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From cumulative to separative exponence in inflection: Reversing the morphological cycle

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FROM CUMULATIVE TO SEPARATIVE EXPONENCE IN INFLECTION: REVERSING THE MORPHOLOGICAL CYCLE

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Morphological strategies for inflectional exponence have traditionally been associated with different stages in the evolution of languages. Moreover, the so-called MORPHOLOGICAL CYCLE (or the TYPOLOGICAL CYCLE in morphology) is claimed to involve a unidirectional sequence of changes that leads from isolation to agglutination (separative exponence in inflection) and subsequently to fusion (cumulative exponence). But this rigid schema happens to exclude a wealth of diachronic developments that are solidly attested in the history of various languages: the shift from cumulative toward separative exponence perhaps constitutes the strongest challenge to the unidirectionality hypothesis implied by the classic typological cycle. Here I survey the data illustrating agglutinative developments inside fusional systems, a task that first requires a canonical definition of morphological techniques. Then the mechanisms underlying this significant typological change are classified and analyzed in detail. The final part of the article is devoted to discussing the possible causes behind the reversal of the morphological cycle. The diachronic evidence at our disposal points to a rather clear differentiation between the language-internal causes that seem to determine the shift from agglutinative to fusional structures and the language-external causes (contact influence of a particular kind) that commonly lie behind the reverse morphological change.*

Keywords: morphological cycle, cumulative and separative exponence, fusion, agglutination, diachronic typology, unidirectionality, contact-induced change.

1. INTRODUCTION. Morphological types have represented a well-established area of inquiry since language typology was founded as a linguistic discipline. According to the first holistic morphological classifications, which grew out of the combined efforts of Friedrich von Schlegel, August Wilhelm von Schlegel, and Wilhelm von Humboldt in the early nineteenth century, there exist three main types: the isolating, the agglutinating (or agglutinative), and the fusional (also known as fleective or inflecting), each characterized by a distinct set of morphological traits. Other types were immediately added to this initial typology, such as the polysynthetic, often equated with the incorporating type, and, somewhat later, the introflective class. However, only the isolating, the agglutinative, and the fusional types—that is, those established on the basis of the morphological technique employed (not those defined by the parameter of synthesis or any others; cf. Sapir 1921:104–5, Dixon 2010:226)—are commonly included in what is known as the MORPHOLOGICAL CYCLE (or the TYPOLOGICAL CYCLE in morphology), namely the diachronic sequence that links these morphological types together in a spe-

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cific order of successive stages (§1.2). The implications of this cycle constitute the central subject of this article.

1.1. LINGUISTIC DIVERSITY AND MORPHOLOGICAL TYPOLOGY. Linguistic diversity is readily recognizable in domains like inflectional morphology. Some languages display little or no inflection at all, whereas in other languages large and complicated inflectional paradigms are encountered. Complex morphological properties have even provided the basis for a ‘disease’ or ‘pathological’ model of morphology, which rests on the common mismatch between morphological form and syntactic or semantic function (Aronoff 1998:413; cf. Fertig 2013:115). Based on conspicuous morphological differences, typology has traditionally divided languages into classes, frequently assuming idealized or homogeneous linguistic types. But in practice natural languages exhibit a high degree of internal variation, even inside restricted subsystems.

From a historical perspective, a widely held view considers that shifts between any two of the main morphological types respond to unidirectional diachronic pathways (this kind of change occurs despite certain genetic and areal tendencies to have a determined morphological type; see Bybee 1997:29). These transitions between the isolating, the agglutinative, and the fusional types are said to form a cycle in the long term, because the diachronically last type of a certain historical sequence invariably gives way to the first stage of the next sequence. However, our present knowledge of diachronic inflectional processes, some of which severely challenge this unidirectionality claim from an empirical standpoint, forces us to revise the traditional schema. This is precisely one of the two main objectives of this article. The other is to elucidate the mechanisms and causes that produce the apparent bidirectionality of typological change in the realm of inflectional morphology.

1.2. DELINEATING THE TYPOLOGICAL CYCLE IN MORPHOLOGY. The morphological cycle has been widely embraced at least since August Schleicher’s times (for its modern formulation, see Dixon 1994:182–83, 1997:42, Hock & Joseph 1996:183, Plungian 2001: 677, Croft 2003:252, Trudgill 2011:93, 150). As defined, for example, by Dixon (1994: 182–83), it implies that ‘a fusional language can develop into one of the isolating type, an isolating language can become agglutinative, an agglutinative language may move towards a fusional profile, and so on’.¹ In other words, linguistic systems ‘tend—very roughly—to move around a typological circle’ (Dixon 1997:41–42; cf. Trudgill 2011: 150). The cycle is illustrated in Figure 1. As already mentioned, this path of morphological change, usually applied to entire languages but corresponding more appropriately to particular grammatical phenomena, has been considered strictly unidirectional.² According to this strong claim, there is no option of reversing the diachronic sequence between any two of these morphological types. Isolating structures are replaced, if at all, by agglu-

¹ The idea of a dynamic relationship among the different types was already present in Wilhelm von Humboldt and Franz Bopp. After Schleicher, it took the form of a *SPIRALLAUF* or spiral movement in Gabelentz’s work (Ramat 2011:18, 22). Hodge’s (1970) *LINGUISTIC CYCLE* and Heine and Kuteva’s (2005:165–70) *MORPHOLOGICAL CYCLE*, although resembling the essentials of the typological cycle in morphology, are more closely related to diachronic processes such as grammaticalization and the renewal of grammatical forms. This also holds for van Gelderen’s recent work on the linguistic cycle (van Gelderen 2011 and a series of previous articles), which concentrates mainly on cyclical processes of form renewal (with no novel claims about the diachronic relationship among the different stages of the morphological cycle; see for instance van Gelderen 2011:344–45).

² See Bynon 2004:1228: ‘Today most historical linguists would probably accept some version of a typological cycle, from isolation via agglutination to flection and back to isolation, but limited of course to individual structures and not applied to entire languages’.

tinating ones, and, when they evolve, agglutinative systems become fusional, never the other way round.

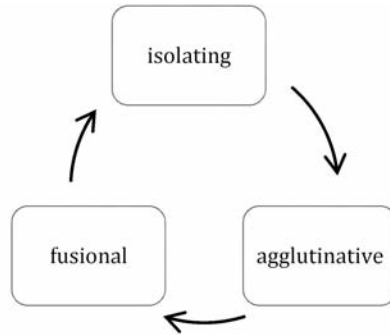


FIGURE 1. The morphological cycle.

In sharp contrast to the unidirectional arrows on which the morphological cycle is based, in this article I analyze various cases indicating the likelihood of bidirectional change in inflectional morphology and discuss the consequences they entail from the perspective of the typological cycle.

1.3. MORPHOLOGICAL TECHNIQUES. Two specific terms deserve early mention here: CUMULATIVE EXPONENCE or CUMULATION, as the main defining property of fusional systems, and SEPARATIVE EXPONENCE or SEPARATION, which characterizes agglutination. The criterion that allows for such a distinction between morphological techniques (or strategies) is the segmentability of words into morphemes. A cumulative marker expresses simultaneously several grammatical values, with no possibility of drawing morpheme boundaries, while a separative one is crucially linked to a single grammatical meaning or morphosyntactic feature: contrast Lithuanian *nam-ŭ* '(of) the houses', in which the unsegmentable ending *-ŭ* conveys the values of both plural number and genitive case (I disregard here the means of expressing gender), with Turkish *ev-ler-in* (bearing the same meaning), in which the suffix *-ler-* indicates exclusively plural number and the suffix *-in* expresses only genitive case (this topic is further developed in §2.2 below). Cumulative markers are also called POLYEXPONENTIAL (and, traditionally, PORTMANTEAU morphemes), whereas separative affixes are sometimes referred to as MONOEXPONENTIAL. Given the unidirectionality of the morphological cycle, only shifts from separative to cumulative morphology are to be expected. But the evidence at hand reveals that the reverse direction of change is also possible.

1.4. STRUCTURE OF THE ARTICLE. Changes in fusional systems that give rise to new structures of an agglutinative type, a kind of evolution that is contrary to traditional expectations, are in need of a historical explanation. This noticeable class of morphological changes is illustrated here with examples from the nominal and verbal inflections of various languages. I first address some terminological and theoretical principles concerning distinctions between morphological types and advocate a canonical approach to morphological phenomena involved in agglutination (and, secondarily, to those involved in fusion) in §2. Then in §§3 and 4 the main instances of typologically relevant inflectional changes known to date are introduced and discussed (first, examples corresponding to the direction of change that accords with the classic morphological cycle, and then the changes that reveal the reverse direction). Two instances of typological shift in so-called mixed languages are examined in §5 in order to highlight the similarities and differences with respect to inflectional changes in other languages. In §6 I offer

an overview of a morphological change that might also instantiate the diachronic trend toward agglutination, even though it implies some more difficulties and can only be defined as a partial or borderline case. The mechanisms of change leading to the replacement of cumulative markers by separative ones are identified and described in §7, and in §8, just before the conclusion, I attempt to give an account of the dual direction of inflectional change, taking into consideration the different factors that may underlie each type of morphological development, with particular attention to language contact and its varying effects.

2. AGGLUTINATION AND FUSION: APPROACHING THE CONCEPTS. As terms with a relatively long tradition, agglutination and fusion must be clearly defined before being used because their meanings have changed throughout history and can be applied differently. Agglutination (which is, as a term, older than fusion) has been traditionally understood as a combination of different but closely connected features that can characterize entire languages. An example of this all-encompassing approach is provided by Austerlitz (1970:1–2), who uses the term AGGLUTINATING to denote:

languages which have most or all of the following morphological characteristics: suffixation (generally correlated with the absence of prefixation), a system of possessive suffixes in the noun which can generally be correlated with the person-marker system in the verb, a developed participial system, local cases in the noun, syntax in which the modifier precedes the head of the construction, the finite verb as a closure marker at the end of the sentence, sequences of comparatively many suffixes, noun-surrogates in postpositional function.

This kind of holistic characterization entails correlations among typological properties that belong to different linguistic domains. Difficulties arise when we want to give the term a universal dimension: for instance, how many of these properties still hold in that case? Is a holistic empirical definition of agglutination or fusion possible? Attempts such as that of Haspelmath (2009) clearly give a negative (even pessimistic) answer to this question: there exists no correlation, even inside morphology, among such typological indices as cumulation, stem alternation, and suppletion, although some tendencies still remain. The problem becomes insurmountable when the terms agglutination or fusion are intended to describe entire languages, since we can find instances of all the morphological types within a single language (see in 1 the classic German examples cited by Skalička (1979 [1951]:23) to illustrate this point).

(1) Examples of the five morphological types in German

- ISOLATING: *ich werde machen* ‘I will do’
 AGGLUTINATING: *ziehen* ‘pull’, *anziehen* ‘put on, dress’, *miteinbeziehen* ‘include’
 FUSIONAL: *Kindes* ‘of the child’, in which the ending *-es* simultaneously marks number, gender, and case
 INTROFLECTIVE: *tragen* ‘carry’ – *trug* ‘carried’, *Mutter* ‘mother’ – *Mütter* ‘mothers’
 POLYSYNTHETIC: *Kleinstadt* ‘small town’, *blaugrün* ‘blue-green’, *Fleischfresser* ‘carnivore’

Typological diversity can thus pervade whole linguistic systems, rendering it difficult or even useless, according to a widespread opinion, to define a language as agglutinative, fusional, polysynthetic, or whatever (see Sapir 1921:102).³ This is despite the fact

³ There is a pretty nice biological parallel to the absence (or near absence) of ideal types in languages (when their grammars are taken as a whole): on the populationist account (Mayr 1976:12, 28–29), which is diametrically opposed to the essentialist viewpoint, biological types are merely abstract entities that are not encountered in any of the individuals forming a population.

that the persistence of these terms in typological description of languages still suggests, as pointed out by Matthews (1972:32), that they retain ‘some intuitive value’, especially when certain typological properties clearly predominate over others. But as Plank (1999:285) makes explicit, what he labels the STRONG HOMOGENEITY HYPOTHESIS (see 2) on agglutination and flection (or fusion) does not hold precisely because of the structural diversity typically present not only within natural languages, but also inside their various grammatical domains.

- (2) The STRONG HOMOGENEITY HYPOTHESIS (from Plank 1999:285): In any language, all marking for all morphological categories and their terms on all words can only have either one of two repertoires of properties, the fully agglutinative one (separation, invariance, distinctness, always zero exponence, locality, repeatability, larger paradigm size, transparent segmentability, weak cohesion, loose bonding, optionality) or the fully flexive one (cumulation, variance, homonymity, no or sporadic zero exponence, extendedness, unrepeatability, smaller paradigm size, opaque segmentability, strong cohesion, tight bonding, obligatoriness).

In order to deal with instances of typological diversity even inside particular subsystems of grammar, Plank (1999) introduces the notion of SPLIT MORPHOLOGY, which is aimed at capturing the not uncommon coexistence of morphological techniques within a single grammatical domain.⁴ To choose one of the simplest examples, in Wakhi (an Indo-Iranian language of the Pamir group), noun inflection displays two morphological strategies, as can be seen in Table 1.

	SINGULAR	PLURAL
ABS	kənd-∅	kənd-iš(t)
OBL	kənd-∅	kənd-əv
DAT	kənd-ərək	kənd-əv-ərək
ABL/GEN	kənd-ən	kənd-əv-ən

TABLE 1. Noun inflection in Wakhi: *kənd* ‘woman’ (Plank 1999:301, based on Grjunberg & Steblin-Kamenskij 1976; cf. Payne 1989:429).

Here we find separate expression of case and number in dative and ablative/genitive forms, whereas the absolutive and the oblique have cumulative markers (with no overt expression in the singular). Even if we could interpret the relationship between the oblique singular and the oblique plural as a regular one in an agglutinative system (*kənd-∅* vs. *kənd-əv-∅*), the fact would remain that noun paradigms in Wakhi display two morphological techniques: a cumulative one, as realized in the absolutive plural, and a separative one, which is well represented at least in the dative and ablative/genitive. The presence of mixed or split paradigms, often with further morphological complications, is characteristic of quite a number of languages, including Estonian and Mordvin (both Uralic), Chukchi (Chukotko-Kamchatkan), Chechen and Archi (both Northeast Caucasian), North Russian Romani, and others.

The preliminary conclusion that can be drawn from the actual typological diversity present in natural languages is that use of the terminological pair agglutination vs. fusion must be somehow limited and explicitly given a technical sense (Haspelmath 2009:27) if we want to recover at least some of the legitimacy of these terms in approaching morphological phenomena.

⁴ This use of the term ‘split morphology’ is not to be confused with another, perhaps more widespread, meaning, according to which inflection and derivation are different components of grammar (Anderson 1982, Perlmutter 1988; for a critical assessment of this idea, see Booij 1994, 1996).

2.1. A NARROW DEFINITION. Since a general, empirically based definition of agglutination vis-à-vis fusion is, as we have seen, not free of serious obstacles (see also Hagege 1990:297), in this article I confine myself to a quite narrow formulation. Specifically, I employ a definition that primarily relates agglutination to SEPARATION (the term SEPARATIST EXPONENCE was coined by Plank 1986:32)⁵ as the basic morphological technique displayed in inflectional systems, that is, lack of any cumulation of grammatical meanings in morphological markers that are not segmentable into smaller meaningful elements (see also Plungian 2001:672). In turn, CUMULATION of grammatical meanings (that is, simultaneous expression of two or more morphosyntactic categories in a single exponent; cf. Carstairs & Stemberger 1988:602)⁶ is viewed here as the main semantic and structural feature of fusional grammatical systems (the structural correlate of semantic cumulation being the unsegmentability of affixes).⁷ There is, of course, no significant novelty in this identification, because, as Plank (1999:282) recalls, separative and cumulative exponents 'have been considered the hallmarks of agglutination and flexion, respectively' ever since morphological typology was inaugurated. Similar conceptual decisions, whether overtly or tacitly expressed, have been made in the recent literature (see, for instance, Bybee 1997:26–27, Moravcsik 2013:123). It is worth noting that the terms agglutination and fusion will not refer here to entire languages, nor even to whole parts of grammar, but namely to the morphological technique used to form the markers realizing inflection as well as the paradigms into which inflectional systems are organized (see also Plank 1999:279, Bynon 2004:1228, Gardani 2012:79).

