

Exaptation from Arabic syntax to Persian lexical Morphology

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It has long been natural for linguists to invoke metaphors taken from the life sciences, in particular evolutionary biology. In recent decades it has been argued that such analogies represent not mere rhetoric or metalinguistic convenience, but actual processes in language development; after all, why should not a biologically-conditioned cultural phenomenon such as language, the collective product of a life form, replicate aspects of a form of life – and not just general processes such as evolution and extinction, but actual details of the process, such as natural selection and exaptation?

“Exaptation” is a biological term coined by Stephen J. Gould and Elisabeth Vrba in a 1982 article¹. It may be defined as “a case where an anatomical structure that originally evolved to serve one function was later commandeered to facilitate a quite different function.” For instance, feathers in the proto-avian dinosaur lineage demonstrably evolved before the capacity for flight; their purpose must have been something else, such as thermo-regulation (to keep them warm), or display (to attract a mate) – functions which additionally continued in many cases. However, this structure was fortuitously available when it was later modified to provide flight-control surfaces. Darwin anticipated this process in 1859, applying the term “pre-adaptation,” and citing the example of a fish’s swim-bladder, as having originally evolved for flotation, and in land animals being converted to a wholly different purpose – that of respiration, in the form of lungs².

In linguistics the term has been adopted by, e.g., Roger Lass in a 1990 article³, and by Laura A. Janda in *Back from the brink: a study of how relic forms in languages serve as source material for analogical extension* (Lincom Europa, 1996). My example of the redeployment of a distinctive feature to a novel purpose (which I investigated in the 1980s, before I had heard of exaptation) involves the successful hijacking, by semantic determinants of Persian lexical morphology, of a syntactically-conditioned phonological alternation in the feminine ending of Arabic nominals. The human motivation was the desire, during the development of the Eastern Islamic Kulturgebiet between the seventh and twelfth centuries (see the map, fig. 4) to incorporate useful or prestigious Arabic vocabulary into Persian, using the Arabic writing system (which had been adopted in Persian) but adhering to Persian phonotactics and lexical morphology. The junk element in Arabic feminine-ending nouns and adjectives was not so much that Persian had no grammatical gender, but that it had no use for the typically Semitic syntactic structure known as the “construct state”: this requires that a feminine ending be pronounced as /-at/ with terminal -t when its nominal is the head of a NP modified by a following noun (“pre-juncture position”), and /-a/ in all other situations (“pre-pausal position”). Thus *dawlat al-Sūdān* ‘the state of Sudan’, but *ra’īs al-dawla* ‘head of state’ and *dawla mustaqilla* ‘an independent state’. In each case, the feminine marker was written with an invariant hybrid graph in Arabic. Now, Persian speakers needed definitively to lexicalize a single form of a word as either -at or -a.

The solution they devised has led to an inventory of at least 1400 Arabic Feminine Ending (AFE) loanwords in the modern Persian lexicon, in a ratio of roughly 600 -at: 800 -eh, including forty doublets – i.e., copies of the same word in each form, written with distinctive graphs (final t, and final h for spoken /-a/) and two lexically distinct meanings (c. fig. 3; I use -eh to represent the vocalic termination as being visually quite distinct from -at, and to

¹ “Exaptation – a missing term in the science of form,” *Paleobiology* 8 (1982): 4-15.

² See *The Origin of Species* Chapter VI, under “Modes of Transition.”

³ “How to do things with junk: exaptation in language evolution,” *Journal of Linguistics* 26 (1990): 79-102.

incorporate the incidental vowel change that marks this form in Standard Persian). A simple example, involving a doublet, is: *āyat* ‘sign, portent’ vs. *āyeh* ‘verse of scripture’.

Looking for a rationale behind the distribution of these allomorphs, it struck me how utterly divorced were the current Persian function of the *-at* vs *-eh* dichotomy (as lexical markers, the significance of which was yet to be described) and the Arabic syntactic alternation *-at* ~ *-a*. The anatomical location, so to speak, was identical, but the process of recycling and the new rationale had remained opaque. The forms are a salient feature of Persian’s large Arabic loanword inventory, but one that had so far been taken for granted. Neither Iranian nor foreign scholars (except for one of each, with very limited results) had even taken note of the puzzle; it was indeed the case (to paraphrase Gould & Vrba) that “Current functions cannot be used to infer past causal pressures.” After collecting the two inventories, I was able first to eliminate any copying of Arabic syntagmata (such as nominals in the construct state, noun adjective NPs, prepositional phrases, etc.) as a source for the loanword patterns. Construct state NPs were quite commonly lifted into Persian *in toto*; but the pre-pausal feminine ending in, e.g., *fawq al-‘āda* ‘extraordinary’, does not correspond to the canonical lexical form *‘ādat* ‘custom, norm’ in Persian; nor does the pre-juncture form in the epithet *sayf al-dawla* ‘Sword of the State’ correspond to the lexicalized Persian *dawlat* ‘state’.

Secondly, I eliminated the cognate loanwords in Malay-Indonesian, various African languages, and Spanish, and determined that this regular pattern of distribution between *-at* and *-eh* was exclusive to the Persianate world, i.e., to those languages which had received their Arabic lexical copies in pre-modern times through the medium of Persian – mainly Iranian, Turkic, and Indic languages covering the shaded area of the map (fig. 4).

Thirdly, I realized that the process had been a dynamic one, both diachronically and geographically. On the evidence of Persian literature of the 10th-11th centuries, the initial ratio of incorporation into Persian showed a preponderance of *-at* over *-eh* affiliates of approx 6:1, as against a modern preponderance of 4:3 *-eh* over *-at*. So, over the intervening 1000 years, there had evidently been a considerable shift in individual items from the *-at* inventory to *-eh*. From an areal perspective, the basic Persian pattern of distribution, and the rate of shift, were not 100 percent the same in inventories of cognate copies in other languages of the area. Turkic dialects especially, showed an idiosyncratic dynamic, with instances of shift and doublets clearly based on the same rationale as in Persian, but targeting different words. Indic languages also demonstrated some independence, but in general were more conservative than Turkish and Persian, retaining more original *-at* affiliates.

