers	<i>mifo</i> 1SG.PRS.IND <i>mipes</i> 2SG.PRS.IND	<i>mifes</i> 2SG.PRS.IND <i>mipas</i> 2SG.PRS.SBJV
b. target	? 2SG.PRS.SBJV	? 1SG.PRS.IND
c. response types	<i>mifas</i> L-pattern <i>mipas</i> natural (person-driven)	<i>mifo</i> natural (mood-driven) <i>mipo</i> L-pattern
		(after Nevins <i>et al.</i> 2015: 111)

Nevins *et al.* (2015: 139) concede that the L-pattern was semiproductive during earlier periods in the history of Romance. They speculate that its death may have been caused by a decline in its inductive support. The L-pattern manifests itself overtly only in verbs of the marked conjugations; it remains covert—if at all present—throughout the first conjugation. As the vocabulary of the Romance languages expanded historically, the number of first-conjugation verbs, which did not provide overt support for the L-morpheme, grew significantly faster than the number of verbs of the marked conjugations.

If the proposals of Nevins *et al.* are on the right lines, then the historical evidence shows that the survival of a putative morpheme depends on the strength of its inductive support. What diachronic arguments like **Maiden's** cannot tell us is whether a morphomic pattern can be successfully acquired without greater inductive support than a minimally different nonmorphomic pattern. For one thing, spontaneously occurring data rarely afford sufficient control of all variables for precise comparison. For another, historical documents provide a rather imperfect record of the fine quantitative properties of the evidence available to learners. Even so, there are other diachronic considerations which hint at the existence of a bias towards naturalness. In this volume, **Corbett** formulates the following diachronic conjecture, which he supports with examples from the history of Russian:

- (37) Morphomic splits start out as obligatory and may become optional; motivated splits start out as optional and may become obligatory.

This is precisely what one expects if natural patterns enjoy a learnability advantage and morphomic patterns suffer from a learnability disadvantage.

Typological research also provides indirect evidence against the no-bias claim. For example, Pertsova (2014: 413–414) reviews crosslinguistic studies of person-and-number syncretisms in pronouns and verbal agreement, including Baerman (2002), Cysouw (2003), and Pertsova (2011). The results converge in showing that natural syncretisms are overwhelmingly more frequent than unnatural ones, and occur far more often than would be expected by chance alone. More specifically, Pertsova (2011) defines two types of natural paradigm: in Type 1, every marker occupies a set of cells that can be defined by a single semantic feature or by the Boolean

conjunction of two or more features; in Type 2, all markers exhibit conjunctively defined distributions except for one, which occurs in the complement of the cells occupied by the others. In accordance with these definitions, Type 1 is a proper subset of Type 2. Pertsova (2011: 258) reports that Type 1 paradigms make up between 47% and 51% of her sample, and natural paradigms in general (i.e. Type 2) constitute between 83% and 91% of the total. By these counts, possible morphemes form a clear minority: between 17% and 9%. Let us now assume that phonological change generally proceeds with neogrammarian blindness, and so is as likely to produce morphomic syncretisms as natural ones (see **Maiden's** second proposition in note 9). If, in turn, morphomic syncretisms have the same chance of persisting diachronically as natural ones, in accordance with **Maiden's** fourth proposition, then the relative typological underrepresentation of unnatural paradigms becomes a mystery. In Pertsova's interpretation, in contrast, the typological evidence indicates the existence of a learning bias against unnatural systems.

The issue of learning biases can in fact be pursued more directly by means of artificial grammar learning experiments (e.g. Pertsova 2014). In phonology, this method has experienced a dramatic growth in currency and refinement in recent years. Interestingly, studies testing for biases in favour of natural classes of sounds show an impressive degree of convergence: virtually without exception, the results are positive (see Moreton & Pater 2012a for an extensive survey). This natural-class advantage emerges consistently whether or not the pattern to be acquired makes sense in articulatory or auditory terms; indeed, the formal bias in favour of natural classes appears to be far more robust than any possible advantage grounded on phonetic substance (Moreton & Pater 2012b). There is thus no doubt that, in phonological learning, a subset of segments is recognized and represented as an equivalence class more easily if it consists of all and only the segments picked up by a single phonological feature or by the Boolean conjunction of two or more features.