Secondarily, the conceptual distinction between agglutination and fusion will be grounded in the notion of invariance of morpheme expression: invariant morphemes characterize agglutination, whereas fusion does not require morphemes to be invariant. This property, however, is likely to exhibit different degrees of realization: deviations from invariance, whether phonologically, morphologically, or lexically conditioned, are indeed frequent in systems with separative exponence (those that might be termed 'agglutinative' in accordance with the main classificatory criterion). Facts like these demand a specific typological approach to agglutination and fusion, a topic to which I now turn.

2.2. CANONICAL TYPOLOGY: CRITERIA FOR DISTINGUISHING AGGLUTINATION AND FUSION. It is obvious that even a restrictive definition of agglutination and fusion such as the one proposed here relies on a somewhat ideal perspective on the morphological techniques displayed in inflectional systems. At one extreme we place a completely separative, Turkish-style exponence, with clear-cut boundaries between affixes and grammatical meanings; at the other we can envisage a coherent set of unsegmentable markers that cumulatively express values of different features (number and case, or person and tense, for instance). The classic model for this second type of exponence is provided by the inflection patterns of ancient (and even some modern) Indo-European languages. As

⁵ An earlier term for separation as a morphological technique of inflection is SIMPLE EXPONENCE, as opposed to cumulative exponence (see Matthews 1991:179).

⁶ Instead of separation and cumulation Renault (1987:91) employs the synonymous terms CONCATENATION and CONCOMITANCE, respectively: 'Les langues agglutinantes ont recours à un processus de concaténation, tandis que les langues flexionnelles ont recours à un processus de concomitance'.

⁷ Of course, equating fusion with cumulation makes sense from a classificatory point of view, but they relate primarily to different phenomena: fusion is phonological in nature (to the extent that it refers, among other things, to assimilatory processes that tend to blur morphemic boundaries), while cumulation is better interpreted as a semantic fact (a one-to-many relationship between affixes and their grammatical meanings). Nevertheless, there is a solid diachronic connection between fusion and cumulation, since the latter is a frequent consequence of the former (see also Plungian 2001:673). For a differentiated treatment of fusion and cumulation, see Bickel & Nichols 2011.

may be clear from this idealized contrast, I intend to adopt here a canonical approach to the morphological techniques that can be found in natural languages. In CANONICAL TYPOLOGY, as developed by Corbett (2005:26, 2007:9), definitions are taken ‘to their logical end point’, an operation that allows the analyst ‘to build theoretical spaces of possibilities’. Then the typologist asks how this space ‘is populated with real instances’. From this perspective, canonical instances are the best and clearest ones, those that closely match the canon, even though they are sometimes ‘unlikely to be frequent’ (in the case of agglutination, systems that come close to the canon are not so rare). The criteria used to set up the canonical model fix a theoretical point ‘from which phenomena actually found can be calibrated’ (see also Corbett 2012:154, Brown & Chumakina 2013:4). This canonical approach may thus be considered a kind of metatypology (Haspelmath 2010:678) that helps, to use Plank’s words (1999:285), to confront ‘possibility with reality’, which is one of the main tasks of typological research.

Some of the principles guiding the canonical approach in typology were somewhat implicit in the earlier literature on morphological types, for example in Skalička’s (1979 [1966]:335) ‘typologische Konstrukten’ or when, in his important contribution to the refinement of theoretical accounts of agglutination and flexion, Plungian (2001:672) states that ‘in an ideal agglutinative language, stems and affixes are uniform’. The same is true of statements that highlight the gradient nature of agglutinative and fusional properties: some forms may be referred to as being more or less agglutinative than others, and so forth. But there has also been an explicit contribution to a canonical definition of agglutination vis-à-vis fusion, that of Comrie (1978/1979), who studied the morphological properties of Balto-Finnic languages, and, to account for their differences, defined a notion of canonical agglutination in terms of two parameters: (i) segmentability of morpheme expression, and (ii) invariance of morpheme expression (Comrie 1978/1979:93; see the definitions above, §2.1). It is precisely this perspective of canonicity made explicit already by Comrie that I would like to reinforce in what follows, in order to identify the core properties that distinguish canonical agglutination and then to consider deviations ‘from canonical agglutination in the direction of fusion’. Fusion in turn is hard, if not impossible, to define in canonical terms: as argued by Comrie (1978/1979:94), a language exhibiting canonical fusion ‘would have to lack segmentability and invariance completely, i.e. every “sentence” would simply differ holistically from every other, with no possibility of formal analysis’. Lack of such ‘fusional’ languages, which poses a problem even for terminology, determines the decision to start by defining canonical agglutination and then to analyze deviations in the direction of fusion. Nonetheless, some properties attributed to canonical agglutination do have canonical fusional counterparts, as will become clear from the discussion below.

In the realm of inflectional morphology, the canonical approach to agglutination (in the spirit of Comrie 1978/1979, Corbett 2005, 2007) considers at least two domains: (i) the domain of affixes themselves, which are the morphological substance through which inflection is realized, and (ii) the paradigm, a domain corresponding to a basic unit of morphological organization in which such processes as case syncretism or even suppletion can operate (here I am exclusively concerned with intraparadigmatic properties and conditions). Although for descriptive purposes we can separate them, both domains are clearly interrelated as long as the structure of affixes or affixal sequences is determinable only by analyzing the paradigm of which they are part.

As far as the affixes are concerned, a clear structural criterion (see 3) can be devised that takes into account the SEMANTIC DENSITY of formatives (Bickel & Nichols 2007:188), that is, whether the grammatical categories are realized through separate or

cumulative exponents, a criterion that inevitably relates to the existence of recognizable morpheme boundaries among the affixes.

- (3) CRITERION 1: STRUCTURAL CRITERION for canonical agglutination vs. fusion
- Separative (segmentable) affixes indicate agglutination.
 - Cumulative (nonsegmentable) affixes indicate fusion.

This is probably the most that we can say on the canon when referring solely to affixes (and it is, at the same time, the clearest basis for a narrow definition of agglutination and fusion as separative vs. cumulative exponence).⁸ Identifying forms that instantiate each morphological technique in natural languages (see 4) is not a difficult task.

- (4) Separative and cumulative exponence⁹

a. TURKISH	b. KHANTY
ev-ler-in	kât-ət-a
house-PL-GEN	house-PL-GEN
c. RUSSIAN	d. LITHUANIAN
dom-óv	nam-ũ
house-GEN.PL	house-GEN.PL

In Turkish and Khanty (previously known as Ostyak, an Ob-Ugric language spoken primarily in the Khanty-Mansi autonomous region in Russia, western Siberia; see Honti 1988:179ff.), clearly segmentable suffixes separately express number and case, while Russian and Lithuanian forms do not allow for a regular pairing of two forms and two meanings: instead, their single, unsegmentable suffixes cumulatively express values of case and number. As regards gender in languages like Russian and Lithuanian, it could be unequivocally indicated by some affixes, but gender assignment is largely extramorphological (i.e. lexically inherent).

Some grammatical meanings, however, tend to be expressed cumulatively even in strongly agglutinative partial systems, as in the case of person and number (in the formal expression of these two features there seems to be a marked preference for cumulation within verbal paradigms; see Plank 1999:292, Siewierska 2004:3, 80, Moravcsik 2013:122), or in the case of tense and aspect, which are frequently based on a simultaneous opposition between durative/imperfective and punctual/perfective markers. In contrast to this overall tendency, some systems, no matter what degree of fusion or agglutination they display, do indeed exhibit separate expression for such frequently cumulated meanings as person and number (like Belhare and other Kiranti languages from the Tibeto-

⁸ Sometimes MULTIPLE OR EXTENDED EXPONENCE (as Matthews 1972:82 called it), which is the opposite of cumulation (i.e. a many-to-one relationship between affixes or morphological segments and grammatical meanings), is also regarded as a property of typically fusional systems. However, it appears to be neither a sufficient nor a necessary condition for a system to qualify as fusional. By Matthews's account, an example of extended exponence would be the Latin verb form *rēxistī* [re:ksisti:] 'you ruled', in which two suffixes (-s- and -is- or, if the latter was no longer segmentable in Latin, -istī) express perfect or perfective value. Furthermore, the perfect stem *rēx-* also contrasts with *reg-* of the imperfective aspect. An alternative term that covers roughly the same range of phenomena is DISTRIBUTED REALIZATION (cf. Dahl 2004:185). For extreme cases of extended exponence like those found in Batsbi and other Nakh-Daghestanian languages, Harris (2008, 2009), inspired by Anderson (2001:11), uses the term EXUBERANT EXPONENCE.

⁹ I follow the Leipzig glossing rules and abbreviation system (<http://www.eva.mpg.de/lingua/resources/glossing-rules.php>). Note in particular the following abbreviations, almost all of them referring to cases: ABESS: abessive, ABL: ablative, ACC: accusative, ADESS: adessive, ADV: adverbial, ALL: allative, CL: nominal class, COM: comitative, DAT: dative, DEF: definite, EQUAT: equative, ERG: ergative, GEN: genitive, ILL: illative, IMPF: imperfect, INDEF: indefinite, INESS: inessive, INS: instrumental, LOC: locative, NOM: nominative, OBJ: objective, OBL: oblique, PART: partitive, and PERL: perlativ.

Burman family; see Bickel 2003:552–53, Ebert 2003:510, Bickel & Nichols 2007:221) or tense and aspect (as is the case in Persian; see Plungian 2001:673).

As we turn now to the paradigmatic domain, more criteria for distinguishing canonical agglutination from fusional phenomena should be devised. First of all, we must refer to a formal criterion corresponding to the identity of affixes across (sub)paradigms in canonically agglutinative systems, for example, markers of case in different number paradigms within noun inflection or tense markers in different persons in verbal inflection (see 5). Canonical fusion, in turn, can be negatively defined as not requiring such affix identity. But we probably need something more: in canonically fusional systems, provided that there is no other kind of formal alternation, divergence of affixes across paradigms is a necessary property for preserving formal oppositions (see 7 below for the criterion involving syncretism).

- (5) CRITERION 2: FORMAL CRITERION for canonical agglutination vs. fusion
- Identity of affixes across subparadigms indicates agglutination.
 - Divergence of affixes across subparadigms indicates fusion.

In addition to the structural and formal criteria, other properties can contribute to the agglutination canon. For the sake of space, and since these additional criteria bear less relevance to the main arguments in the next sections, I only briefly indicate them (with some comments in the footnotes).

- (6) CRITERION 3: MORPHOTACTIC UNIFORMITY CRITERION for canonical agglutination vs. fusion
- Agglutination requires uniform morpheme boundaries.
 - (Fusion does not require uniform morpheme boundaries.)¹⁰
- (7) CRITERION 4: MORPHOSYNTACTIC CRITERION for canonical agglutination vs. fusion
- Agglutination is characterized by lack of syncretism.
 - (Fusion does not require lack of syncretism.)¹¹
- (8) CRITERION 5: PARADIGMATIC CONSISTENCY CRITERION for canonical agglutination and fusion
- Agglutinative (and fusional) paradigms display only one morphological technique.¹²

Criterion 5 sets a constraint on the combination of morphological techniques. An ideal agglutinative paradigm consists exclusively of separative, uniform, nonalternating morphemes; that is, it shows no split morphology at all (see above). The same, *mutatis mutandis*, holds for fusion. Mixed paradigms (like those studied by Plank (1999) and illustrated by the Wakhi inflection above) are by no means canonical since they violate

¹⁰ The uniformity requirement does not hold for fusion, in which morphotactic alternations may appear (in fact, nonuniformity of stems and affixes is said to be one of the constitutive features of fusional or flective systems; see Plungian 2001:672), even though they are not necessary to guarantee cumulation of grammatical meanings.

¹¹ Syncretism, whereby a single inflectional form fits more than one morphosyntactic description, constitutes a highly fusional characteristic, since in syncretized forms different values come to be cumulatively expressed (furthermore, those values are neutralized in certain positions). In agglutinative paradigms, syncretism is said to constitute a fairly uneconomical device; see Carstairs 1984:82, 1987:111–12, Carstairs & Stemberger 1988:614, Plank 1999:321. Of course, this does not mean that otherwise agglutinative paradigms cannot have syncretic forms (as is frequently the case; see Baerman et al. 2005). Fusional systems, by contrast, tend to include syncretisms, but their obligatory presence can hardly be claimed to be a condition for a paradigm to be canonically fusional.

¹² For general criteria of internal paradigmatic consistency in canonical inflection, see Corbett 2011:109–11.

the PARADIGMATIC CONSISTENCY CRITERION (which must be distinguished from the requirement for MORPHOTACTIC UNIFORMITY formulated in criterion 3).

These five criteria enable us not only to determine the degree of agglutination or fusion that characterizes certain inflectional structures, but also to shed some light on the diachronic development of morphological systems. The typological cycle referred to above, though corresponding in the traditional version to entire language or grammatical systems, can be restricted to the evolution of types of morphological technique as they have been defined in this section. Thus, according to the morphological cycle (in the restricted meaning advocated here), separate expression of grammatical values is diachronically replaced by fusional exponence, owing primarily to phonetic reduction, with this reduction also being one of the main factors that explain the subsequent shift from fusional to isolating structures (the shift from separative to cumulative exponence is the topic of §3 below). What the morphological cycle precludes, insofar as it is based on the assumption of unidirectional processes, is the possibility of fusional patterns becoming agglutinative in the course of history, a typological change that is, the above notwithstanding, actually attested in the evolution of several languages (a topic that is discussed in §4).

3. FROM AGGLUTINATION TO FUSION (IN ACCORDANCE WITH THE MORPHOLOGICAL CYCLE). In those linguistic subsystems in which we find synchronic internal coherence from the typological viewpoint, the diachronic replacement of agglutinative by fusional structures has been widely proposed in reconstructed processes of grammatical change, as in the case of Indo-European morphological reconstruction. Here, one should recall not only Franz Bopp's old agglutination theory about the origin of verbal forms, but also modern observations and hypotheses on the (more) analytic earlier stages of Proto-Indo-European nominal inflection (see, for instance, Erhart 1993:34–44 and Lehmann 2002:167–68, preceded by Lehmann 1958).

The development of cumulative exponence out of separative morphology can be illustrated with other examples as well. Estonian noun inflection provides a well-researched instance of fusional development within an agglutinative system. Syllables in word-final position underwent in Estonian, as well as in Livonian (another Balto-Finnic language, today nearly extinct), several phonetic changes that have partially transformed the inflectional paradigms and increased their morphological opacity (Grünthal 2003:26, Viitso 2003:196). When compared to their Finnish correlates, it becomes evident that some Estonian case suffixes crucially deviate from a canonical agglutinative exponence (they are called 'fusional cases'), while others still reflect the separate expression of grammatical meanings that consistently characterized the entire paradigm in the past. Contemporary Estonian declension thus displays mixed morphological strategies (see also Grünthal 2007:404).