Finally, what is the rationale for the dichotomy in these two series and their patterning? We may gain an overview of it by shifting our attention between fig. 1, which summarizes the principal linguistic and sociolinguistic features of the system, and fig. 2, where these are exemplified by the location of typical AFE loanwords in the Persian semantic and lexical spectrum. This “semantic spectrogram” maps words across a range of lexical, syntactic, and sociolinguistic usage, from most abstract and least specialized to most concrete and/or specialized. The illustrations in fig. 2 are singletons, i.e., borrowings which remained true to their respective incorporation in *-at* or *-eh* without formal change.

In the case of loanwords which in Arabic were deverbal or deadjectival derivatives, “specialization” may involve re-verbalization as a compound verb (+V) and/or acquisition (whether contextual or permanent) of a particular extension of the verbal sense, such as a noun of instance (English *sleeping*, *sleep* are action nouns, [*a*] *sleep* or *nap*, pl. *naps* are instance nouns), a product noun (as Eng. [*a*] *collection*) or instrumentive or agentive nouns (as *cooker*, *cook*). Thus the same nominal may occupy progressively more tangible, imageable, and countable semantic slots so as to approach the concrete polarity of an entity noun. The hatched line separating the mean point between clusters of *-at* and *-eh* affiliates in these figures I call the “Semantic Watershed.” It illustrates the comparative density and location of *-at* and *-eh* copies across the semantic spectrum.

Bearing in mind the features sketched in the three sections of fig. 1, what stands out intuitively from the meaning of the forms listed in fig. 2 is the following.

(1) From a semantic and syntactic perspective, *-at* marks words for abstract, intangible, low-imagery referents. Here the *-at* affiliates constitute mainly quality and action nouns, as nos. 5 *šo'ûbat* 'difficulty', 10 *ḥokumat* 'government'. Some may have expanded their semantic range for use as nouns of instance (fourth column: 'a [particular instance of] difficulty, a problem'); or, more rarely, as product, agentive, or instrumentive nouns ('agency that governs; the persons so constituted'). These are then count nouns: 'difficulties, governments'. Though they are more 'imageable', i.e., readily visualized via a speaker's or hearer's particular experiences, they seldom extend as far as tangibilia, or entity nouns (last three columns).

Conversely, *-eh* tends to mark concrete, tangible, high-imagery deverbals such as product nouns, etc.: 1 *moqaddemeh* 'preface, introduction [to a book, etc.]' (instrumentive), 4 *mervaḥeh* 'instrument for creating a draft', 5 *raqqāṣeh* 'dancing girl' (agentive). In everyday Persian usage, the deverbal function encoded in the Arabic morphological pattern may be opaque, and nouns such as this last will fall intuitively into the class "entity noun," the same as nos. 8 'town, city' (and the name of a particular city), 9 'name of a female', 10 'type of camel'.

(2) Sociolinguistically, *-at* marks unspecialized, and *-eh* specialized terms in various ways. Stylistically, those originally incorporated in *-at* as learned words (*mots savants*) often remain in the higher, literary register; some may be characterized as "Classical," i.e., archaic or imperfectly assimilated in modern Persian (*Fremdwörter*). Those that were incorporated in the *-eh* series are (or were) common in the vernacular register (and tend, of course, to be countable and to correspond to concrete and entity nouns). Those which, we might guess, were originally transmitted orally turn up as *-eh* (such as names: no. 9 *Xadijeh*, and the toponym *Maymaneh*² in fig. 3 no. 9; common entity nouns: no. 10 *jam(m)āzeh* 'dromedary').

(3) Questions of diachronic shift *-at* > *-eh*, the generation of doublets, and differential assimilation in different languages (as limned in the third section of this epitome), are best illustrated in condensed form via fig. 3 (Doublets). To begin with a minor lexical point that is not captured in fig. 1: contrastive affiliation can, at its simplest, disambiguate what were homonyms in Arabic (i.e., a mere coincidence of root and surface forms), such as fig. 3, no. 8 *šarārat* 'evil, wickedness' vs. *šarāreh* 'spark'. Homophones and homographs in Arabic, these non-cognate words find themselves, as Persian loanwords, appropriately differentiated in sound and form, and parked at opposite ends of the semantic spectrum in accordance with their affiliation in *-at* or *-eh*. More subtly, no. 4 *mānaviyat* 'Manichaeism' and *Mānaviyeh* '(the) Manichaeans' (collectively, as a sect or community) demonstrates different uses of the feminine ending in Arabic as a quality noun ('Manichaean-ness') and as a collective noun formative; the resulting surface homonymy in Arabic is disambiguated in Persian by the assignment to, and marking of, separate semantic slots appropriate to *-at* and *-eh*.

No. 6 *mas'ala*, in Arabic, likewise represented not simply two different denotations of the same lexical pattern, but two semantically distinct lexical patterns. As discrete Persian copies, the Classical Persian (CP) action noun *mas'alat* 'asking, questioning' (a *mot savant*) soon took a back seat to the everyday instance and product noun *mas'aleh* 'question, problem, issue, matter; thingy' (a vernacular euphemism for the male sexual organ). Equally ingenious is the doublet pair no. 2 *ešāriyat/-eh*, both being late Arabicate neologisms in Indo-Persian or even Urdu. The abstract 'symbolism' contrasts with the instrumentive 'index' (a count noun, readily visualized, and even tangible when printed). These neologisms were derived from Perso-Arabic doublet pair no. 1 *ešārat/-eh* 'showing; indication, gesture, sign'. The semantic extension in the direction of specialization, imageability, tangibility and vernacularity that prompted the shift *-at* > *-eh* is evident: Classical Persian *ešārat* is a verbal abstract, 'the showing, demonstration'; as +V it is re-verbalized in conjunction with an auxiliary ('to show, indicate, gesture'), and soon shifts in this function to *ešāreh*; but it is so marked also as a count noun of instance/product, 'pointer, gesture, sign'.