Crucially, this finding does not entail that phonological features themselves must be given innately; on the contrary, it merely requires that the features that go into the characterization of natural classes should themselves be independently definable in terms of phonetic properties.<sup>26</sup> Accordingly, it is consistent with theories that assert that features emerge in the course of phonological development (see e.g. Cristià *et al.* 2011). *Pace Aronoff*, therefore, scepticism about feature innateness does not warrant scepticism about natural classes. Indeed, the natural-class advantage may itself arise from domain-general properties of human cognition. Pertsova (2014: 413) reports that psychological studies of artificial category learning in other domains, such as vision, also find a bias towards categories defined by a single feature or by the conjunction of features.

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<sup>26</sup> Pertsova (2014 : footnote 1) makes a similar point in respect of the semantic definition of syntactic features.

(38) *Difficulty of category acquisition according to the logical relationship between features*

	← easy		hard →	
category (members shaded)	● ■ ○ □	● ■ ○ □	● ■ ○ □	● ■ ○ □
logical relationship between the features	<i>affirmation</i> circle	<i>conjunction</i> circle AND solid	<i>disjunction</i> square OR hollow	<i>exclusive disjunction</i> (square AND solid) OR (circle AND hollow)

(after Pertsova 2014: 413)

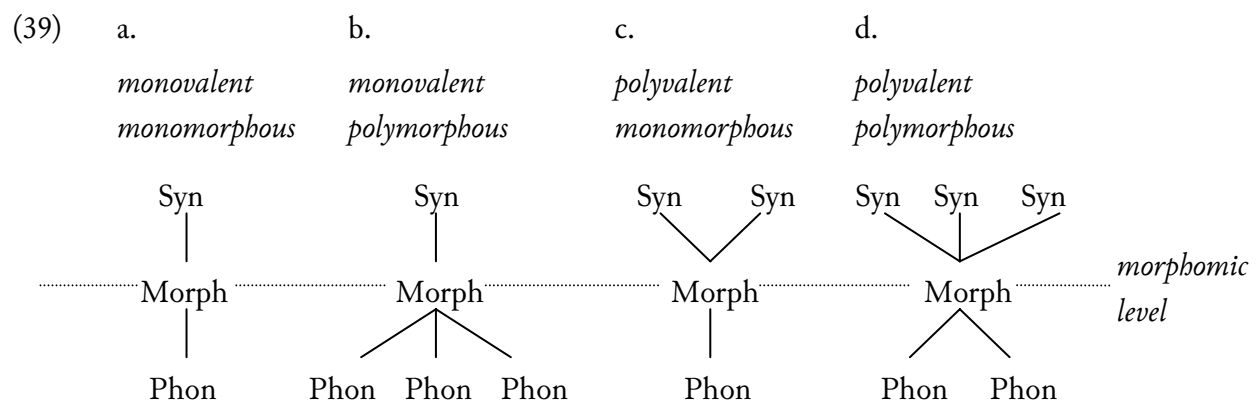
In sum, the experimental evidence for a defeasible natural-class advantage in phonological acquisition is as strong as one could wish for. There is no immediately apparent reason why morphology should be different in this respect, particularly if the bias in favour of conjunctively defined categories arises from domain-general properties of human cognition. The typological evidence suggests that, indeed, a natural-class advantage obtains in morphological acquisition too. In this light, it would be strange and surprising if the no-bias claim, as formulated in (1.b) and (33), turned out to be true. In this section we have argued that neither **Aronoff's** conceptual arguments nor **Maiden's** diachronic evidence force us to accept the no-bias claim. The question of learnability asymmetries between morphomic and nonmorphomic patterns should rather be directly pursued by means of artificial grammar learning experiments like Pertsova's (2014). Since many linguists are prepared to accept the existence claim but reject the no-bias claim in more or less emphatic terms (e.g. Vincent 2013, Nevins *et al.* 2015), new and reliable empirical data on this question would have the potential to considerably reduce the heat of the morphome debate.