	ESTONIAN		FINNISH	
	SINGULAR	PLURAL	SINGULAR	PLURAL
NOM	lipp	lipu-d	lippu	lipu-t
GEN	lip-u	lippu-de	lipu-n	lipu-j-en
PART	lipp-u	lippu-sid	lippu-a	lippu-j-a
PART ₂	—	lipp-e	—	—
ILL	lipu-sse	lippu-de-sse	lippu-un	lippu-i-hin
ILL ₂	lipp-u	—	—	—
INESS	lipu-s	lippu-de-s	lipu-ssa	lipu-i-ssa
ALL	lipu-le	lippu-de-le	lipu-lle	lipu-i-lle
ABL	lipu-lt	lippu-de-lt	lipu-lta	lipu-i-lta
ADESS	lipu-l	lippu-de-l	lipu-lla	lipu-i-lla

TABLE 2. Nominal paradigms in Estonian and Finnish: partial paradigms of Estonian *lipp* 'flag' and Finnish *lippu* 'flag'.

The vast majority of forms in the nominal paradigm—the peripheral cases (from the illative up to the adessive in Table 2)—can safely be defined as agglutinative (Ehala 2009:37). In this context the nominative, the genitive, and the partitive cases in Estonian constitute a special subsystem. They are inflectionally relevant as far as the form of the other cases in the paradigm can be predicted on the basis of the relationship, prosodic as well as morphological, existing among these three forms (Blevins 2005:6–8, 2008:244). For some nouns, there is also a short syncretic form of partitive and illative (only in the singular) that resembles the morphological structure of the core cases in that it is cumulatively opposed to its plural counterpart (cf. ILL.SG₂/PART.SG *lippu*, PART.PL₂ *lippe*). Despite the exceptionality of its illative form, the paradigm of Finnish *lippu* is more homogeneous than its Estonian correlate. Finnish declension is more consistently agglutinative, even though it is far from canonical (to the irregular forms of the illative case we must add the presence of two exponents for number, *-t-* and *-i/j-*, which violates the condition of paradigm uniformity based on the identity of value markers; cf. criterion 2 in 5 above). But we find no formal oppositions comparable to Estonian ILL.SG₂/PART.SG *lippu* vs. PART.PL₂ *lippe* or PART.SG *lippu* vs. PART.PL *lippusid*, in which there is no affixal separation of grammatical meanings.¹³

To sum up, the morphological evolution in the Estonian language has produced cumulative case forms in a domain where probably there were none (it was thus an innovation that introduced elements of fusion into an agglutinative system, and not an improbable inflectional retention from remote Proto-Uralic times; see §4.1 below).

Another possible evolution from agglutination toward fusion can be identified in Basque, which is commonly regarded as a language with a highly regular or even strongly agglutinating morphology (Trask 1998:318). But when comparing the singular and the plural paradigms of Basque declension (see Table 3), one realizes that there is nowadays a certain degree of deviance from canonical agglutination. In the plural paradigm we find a significant difference in morphological technique between cases such as the locative, the ablative, the allative, and others, on one side, and the genitive and probably the absolutive, on the other. In forms like the absolutive or the genitive plural there is no clear-cut separation between number and case marking; that is, here we can identify some degree of inflectional cumulation.

	INDEFINITE	DEFINITE	
		SINGULAR	PLURAL
ABS	etxe	etxe-a	etxe-ak/etxe-a-k
ERG	etxe-k	etxe-a-k	etxe-e-k
GEN	etxe-ren	etxe-a-ren	etxe-e-n
DAT	etxe-ri	etxe-a-ri	etxe-e-i
INS	etxe-z	etxe-a-z	etxe-e-z
COM	etxe-re-kin	etxe-a-re-kin	etxe-e-kin
ALL	etxe-ta-ra	etxe-ra	etxe-eta-ra
ABL	etxe-ta-tik	etxe-tik	etxe-eta-tik
LOC	etxe-ta-n	etxe-a-n	etxe-eta-n

TABLE 3. Basque inflectional paradigms of vowel-ending nouns (partial paradigm of *etxe* ‘house’, without some postpositions and proximal plural forms; cf. Hualde 2003:172).

¹³ Peripheral plural cases in Estonian can also be formed on the basis of PART.PL₂, with the formative *-e-* extended across the paradigm: ILL.PL₂ *lip-e-sse* (cf. ILL.PL *lippu-de-sse*), INESS.PL₂ *lip-e-s* (cf. INESS.PL *lippu-de-s*), ABL.PL₂ *lip-e-st* (cf. ABL.PL *lippu-de-st*). The characteristic vowel of these plural forms arose as a result of a fusional process, whereby the stem vowel (in these examples *-e-*) and the original plural marker (**-i-*) merged into a single segment (Juha Janhunen, p.c.).

Basque declension has indefinite and definite paradigms. The former is number-independent, whereas the latter distinguishes between singular and plural paradigms. Definite declension is characterized by the presence of the article (*-a-*) in the singular (although not in all case forms). In the plural, two allomorphs function as number markers: *-e-* and *-eta-* (the latter being most probably a later innovation in the paradigm; see Trask 1997:203). The number opposition in the majority of case forms is therefore quite transparent, as long as plural forms have separate exponents for plurality and case: DEF.ABL.SG *etxe-tik* (note that this form contains no article) vs. DEF.ABL.PL *etxe-eta-tik*; DEF.LOC.SG *etxe-a-n* vs. DEF.LOC.PL *etxe-eta-n*.¹⁴

By contrast, genitive forms, which were probably created on the basis of this general agglutinative principle, have somewhat blurred the original distinction between morphemes: compare DEF.GEN.SG *etxe-a-ren*, in which *-r-* now has no morphological relevance (see also the dative forms, which exhibit the same epenthetic *-r-* separating the final vowel of the stem from the case ending),¹⁵ with DEF.GEN.PL *etxe-en* from **etxe-agen*, probably through something like **etxe-a-en* (cf. attested forms like *iusturi-aen* ‘of the thunders’, from the sixteenth century, or *il-aen* ‘of the dead’, from the seventeenth century). Identity of inflected forms across numeral paradigms is better instantiated by the consonant-final stems: contrast INDEF.GEN.SG *gizon-en* ‘(of) man’ (DEF.GEN.SG *gizon-a-ren* ‘(of) the man’) with DEF.GEN.PL *gizon-en* ‘(of) men’. As it appears, phonological developments (the loss of the velar plosive and the syntagmatic merger of vowels) have introduced an appreciable degree of inflectional cumulation into the Basque paradigms.¹⁶ The absolutive plural form also deviates from canonical agglutination in that its characteristic ending *-ak* can hardly be segmented into grammatically meaningful units (as pointed out already by Plank 1986:36), unless we wish to identify in its vowel, as Michelena (2011 [1950]:199) was inclined to do, the singular form of the article (this alternative view would bring further obstacles to agglutinative canonicity, namely with regard to the lack of uniformity in plurality markers).¹⁷

Since the typological shift from agglutinative sequences to fusional morphemes is the default case in studies on diachronic morphology (see also Hagège 1990:300ff.), I do not stress this point any further and instead focus on the reverse direction of change.

4. FROM FUSION TO AGGLUTINATION (NOT IMPLIED BY THE MORPHOLOGICAL CYCLE). Despite the strict predictions made by the typological cycle, in the attested history of several languages we quite frequently find the inverse diachronic relationship between the agglutinative and the fusional types. The data that I introduce in this section show what appears to be a clear tendency toward the replacement of cumulative by separative exponence in nominal as well as verbal morphology.

¹⁴ An alternative analysis of the locative ending considers final *-an* a single nonsegmentable morpheme, probably coming from an earlier **-gan* (see Trask 1997:202). Discrepancies in segmentation are nonetheless not relevant to the present discussion.

¹⁵ Diachronically, this *-r-* in genitive and dative singular forms has been regarded as a relic of the distal demonstrative pronoun **ha(r)*, which was grammaticalized as an article and cliticized to the root as a definiteness marker (for a summary, see Santazilia 2013:244). For a general hypothesis on the pronominal origin of Basque nominal paradigms, see Manterola 2009.

¹⁶ If one adds to that the absence of morphological identity between some case markers across number paradigms, it becomes quite clear that the Basque nominal declension cannot be treated as a canonical agglutinative system (it violates at least criterion 2 for canonical agglutination; §2.2).

¹⁷ Regarding its etymology, there are two main proposals: (i) the ending *-ak* has been traced back to **-aga* (which is paralleled by a suffix broadly used in toponymy), and (ii) it has been linked to *haik/hak*, the absolutive plural case of the distal demonstrative pronoun that is claimed to have been attached to the noun stem (**etxe haik* or **etxe hak* ‘those houses’ > *etxeak* ‘houses’); cf. Trask 1997:200, Martínez-Areta 2009:80ff.

This refers first of all to the morphological evolution of languages such as Armenian, Ossetic, Georgian, Asia Minor Greek (more specifically, Cappadocian Greek), Lithuanian, Tocharian A and B, and some modern Indo-Aryan languages (Marathi, Bengali, Assamese). These languages provide the main data that I examine here. Other instances of typological shift toward a separative inflectional morphology have been discussed in the literature, but they involve reconstructed processes of change, as in the case of Proto-Uralic and Proto-Munda innovations, so the evidence is of a somewhat different kind (i.e. it cannot count as an indisputable instance of such kinds of typologically relevant morphological change). Nevertheless, I briefly mention in this section the arguments concerning agglutinative developments at some unattested stages of language evolution.

Many of the languages to be examined here (if not all of them) have evolved in conditions of close contact with languages characterized by inflectional systems of the agglutinative type. The incidence of language contact in inflectional changes is a recurring topic throughout the remaining sections of the article, but it is specifically treated in §§8.2–8.3.

4.1. NOMINAL INFLECTION. In what follows I introduce eight instances of fusional-to-agglutinative developments in the domain of noun inflection. I give a brief overview of the morphological changes undergone by Armenian, Ossetic, Georgian, Tocharian A and B, Lithuanian, Marathi, Bengali, and Cappadocian Greek. In addition, as indicated above, recent proposals of this kind of morphological change for unattested phases of development in Uralic and Munda language families are mentioned. The different mechanisms of change underlying each innovation (or group of innovations) are analyzed in §7.

ARMENIAN. Among the Indo-European languages, Armenian and Ossetic constitute remarkable instances of agglutinative reorganization of the nominal paradigms. The declension in both languages was originally of the fusional type, but the modern languages have developed morphological traits that can be defined as agglutinative. Consider first (Table 4) the inflectional evolution that separates the nominal declension of Old Armenian (between the fifth and seventh centuries AD), illustrated here with the paradigm of *azg* ‘nation, people’, from its Modern Eastern Armenian counterpart (Stempel 2000:471–72, Schmitt 2007:94).

	OLD ARMENIAN		→	MODERN EASTERN ARMENIAN	
	SINGULAR	PLURAL		SINGULAR	PLURAL
NOM	azg	azg-kʰ		azg	azg-er
ACC	azg	azg-s		azg	azg-er
GEN	azg-i	azg-acʰ		azg-i	azg-er-i
DAT	azg-i	azg-acʰ		azg-i	azg-er-i
ABL	azg-ē	azg-acʰ		azg-icʰ	azg-er-icʰ
INS	azg-aw	azg-awkʰ		azg-ov	azg-er-ov
LOC	azg-i	azg-s		azg-um	azg-er-um

TABLE 4. Evolution of Armenian noun inflection, illustrated with the declension of *azg* ‘nation, people’.

Cumulative markers have been replaced in Armenian by separative ones in a process whereby a new affix, which has the allomorphs *-er-/ner-* depending on whether the noun stem is monosyllabic or polysyllabic (see also Karst 1901:188, Dum-Tragut 2009:71ff.), entered the inflectional paradigm, transforming it into an agglutinative structure, with identical markers of case across number subparadigms (Vogt 1988a [1945]:183). Old cumulative endings were simply eliminated in the plural, and in their place a new,

homogeneous paradigm emerged in Middle Armenian (from the twelfth century onward) on the basis of an earlier collective suffix, which originally had the form *-ear*; see Karst 1901:178. Among the innovated case endings, the instrumental (and, to some extent, also the ablative) represents a formal exception: on the one hand, the modern suffix, though in a modified structural context, retains the main morphological substance of its ancestor (*-aw* > *-ov*); on the other, it is noteworthy that even its old form separately expressed case and number values, since the morpheme *-awk'* may be further segmented into *-aw-* (cf. the instrumental ending in the singular) and *-k'* (cf. the nominative plural). Consequently, in Old Armenian there were already some agglutinative characteristics (Klein 2007:1053). The morpheme ordering in the old instrumental plural contradicted, by the way, Greenberg's universal No. 39: '[w]here morphemes of both number and case are present and both follow or both precede the noun base, the expression of number almost always comes between the noun base and the expression of case' (Greenberg 1990 [1963]:59). In modern Eastern Armenian the form *azg-er-ov* (people-PL-INS) is already arranged in accordance with that constructional principle.

OSSETIC. In Ossetic, a member of the Iranian group of Indo-European languages spoken in the Caucasus, the morphological evolution of noun inflection has produced analogous structural results. In the Old Iranian languages (Avestan and Old Persian, with preserved texts dating back to the sixth century BC), noun declension was characterized by a fairly consistent cumulative exponence. By contrast, the declensional system of present-day Ossetic (see Table 5) is usually viewed as being consistently agglutinative (Abaev 1964:17, Oranskij 1977:135, Thordarson 2009:116, Belyaev 2010:293).

	SINGULAR	PLURAL
NOM	bæx	bæx-t-æ
GEN	bæx-i	bæx-t-i
DAT	bæx-æn	bæx-t-æn
ALL	bæx-mæ	bæx-t-æm (cf. in Digor <i>gal-tæ-mæ</i> 'oxen')
INS/ABL	bæx-æy	bæx-t-æy
INESS	bæx-i	bæx-t-i
ADESS	bæx-il	bæx-t-il
EQUAT	bæx-au	bæx-t-au
COM	bæx-imæ	bæx-t-imæ

TABLE 5. Ossetic *bæx* 'horse' (forms corresponding to the Iron dialect).

As we have seen in the Armenian example above, the inflectional markers of Modern Ossetic (in both the Iron and Digor dialects) meet the main structural and formal criteria for canonical affix separation (see §2), even though the relationship between the nominative singular and the nominative plural is not completely regular (lack of identity between the markers of case, that is, violation of criterion 2 for canonical agglutination), and in spite of the syncretism between the genitive and the inessive (violation of criterion 4; see §2.2 above). The evolution of noun declension in Ossetic gave rise to a system that is rather unusual among modern Iranian languages.¹⁸ The innovation was

¹⁸ Yaghnobi, another East Iranian language spoken (according to the latest estimates) by some 13,500 people in several places in Tajikistan and a language that is taken to be the only surviving descendant of Sogdian, also presents a system of nominal inflection based on an agglutinative principle, with separative markers of number and case at least in noun stems ending in a consonant: cf. direct singular case *kat* 'house' or *davar/divar* 'door', direct plural case *kât-(i)t – davar-t*, oblique singular *kât-i – davar-i*, and oblique plural *kât-t-i – davar-t-i* (Junker 1930:11, Bogoljubov 1966:346). Sogdian, in turn, was characterized by a split in morphological technique between light and heavy noun stems, but later on separative exponence was generalized in all of the inflectional classes (see Sims-Williams 1982:69–70, 1989:183, Plank 1999:290–91).

based on a new marker for number (*-t-* or *-tæ-*) that derives from an Old Iranian suffix **-tā-* originally used to form abstract and collective nouns (Bielmeier 1982:66, Thor-darson 2009:117).

GEORGIAN. Structural evolution of the nominal paradigms in Georgian (and in the other South Caucasian or Kartvelian languages) also resulted in a considerable change of its declensional system. The context is nevertheless a bit more complicated than in the preceding examples because Old Georgian (between the fourth and eleventh centuries AD) had two plural subparadigms (PLURAL₁ and PLURAL₂), only one of which has survived in Modern Georgian. They are included in Table 6, together with the subsequent changes undergone by Georgian noun inflection.