No. 3 *mo'ādelat* was similarly abstract, 'equivalence, balancing' when first copied into Persian. In Ottoman Turkish it shifted to *mo'ādeleh*, in the product noun sense 'equation'. Likewise restricted to Turkish is the pair no.5 *ḥarakat* 'movement' (an action

noun) and its shifted doublet *harekeh* ‘vowel sign’ (a grammatical device and the written symbol for this; modern orthography *hareket*, *hareke*; Persian uses *-at*).

No. 7 *ta'ziat* was copied into Classical Persian with the meaning ‘condolence, mourning’. In Turkish this shifted to *-eh*, in the more concrete and vernacular sense of ‘obsequies, funeral’; in the usage of Shi'i Turkmen and Iranians of the fifteenth century, it specialized as ‘Moharram mourning rites for Imam Hosayn’; returning to Persian as a *Rückwanderer*, the word was further restricted to the sense ‘Passion play’ (in Persian), and later copied into Indo-Persian with reference to a ritual object, the model of the martyr's tomb carried in procession.

In no. 9 we encounter a neat tripartite distinction of three meanings of Arabic *maymana*, a homonymous doublet from the trilateral root *YMN* ‘right (side); being of good omen’. The word of the two that is an action noun (from a stative verb, hence in effect a noun of condition or quality, ‘wellbeing, prosperity’) is logically affiliated in Persian in the *-at* series. The other word, a locative ‘right wing (of an army)’, as a specialized count noun derivative of the plain, non-metaphorical sense of *YMN*, is allocated to the *-eh* series as *maymaneh*¹. Then there is also a city in Afghanistan called Maymana (*maymaneh*²); is this in origin ‘located on the right (side, wing)’, or a ‘place of prosperity’? Whichever it be, the form is appropriate.

In the course of the next several centuries, hundreds of the *-at* class shifted to the *-eh* class, some leaving behind traces as doublets in *-at*. (Or, to rephrase this in more sociolinguistic terms, a shortened form with a more specialized, imageable connotation evolved in the vernacular, which soon complemented, or superseded, the literary word). In general, the sound (and orthographic) change recapitulates the original rationale: the resulting *-eh* words are semantically more specialized or concretized (cf. fig. 3 no. 3 *mo'ādeleh* ‘equation’, or no. 5 *harekeh* ‘vowel sign’), and/or more firmly established in the vernacular (cf. no. 6 *mas'aleh* ‘question, matter, problem’, and no. 7 *ta'zieh* ‘Moharram passion play; cenotaph’).

There are of course apparent exceptions to the trends observed here. *Nomina actionis* especially (by definition abstract, less imageable, in their basic meanings) seem to be more arbitrarily apportioned; even of these, however, those ending in *-eh* tend to form common compound verbs in Persian (i.e., are more imageable in context, and frequent or vernacular in usage), and have also evolved count-noun referents (no. 1 *ešāreh*). This shift appears to have peaked by the late thirteenth century, by which time the majority of the Arabic loanwords that are in general use today had been incorporated in Persian, and were being transmitted to Turkish, Hindi, etc. Moreover, as is evident from the examples, not only were individual loanwords incorporated into Persian then passed on to nearly all the other languages of mainland Muslim Asia, but the intuitive rules for this binary sorting were transmitted with them, to be used innovatively in the recipient languages.

To conclude: a fortuitous syntactically-triggered dichotomy in a portion of the inventory of Arabic substantives that were copied into Persian was reanalyzed to furnish a sub-system of semantic sorting and lexical expansion in the languages of a significant cultural area. This exaptive morphological redeployment of the Arabic feminine ending in Persian was still active in Persianate cultures at least until the first decades of the twentieth century: in evidence we may cite neologisms such as Urdu *ešāriyat* and *ešāriyeh*, Persian *e'lāmiyeh* ‘manifesto’, Turkish *e'ḫfā'iyeh* ‘fire service’ and *melliyyat* ‘nationalism’ (also adopted in Persian), and (Soviet) Tajik *partiaviyat* ‘party loyalty’. It has ceased to be productive, except to a limited extent in Urdu of Pakistan, since Arabic ceased to be an active source of vocabulary after the language reform movements in Turkey, Iran, and Soviet Muslim Asia during the second quarter of the twentieth century.

Further references to works by J. R. Perry on this topic

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Fig. 1. Epitome of the *t.m.* Series Dichotomy

	<i>-at</i>	<i>-eh</i>
Semantic & Syntactic Features	Abstract; <i>and/or</i> intangible, insubstantial, low-imagery. Mass noun +VN (Nominalization of VP)	Concrete; <i>and/or</i> Tangible, substantial, high imagery. Count noun +N; +V (Reverbalization)
Sociolinguistic Features	Mot savant; <i>Fremdwort</i> High register; <i>and/or</i> Classical, literary; ?higher written frequency	Lexically assimilated Low register; <i>and/or</i> modern, vernacular; ?higher spoken frequency
Diachronic & Dialectal Features	Abstract, etc. Mass noun +VN Mot savant > <i>Fremdwort</i> High register, etc. <i>But also:</i> written > spoken	> Concrete, etc. > Count noun > +N; +V (reverbalization) > Lexically assimilated > Low register, etc. written < spoken

Fig. 2. Semantic Spectrogram: Single-Series Loans in Persian

	Qual. N.	Action Noun		Inst. N.	Product Noun, &c.		Entity Noun			
		+N	+V		Int.	Tan.	Mas	Cnt		
1. <i>oxovvat</i>	t				h	h		h	<i>moqaddemeh</i>	1.
2. <i>zarurat</i>	t				h	h		h	<i>majmu'eh</i>	2.
3. <i>morovvat</i>	t					h		h	<i>'amaleh</i>	3.
4. <i>nobovvat</i>	t					h		h	<i>merva'eh</i>	4.
5. <i>so'ubat</i>	t			t		h		h	<i>raqqāseh</i>	5.
6. <i>xošūnat</i>	t	t		t				h	<i>'olufeh</i>	6.
7. <i>kodurat</i>	t	t		t				h	<i>xārejeh</i>	7.
8. <i>sokunat</i>	t	t	t	t				h	<i>madineh</i>	8.
9. <i>'oqubat</i>	t	t		t				h	<i>xadijeh</i>	9.
10. <i>hokumat</i>	t	t	t	t	t			h	<i>jam(m)āzeh</i>	10.