### 5. The analysis question and the morphomic-level claim

If for the sake of argument we continue to grant the existence claim and to ignore the diagnosis problem, we can now ask the analysis question (1.a): how does the grammar generate morphomic patterns? One might expect that a linguist's answer will be informed by her view of the no-bias claim. If a morphome can be acquired as easily as a natural syncretism, then it would make sense to assume that both types of pattern are represented in similar ways. In contrast, if morphomes suffer from a learnability disadvantage, we could hypothesize that this bias arises because morphomic patterns require more complex grammatical mechanisms. In this section we shall see that, indeed, there is a strong correlation between a morphologist's attitude towards the concept of the morphome and the analytic strategies that she is likely to adopt when faced with putatively morphomic patterns. However, the logic underpinning this correlation turns out to be less sound than may appear at first sight: theories with enough power to generate highly unnatural patterns

of syncretism exist on both sides of the debate and, in the current state of knowledge, the relationship between learning biases and morphological architectures is at best moot.

Aronoff (1994: 25) was the first to suggest that morphemes are cut from the same cloth as all other patterns of exponence. More specifically, he proposed that exponence relationships are mediated by purely morphological categories even when the exponenda or the exponents constitute natural classes. In other words, exponence functions go through a purely morphological level of representation not only when they are morphomic in the narrow sense (see note 2), i.e. when they are polyvalent and polymorphous (39.d), but also when they are monovalent and polymorphous (39.b), polyvalent and monomorphous (39.c), and even monovalent and monomorphous (39.a). This assertion is the morphomic-level claim (1.c). Under this hypothesis, exponence functions of types (39.a), (39.b), and (39.c) constitute morphemes in the broad sense (see **Aronoff** in this volume).



The morphomic-level claim may be seen as a manifestation of MORPHOMIC MAXIMALISM, i.e. of a research programme that seeks to make maximum use of the grammatical mechanisms motivated by morphemes in the narrow sense.<sup>27</sup> This trend characterizes a great deal of current work in inferential-realizational frameworks within the broad tradition of Word-and-Paradigm Morphology (Stump 2001: 3ff). In this volume, Part II offers several examples of morphomic maximalism. **Round** proposes a direct implementation of Aronoff's morphomic-level claim in his analysis of Kayardild morphotactics (see also Round 2012). **Spencer** explores the possibility of substantially expanding the domain of morphomicity by adopting the Strictly Morphomic Stem Hypothesis (Spencer 2012), which holds that all stems behave like the third stem of Latin verbs in Aronoff's (1994: ch. 2) analysis: i.e. they make no contribution to the semantic representation of the lexeme (see section 2 above, and cf. **Embick** for a diametrically opposed view). Finally, **Stump's** theory of paradigm linkage (Stump 2002) constitutes a special version of the morphomic-level claim. In this theory, the set of syntactic contrasts relevant to a lexeme defines a content paradigm; the corresponding set of morphological contrasts defines a form paradigm. Rules of paradigm

<sup>27</sup> Hereafter we revert to our previous usage, in which the term 'morpheme' refers exclusively to morphomic patterns in the narrow sense: i.e. polyvalent polymorphous exponence functions like (2) and (39.d). See note 2 above.

linkage associate particular cells in the content paradigm with particular cells in the form paradigm. The rule mapping a content cell to a form correspondent with the same features holds only by default; it can be overridden by more specific rules, which may give rise to morphomic patterns. Thus, Stump's theory illustrates the affinity between morphomic maximalism and DEFO analyses of morphomic patterns (Stewart & Stump 2007: 414, after Zwicky 1986; and see note 3 above).