	OLD GEORGIAN			→	MODERN GEORGIAN	
	SINGULAR	PLURAL ₁	PLURAL ₂		SINGULAR	PLURAL
NOM	k'ac-i	k'ac-n-i	k'ac-eb-i		k'ac-i	k'ac-eb-i
ERG	k'ac-man	k'ac-ta	k'ac-eb-ma		k'ac-ma	k'ac-eb-ma
GEN	k'ac-isa	k'ac-ta	k'ac-eb-is		k'ac-is	k'ac-eb-is
DAT	k'ac-sa	k'ac-ta	k'ac-eb-s		k'ac-s	k'ac-eb-s
INS	k'ac-ita	k'ac-ta	k'ac-eb-it		k'ac-it	k'ac-eb-it
ADV	k'ac-ad	k'ac-ta	k'ac-eb-ad		k'ac-ad	k'ac-eb-ad

TABLE 6. Evolution of Georgian noun inflection, illustrated with the declension of *k'aci* '(the) man'.

The evolution of the plural paradigm in Georgian consists of the reinforcement of the agglutinating nature of affix exponence through the removal of cumulative (and highly syncretic) forms in *-n-i/-t(a)* and the parallel consolidation of the suffix *-eb-* as the only marker of plural (Harris 1991:28: 'In the course of history, ... *-eb* has completely replaced the fusional suffixes as markers of plural number').¹⁹ The agglutinative plural paradigm, secondary from a diachronic perspective, was built around the collective suffix *-eb-* (Vogt 1988b [1947]:227–28, Harris 1991:28, Hewitt 1995:33). Its collectiveness had syntactic effects in Old Georgian, since verbal agreement with *eb*-plural subjects usually took singular forms, unlike agreement with *n*-plural subjects (Fähnrich 1991:198).

This morphological innovation is also reflected in Mingrelian and Laz: in Mingrelian the separative number marker is *-ep-* (Kadshaia 2008:184), while in Laz it has the form *-epe-* (Kartosia 2008:278). Finally, Svan has *-ar/-är-* for this function (Boeder 2005:14). Thus all of the Kartvelian languages appear to have restructured the plural paradigm, and only the difference in phonological substance makes it difficult to posit a single morpheme for Proto-Kartvelian.

The preference for a separative kind of inflectional exponence in the history of Georgian, in which both the fusional and the agglutinative models were available (and the agglutinative won out), is an additional piece of evidence against the unidirectionality of inflectional change implied by the morphological cycle.

TOCHARIAN. The next instance comes from the Tocharian languages, a small group of two languages (usually named A and B) that was discovered in the early twentieth century and immediately linked to the Indo-European family. Available Tocharian documents date from the sixth to eighth centuries AD and were found in part of what is now the northwest territory of China (the Xinjiang Uyghur autonomous region). Tocharian A

¹⁹ As Boeder (2005:14) observes, the old plural forms are sometimes found in formal or poetic contexts, and they are regular in demonstrative pronouns. In two archaic dialects (Khevsurian and Pshavian), the old plural paradigm has developed a sort of dual/paucal meaning, denoting groups of two to three items.

and B are characterized by a complex system of nominal inflection, which is based on different morphological techniques. They both represent cases of declensional enrichment by means of expanding agglutinative-like suffixes. The special inflectional features of Tocharian declension came to the attention of scholars shortly after the discovery of those languages. Trubetzkoy (1939) was among the first to point out the typological relevance of Tocharian nominal declension inside Indo-European. In Tocharian languages the form of the accusative/oblique case provides the basis or pivot for a remodeling of the whole paradigm: all of the noncore cases are reshaped in accordance with this principle, so they all take the ending of the accusative/oblique case plus a specific suffix. This is, no doubt, a late innovation within the Indo-European family (Schmidt 1969:106). As a consequence of the morphological reorganization of Tocharian nouns, singular and plural stems diverged, and this enabled the inflectional separation of case affixes. What we see in Table 7 is, therefore, a quite typical example of split morphology (Plank 1999; see §2 above): the core cases (nominative and accusative, with the genitive showing mixed features) display cumulative exponence, whereas the noncore cases have developed an affix/meaning separation characteristic of the agglutinative systems (Schmidt 1978/1979:335, Carling 2012:58).

	TOCHARIAN A <i>yuk</i> 'horse'		TOCHARIAN B <i>yakwe</i> 'horse'	
	SINGULAR	PLURAL	SINGULAR	PLURAL
NOM	yuk	yuk-añ	yakw-e	yakw-i
ACC/OBL	yuk	yuk-as	yakw-e	yakw-eṃ
GEN	yuk-es	yukaś-ši	yäkwe-ntse	yäkweṃ-ts
INS	yuk-yo	yukas-yo	—	—
PERL	yuk-ā	yukas-ā	yakwe-sa	yakwen-tsa
COM	yuk-aśšäl	yukas-aśšäl	yakwe-mpa	yakweṃ-mpa
ALL	yuk-ac	yukas-ac	yakwe-ś(c)	yakweṃ-ś(c)
ABL	yuk-äṣ	yukas-äṣ	yäkwe-meṃ	yakwen-meṃ
LOC	yuk-aṃ	yukas-aṃ	yakwe-ne	yakweṃ-ne

TABLE 7. Tocharian noun paradigms (Krause & Thomas 1960:141, Pinault 2008:468).

OLD LITHUANIAN. A somewhat similar innovation affected to some extent the structure of nominal paradigms in Old Lithuanian. Being a language that preserved many archaic features in its nominal declension, Lithuanian created, nonetheless, a group of secondary cases by combining the old endings of the accusative, genitive, and locative cases with local postpositions. This is the origin of the old and dialectal illative (ACC + *na*), allative (GEN + *pi*), adessive (LOC + *pi*), and inessive forms (LOC + *en*). Corresponding plural forms were created later. These postpositional cases were frequently used in the first Lithuanian written texts (dating from the sixteenth century), and the locative form has been retained in Standard Lithuanian. The other cases have been generally replaced by prepositional phrases (for instance, instead of the illative form Lithuanian makes use of the preposition *į* + the accusative case), and there remain only a few composite forms such as the ILL.SG *káima(n)* 'toward the village' (cf. the ILL.PL *káim-uos-na*), the ALL.SG *vakaróp* 'about nightfall' (an idiomatic expression), or the ADESS.SG *namíep* 'beside the house, at the house' (cf. the ADESS.PL *dvar-úos-emp* 'beside the doors'). As these last examples illustrate, the vowel in *-pi* is frequently dropped.²⁰ In Tables 8 and 9 we can compare the general Lithuanian paradigm (consisting of simple,

²⁰ The loss of word-final *-i* is also found in other examples (inside Baltic): cf. the Lithuanian infinitival forms in *-ti* (*vèsti* 'to lead') vs. their Latvian counterparts in *-t* (*vest* 'idem'). I am grateful to Brian D. Joseph for bringing these parallels to my attention.

inherited cases and the postpositional locative form) and the subsystem of dialectal (and old) complex cases (the illative, allative, and adessive, which are additional forms to those listed in Table 8).

	SINGULAR	PLURAL
NOM	mišk-as	mišk-aī
ACC	mišk-ą	mišk-ūs
GEN	mišk-o	mišk-ū
DAT	mišk-ui	mišk-áms
INS	mišk-ù	mišk-áis
LOC	mišk-è	mišk-uosè

TABLE 8. Lithuanian noun declension for *miškas* ‘forest’ (example of an *a*-stem, from Ambrazas 1997:110).

	SINGULAR	PLURAL
ILL	mišk-a-nà/misk-a-ñ	mišk-úos-na
ALL	mišk-ó-pi	mišk-uñ-pi
ADESS	mišk-íe-pi	mišk-úosem-pi

TABLE 9. Dialectal (Eastern High) Lithuanian forms of illative, allative, and adessive (*miškas* ‘forest’; Ambrazas 1997:106, Zinkevičius 1997:111–15). Note: there also exist the variants *miškúosumpi* and *miškúosampi* for the adessive case.

Despite their internal irregularities (the stem varies both in the singular and in the plural), the secondary case forms still have similar characteristic endings across numbers. It is worth noting that in the allative plural the postposition *-pi* (< *priē*) was affixed to the genitive plural form before the change **-un* > *-u* (Endzelīns 1971:167, Zinkevičius 1997:116), and that the adessive plural takes its nasal by analogy from the allative plural (**mišk-uosù-pi*/**mišk-uosè-pi* > *mišk-úosum-pi*/*mišk-úosem-pi* in the adessive plural, influenced by the allative plural *mišk-uñ-pi*; see Zinkevičius 1997:115).

As the paradigms in Tables 8 and 9 show, this Lithuanian innovation did not lead, not even for a short while, to a canonical agglutinating system; at most the change, consisting of the paradigmatic integration of certain postpositions, could produce a split-morphological situation, in which the structural and formal conditions for agglutination—in the postpositional cases examined—were only partially met. In any case, the rise of these secondary case forms through a process of paradigmaticization of spatial postpositions once again suggests the actual diachronic possibility of introducing agglutinative traits into a fairly consistent (as was the case in Lithuanian declension) fusional system.

MARATHI AND BENGALI. Most modern Indo-Aryan (or Indic) languages exhibit complex nominal paradigms (see already Bloomfield 1933:470, Emeneau 1956:9), in which scholars have identified different morphological LAYERS or stratified groups of forms with chronological implications. According to Masica (1991:231), at least three layers of forms with case-like functions can be distinguished. These layers are typically made up of inherited fusional (layer I), new agglutinative (layer II), and quasi-analytic (layer III) elements. The relevant point to our discussion here is the difference between layers I and II: the latter constitutes a set of diachronically secondary markers that are either ‘attached to the base indirectly, through the mediation of a layer I element’ or ‘invariant for all nouns and the same for both numbers’ (Masica 1991:232). The first way of creating new forms makes this innovation similar to that undergone by Tocharian and, partially, Lithuanian, and is attested in languages such as Marathi (see Table 10).

As for the second way, the emergence of new plural markers (agglutinative suffixes or analytic particles) approximates layer II of languages like Assamese (Kakati 1941:

	SINGULAR	PLURAL
OBL (layer I)	<i>vimān-ā</i>	<i>vimān-yā^N</i>
DAT (layer II)	<i>vimānā-lā</i>	<i>vimānyān-nā</i>
INS (layer II)	<i>vimānā-ne^N</i>	<i>vimānyān-nī^N</i>

TABLE 10. Oblique, dative, and instrumental cases of Marathi *vimān* ‘plane’ (Masica 1991:233).

284) or even the entire declensional system, as may be the case in Bengali/Bangla (Thompson 2012:53, 62ff.), to the diachronic behavior of nominal declension in Armenian, Ossetic, or Georgian (see an example of Bengali declension in Table 11 below).

The dative and instrumental cases (layer II) are formed in Marathi on the basis of the oblique case (layer I). This introduces a secondary distinction between singular and plural stems into the paradigms. From a canonical perspective on agglutination, while the dative forms are rather close to the canon (the minimal difference between the endings seems to derive from purely phonological alternations), the instrumental case strongly deviates from it, since in this form the violation of criterion 2 for canonical agglutination cannot be accounted for in phonological (or other) terms.

	SINGULAR	PLURAL
NOM	<i>bāri</i>	<i>bāri-gulo/bāri-guli</i>
OBJ	<i>bāri-ke</i>	<i>bāri-gulo-ke/bāri-guli-ke</i>
GEN	<i>bāri-r</i>	<i>bāri-gulo-r/bāri-guli-r</i>
LOC	<i>bāri-te</i>	<i>bāri-gulo-te/bāri-guli-te</i>

TABLE 11. Bengali (or Bangla) noun paradigm of *bāri* ‘house’.

In Bengali nominal paradigms, the insertion of special markers for plurality (among them the variants *-gulo-* and *-guli-*), which are considered classifiers by Thompson (2012:62), is accompanied by the formal unification of cases across numbers, in a development that lends Bengali declension a canonical agglutinative character at least in some noun paradigms. Alongside these plural classifiers there is also the plural marker *-ra* (and its variants), but this suffix is reserved for animate nouns (Thompson 2012:61). As Table 11 shows, the inflectional system of Bengali declension (at least for some nouns) has evolved into a consistently agglutinative structure with transparent separate markers of number and case.

CAPPADOCIAN GREEK. Some Asia Minor Greek dialects, formerly spoken in several places in Central Anatolia, provide instances of inflectional evolution within the domain of noun morphology that also point to a typological shift from cumulative exponence to separate expression of nominal categories. Cappadocian Greek, one of whose varieties still survives in Northern and Central Greece (Janse 2009a:38–39), clearly illustrates the change in question. Even though not all innovations in its declension can be unequivocally considered agglutinative in nature (for a recent reinterpretation of some data see Karatsareas 2011:257ff.), inflectional structures such as the ones represented in Tables 12 and 13 are unanimously considered to be agglutinative by all scholars (beginning from Dawkins 1916:114; see Thomason & Kaufman 1988:219, Janse 2004:9–12, Winford 2005:405, Matras 2009:262–63, Ralli 2009:99–102, Karatsareas 2011:261).

	SINGULAR	PLURAL	SINGULAR	PLURAL
NOM	<i>numāti-s</i>	<i>numát-e(s)</i>	<i>kloxára-∅</i>	<i>kloxár-es</i>
ACC	<i>numát(i)-∅</i>	<i>numat-jús</i>	<i>kloxára-∅</i>	<i>kloxár-es</i>
GEN	<i>numát(i)-∅</i>	<i>numát-ez-ju</i>	<i>kloxára-s</i>	<i>kloxár-ez-ju</i>

TABLE 12. Aksó Cappadocian declension (Karatsareas 2011:260): *numátis* ‘man’ and *kloxára* ‘spindle’.

	CAPPADOCIAN <i>néka</i> 'woman'		TURKISH <i>kız</i> 'girl'	
	SINGULAR	PLURAL	SINGULAR	PLURAL
NOM	<i>néka-∅</i>	<i>nék-es</i>	<i>kız</i>	<i>kız-lar</i>
ACC	<i>néka-∅</i>	<i>nék-es</i>	<i>kız-ı</i>	<i>kız-lar-ı</i>
GEN	<i>néka-ju</i>	<i>nék-ez-ju</i>	<i>kız-ın</i>	<i>kız-lar-ın</i>

TABLE 13. Ulağaç Cappadocian and Turkish noun declension (adapted from Dawkins 1916:114).

Separate expression of number and case (see the genitive forms in Table 13: GEN.SG *néka-ju* vs. GEN.PL *nék-ez-ju*) parallels the morphological structuring of nominal inflection that is characteristic of Turkish. Indeed, Turkish influence, according to the vast majority of authors, lies behind this morphological innovation in Cappadocian Greek dialects. In any event, although a paradigm like that of *néka* 'woman' might be said to exhibit an almost canonical agglutinative structure, in the case of Axó Cappadocian paradigms the inflectional scenario that has arisen is far from being a canonical instance of separative exponence: the structural condition for canonical agglutination (criterion 1: separate expression of grammatical meanings) is only partially satisfied (see the ACC.PL *numat-jús*, with a cumulative marker), and the main formal condition (criterion 2: identity of case markers across number paradigms) does not seem to be met (cf. GEN.SG *numáti-∅* and GEN.PL *numát-ez-ju* or GEN.SG *kloxára-s* and GEN.PL *kloxár-ez-ju*). Far clearer, from the point of view of its agglutinative structure, is the declensional paradigm of *átropos* 'man' in Ulağaç (Table 14, based on Janse 2004:10, who cites data collected by Sasse 1992:66).

	SINGULAR	PLURAL
NOM	<i>átropos</i>	<i>átropoz-ja</i>
ACC	<i>átropos</i>	<i>átropoz-ja</i>
GEN	<i>átropoz-ju</i>	<i>átropoz-ja-ju</i>

TABLE 14. Inflectional paradigm of *átropos* 'man' in Ulağaç (adapted from Janse 2004:10).