GLOSSES: *-at* 1. 'brotherhood'; 2. 'necessity'; 3. 'manliness'; 4. 'prophethood';
5. 'difficulty'; 6. 'harshness'; 7. 'turbidity'; 8. 'residence'; 9. 'punishment';
10. 'government'.

-eh 1. 'preface'; 2. 'compendium'; 3. 'worker'; 4. 'fan'; 5. '(female) dancer';
6. 'fodder'; 7. 'foreign parts'; 8. 'town; Medina'; 9. 'Khadija'; 10. 'dromedary'.

Fig. 3. Semantic Spectrogram: Sample Doublets in Persian, Turkish and Urdu (P, T, U)

	Qual. N.	Action Noun		Inst. N.	Product Noun, &c.		Entity Noun		
		+N	+V		Int.	Tan.	Mas	Cnt	
1. <i>ešārat</i>		t h	h	h	h	h			<i>ešāreh</i>
2. <i>ešāriyat</i> (U)	t				h	h			<i>ešāriyeh</i> (U)
3. <i>mo'ādelat</i> (T)	t	t			h				<i>mo'ādeleh</i> (T)
4. <i>mānaviyat</i>	t			t h			h		<i>mānaviyeh</i>
5. <i>harekat</i>		t	t	t h	h	h			<i>harekeh</i> (T)
6. <i>mas'alat</i> (CP)		t	t		h			h	<i>mas'aleh</i> (P)
7. <i>ta'ziat</i> (P)		t	t		h			h	<i>ta'zieh</i> (T, P, U)
8. <i>šarārat</i>	t							h	<i>šarāreh</i>
9. <i>maymanat</i>	t	t						h	<i>maymaneh</i> ₁ <i>maymaneh</i> ₂

GLOSSES: 1. 'indication'/'gesture; sign'; 2. 'symbolism'/'index'; 3. 'equivalence'/'equation'; 4. 'Manichæism'/'the Manichæans'; 5. 'motion, movement'/'vowel sign'; 6. 'asking'/'problem; thingy'; 7. 'condolence'/'obsequies' (T), 'religious drama' (P), 'cenotaph' (U); 8. 'wickedness'/'spark'; 9. 'prosperity'/'right wing; name of town'.

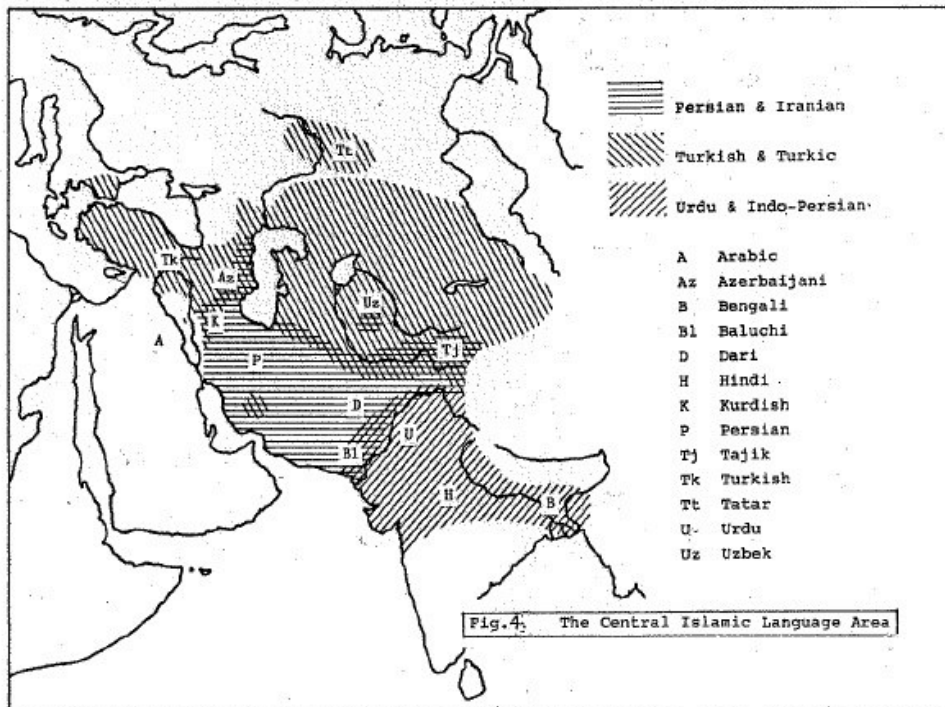


Fig.4. The Central Islamic Language Area

Analogy vs Rules: How Can Diachronic and Synchronic Perspectives be made to work together?

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1. Introduction

The research I present in this paper is part of an on-going research project; consequently, some of the questions I raise I consider to be (relatively) solved, others not. More specifically, I will try to answer two questions:

- Firstly, how should we conceptualize and represent the evolution that leads from the use of a term as a preposition to its use as a prefix?
- And secondly, what theory is best fit to account both for this diachronic evolution and for the synchronic use of the term as a prefix?

Most researchers study either diachronic changes, either affixes from a synchronic morphological point of view; there are but a few researchers who combine both points of view. I decided to look into the work of Teresa Vallès (2004) and Geert Booij (2005 and 2008), because, although they are originally not into historical linguistics, they both work in theoretical frameworks that allow them to describe the emergence of new words or new patterns in language. Teresa Vallès does so in studying lexical creativity in the framework of the usage-based model of Joan Bybee, and Geert Booij, in studying, amongst others topics, some problematic cases between compounding and derivation in the framework of Adele Goldberg's Construction Grammar.