If there is a learning bias against morphemes, however, the existence of a purely morphological level of representation in the grammar may do nothing to mitigate it. In section 4 we contemplated the possibility that the ease or difficulty with which a category is discovered may largely depend on the logical relationship between the features that go into the category's definition: see (38). If so, positing a morphomic level will leave the relative learnability advantage of natural classes undiminished, particularly if the latter arises from domain-general cognitive mechanisms, as suggested by Pertsova (2014). Indeed, the morphomic-level claim raises learnability problems of its own. For example, what alerts learners to the existence of intermediate morphological representations in monovalent monomorphous patterns of exponence (39.a)? In other words, we may ask, paraphrasing Aronoff (1994: 25), how learners find out about morphemes that do **not** 'truly earn their name'. This question could conceivably be answered with an appeal to architectural innateness in the sense of Elman *et al.* (1996: 25-31): genetically endowed knowledge requires the construction of a morphomic level. However, such a solution would directly conflict with Aronoff's empiricist perspective on morphemes.

In contrast with the morphomic maximalism that currently prevails in Word-and-Paradigm Morphology, the proponents of lexical-realizational theories like Distributed Morphology (e.g. Halle & Marantz 1993, 1994; also Embick 2010, Arregi & Nevins 2012) virtually never mention the term 'morpheme'. Nonetheless, Trommer (2016) draws attention to the fact that standard rule-based versions of Distributed Morphology have enough power to generate most—and possibly all—of the putatively morphomic patterns identified in the literature. If correct, Trommer's assessment would indicate that the striking differences in foundational assumptions and styles of argument between Word-and-Paradigm Morphology and Distributed Morphology hide an unexpected degree of overlap in empirical content.

Indeed, the two frameworks share some of the tools commonly used to capture morphomic patterns, such as inflectional class features. In section 2 we saw that Aronoff (1994: 67-72) follows Harris (1991, 1992) in describing the distribution of nominal theme vowels in Spanish by means of declension diacritics: see (15). Trommer (2016: §2.2) observes that Halle & Marantz (1994) do exactly the same in their exposition of the main principles of Distributed Morphology. Within the same framework, **Acquaviva** uses a node hosting class features to account for the similarities between *n*-declension nouns and weakly inflected adjectives in German.

Trommer (2016: §5.3) further shows that, in Distributed Morphology, impoverishment rules can be used aggressively to 'carve' an arbitrary set of cells out of a paradigm. He illustrates this procedure with an analysis of one of Aronoff's (1994) choice examples of morphomicity: the syncretism between passive and perfective participles in present-day English (see note 20 above).

Trommer's account works by ensuring that passive and perfective participles end up solely specified as [-finite], and that infinitives become totally unspecified.

(40) *English passive and perfective participles syncretized by carving* (Trommer 2016: §5.3)

a. impoverishment rules

$$(i) \begin{bmatrix} - \text{pfv} \\ - \text{pass} \\ - \text{fin} \end{bmatrix} \rightarrow \emptyset$$

$$(ii) \quad [\pm \text{pass}] \rightarrow \emptyset$$

$$(iii) \quad [\pm \text{pfv}] \rightarrow \emptyset$$

b. vocabulary items

$$[-\text{fin}] \leftrightarrow -ed$$

$$[ \quad ] \leftrightarrow -\emptyset$$

c. derivations

syntactic specifications	$\begin{bmatrix} - \text{pfv} \\ - \text{pass} \\ - \text{fin} \end{bmatrix}$	$\begin{bmatrix} - \text{pfv} \\ + \text{pass} \\ - \text{fin} \end{bmatrix}$	$\begin{bmatrix} + \text{pfv} \\ - \text{pass} \\ - \text{fin} \end{bmatrix}$	$\begin{bmatrix} + \text{pfv} \\ + \text{pass} \\ - \text{fin} \end{bmatrix}$
rule (a.i)	[   ]	—	—	—
rule (a.ii)	—	$\begin{bmatrix} - \text{pfv} \\ - \text{fin} \end{bmatrix}$	$\begin{bmatrix} + \text{pfv} \\ - \text{fin} \end{bmatrix}$	$\begin{bmatrix} + \text{pfv} \\ - \text{fin} \end{bmatrix}$
rule (a.iii)	—	[- fin]	[- fin]	[- fin]
output of impoverishment	[   ]	[- fin]	[- fin]	[- fin]
vocabulary insertion	-∅	-ed	-ed	-ed