This paradigm, which includes forms such as the GEN.PL *átropoz-ja-ju*, with an invariant case marker that is attached to what appears to be a plural stem (*átropoz-ja*) regularly built through suffixation on the singular stem, is nearer to canonical agglutination (see also Ralli 2009:101). However, in the corpus studied by Karatsareas (2011:256) there is not a single occurrence of this type of genitive plural, which casts some doubts on its use (though the genitive plural form is in general decline in Modern Greek; Brian D. Joseph, p.c.). In any case, there are well-attested forms such as the GEN.PL *kloxár-ez-ju*, which are considered 'truly agglutinative' (Karatsareas 2011:261), that is, canonical as far as criteria 1 and 2 for agglutination are concerned (§2.2).

PROTO-URALIC. A similar diachronic trend toward agglutination in noun morphology has been proposed for Proto-Uralic. Uralic languages exhibit different morphologies that range from fairly pure, even canonical agglutinative (Cheremis, Khanty) to mixed fusional-agglutinative systems (of which Estonian is perhaps, together with Livonian and the Saamic languages, the most remarkable case; see above §3 and Comrie 1988, Grünthal 2000). Despite these slight divergences, their common ancestor has usually been reconstructed as a fairly pure agglutinative system (Marcantonio 2002:205). According to Korhonen (1996 [1981]), however, Proto-Uralic might initially have been of the flecive/fusional type (see also Puzstay 1995:115). Korhonen himself was somewhat astonished by the results of his research insofar as they did not conform to the usual direction of the morphological cycle. He asserted the following (1996 [1981]:198):

In a typological cycle it is usually thought that an isolating phase follows a flectional phase and an agglutinating phase follows an isolating phase. This seems a very logical argument, since analytical, isolating structures simplify the morphophonemics of a flectional language which have become too complicated; whereas agglutination begins when the separate words in sentences of an isolating language begin to fuse. If these progressions are held to be true, it seems that in the prehistory of Proto-Uralic we have to prove an exceptional development of a flectional language into an agglutinating, without an intermediary isolating phase.²¹

Korhonen's observation is extremely interesting and symptomatic, because he is trying to adapt his findings to the traditional schema: the natural direction of cyclical change remains the same, and what is exceptional in his view is the gap between the fusional and the agglutinative stages (i.e. the lack of an intermediary isolating phase).²² But if there is apparently no unidirectionality in typologically relevant morphological changes (which is precisely one of the main claims of this article), we do not need this kind of explanation.²³ In fact, in the inflectional evolutions examined so far we have encountered no trace of isolating-like developments. Either separative affixes replace cumulative ones (without any minimally significant loss in the inflectional system), or, in a context of functional concurrence, separative affixes end up prevailing over the competing cumulative markers (as the history of Georgian noun declension demonstrates).

MUNDA LANGUAGES. Another instance of fusional-to-agglutinative change is, according to Donegan and Stampe (2004:3, 21), the morphological evolution of the Munda languages. They appear to have developed over time an agglutinative structure: the comparison of Munda with Mon-Khmer allows the authors to reconstruct a diachronic process of typological shift from the fusional system of Proto-Austro-Asiatic (more cautiously, Lehmann (1973:57) labeled it 'nonagglutinative') to the agglutination characteristic of modern Munda languages. As in the Uralic example above, this hypothesis concerns nonattested stages of language evolution, which are, by definition, a type of data with less probative weight than the historically documented developments.

4.2. VERBAL INFLECTION. The examples of morphological evolution that I have dealt with so far pertain to nominal inflection. But the evidence for a diachronic tendency toward separation of inflectional markers is not limited to this module of grammar. We also find instances of replacement of a fusional pattern by an agglutinative one within the verbal system. In this section I examine a particularly clear instance of agglutinative development involving pairs of features such as person/number and tense/aspect.

Perhaps the best-documented change to date is the reshaping of verbal inflection in Cappadocian and Bythinian Greek, a development that mirrors the evolution of the noun declension in those dialects. In Table 15 we can compare two distinct patterns of

²¹ To be fair, this is not the only possibility for reconstructing past stages in the typological evolution of Proto-Uralic. According to Janhunen (2000:71), lack of suffixal morphology and the late grammaticalization of independent words (pronouns and postpositions) into suffixes would characterize Pre-Proto-Uralic as 'an isolating language with a purely analytic grammar'. It may be even the case that the conventional typological schema accounts better for the prehistoric Uralic developments (Juha Janhunen, p.c.).

²² In his brief survey of cyclical evolutions, Dixon (1994:184) made quite a similar point (although with no examples): 'The [typological] cycle ... is schematic and should not be taken to imply that every language changes in exactly the same way. Corners can be cut—for instance, it would be possible to move from an agglutinative to an isolating type without going through a thoroughly fusional stage. But it does indicate the general way in which languages shift, from one morphological type to another'.

²³ See also Trask (1996:127): 'We know now that there is no reason that changes in morphology can proceed only in one direction'.

morphological organization of the copula inflection in two Cappadocian dialects (data from Janse 2009b:98).

	ARAVÁN		ANAKÚ		
	PRESENT	IMPERFECT	PRESENT	IMPERFECT	
1SG	(i-)me	(i-)mun	(i-)me	(i-)to-me	(i-)ta-me
2SG	(i-)se	(i-)sun	(i-)se	(i-)to-se	(i-)ta-se
3SG	(i-)ne	(i-)tun	(i-)ne/én(e)	(i-)to-n(e)	(i-)ta-n(e)
1PL	(i-)meste	(i-)meste	(i-)meste	(i-)to-meste	(i-)ta-meste
2PL	(i-)ste	(i-)ste	(i-)ste	(i-)to-ste	(i-)ta-ste
3PL	(i-)nde	(i-)san	(i-)ne/-nde	(i-)ton(-de)	(i-)tan-de

TABLE 15. Inflection of the copula in Cappadocian Greek.

Whereas Araván endings reflect the Modern Greek paradigm, with a predominantly cumulative marking of tense/number/person values²⁴ (and inflectional homonymies between tenses in 1PL and 2PL), the Anakú paradigms of the imperfect have been reshaped following an agglutinative pattern, with separative markers for tense (*-to(n)-* or *-ta(n)-*), on the one hand, and for person/number, on the other (a side effect of this change was the removal of all the inflectional homonymies present in the Modern Greek paradigms). The same innovation that we have seen in the copula is found in the medio-passive imperfect (see Table 16), which also exhibits (in several varieties including Floitá, Mišótika, Sílata, Ulağác, and Aksó) identical person/number endings for present and imperfect tenses (data from Janse 2009b:100–102).

	SÍLATA	ULAĞÁC	AKSÓ
1SG	erú-ta-me	éro-to-me	erú-ton-me
2SG	erú-ta-se	éro-to-se	erú-ton-se
3SG	erú-tan	éro-ton	erú-ton
1PL	erú-ta-meste	éro-ta-misti	erú-ton-meste
2PL	erú-ta-ste	éro-ta-tte	erú-ton-ste
3PL	erú-ta-nde	éro-ta-nde	erú-tan

TABLE 16. Inflection of the medio-passive imperfect in Cappadocian Greek (verb 'to come').

Despite the slight differences among them, verbal paradigms in these three varieties show a shared principle of inflectional organization on the basis of a separative exponence that distinguishes tense from person/number. The crucial role in this process of morphological restructuring is played by the reinterpretation of the portmanteau morpheme *-ton* or *-tan* (originally 3SG.IMPF) as an exclusive marker for tense, which was then generalized across the paradigm (from this perspective, Ulağác and Aksó paradigms are irregular since they combine two allomorphs of the tense marker).²⁵

²⁴ Although some endings seem to be further segmentable into smaller morphological units, I do not develop this possibility, since it is not relevant (or it is only tangentially relevant) to the tendency toward a morphological separation of tense markers in Cappadocian Greek that I am concerned with here (for an in-depth analysis of Greek verbal inflection, including a critical assessment of what they call 'pseudo-agglutinative hypersegmentation', see Janda & Joseph 1992).

²⁵ In other Greek dialects, medio-passive (or nonactive) plural endings of the imperfective past (1PL *-mas-tan*, 2PL *-sastan*, and 3PL *-ondustan*, the latter in the Peloponnesos region) are also created according to what seems to be a separative constructional principle: the generalization of the medial *-t-* as a result of the recognition of object pronouns (*mas* 'us/our', *sas* 'you/your', *tus* 'them/their') within the endings is indicative of its reanalysis as a segmentable plural marker, whereas tense, voice, and person values are expressed by other segments, even if not in a canonical agglutinative manner (Joseph 2006:2, 6, 2009:48–50, following Ruge 1984:136ff.).

The adoption of separate morphemes in Cappadocian Greek was amply documented by Dawkins (1916:142–43), who related this phenomenon to a pervasive Turkish influence on Cappadocian grammar. Following Dawkins's observations, Thomason and Kaufman (1988:219) interpreted the inflectional reorganization of Cappadocian Greek verb as a change from flective/fusional toward agglutinative morphology. And, in Janse's (2009b:102) words, referring in this case to the medio-passive paradigms, '[w]hat we have here is a clear case of a contact-induced remodeling of the entire medio-passive paradigm as an agglutinative inflection built around the 3sg'.

4.3. THE DIACHRONIC TREND TOWARD SEPARATIVE EXPONENCE: A SUMMARY. All of the morphological evolutions discussed in this section demonstrate that cumulative exponence can indeed be replaced over time by separative exponence. This pathway of change severely challenges the unidirectionality claim on which the morphological cycle is founded. But the linguistic evidence, which leaves little or no doubt, forces us to recognize this direction of typological shift. The best-researched cases of agglutinative development share one significant property: inflectional systems that become separative (or more separative than earlier) are usually in contact with surrounding languages that are characterized by highly consistent agglutinative morphology. This is especially clear in languages from the Caucasian region (Armenian, Ossetic, and Georgian), in Cappadocian Greek dialects, and in some Indo-Aryan systems (like Bengali and Marathi) that have been influenced by Dravidian and other languages. In §§8.2 and 8.3 below I address the implications of language contact for this class of typologically relevant morphological changes. While internal development cannot be discarded a priori as a source of novel separative exponence, language contact (chiefly under certain conditions that will be described in that section) seems to be a highly favoring, if not determinant, factor in fusional-to-agglutinative changes. In contrast to those cases, the inflectional outcomes of language mixing appear to depend on the particular properties of the languages mixed, and thus no specific directionality can be identified. The next section is devoted to this topic.

5. STRUCTURAL SHIFTS IN MIXED LANGUAGES. Typologically relevant changes in inflection have also been noticed in languages like Copper Island Aleut (or Mednyj Aleut), today a nearly extinct language that was formed in Copper Island around the middle or toward the end of the nineteenth century (Golovko 1997:117) on the basis of a pervasive blending of Aleut and Russian grammatical elements, and like Ma'a (Mbugu), a Cushitic language (according to Thomason 1983, 1997b, though the issue is disputed) spoken in Tanzania that has been strongly influenced by surrounding Bantu languages. They are normally considered mixed languages, that is, languages that arise through the fusion or the profound intertwining of usually two source languages.²⁶ The interesting point in comparing the developments in Mednyj Aleut and Ma'a is that, despite the somewhat similar circumstances in which they evolved, the resulting inflectional patterns are of the opposite sign. The evolution of these systems, though superficially resembling that of the languages surveyed in the preceding sections, seems to respond to different mechanisms and reasons.

²⁶ According to Bakker's (1994:26) criterion, 'a language is mixed if it can with equal justification be assigned to two different language families'. In the examples discussed here, difficulties in genetic assignment seem to be somewhat more pronounced in the case of Ma'a. Even though it has been claimed that Cappadocian Greek is a Greek-Turkish mixed language, relying primarily on typological evidence (see Janse 2009a:37–38), its genetic affiliation seems to be undisputed (and that is why Cappadocian Greek has been examined here in previous sections).

5.1. COPPER ISLAND ALEUT (MEDNYJ ALEUT). An apparently straightforward example of typological shift toward a fusional structuring of inflection is provided by Copper Island Aleut verb paradigms. In view of the data collected by Menovščikov (1964, 1969), Vakhtin (1985), and Golovko and Vakhtin (1990), and analyzed also by Thomason and Kaufman (1988:234), Sekerina (1994), Thomason (1997a), van Coetsem (2000:253–55), and Comrie (2008:24–30), in Copper Island Aleut the inherited endings of finite verbs were replaced by Russian ones. This process of inflectional borrowing led to a complete reorganization of the verb paradigms, as can be seen in Table 17, in which Bering Aleut and Mednyj Aleut data are compared, along with the corresponding Russian forms.

	BERING ALEUT	MEDNYJ ALEUT	RUSSIAN
	Original situation	Innovated paradigm	Source of new forms
1SG	uŋuči-ku-q	uŋuči-ju	siž-ú
2SG	uŋuči-ku-χt	uŋuči-iš	sid-iš
3SG	uŋuči-ku-χ	uŋuči-it	sid-it
1PL	uŋuči-ku-s	uŋuči-im	sid-ím
2PL	uŋuči-ku-χt-xičix	uŋuči-iti	sid-íte
3PL	uŋuči-ku-s	uŋuči-ját	sid-ját

TABLE 17. Bering Aleut and Mednyj Aleut verbal inflection (only singular and plural given) compared to that of Russian: present of the verb ‘to sit’ (adapted from Menovščikov 1969:132 and Thomason & Kaufman 1988:234).

While Bering Aleut, which represents the original situation, expresses person/number and tense separately (the latter by means of the suffix *-ku-*), Mednyj Aleut has adopted the fusional pattern of Russian. It has directly borrowed the cumulative endings of Russian, eliminating at the same time the specific Aleut suffix for expressing tense. By contrast, it is important to note that Copper Island Aleut retains Aleut nonfinite verb morphology along with large parts of its original grammar and lexicon (though with a remarkable split between nominal and verbal inflectional morphology; see Sekerina 1994:19–20).²⁷

Mednyj Aleut is considered to be a case of extreme language mixture. New verbal forms are not, obviously, the result of an internal development; nor do they qualify, according to some theoretical perspectives (see Gardani 2012:75), as inflectional borrowing because of the grammatical intermingling present in mixed languages. The situation becomes even worse if Mednyj Aleut is actually the surviving remnant of a pidgin constructed by the Russian-speaking community in Russian America (that was later imported to Copper Island), as hypothesized in Vakhtin 1985:42 and Golovko & Vakhtin 1990:117;²⁸ see also van Driem 1993:51 and, for a slightly different, more fine-grained

²⁷ The formation of the past tense in Mednyj Aleut reveals other interesting facts: past forms contain the Russian suffix *-l-*, but unlike Russian, Mednyj Aleut attaches to these forms the corresponding pronoun markers and, in the plural, also the marker for plurality: cf. *ajxača-l-ja* ‘I went’, *ajxača-l-ti* ‘you went’, *ajxača-l-θ* ‘he went’, *ajxača-l-i-mi* ‘we went’, *ajxača-l-i-vi* ‘you (pl.) went’, *aijxača-l-i-θ* ‘they went’ (Vakhtin 1985:37; cf. Menovščikov 1964:104, 1969:132–33, which places the personal pronouns before the verbal forms). Thus, in contrast to the inflectional changes in the present tense, in the past forms Mednyj Aleut arranges exogenous morphological elements in a typically agglutinative (separative) fashion. Note, however, that as far as basic tense and person/number marking is concerned, separate expression of these categories comes unaltered from the Russian source.