In this paper, I will first present some distinctions I make between the formatives of prepositional origin; then I will illustrate the problem I discuss by using the concrete example of *après*. In parts 3 and 4, the proposals of T. Vallès and G. Booij will be set out and "evaluated" in relation to the two questions raised above. In my conclusions, I will resume the results of this small investigation and show how they open some perspectives for future research.

2. Some distinctions

The questions I will raise turned up in previous diachronic and in synchronic research on French prepositions and formatives such as *sur* 'on', *après* 'after' or *sans* 'without'. These items present the particularity of having both prepositional and formative uses in contemporary French. This is shown in the examples under (1):

- | | |
|--|---|
| (1) <i>sur le sol</i> 'on the ground' | <i>surexposition</i> 'overexposure' |
| <i>après les vacances</i> 'after the holidays' | <i>après-guerre</i> 'the post-war years' |
| <i>sans (son) parapluie</i> 'without his/her umbrella' | <i>sans-gêne</i> 'lit without embarrassment, lack of consideration' |

In fact, these data are well-known and comparable examples have already been observed in many languages.

In Amiot (2004), I claimed that these items are ambivalent: some, such as *sans-*, are still prepositions, others, such as *sur-*, have turned into full blown prefixes, and still others, such as *après-*, have some kind of intermediate status. The arguments I used to show this, were, briefly put, the following:

- (i) a prefix has at least one meaning that is different from the corresponding preposition;
- (ii) it is part of a paradigm that contains other items possessing beyond any doubt the status of prefix;

- (iii) it can be associated to bases of different categories and be used to form lexemes that are members of different categories;
- (iv) the complex lexeme is semantically endocentric;
- (v) if the complex lexeme is a noun, it inherits its gender from the lexeme base.

This list of five arguments resumes the work of several researchers, in particular that of Scalise (1984) and Iacobini (1998, 2004); the arguments show that a prefix can originate from a corresponding preposition.

Sur- and *sans-* allow us to illustrate the differences that exist between French items with respect to their degree of prefixation.

Concerning the prefix *sur-*:

- (i) Its main meaning is ‘excess’, as can be seen in (2):
- (2) *surcharge* ‘overload’, *surestimer* ‘overestimate, over-value’, *suralimentation* ‘overfeeding’

However, this meaning cannot be expressed by the corresponding preposition.

- (ii) *Sur-* is a member of the same paradigm as *hyper-*, which is a prefix without any doubt:

- (3) *hypertension* ‘hypertension’, *hyperactif* ‘hyperactive’

- (iii) It can enter in processes that concern several distinct lexical categories:

- (4) N → N: *charge* → *surcharge*
V → V: *estimer* → *surestimer*
A → A: *doué* → *surdoué* ‘gifted, super talented’

(iv) The complexes with *sur-* are semantically endocentric, that is, they are more or less hyponyms of the base: a *surcharge* is a sort of charge (it’s a too heavy charge), *surestimer* is estimate, but the estimation is too great, and so on.

(v) As a consequence of their endocentricity, the complexes are of the same gender as the base: *surcharge* is feminine just as *charge* is and *surpoids* ‘excess weight’ is masculine just as *poids* is.

Sans-, on the other hand, is really similar to the corresponding preposition *sans*:

- (i) It has exactly the same meaning, they both express ‘absence’ (‘without’):

- (5) *sans-abri* ‘litt: without-shelter, homeless’ / *il est sans abri pour la nuit* ‘he has no shelter / housing for the night’

- (ii) In French, there is no paradigm it can be a member of;

- (iii) It can only be involved in one categorial relation:

- (6) N → N: *sans-abri*, (*faire un*) *sans-faute* ‘lit without-mistake; to do something (in sport, at school for example) without a mistake’

(iv) The complex lexemes formed using *sans* are semantically exocentric: a *sans-abri* is not a sort of *abri* ‘shelter’, but somebody with no housing, a *sans-faute* is not a sort of *faute* ‘mistake’, but something (a race, an exercise, etc.) done without a mistake’.

(v) The complexes – at least in inanimate nouns – have the default gender, that is the masculine, whatever the gender of the “base”: *faute* is feminine and *fil* ‘line/wire’ is masculine, but both *sans-faute* and *sans-fil* ‘lit without-line, telegraph’ are masculine.

Après- exemplifies a third case: it has some properties of the preposition and some of the prefix; consequently, it is to be situated between the two categories:

(i) It only expresses temporal posteriority whereas the corresponding preposition expresses both temporal and spatial posteriority:

(7) *l'après guerre* 'lit. the after-war, the postwar period', *l'après-match* 'the after match period'
il est né après la guerre 'he was born after the war' / *la boucherie est juste après la boulangerie* 'the butcher shop is just after the bakery'

(ii) *After-* belongs to the same paradigm as *post-*, a prefix (cf. *postdoctoral* 'ibid.');

(iii) It can only be involved in one categorial relation: N → N;

(iv) The complex lexemes are exocentric: *l'après-guerre* is not a *guerre* 'war', but the period after the war, *l'après-match* is not a match, but the period after the match, and so on;

(v) The gender of the lexemes built using *après* is not easy to determine, because the definite determiner (*le* masc. or *la* fem.) preceding them is systematically elided (*l'*) before a vocalic initial, as in *après*. Moreover, some / a limited number of lexemes are masculine and feminine (*après-midi*, *après-guerre*).

In the end, then, *après* presents two characteristics that are typical of prefixes and two characteristics that are typical of prepositions.

These differences can be related to the dates of the first attestation of the preposition / adverb as a formative:

- *sur-* was a prefix in Old French from early on, since it is the French counterpart of *super*, which was already a preposition, an adverb and a prefix in Latin;
- the first uses of *après* as a formative date from the fifteenth century; whereas the first uses of *sans* as a formative only date from the eighteenth century.

These items can therefore be ordered on a grammaticalization scale.

2. An example: the emergence of the first nouns formed by *après*

The first noun in which *après* appeared is *après-disner* 'after-diner', at the beginning of the fifteenth century.