Trommer's example shows that the standard rule-based version of Distributed Morphology is perfectly capable of describing morphomic patterns; in this respect, its generative capacity does not seem obviously smaller than that of inferential-realizational theories. An interesting question, however, is whether analyses like (40) become unavailable in constraint-based implementations of Distributed Morphology (Trommer 2001) that rely on markedness-driven impoverishment (Noyer 1998). Such models may be unable to replicate the effects of rules like (40.a,i), which deletes unmarked feature values in an unmarked context (cf. Nevins 2011).

In any case, the analysis in (40) highlights an important conceptual difference between Distributed Morphology and frameworks that subscribe to the morphomic-level claim. The latter assume that all exponence patterns are mediated by purely morphological representations. In contrast, Distributed Morphology asserts that class diacritics and impoverishment rules are available to the language-learning child as devices for representing inflectional classes and systematic syncretisms, but the theory does not require the presence of these devices in the grammar of every language. In this sense, Distributed Morphology is a resolutely BASI theory

(Stewart & Stump 2007: 414, after Zwicky 1986; and see note 3 above): morphomic behaviour is captured by enriching the morphological derivation with additional steps such as impoverishment operations or the insertion of class nodes. Morphomicity is thus characterized as a marked state of affairs; in the absence of language-particular processes of impoverishment or insertion, the grammar only generates Type 2 paradigms in the sense of Pertsova (2011), i.e. natural paradigms in which markers either have conjunctively defined distributions or work as elsewhere exponents.

In this light, Trommer (2016) points out that Distributed Morphology could be used to define an evaluation metric for morphological derivations. On the assumption of an inverse correlation between derivational complexity and learnability, such a metric would make predictions about acquisition biases and, by implication, about morphological typology (see section 4). Although Trommer's proposal would have the eminent virtue of increasing the empirical content of the theory, it remains a largely untried possibility. In addition, it is by no means certain that the programme would succeed. Evaluation metrics have a relatively poor record of explaining the facts of language acquisition: see Bermúdez-Otero (2012: 21-24) for the case of *SPE* (Chomsky & Halle 1968).<sup>28</sup> If Pertsova (2014) is right, domain-general cognitive mechanisms may suffice to explain the learnability advantage of natural classes.

## 6. Conclusion

At first blush, the morphome debate may seem largely concerned with a choice between two package deals. Morphologists working in the word-and-paradigm tradition embrace the existence claim, are more or less tolerant of the no-bias claim, and pursue a DEFO approach to the analysis question, often resulting in morphomic maximalism. In contrast, the practitioners of lexical-realizational theories like Distributed Morphology are hostile to the morphome: they typically resist the existence claim, deny the no-bias claim, and take a BASI line on the analysis question. In this chapter, however, we have seen that the true situation is considerably more nuanced: acceptance of the existence claim is in fact fairly widespread, and, despite their conceptual differences, theories on both sides of the argument turn out to exhibit a surprising amount of empirical overlap. There is scope for useful empirical and theoretical work on the diagnosis problem and on the issue of learning biases. The latter, we have suggested, calls for greater use of new research methods like artificial grammar learning experiments. Such work promises to improve our understanding of the place of morphology in the overall architecture of grammar. Yet, even if the language faculty turns out to contain an autonomous morphological component, it is abundantly clear that morphology as a scientific discipline cannot prosper if pursued in an autonomous fashion: progress will come only through the vigorous pursuit of methodologically eclectic and broadly interdisciplinary research.

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<sup>28</sup> But cf. Rasin & Katzir (2016) for a different view.



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