²⁸ The idea of a mixed language that arose as a result of strong mutual interference between Russian and Mednyj Aleut was already present in the work of Menovščikov (1969:134), who considered Mednyj Aleut to be a creole-type language.

view, Golovko 1994:117–19 and especially Golovko 1996:73, in which the author even considers that Copper Island Aleut has nothing in common with pidgins. But if that were indeed the case, the restructuring of the verbal paradigm in Mednyj Aleut could hardly be regarded as an instance of fusional development induced by the influence of one grammatical system upon the other (but see Thomason 1997a:462). One could say, as regards that case, that two different inflectional systems were mixed in a single, simplified grammar that arose as a result of pidginization. But, as argued by Thomason (1997a:464), who considers the pidginization process highly unlikely, the mixed nature of Copper Island Aleut should instead be considered the result of code-switching and profound interference inside a bilingual population (see also Golovko 1996:64, 73).²⁹ The fact that only the verbal (and not the nominal) inflection was affected by such a dramatic reshaping on the basis of Russian verb morphology is explained by taking into account the structural distance between the two systems (which was larger than in the case of nominal inflection; see also Sekerina 1994:19). Thus, the adoption of Russian verbal morphemes could be ‘a means of lessening the learning burden for Russian (semi-)bilinguals who want to use’ the mixed language (Thomason 1997a:465). Be that as it may, in the next subsection I examine a process of change that developed in somewhat similar circumstances (language mixture or massive convergence, transfer of morphemes), but whose outcome was, nevertheless, the opposite.

5.2. MA’A (MBUGU). A structurally similar change to that undergone by the verbal inflection in Cappadocian Greek dialects (§4.2 above) can be found in Ma’a (Mbugu). Like Mednyj Aleut, Ma’a has been claimed to be an instance of mixed language: its basic vocabulary is of Cushitic origin, but its grammatical structure resembles Bantu rather than Cushitic (this divergence reveals some paths of nongenetic development of Ma’a grammar and even makes it difficult to relate Ma’a to one or the other language family; see Thomason 1983:217). While Cushitic languages tend to have suffixing cumulative exponence in verbal inflection, with unsegmentable tense-aspect/subject affixes, Ma’a is characterized by the presence of separate (and prefixed) markers for tense and subject (see 9). The inflectional morphemes are arranged according to the common Bantu pattern (Thomason 1983:212).

(9) Structure and examples of verbal inflection in Ma’a

(NEG) + subject + tense + (object) + ROOT + (extension)

a. ve-ne-tu-ifi ‘they will destroy us’

CL2-FUT-us-destroy

b. e-tu-ta-zaxo ‘we will not hold’

NEG-we-FUT-hold

Besides this morpheme ordering, which sharply contrasts with typical Cushitic patterns, the affixes themselves seem to be all Bantu in origin, inasmuch as they can be identified with Pare and/or Shambaa affixes (two Bantu languages; Thomason 1983:213). Morphological changes in Ma’a are thus viewed as being part of a gradual process of Bantuization of a previously non-Bantu language (Thomason 1997b:480, Mous 2003:74; for

²⁹ Similar conditions are found, according to Pakendorf (2009:88, 105ff.), in Sebjan-Küöl Èven, a Northern Tungusic language that has copied mood and person suffixes from the Turkic language Sakha under intensive contact with it. In this case, however, both the original and the innovated paradigms are characterized by a separative morphological technique.

other possible scenarios see Mous 1994:198–99).³⁰ Thus, if we accept that Ma'a verbal morphology has been substantially modified at some point in time, the direction of this change from cumulative to separative exponence would clearly run counter to the diachronic expectations characterizing the typological cycle in morphology. But as in the above examples from Mednyj (Copper Island) Aleut, the data from Ma'a (Mbugu) would only qualify as an instance of typological shift toward morpheme separation if the Cushitic origin of the grammatical system concerned is beyond any doubt. Otherwise, if Ma'a grammar were a consequence of extreme language mixture, we could not rule out the possibility of its verbal structure simply being inherited from Bantu.

5.3. UNSPECIFIC DIRECTIONALITY. Opposed outcomes in Mednyj Aleut and Ma'a seem to point to the lack of any specific directionality of change in those cases in which bound morphology is subject to wholesale borrowing or copying. The transfer of entire paradigms, as in Mednyj Aleut, together with the cumulative or separative profile that goes with them, represents a different process from those discussed in the preceding sections. This rare phenomenon appears to be almost entirely dependent on the original features of the languages concerned (in this case, of the donor languages for each concrete grammatical trait), and not on more general processes of exponence replacement (hence, probably, the divergence in the outcomes).³¹

6. A BORDERLINE CASE: PARTIAL AGGLUTINATION IN RUSSIAN. The diachronic analysis of noun declension in East Slavic languages (especially Russian) provides what appears to be an additional instance of agglutinative development within a fusional structure. When comparing noun paradigms in Old Russian, the language reflected in the old East Slavic texts from the eleventh to the fourteenth centuries,³² and contemporary Russian, we observe different possibilities of affix segmentation. The inflectional state represented in Old Russian corresponds to quite a typical cumulative structure, inherited from Late Proto-Slavic, with some case syncretisms and without split-morphological phenomena. In at least some modern paradigms, in turn, we can identify, except for the genitive plural, a new morphological element *-a-* that seems to fulfill the function of plural marking (and consequently number and case are expressed to some extent separately). This separable segment is lexically general in the dative, instrumental, and locative plural cases (they will be referred to here as the oblique or peripheral cases). As regards the nominative and the accusative, the suffix *-a* is encountered in a group of masculine nouns (see below), whereas the majority of forms present the ending *-y*.

	OLD RUSSIAN		RUSSIAN	
	SINGULAR	PLURAL	SINGULAR	PLURAL
NOM	gorod-ъ	gorod-i	górod-∅	gorod-á
ACC	gorod-ъ	gorod-y	górod-∅	gorod-á
GEN	gorod-a	gorod-ъ	górod-a	gorod-óv
DAT	gorod-u	gorod-omъ	górod-u	gorod-ám
INS	gorod-ъмь	gorod-y	górod-om	gorod-ámi
LOC	gorod-ѣ	gorod-ѣхъ	górod-e	gorod-áx

TABLE 18. Inflectional paradigms of Old Russian *gorodъ* 'town' and Russian *górod* 'town, city' (nongeneral forms within the masculine declension are shaded).

³⁰ Ma'a has a number of fossilized non-Bantu forms (such as the nominative plural suffix *-eno*) that in some cases reflect Cushitic structural and formal patterns. Remnants like these have been adduced in favor of the Cushitic origin of Ma'a (Thomason 1997b:484; see also Mous 2003:68–70).

³¹ I wish to thank a referee for bringing this point to my attention.

³² Other terms that traditionally refer to the same linguistic corpus are Old East Slavic and even Old Russian (from Rus', the old name of East Slavic territories).

At first sight, the differences between the two stages do not seem to be all that dramatic, at least from a typological perspective, but what happened in reality? As Table 18 shows, the main inflectional changes concentrated in the plural, whereas in the singular paradigm only minor changes occurred. The oblique or peripheral cases of the plural (the genitive case is not included here) were formally unified in all declensional classes in a process of analogical extension that started in the thirteenth century, being common to later Russian, Ukrainian, and Belorussian (Sobolevskij 2004 [1907]:177, Šaxmatov 1957:278, Iordanidi & Kryś'ko 2000:246ff.). Forms of DAT.PL, INS.PL, and LOC.PL ending in *-amь*, *-ami*, and *-axь*, respectively, expanded across all declensions.³³ Within the paradigm of the **o*-stems, to which the noun *gorodь* 'town' belonged, this change completely reshaped the formal relations between peripheral cases: instead of the heterogeneous endings DAT.PL *-omь*, INS.PL *-y*, and LOC.PL *-ěxь*, which, among other consequences, occasioned phonological alternations in the stem (because of the anterior vowel in the locative plural), a new fairly homogeneous group of peripheral cases emerged, simplifying the formal aspect of the paradigm and improving its morphotactic transparency. The analogical generalization of a single initial vowel for the peripheral desinences of all nouns was, as Andersen (1969:27) observed, semantically motivated, since 'unity of form is the optimal expression for lack of semantic differentiation'.

This was, so to say, the first step in a chain of several apparently unrelated changes. As the peripheral cases were undergoing the process of formal unification, another morphological change began to affect the nominative and the accusative case in the plural. First, they merged into a single form (*-y*); then (from the fifteenth century on), this common ending was replaced in the declension of some masculine nouns by an accented *-á* of probable dual origin whose extension to the plural paradigm has been a matter of long debate (Ivanova 1957:57, Kiparsky 1967:46, Xazagerov 1970:137ff., Worth 1983:257–58, Igartua 2005:613ff.; cf. also Johnston 1997:113). As a result of this, several masculine nouns with mobile stress now have this ending *-á* in the syncretic form of nominative-accusative plural (if the noun is inanimate) or only in the nominative plural (if the noun in question denotes an animate being): *gorodá* 'towns, cities', *golosá* 'voices', *domá* 'houses', *boká* 'sides', *poezdá* 'trains', *beregá* 'banks', *gromá* 'peals of thunder', *professorá* 'professors' (the form *profěssory* also exists), and so forth. This change generalized the stressed vowel *á* in the plural of at least some declension classes. Dialectally, the ending *-á* spread even to some feminine nouns (as demonstrated by such forms as the NOM.PL *materá* 'mothers' vs. Standard Russian *máteri* or *lošad'á* 'horses' vs. Standard Russian *lósadi* in southern as well as northern dialects; cf. Durnovo 2000 [1924]:264, Borkovskij & Kuznecov 1963:199).

The reshaping of the plural declension of nouns was preceded by the inflectional unification of pronominal and adjectival paradigms. In Late Proto-Slavic these two word classes had already generalized two pairs of distinctive vowels in the majority of plural forms (*ě/i* in the pronominal declension, *y/i* among the adjectives). This inherited formal property of their inflection could have exerted an analogical influence on the morphology of Russian nouns.

As summarized in 10 below, all of these developments and morphological conditions together led to a far-reaching change in the declension of some masculine nouns be-

³³ These were originally the endings of the old **ā*-stems (which were predominantly feminine), but this inflectional class is not necessarily the direct (or unique) source of the new unitary peripheral cases (the mechanisms and causes of this inflectional innovation have been largely discussed in the literature: to mention but a few references, see Andersen 1969:27, Markov 1992:106–7, Iordanidi & Kryś'ko 2000:268; cf. Igartua 2005:637–38).

longing to the old **o*- and **u*-stems (two inflectional classes that had merged into a single declension before the plural paradigm was modified in the East Slavic languages).

- (10) Morphological changes and conditions involved in the reshaping of plural paradigms in Russian noun declension
- a. Paradigmatic unification of the plural: the inflectional diversity of Old Russian was significantly reduced through the spreading of peripheral forms in *-amъ*, *-ami*, *-axъ*.
 - b. Conflation of the nominative and accusative plural cases.
 - c. Spread of new masculine nominative-accusative plural forms in *-á* from the fifteenth century on (in some dialects, new feminine plural forms in *-á* were created too).
 - d. Presence of adjectival and pronominal models (with characteristic vowels), which served as the basis for an analogous development among the nouns.

As a consequence of the processes mentioned, a new morphological segmentation of plural forms, illustrated in 11, became possible. The overt result of this reanalysis can be identified in the dialectal feminine forms that present this suffix *-á* (like the NOM.PL *mater'á* 'mothers' or *lošad'á* 'horses'), which is no longer associated with a particular inflectional class.

- (11) Reanalysis of plural forms in Russian (illustrated with the instrumental and locative forms)
- a. gorod-ámi → gorod-á-mi
town-INS.PL town-PL-INS
 - b. gorod-áx → gorod-á-x
town-LOC.PL town-PL-LOC

The reshaping of the plural paradigm in Russian, which eliminated almost all gender distinctions, resulted in a unitary inflectional class in which a new formative for the plural meaning can be segmented. The morphological change gave rise to a separate expression of case and number that replaced the inherited cumulative exponence. It is important to note that the new marker for plurality was already present in the old morpheme as a segment with no grammatical meaning. As is discussed below, this innovation involved no addition of new inflectional material.

Leaving aside the genitive case (*-ov*), which represents an exceptional form within the new declensional system (it splits the paradigm into two sets of forms), some paradigms in Russian noun inflection can be thus described as partially agglutinative structures that tend to separate the formal expression of case from the formal expression of number. The clearest example, from the perspective of morphological analysis, is that of the nominative-accusative forms: NOM-ACC.SG *gorod-θ-θ*, with two zero morphs, is opposed to NOM-ACC.PL *gorod-á-θ*, with only one zero morph, the one for case marking. The segmentation of the characteristic vowel *-á-* as a pluralizer is justified by its recurrence in the rest of the paradigm (*gorod-á-m*, *gorod-á-mi*, *gorod-á-x*). Of course, this segmentation, when compared to the singular paradigm, appears to meet the structural condition for canonical agglutination (separation of markers, criterion 1 above, §2.2), but not the main formal requirement (identity of case expression, criterion 2). Both conditions are met, as seen above, only in the nominative and the accusative cases of some nouns. In the rest of the paradigm, case markers still differ in a way that leads us to think that oblique forms retain some degree of cumulation (as long as that they continue to indicate not only case but also number). Therefore the Russian declension of these

masculine nouns might be defined as a noncanonical instance of agglutinative structuring (see already Zaliznjak (2002 [1967]:549), who called it a 'semi-agglutinative' system). In spite of its partial outcomes, the diachronic process of change that reshaped the Russian declension demonstrates the fact that even highly fusional structures, 'given the right syntagmatic and paradigmatic circumstances' (Plank 1999:324),³⁴ can develop traits of inflectional exponence characteristic of agglutinative systems.

7. THE MECHANISMS OF CHANGE LEADING TO SEPARATIVE EXPONENCE. Having analyzed the main data illustrating the typological change from fusional to agglutinative patterns, we can now identify at least three different mechanisms of change in the direct evolution (without there being an intermediate isolating phase) from cumulation to affix separation.

The first mechanism consists of the paradigmatic integration of adpositions and particles, a grammaticalization process that generates new suffixal forms within the noun declension.³⁵ This process is attested in the Tocharian languages as well as in Old Lithuanian and the Indo-Aryan language Marathi. It was also the case, according to some reconstructions, in earlier stages of Proto-Indo-European, where it nevertheless yielded different results, and in Proto-Uralic (Korhonen 1996 [1981]:200ff., 1996 [1992]:233; cf. also Décsy 1990:70–71, Janhunen 2000:71). In what appears to be the clearest instance of this mechanism (that of the Tocharian languages), noun paradigms contain two groups of forms: the fusional and the agglutinative. The latter group originated when some postpositions were attached to the forms of the accusative/oblique singular and plural, which concomitantly became the new stems for the peripheral cases. This process gave rise to a split-morphological structure, because some inflectional forms preserved its cumulative nature while in others case and number began to be expressed separately.

The second mechanism of change causes the extension of the plural stem by introducing new affixes into the paradigm. Inserting these affixes, which are typically associated with the expression of number, leads to the replacement of cumulative markers by a sequence of separative morphemes.³⁶ For the paradigm to be fully agglutinative, however, formal unification of case markers across paradigms is also necessary. This is accomplished in all cases under study by the spread of singular formatives for the expression of case beyond the singular paradigm. Armenian, for example, generalizes a new suffix *-er/-ner-* (from a collective marker *-ear*) in the plural and unifies the expression of case on the basis of singular forms (an expected result if collective formations were, as seems probable, originally singular). In this way, the Classical Armenian declension, which contained paradigms consisting of cumulative markers, evolved into an agglutinative system that now meets both the structural and the main formal condition for canonical agglutination (criteria 1 and 2, disregarding here the syncretisms that seem to still be present, at least under some analyses, in the declension). A similar inno-

³⁴ Unlike Hentschel and Menzel (2002:26, n. 32), who claim that the innovation at issue reflects a 'latent tendency to agglutinative signalling of plural number', I consider it to be an unexpected consequence of a series of different, even unrelated, changes, whose cumulative effect (in the generic sense of the word) results in a semi-agglutinative structure.