This noun is the result of a gradual reanalysis of *après disner*, which was first an adverbial phrase, formed out of the adverb / preposition *après* and the infinitive verbal form *disner*.

- (8) a. [Baye, II, 1411-1417, 28] Cedit jour, **après disner**, je fu mandé de par monseigneur de Bourgoigne¹ 'this day, **after diner**, [...]'
b. [Chartes Abb. St-Magl. T.F., t.3, [1330-1436], 650] Comme le dymanche XXVIIIe jour du moys d'avril derrenierement et nagaires passé, environ deux heures **après disner**, 'about two hours **after diner / after dining**'
c. [Reg. crim. Chât., I, 1389-1392, 195] elle estant seule en l'ostel dudit Hennequin, son maistre, à heure d'après disner 'lit at hour of **after diner**'

In (8 a) *après disner* is really an adverbial phrase, but in (8 b & c) it is a kind of complement to the temporal noun, without any preposition in (8 b), and introduced by the preposition *de* in (8 c). In these two last contexts, *après-disner* is not really an adverb anymore, and *disner* tends to be reanalysed as a noun: *après-disner* in these examples could be glossed by 'after the disner', and also by 'after having diner'.

¹ This example and the following come from the *Base de Lexiques de Moyen Français (DMF1)*, <http://www.atilf.fr>

Gradually, *après-disner* evolves / turns into a noun; it can then be used in contexts where it is coordinated with a noun as in (9):

- (9) [Baye, I, 1400-1410, 140] Cedit jour, à **matin** et **après disner**,
 ‘This day, at **morning** and **after diner**’

The expression has acquired full nominal status when it is used as the head of a phrase and is preceded by a determiner, such as in (10); we find (at least) two spellings for *diner*: *disner* or *disnee*:

- (10) [Ch. d’Orléans, *Chanson*, 1415-1440, 248] En gibessant toute **l’après disnee**
 ‘hunting all **the after diner**’
 [Commynes., III, 1495-1498, 130] à **l’après disner**,
 ‘at **the after diner**’

The only other Old French nouns with *après* as a first constituent are *après-souper* (1502) and *après-midi* (1702). During the next centuries, but a few nouns were coined using *après*- (for example *après-minuit* by Flaubert, nineteenth century); it is only from the middle of the twentieth century that this mode of formation became more productive: *après-guerre* ‘the post war years’, *l’après-match* ‘the after match period’, and above all, many words of the form *après* + PN (proper name), this PN can notably be an anthroponym (*l’après-Ceausescu* ‘the after-Ceausescu period’, *l’après-Bush* ‘the after-Bush period’, a date (*l’après-11 septembre* ‘the after-eleventh of September period’), and so on.

I will now set out the framework of Teresa Vallès to see if it can account for these data.

3. Teresa Vallès’s proposal

T. Vallès, who is working in the framework of Joan Bybee’s usage-based model, considers that neologisms are created by analogy, in its more basic sense: “any change due to the influence of one form on another” (Joseph 1998 : 362). She distinguishes between punctual and conventional analogy.

Punctual analogy is the extension from one exemplar, and it contains the following stages (in my translation):

- first, a neologism is coined as the result of the extension of one exemplar used as a model, or a prototype: A → B. Once this neologism is created, the schematization and the abstraction can produce a new pattern, C.
- the new pattern, which is a low level pattern, can be used to analyse the two words, the model and the neologism coined from this model, in such a way that A and B become actualizations of the new pattern C, that can become productive. Becoming a productive pattern often depends on the frequency of the elements in play. T. Vallès schematizes this evolution as in figure 1, in Vallès (2004: 147):

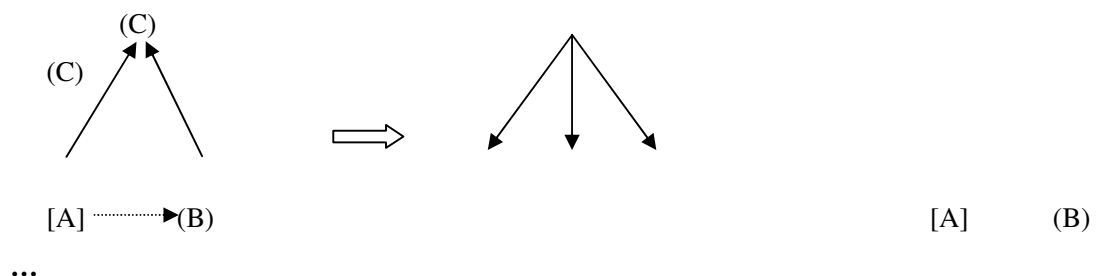


figure 1

In conventional analogy, on the other hand, a new pattern can become a sort of rule thanks to the ability of the language users to abstract patterns from existing words; these abstract

patterns are then conventionalized and used for regular word formation. This sort of “rules” is also based on analogy, but T. Vallès does not really explain in what sense they are different from punctual analogy.

Then, there is a continuum between the lexical innovation by analogy, the creation of low level patterns and the creation of abstract conventionalized patterns.

It is worth noting that this conception of lexical innovation and its extension to the coinage of other words is underlain by two strong principles:

- (i) Language users play an active role by their ability to abstract low level patterns or more abstract ones, which allow them to create word formation rules;
- (ii) The mental lexicon contains all existing words (the regular and the irregular ones, the simple and the complex ones, the affixes and the lexemes, etc.), and these constitute a network in which all the nodes share multiple and complex relations. These multiple connexions between the words in the mental lexicon allow the language users to abstract the patterns that will serve to create the neologisms or the rules.

Such a conception of the mental lexicon is frequently found in the work of linguists working in a diachronic perspective that is inspired by cognitive linguistic theories; in the present case, it is based on the usage-based model of Joan Bybee (1985), which goes back to the theories of Langacker (1987, among others).

How can Vallès’ model be of interest for the problems we are dealing with? Such a connexionist model is able to account for the first uses of *sans-*, *après-* and *sur-* (for example) as formatives. Indeed, what was said before about *après* can be transposed to this theoretical frame.