³⁵ As a referee points out, the postpositional nature of the developments under analysis here may be accidental. Prepositions could similarly evolve into bound affixes (prefixes), again given the right syntagmatic and paradigmatic circumstances.

³⁶ The phenomenon, as observed in passing by Michelena (2011 [1968]:321–22), can be characterized as MORPHEMIC DISSOCIATION (see also Igartua 2007/2008:29), but the specific mechanism of change is best defined as the insertion of novel monoexponential morphemes, which results in a separative structure.

vation took place in Ossetic, in which a new marker for plural emerged out of an old suffix with abstract and collective meaning. In the noun declension of today's Ossetic, an independent marker for number is used, and this triggers the formal unification of case suffixes (some of which are derived from former adpositions and particles through the first mechanism of change). But the original inflectional scenario was somewhat different, since Ossetic declension, as is the case in all of the Iranian languages that preserve the nominal inflection, can safely be traced back to a consistently fusional system (for a full diachronic account, see Cheung 2008:92ff., Belyaev 2010:294ff.).

In Old Georgian, as shown above in Table 6, two sets of forms were used for the plural. One of them included a collective marker (*-eb-*), and separately expressed number and case from the first attestations. Diachronically, the form of the case markers in the plural of this second paradigm seems traceable to corresponding singular morphemes. This paradigm of collective origin is the only one commonly used in Modern Georgian (Mingrelian, Laz, and Svan declension systems evolved in a similar way). We can therefore conclude that, in the history of Georgian declension, the functional concurrence between the cumulative and the separative patterns of inflection has been solved in favor of the separative option.

Both the paradigmaticization of postpositions and particles (MECHANISM 1) and the plural stem extension (MECHANISM 2) can be defined as ADDITIVE PROCESSES, since these instances of morphological change on the way from fusion to agglutination typically involve ADDITION of new inflectional material (postpositions, particles, collective suffixes), which serves as the basis for the expression of new complex cases (as in Old Lithuanian, Tocharian A and B, and some Indo-Aryan languages such as Marathi) or for the separation of number markers (Armenian, Ossetic, Georgian, Bengali).

The Russian and some Cappadocian innovations in turn reveal a different mechanism of agglutinative development (MECHANISM 3). It does not involve addition of any kind. Instead it takes advantage of the internal morphological resources of noun and verb inflection to transform a fusional system into an agglutinative or a semi-agglutinative one. In the evolution of Russian, some of the nominal plural endings, owing to the spread of a characteristic vowel, seem to have undergone a process of reanalysis whereby an independent marker for number was created. The mechanism of change underlying this inflectional innovation is a process of reanalysis that can be labeled AFFIX SECRETION (a term that was already used by Jespersen 1922:384).³⁷ This is a mechanism of exponence change consisting of the formal and functional emancipation of a particular morphological segment inside a morpheme (this definition can justify the alternative use of the term AFFIX EMANCIPATION for affix secretion, in line with the notion of MORPHOSYNTACTIC EMANCIPATION proposed by Andersen (2008:27–28) to account for other phenomena that resemble the innovation studied here). Affix secretion or emancipation is thus based on a resegmentation of the morphological substance preexisting in the language (Igartua 2007/2008:32), and consequently it can be described as the opposite of affix addition.³⁸

³⁷ Actually, the term has a longer history. It was employed in the nineteenth century to refer to several cases of morphological resegmentation. Specifically, Appel (1881:121–24) characterized the change of German *des Menschen* 'man's, of the man' to *des Mensch-en* (part of the stem reanalyzed as ending) as an instance of secretion. For the subsequent history and uses of this term and other related to it, see Lindström 2004. The place of affix emancipation in a typology of morphological reanalysis is discussed in Igartua 2012:124–26, 130.

³⁸ Affix secretion crucially differs from EXAPTATION (Lass 1990) in that it necessarily involves reanalysis (creation of a morpheme boundary where there was none) and does not imply, or does so only secondarily, recycling or refunctionalization of morphemes (which is essential in exaptation). Among the first examples of

We also find a process of affix secretion at the first stage of inflectional innovations affecting verbal paradigms in Cappadocian Greek. The new tense marker *-to-* or *-ta-* that spreads to all forms of the paradigm originates in the form of the third-person singular, in which it is part of the cumulative affix that conveyed person, number, and tense (as is the case in Standard Modern Greek and in other dialects of Asia Minor Greek). In the innovating systems, the cumulative formative *-to(n)* was reanalyzed as *-to(n)-∅*, a sequence consisting of a morpheme realizing tense and a zero ending for person and number (in 3SG). This was a change in segmentation around which the whole paradigm was subsequently reorganized (see Janse 2009b:102; for the creation of morphological zeroes in verbal paradigms and beyond, see Koch 1995). Thus a separate marker for tense arose as a result of the emancipation of a segment that previously expressed more than one grammatical category.

The mechanisms of change leading to separative exponence can therefore be divided into two classes: additive and nonadditive. The nonadditive mechanism of change is affix secretion or emancipation, as illustrated by the Slavic and Greek examples. Additive mechanisms are instantiated in our data by the paradigmaticization of postpositions and particles, on the one hand, and the insertion of special markers (generally of collective origin) resulting in plural stem extension, on the other. Table 19 includes the mechanisms of change actually found in the examples discussed, but it probably does not exhaust all of the possibilities, even though from a structural perspective one could envisage only minor adjustments (like the possibility of prepositions becoming inflectional prefixes). As far as I know, the mechanisms of change that produce new separative morphology are not mutually exclusive, as the inflectional history of languages like Ossetic (see above in this section) shows at least with regard to the first two mechanisms of this classification.

TYPE OF MECHANISM	MECHANISM	EXAMPLES
ADDITIVE MECHANISMS	1. Paradigmatization of adpositions (postpositions) and particles	i. Nominal inflection in the Tocharian languages and in Marathi ii. Nominal inflection (secondary local cases) in Old and dialectal Lithuanian iii. (Hypothetically) Nominal inflection in Proto-Uralic
	2. Insertion of special morphemes (accompanied by the formal unification of case markers) resulting in plural stem extension	i. Nominal inflection in Armenian, Ossetic, Georgian (as well as the other Kartvelian languages), and Bengali ii. (Partially) Nominal inflection in Cappadocian Greek
NONADDITIVE MECHANISMS	3. Affix secretion or emancipation	i. Verbal inflection in Cappadocian Greek ii. (Partially) Nominal inflection in Russian

TABLE 19. Mechanisms of change leading to separative exponence.

affix secretion discussed in the literature was the reanalysis that took place in the dialectal English possessive forms *mine* and *thine*, which produced the striking forms *hisn*, *hern*, *yourn*, or *theirn* (Jespersen 1922:385). A segment with no grammatical function (although it was not a piece of grammatical junk) was given the specific meaning of possessiveness, which thus became independent from the person meaning of the stem (see also Dahl 2004:175).

8. CAUSES OF CHANGE: INTERNAL AND EXTERNAL FACTORS. The diachronic developments studied in this article appear to invalidate the traditional claim about the unique direction of typological changes in morphology. As we have seen, the evolution from fusion to agglutination (from cumulation to separation in inflectional systems; see again §2.1), which is not included in the classic schema, is not only possible, but also widely attested, as is its counterpart.³⁹ This bidirectionality of typological change (from agglutination to fusion, but also vice versa) can be explained by taking into account the different linguistic factors that trigger each kind of change.

8.1. INTERNAL TENDENCIES. In the case of agglutination-oriented evolution, the main reason behind this diachronic tendency might well be morphological naturalness, reflected in properties like biuniqueness—as uniform encoding of grammatical categories—and morphotactic transparency, among other characteristics (cf. Dressler 1987: 111, Mayerthaler 1987:49, and see §8.3 below on the transparency principle). From the standpoint of NATURAL MORPHOLOGY, this kind of morphological change involving decrease in structural complexity can be—and mostly is—language-internally motivated. But recent research on the internal evolution of grammatical systems and the effects of different types of language contact (to be discussed in §8.3) has cast serious doubt on this perspective. The alternative view ascribes the rise of certain ‘natural’ morphological phenomena to the disruptive impact of second language or suboptimal learning.

In some cases, the new agglutinative structure with separative markers perhaps arises as a collateral consequence of different and even unrelated processes (as in the Russian case studied here). These are commonly the conditions under which historical linguists become prone to see the effects of a conspiracy change.

Fusional developments in turn have to do with phonological naturalness and internal-change processes like erosion or phonetic reduction (as illustrated by the Uralic and Basque examples in §3; see also Dixon 1994:183 and the schema in Croft 2003:252, reproduced here in 12). The emergence of cumulative exponence may be seen as the final stage (within a particular cycle) in a process of GRAMMATICAL MATURATION (Dahl 2004:106–7) that leads from periphrastic constructions through affixal patterns to cumulative morphology.

(12) States and processes in the morphological cycle (Croft 2003:252)⁴⁰

STATES: isolating → agglutinative → inflectional⁴¹ → isolating
 PROCESSES: particles > affixes > fused affix(es) > loss

Grammaticalization processes, whereby lexical items turn into grammatical formatives and grammatical formatives become still more grammatical (Kuryłowicz 1965: 52), might also be at work here. The overall directionality of grammaticalization seems

³⁹ To assess the relative typological frequency of both processes of change, we need, as suggested by a referee, to do more research, especially in quantitative terms, a task that goes beyond the scope of the present work. The point here (throughout the article and specifically in §§7 and 8) is to identify the diachronic trend toward separative exponence, and then to discuss the conditions under which it develops.

⁴⁰ In Dixon’s schema (1994:183–84), three diachronic processes explain the shifts inside the typological cycle: phonological change, morphological simplification, and morphological amalgamation (and augmentation). Isolating systems become agglutinative through the last operation. Agglutinative systems develop into fusional ones through phonological change, and, finally, a combination of phonological change and morphological simplification lies behind the last step toward an isolating structure, in which the morphological cycle reinitiates.

⁴¹ Note that I have used ‘fusional’ or ‘flective’ here instead of the misleading term ‘inflectional’, which is reserved for grammatical phenomena (declension, conjugation) that are not exclusive of fusional systems, because agglutinative systems may also contain inflection (Dixon 2010:226).

to be in line with the traditional pathway governing typological shifts in inflectional morphology. On the level of form, as Bybee (1997:29) says, increasing grammaticalization ‘corresponds to increasing synthesis’. Additionally, given the predominantly reductive character of phonological developments accompanying grammaticalization,⁴² the admittedly rigid diachronic schema that results is one in which isolating systems can become agglutinative, and agglutinative systems can be replaced by fusional ones, just as predicted by the morphological cycle. Extreme reduction in turn can eliminate all traces of morphological substance, yielding an isolating system.⁴³

But certain grammaticalization processes like the increase in paradigmaticity and bondedness of linguistic units (Lehmann 1985:306, 309, Fischer 2008:339) appear to also be compatible with at least some of the mechanisms leading to separative exponence (summarized in Table 19 above). As in Tocharian, as well as some Indo-Aryan and Old Lithuanian innovations, the development of secondary affixes out of adpositions and particles can be said to be driven by a grammaticalization path that increases the degree of synthesis. The crucial point here is that this novel combination of already existing cumulative endings and new affixes of postpositional origin results historically in an agglutinative structure (with separative markers of number and case) that tends to replace an earlier fusional structure. This might simply be a matter of evolutionary stages within the grammaticalization chain (Lehmann 1985:304, 309; from this viewpoint we can compare Estonian with Finnish and certain stages of Proto-Uralic; see §3), but it can also demonstrate that a similar diachronic trend can produce divergent outcomes. Separative exponence seems to depend here on a particular condition: namely, that adpositions are attached to a single base form, itself inflected, in each numeral paradigm, which almost automatically creates different stems according to number (an innovation conforming to the structural criterion for canonical agglutination that shows up most clearly in the Tocharian secondary cases; see §4.1). But given the similarity of structural premises that can produce, in the end, rather different results (both cumulative and separative), one would suspect that at least some of the motives for such diachronic diversity are to be sought elsewhere (see §8.2 below).

In the stem extension in plural noun paradigms (like those of Armenian, Ossetic, and Georgian), grammaticalization forces can also be somehow involved. The plural formative in all of those cases stems from a collective or abstract affix, which has more lexical content than a simple plural marker.

By contrast, affix secretion or emancipation (as attested in Cappadocian Greek verb inflection or in Russian noun declension) is due to reanalysis, a type of change that has been argued to be conceptually and functionally different from grammaticalization processes (Haspelmath 1998:315, Detges & Waltereit 2002:152).

In any case, shifts from cumulative to separative exponence in the majority of systems studied here seem to have occurred with suspicious frequency in conditions of language contact. Even though internal factors may sometimes be sufficient to account for a concrete innovation, usually language contact appears to be a key factor in the diachronic replacement of cumulative by separative structures. In this vein, changes in exponence strategy relating to grammaticalization processes can be interpreted as in-

⁴² See Bybee et al. 1994:107: ‘The result of these processes is that grammaticized material will be shorter in terms of the number of segments present. Since lexical material gradually develops into grammatical material, the degree of semantic grammaticization should be reflected in the degree of formal reduction or shortening’.

⁴³ This and the following paragraphs were inspired by an insightful suggestion by Claire Bowerin.

stances of contact-induced grammaticalization (Heine & Kuteva 2003, 2005:81ff., Hill 2013:178–79).⁴⁴

8.2. LANGUAGE CONTACT. As mentioned above, the internal factors that can be adduced in order to explain the dual direction of morphological change may not be enough. Whereas in agglutinative-to-fusional change, internal factors may indeed prevail (even if they are not exclusive), in almost all cases of fusional-to-agglutinative change examined in this article an external influence can actually be detected.

The morphological evolution of Georgian, Armenian, and Ossetic noun paradigms probably owes much to the ‘agglutinative’ environment in which these languages are spoken. In Ossetic, for example, the influence exerted by, among others, some North-east Caucasian (Nakh-Daghestanian), Kartvelian (Georgian), and Turkic languages (like Karachay-Balkarian) has left noticeable traces in its grammar and lexicon (Thorndarson 2009:22–45, 65ff.; for the reflection of these influences in the case system, see Skjærvø 1989:379–80, Johanson 2006:171, Belyaev 2010:310–12). Armenian, in turn, borders Turkish and Azeri/Azerbaijani, and has also been historically influenced by Persian, which, like Armenian, lost grammatical gender, and by the Kartvelian languages, whose noun inflection has likewise evolved from a largely fusional to an agglutinative structure (§4.1). In fact, at least according to Chirikba (2008:84), language contact has caused the Kartvelian languages to develop in the direction of the North Caucasian structural type.

As is widely acknowledged, Cappadocian Greek represents a superb instance of heavy structural borrowing (Thomason & Kaufman 1988:93, Janse 2009a:50), which probably reflects processes of recipient-language agentivity (borrowing) as well as of source-language agentivity (imposition), to use van Coetsem’s (1988, 2000) terminology (see also Winford 2005:381 and §8.3 below).

In southeastern India the contact between Indo-Aryan (Indic) and Dravidian languages has been intensive throughout history, and this could be at least one of the reasons for the agglutinative-like innovations in the nominal declension of such languages as Bengali or Marathi, among others (for other morphological effects of Dravidian influence on Modern Indo-Aryan languages, see Tunga 1995:185). In addition, Tibeto-Burman and Austric languages have exerted a profound influence on other Indo-Aryan languages like Assamese (the far-reaching impact of these contacts is surveyed in, for example, Goswami & Tamuli 2003:431ff.).

A number of loanwords (Lubotsky & Starostin 2003:257–62) may testify to early contact between Tocharian and Turkic languages, an issue that perhaps demands additional research despite the intrinsic difficulties that it entails (see also Pinault 2001:245–46, Dybo 2007:125ff.). In any event, it is quite clear that the Tocharian languages were spoken in the vicinity of different—both genetically and structurally—languages (Indo-Iranian, Turkic, and Chinese).