As was pointed out above, the first nouns *après* attaches to are *disner* at the beginning of the fifteen century, *souper* one century later, and *midi* two centuries after *après souper*. There is a great temporal distance between the coinage of these nouns.

At this point, two facts deserve to be pointed out:

- before their lexicalization, *après souper* and *après midi* were used in contexts similar to those of *après disner*: for both of them, the adverbial forms were attested, but they were not very frequent and the contexts in which they appeared showed less variation;
- the noun *after disner* had a very frequent use when *after souper* was coined.

Thus, it seems that once *après disner* was coined (by reanalysis from specific contexts of high frequency; on these general topics, see among others, Hopper & Traugott (1993), Heine & al. (1991), Lehmann (1995), etc), it could serve as a model for the formation of *après souper* and *après midi*: indeed, the former – *après souper* – involves an infinitive form, just like *après disner*, and the latter is formed using a particular kind of temporal noun that Van de Velde (2000) has called “temporal proper name” and that is generally used without a determiner, even in modern French.

Consequently, the assumption can be made that a low level pattern comparable to those described by Vallès has been set up, based on punctual analogy. The possibility of analogical processes relies on the notion of paradigm, underlain by the notion of network.

It is however more difficult to account in the same way for the extension to regular formations, above all those in *sur-*, when *sur-* is a prefix, because, in my opinion

- (i) the relation between the notions of conventional pattern and that of the emergence of abstract patterns is not sufficiently clarified; these two related notions are not made sufficiently explicit and it is difficult to understand to what extent there is “abstraction”.
- (ii) the notion of affix / prefix is insufficiently developed. Indeed, the only real criterion that is used is that of dependence: a prefix is phonologically and semantically dependent, while a stem is characterised by its independence. A second criterion, which is a semantic one, appears when T. Vallès writes:

“The préfixoïdes *euro-* and *eco-* can be considered prefixes, because they have no autonomy [...]; but they are not prototypical prefixes on account of their semantic content, which is that of a lexical unit” (Vallès 2004: 191) [my translation]

The principles are similar but there are some differences:

- a prefix, like a suffix, has no lexical category;
- prefixes are normally category-neutral, so the properties of the base are transferred to the complex word;
- a prefix has the semantic function of a modifier.

Booij makes the assumption that in the morphological domain there also exist constructional idioms (in the sense of Jackendoff 2002); a constructional idiom in morphology is an abstract construction in which one position is occupied by a specific lexical item. For example, in French, there exist constructional idioms involving the prepositions *sans* or *après*:

- (13) $[[sans]_P [y]_V]_V$ 'something / somebody without Y'
 $[[après]_P [y]_V]_V$ 'period after Y'

These schemes are to be interpreted as follows: when the preposition *sans* / *après* and a noun are conjoined to form a compound noun, this noun means, respectively, 'something / somebody without Y' such as in *sans-abri*, *sans-papiers* or *sans-faute* / 'period after Y', such as in *après-guerre*, *après-match* or *après-Ceaucescu*.

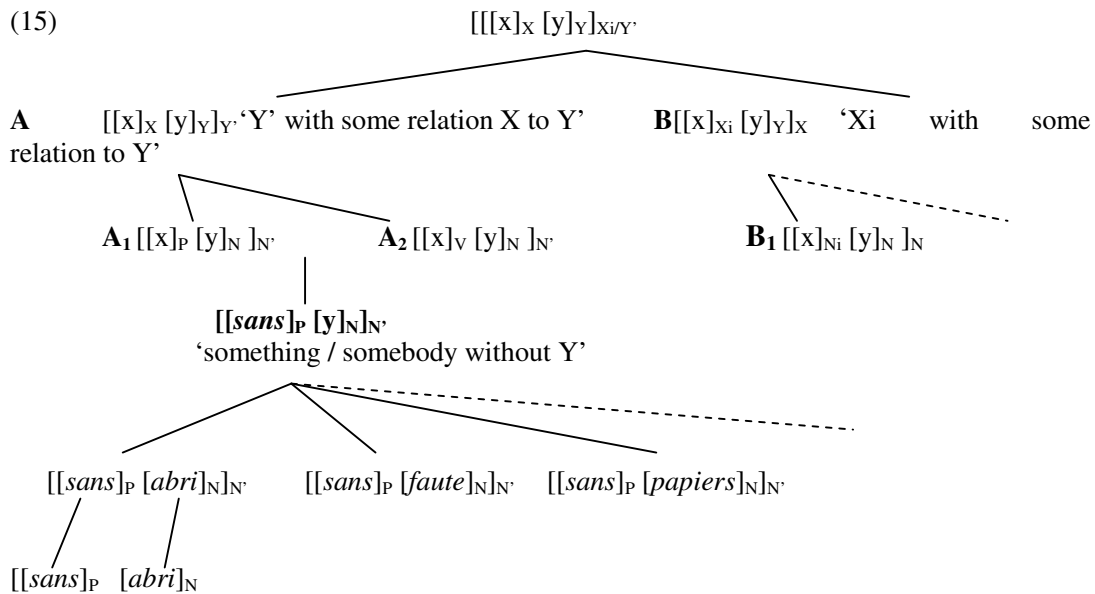
Constructional idioms can also be set up for affixation; here is the example of the prefix *sur-*:

- (14) $[sur [y]_y]_y$ 'Y in excess'²

The two *x* subscripts in (14) indicate that, as was pointed out under 2., the lexemes built by *sur-* belong to several categories (nouns, verbs and adjectives) and the complex lexeme is of the same category as its base.

Constructional Idioms are intermediate sub-schemes between the general scheme and the individual words; they can be represented as follows, for example for *sans* (it is an adaptation, and an extension, from Booij 2005 and 2008):

² This is not the only meaning a lexeme built with *sur-* can express, but it is indeed the most frequent, expressed by the bulk of types of bases.



This representation needs some clarification:

(i) The Constructional Idiom (in bold type in (15)) is in fact situated on an intermediate level between the most general levels and the individual items. This representation takes the shape of a multiple inheritance tree, where the lower nodes inherit the properties of their dominating nodes.