The Baltic languages are geographically close to some Uralic languages (the Balto-Finnic ones), and contact is usually invoked as the main factor explaining certain innovations in Baltic, both lexical (a series of loanwords) as well as grammatical (secondary local cases like those of Old and dialectal Lithuanian; see §4.1 above and cf. Hill 2013:175–76). Additionally, the Baltic and Slavic languages, although closely related

⁴⁴ This is hardly surprising, since, as pointed out by Dahl (2004:146), ‘the high degree of areality of grammaticalization phenomena suggests that grammaticalization processes are more often than not contact-induced’.

to each other, exhibit various properties (specific loanwords, morphosyntactic features like the predicative use of the instrumental case, and the presence of two inflectional patterns for adjectives) that are perhaps better understood as a consequence of mutual contact than as common inheritance.

Finally, there is also evidence to claim that, at some stages, East Slavic languages have evolved under the pressure of neighboring Uralic systems (Veenker 1967), even though the particular change that I have dealt with here, which is a relatively late morphological development, does not seem to be directly attributable to Uralic influence. Nor could we credit it to the impact of Turkic languages, in spite of prolonged contacts and the period of Mongol-Tartar dominance (the so-called Golden Horde) in the East Slavic territories (from the mid-thirteenth century to the end of the fifteenth century), which left numerous lexical borrowings (and perhaps some traces in the phonology) but which affected only minimally, if at all, the grammatical structure of the East Slavic languages.

It turns out, anyway, that language contact determines to a great extent the direction of typological change in morphology. On the one hand, this areal factor is in keeping with the general tendencies of inflectional borrowing: separative or monoexponential morphemes tend to be more easily and frequently borrowed than cumulative or polyexponential ones (Weinreich 1953:41, Field 2002:38, Comrie 2008:31, Gardani 2008:46, 89, 2012:78, Matras 2011:208, and see, in general, the contributions in Johanson & Robbeets 2012). Moreover, cumulation might even be an impeding factor to borrowing.⁴⁵ On the other hand, the emergence of new agglutinative structures (with separative markers) is commonly based not on borrowed inflectional material, but on the internal morphological resources of a given language. In other words, what is replicated during the process of contact-induced typological shift is the inflectional pattern, not its substance.

8.3. MORPHOLOGICAL SIMPLIFICATION AND NONNATIVE LANGUAGE LEARNING. Change from cumulative to separative inflectional exponence may qualify as an instance of morphological simplification, along with regularization of irregularities, loss of allomorphy, and other processes (Trudgill 2011:21). A separative marker is simpler than a cumulative one in that it directly reflects the *TRANSPARENCY PRINCIPLE*, which ‘demands that the relation between form and meaning is as transparent as possible’ (Kusters 2003:21). The highest level of transparency is obtained precisely when ‘every single meaning is expressed in a separate form’, that is, when morphological structure conforms to the *ONE MEANING–ONE FORM PRINCIPLE* (Miestamo 2008:33). It is also worth recalling that Matthews (1991:179) refers to separative exponence as simple exponence (opposed to cumulative exponence, on one side, and to extended or multiple exponence, on the other; for the latter see above §2.2, and n. 8). Agglutinative structures are thus claimed to be less complex than fusional or cumulative ones, and consequently easier to learn (at least from the perspective of their cost or difficulty in second language acquisition; cf. Dahl 2004:39–40). Under particular circumstances of language learning and linguistic development (to be elucidated in what follows), the transparency principle leads to the avoidance of such ‘learner-unfriendly phenomena’ (McWhorter 2007:50) as cumulation, allomorphy, syncretism, and what Kusters (2000:225) labels *FISSION* (that is, extended or multiple exponence).

If language contact is, as argued above, a key factor in the agglutinative evolutions studied here, the question arises as to what kind of contact may lead to inflectional sim-

⁴⁵ In this sense, innovations such as that represented by verbal inflection in Mednyj Aleut (see §5 above) constitute clear exceptions, and are probably due to the mixed nature of these systems.

plification.⁴⁶ Recent literature on complexification and simplification in language-contact situations distinguishes between two main types of contact: one involving child bilingualism (LOW CONTACT, according to Trudgill 2009, 2011), and the other hinting at adult language acquisition (HIGH CONTACT). It is when nonnative adult—or post-critical threshold—learning predominates that grammars tend to be (radically) simplified (McWhorter 2007:5). Another but perhaps not completely unrelated source of simplification in grammars is what Aikhenvald (2007:42–43) terms ‘displacive contact’, with a dominant language imposing its patterns over the other language. By contrast, low contact usually produces more complex structures—provided that degrees of complexity can be reasonably well established at least for certain parts of the grammar.⁴⁷ Differences between the outcomes of both types of language contact (as well as between the results of contact involving adult learning and those deriving from internal development of languages) have been investigated and accounted for in a series of recent works (Kusters 2003, 2008, McWhorter 2007, Trudgill 2009, Maitz & Németh 2014).

On the basis of this evidence, it is highly tempting to ascribe the contact-induced replacement of cumulative by separative structures to the simplificatory effects of nonnative language acquisition.⁴⁸ No doubt, more research is needed in this specific area, even though complete historical information may seldom be recoverable: see nonetheless Dawkins 1916:5–38 on the sociolinguistic situation of Greek-speaking communities in Asia Minor about a century ago, and specifically Dawkins 1910:270, 289 on native speakers of Turkish as the source of interference; Thordarson 2009:28–29, 81–82 on contact throughout the history of the Ossetic language with Turkic and North Caucasian languages; Vogt 1988a [1945]:177ff. on general linguistic contacts in the Caucasus; and Tunga 1995:8 on the mostly mixed Indic-Dravidian nature of the people of Bengal and Assam.

Intense or intimate contact characterizes many of the cases discussed here (some of which are geographically located, for example, in the Caucasian sprachbund or linguistic area). But what appears to be crucial is the type (and the dynamics that goes with it) of this contact. As mentioned above, the shift from cumulative to separative exponence, as long as it derives from a process of morphological simplification, could be indicative of the influential role played by second language adult learning (that is, imperfect learning or suboptimal transmission; cf. Dahl 2004:281). Other linguistic changes undergone by some of the languages under scrutiny are similarly suggestive of nonnative acquisition. This is true of the merger of the two Greek interdental fricatives with other phonemes (e.g. alveolar stops and velar fricatives) in Cappadocian Greek, which reduced its phonological inventory (Dawkins 1916:74–75, Thomason 2001:1643, Janse 2009a:40). In general, Cappadocian innovations are especially telling: basing their argument primarily on Dawkins (1910:270, 289), Ringe and Eska (2013:73) have recently referred to some of them (namely, the inconsistencies in the reflexes of interden-

⁴⁶ I elaborate here on a thought-provoking suggestion made by a referee.

⁴⁷ For different (but nonetheless compatible) attempts to set a metric for measuring linguistic complexity, see McWhorter 2001, 2007, Kusters 2003, 2008, Miestamo 2008, and Nichols 2009 (see also in general the contributions in Miestamo et al. 2008 as well as Sampson et al. 2009).

⁴⁸ On the other hand, the rise of semi-agglutination in Russian noun declension seems to supply an example of how a constellation of language-internal mechanisms of change (discussed in §6 above) can engender separative inflectional structures (this arguably represents a partial decrease in linguistic complexity, but certainly not of a kind that would make us suspicious of the internal character of this change; cf. McWhorter 2008:169, 187; for simplification as a possible outcome of language-internal developments, see Kusters 2008:19).

tal fricatives) as ‘a typical outcome of imperfect second-language learning by adults’.⁴⁹ But the same mechanism of nonnative acquisition may also be responsible for changes like the loss of grammatical gender in Armenian and Ossetic, a process usually considered to be another instance of simplification.⁵⁰ Loss of gender in these two languages is paralleled by similar reductions in the Tamian dialect of Latvian, deeply influenced by the Uralic language Livonian (Matthews 1956:316), and in the Albanian dialect of Mandres, which lost its gender system under Turkish pressure (Hamp 1965:146).⁵¹

Even the development of a new glottalized stop series in Ossetic and the Armenian dialects near the Caucasus, which can hardly count as simplification (Chirikba 2008: 43), might be ascribed to the influence of speakers of Northeast and South Caucasian languages acquiring Ossetic and Armenian (this is a straightforward example of source-language agentivity, reflected here in the imposition of certain articulatory habits upon the language that is being acquired; see van Coetsem 1988:84, 2000:61).⁵²

All of this, of course, does not mean that child bilingualism or native acquisition is excluded at all. On the contrary, there may have been some mixture or successive occurrence over time of both types of contact, each of them occasioning different (and even opposed) outcomes, and this is another aspect that needs further research but whose signs are identifiable in innovations like the expansion (complexification) of the declensional system—up to nine cases—in Ossetic (which sharply departs from the situation represented by Avestan and Old Persian, with six/seven cases inside a fairly cumulative structure). Furthermore, intimate contact does not result in an overall decrease in complexity in grammars like those of Georgian, Armenian, Ossetic, the Baltic and Indo-Aryan languages, or even of Cappadocian Greek (cf. McWhorter 2007:89). But internal development of each linguistic system must admittedly have created additional pieces of grammatical complexity. To the extent that the shift from cumulative to separative exponence can arguably represent a process of inflectional simplification, however, current sociolinguistic typology suggests that the most probable contact scenario leading to this kind of change is that in which nonnative adult learning takes a prominent position.

In summary, under apparent bidirectionality in the evolution of exponence strategies (which is an undoubted fact revealed by the outcomes of various morphological changes), two opposite diachronic tendencies, which may themselves be unidirectional,

⁴⁹ Dawkins (1910:289) had stated that ‘in its phonetic changes Greek shews signs of having been adopted by Turkish speakers’, and he attributed its subsequent ‘grammatical decay’ to its losing battle with Turkish in bilingual communities.

⁵⁰ It is noteworthy that Vogt (1988a [1945]:180) had already referred to morphological innovations in Armenian as resulting from processes of simplification (and leveling). Lack of grammatical gender and case marking as well as other numerous features that render Persian anomalous among the Iranian languages are also associated with nonnative acquisition by McWhorter (2007:140, 163).

⁵¹ Other examples are Afrikaans, some Scandinavian vernaculars in Jutland and Finland, and English (cf. Dahl 2004:283), all of them lacking gender in their nominal systems. In Cappadocian Greek there are only ‘a few reminiscences of the original Greek gender distinctions’ (Janse 2009a:41). The loss of grammatical gender in Cappadocian Greek, a process most probably accelerated by language contact, is treated in detail by Karatsareas (2009).

⁵² Van Coetsem (2000:61) describes the dual nature of source-language agentivity in this fashion: ‘In the process of SL [source language] agentivity, within the complementary development of imposition and acquisition, the vocabulary of the RL [recipient language] is acquired, the grammar of the RL is reduced, while SL grammatical material and an important part of the SL phonology are or may be temporarily transferred to, i.e., imposed upon the RL’. Another phonological innovation that may be due to nonnative acquisition is the rise of partial vowel harmony in some dialects of Asia Minor Greek under the pressure of Turkish sound structure (Dawkins 1916:42–43, 67–69).

can probably be identified: the predominantly language-internal tendency toward fusion (through reductive phonological processes), and the predominantly language-external tendency toward agglutination (in this case, a particular type of language contact appears to activate or favor such simplificatory morphological processes as those guided by the transparency principle).⁵³ In any case, external factors do not always exclude the internal ones, which still leaves the possibility of multiple causation (for this concept and its implications, see Joseph 2013:675–76, 679; cf. also Chamoreau & L  glise 2012:9 and the pathbreaking observations in Malkiel's (1967) classic paper).

9. CONCLUSION. The typological cycle in morphology can easily be reversed with respect to its agglutinative and fusional stages, as the evolution of several languages demonstrates.⁵⁴ In various inflectional systems discussed here, cumulative markers have been historically replaced by the separate expression of grammatical categories, which is the morphological technique that defines agglutination. This change, whose typological implications I have tried to underscore, is accomplished by means of three main mechanisms: (i) paradigmaticization of adpositions (postpositions) and particles, (ii) insertion of special markers resulting in plural stem extension (both of them processes of morpheme addition), and (iii) affix secretion or emancipation (which is not an additive process).

The reorganization of inflectional paradigms on agglutinative or semi-agglutinative models owes much, as we have seen, to areal factors. Inflectional patterns replicated by languages in contact commonly produce agglutinative-like morphological innovations (conversely, cumulative systems that emerge out of separative morphology as a result of language contact seem to be rare, if they occur at all). More specifically, separative structures probably arise, like other instances of morphological simplification, in contexts of widespread nonnative language learning. Thus, in the light of the data available and taking into account the most recent advances in sociolinguistic typology, we can conclude that the structural shift from fusion to agglutination in the domain of inflectional morphology is likely to be a consequence of a particular type of language contact, whereas the traditionally assumed change from agglutination to fusion more heavily relies on internal factors of language development.

Finally, under the surface bidirectionality of inflectional change demonstrated by the morphological innovations examined throughout the article (see Figure 2), I have been able to identify two opposed diachronic tendencies that reflect different mechanisms and causes of change and can thus be individually characterized as unidirectional. Croft (2003:252) suggests that 'it may even be the case that *all* language changes are ultimately unidirectional; that is, that for any apparent bidirectionality of change between

⁵³ Morphological changes like the incipient ones that are affecting the system of evidentials in Hup (leading them from an isolating to a slightly fusional profile) under the influence of neighboring Tucanoan languages in the Vaup  s region in Amazonia indicate that other typological shifts can also be initiated or accelerated by language contact (Epps 2005:636). One can hypothesize that in these cases other types of contact dynamics are probably involved.

⁵⁴ It remains to be explored in detail whether other typological reversals in the morphological cycle may take place as well (and to what extent). For instance, the morphological evolution of languages or language groups like Chinese seem to represent a typological development from the agglutinative structures reconstructable to early Chinese into the isolating ones characterizing the classical language (which were, in turn, replaced by new agglutinative schemas, especially in Mandarin; see Janhunen 2000:66). The rise of isolating systems directly out of agglutinative structures has also been suggested for some languages of West Africa (cf. Trask 1996:127). In this vein, Hyman (2004:72, 85) has proposed a gradual change from agglutinative to isolating morphology (without an intermediary fusional stage) in the evolution of a Bantu-like to a Kwa-like verb within the Niger-Congo family.

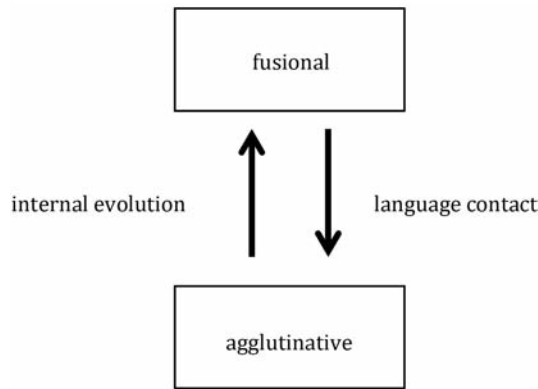


FIGURE 2. Bidirectional shift between cumulative (fusional) and separative (agglutinative) systems.

type A and type B, the mechanism underlying the change from A to B will be different from the mechanism for the change from B to A' (author's emphasis). But at the same time he cautions that at this point 'there has been too little research on apparently bidirectional language changes to confirm the hypothesis that all language changes are unidirectional'. Regardless of the adequacy of the final claim contained in Croft's reflection, an issue that is not pursued here, I hope to have contributed (at least to a modest extent) to the task of clarifying the directionality problem with regard to the typologically relevant morphological shifts between the cumulative and the separative types of inflectional exponence.

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