(ii) I make the assumption that, in French and possibly in other Romance languages, there are two general schemes of composition, one for the formation of exocentric lexemes (A), and another for the formation of endocentric ones (B). The scheme for exocentric lexemes subsumes two other sub-schemes, one in which the first constituent is a preposition (A₁) and another in which the first constituent is a verb (A₂), such as, for example, in *brise-glace*: 'lit. break-ice; icebreaker'. The scheme that accounts for the formation of endocentric lexemes can be exemplified by a lexeme such as *requin-marteau* 'lit. shark-hammer; hammerhead'.

(iii) As is also the case in other Romance languages, French compounds are left-headed when they are endocentric and when they are exocentric, their interpretation beginning at the left. For the exocentric compounds, the prime in Y' or N' indicates that, although the compound is of the same category as the second constituent, it is semantically different (it is a consequence of exocentricity). Conversely, the subscript *i* indicates the semantic head for the endocentric compounds.

(iv) The constructional idiom of *sans-* is an instantiation of the schema of exocentric compounds, and more precisely, of A₁.

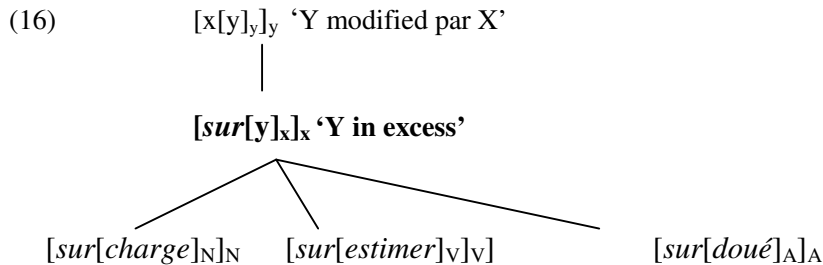
(v) The last line indicates that each constituent of a compound is linked with its corresponding syntactic counterpart, and also inherits properties from it.

I also want to insist on the fact that constructional idioms cannot be hypothesized for all sorts of compounding; it is possible to do so when the first constituent is a preposition, but not in the two other schemes of the representation under (15), A₂ et B₁. For these, there is no intermediate level between the pattern and the individual lexemes because no regular series of lexemes are formed from one of the two constituents³; therefore, the

³ In the best case, some words are created with the same first verb (*garde-malade* 'home-health aide', *garde-feu* 'fireguard', *garde-manger* 'larder', etc.) or with the same first noun (*requin-marteau*, *requin-baleine* 'whale shark', *requin-tigre* 'tiger shark', etc.).

emergence of constructional idioms can be seen as the first step toward the path that leads from composition to derivation.

As for the prefix *sur-*, its constructional idiom is a part of the general scheme of affixation, and more precisely the scheme of prefixation, that can be simplified in the following way:



Booij never considers a formative as a prefix as long as it corresponds to a preposition; thereby, such a representation could only hold, in the analysis of Booij, for a prefix such as *hyper-*, a prefix that belongs to the same paradigm as *sur-*, but without any correspondent preposition in French. But this difference in the analysis is not very important here.

Booij's model is interesting in that it offers a general overview of the architecture of word formation processes, and of the sub-regularities which characterise it, these sub-regularities being represented by the constructional idioms, on which accurate constraints are exerted. But, from our perspective, which is diachronic, the following question arises: how is it possible to conceptualize in this framework the evolution from the creation of the first complex words in which the left constituent is a preposition to the morphological operation of prefixation *via* the stage of the formation by an operation of compounding?

When the first lexemes occur, a low level pattern (cf. Vallès) can be created (cf. the emergence of the first words with *après*, § 3.). Such a pattern can correspond to an existing pattern, as a matter of fact $[[x]_P [y]_N]_N$. When the process becomes regular, a constructional idiom can emerge, for example $[[après]_P [y]_N]_N$, in which *après* is still a preposition, and the complex lexemes are exocentric. The difficulty lays in the evolution toward a derivational constructional idioms: if, for example, *après* become a real prefix, as *sur-* is, the evolution would be:

$$(17) \quad [[après]_P [y]_N]_N \rightarrow [après[y]_x]_x$$

As a prefix, *après* would be a modifier and would form endocentric lexemes (of several categories), just as *sur-* does. Such an evolution is not easy to conceptualize: what are the operations allowing it?

A way to conceptualize it is to consider that there has been a "leap" in the evolution: when the formative has acquired enough autonomy with respect to the preposition it comes from (= when it has become "light" enough, cf. the criteria at the beginning of the paper), it can be integrated in the general pattern of derivation ($[x[y]_y]_y$); in this way, it "becomes" a modifier able to form endocentric lexemes; then, it can carry on its evolution (in, gradually, combining with lexemes belonging to other categories than the nominal category).

5. Perspectives

Booij works in the theoretical framework of Construction Grammar, but also in the framework of Item & Arrangement, which, according to Aronoff and Fudeman (2005) “proceeds from a picture of each language as a set of elements, and the patterns in which those elements occur” (Aronoff and Fudeman 2005: 47). In such a framework, the affixes are morphemes (that is pairing form-meaning) like the lexemes they attach to. Considering that affixes are morphemes allows one to conceptualise quite easily the path that leads from the domain of composition to that of derivation, which is an important result when one works in a diachronic perspective.

However, the Item & Arrangement perspective has two disadvantages:

- it is not very easy to account for the paradigmatic relations between affixes in this frame;
- it isolates affixal derivation from non affixal word formation processes, such as back-formation, shift stress, duplication, and so on.

Consequently, what needs to be examined now is whether an Item and Process perspective, which, in the words of Aronoff & Fudeman “gives no independent status to the items” and where “complex words result from the operation of processes on simpler words” (*ibid.*) is compatible with the analysis developed here (notably the evolution from compounding to derivation). Some researchers begin to adopt this frame for research in a diachronic perspective, for example Amanda Pounder, who studied the evolution of denominal adjectives in German.

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