20. The development of inflectional features
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1. What is inflection?

"Inflection" is understood in linguistics and distinguished from "derivation" in two related, but non-identical ways. On the understanding that one might call "notional" or "meaning-based" (e.g. Booij 2005: 100; Haspelmath & Sims 2010: 81–86; Haspelmath 2023), inflection comprises the morphological expression of a cross-linguistically largely stable set of functions related to the syntactic, semantic and pragmatic integration of referents and events and their expressions into sentences and discourses, such as case, number, gender and definiteness with nominals and person, tense, aspect, mood, evidentiality and voice with verbs. By contrast, the functions expressed by derivational morphology are much more varied and rather related to modification of the lexical meaning of the base (see Rainer, this volume). Moreover, while an inflectional system of a given language tends to be relatively stable and closed, new inflectional values and features taking considerable time to arise, derivational morphology forms an in principle open system, being fed by processes of reanalysis, analogical extension, figurative and playful manipulation and borrowing (see again Rainer, this volume).

On the other understanding, that one might call "formal" or "paradigm-based" (e.g. Booij 2005: 112–115; Stump 1998, 2001, 2005, 2022: 37–40; Jackendoff & Audring 2020: 132–135), what distinguishes inflection from other domains of morphology is its being structured by a matrix of cross-cutting obligatory features with mutually exclusive values, in the ideal case applying to all members of particular parts of speech. Such matrices are traditionally called inflectional paradigms, and it is also generally assumed that all wordforms belonging to the same inflectional paradigm share a common lexical meaning and are different forms of the same lexeme. The features that determine inflectional paradigms are assumed to interact with syntax (e.g. participate in government and agreement) in a much more systematic and straightforward way than the functions traditionally relegated to derivation. (Note, however, the important distinction between "contextual" and "inherent" inflection proposed by Booij 1994, 1996, whereby inherent inflection is driven by semantics rather than syntax and is thus closer to derivation.) By contrast, derivational categories are commonly assumed to be optional, i.e. not required by morphosyntax, and not so much susceptible to paradigmatic structuring (but see Bauer 1997, 2019; Booij 2008; Ruz et al. (eds.) 2022 on derivational paradigms).

Inflection and derivation employ the same formal mechanisms of affixal as well as nonconcatenative morphology across languages; this has led linguists to formulate the **uniformity of realisation principle** (Spencer 2016: 28). Still, there are some differences in exponence, i.e. relations between meaning and form, that set inflection apart, even if only as a tendency. For example, cumulative expression of two or more inflectional features by means of indivisible affixes is well-attested (cf. Bickel & Nichols 2013), as in West Circassian (ISO 639-3 ady, Northwest Caucasian) *jane-jate-me* mother-father-OBL.PL 'parents', where the suffix *-me* simultaneously expresses number and case. While cumulation of several derivational categories is also sporadically attested (e.g. the Dutch agent noun suffix *-ster* simultaneously expressing the feminine gender of the referent: *spreek-ster* 'female speaker' ~ *sprek-er* 'speaker', Booij 2019: 5; see Ricca 2005 for a discussion), it is rather exceptional, and we do not expect to find a language with e.g. suffixes for agent, instrument and event nouns having unanalysable plain, diminutive and augmentative variants. Likewise,

obligatoriness and paradigmaticity of inflection allows linguists to speak about such phenomena as suppletion and portmanteau forms, like e.g. Polish *są* 'they are' ~ ***jest-em*** 'I am' ~ ***by-ł-em*** 'I (masc.) was', where words featuring unrelated stems or even total fusion behave as forms of the same lexeme by virtue of being associated with well-defined and otherwise regularly expressed (bundles of) morphosyntactic values. While in some well-defined and paradigmatically structured areas of derivational morphology one may also find such and similar irregularities of exponence, most cases of semantically but not formally related lexemes are usually excluded from the domain of derivation. By the same token, cells of inflectional paradigms can and often are filled by periphrastic expressions, i.e. syntactic phrases, which serve to express those morphosyntactic values that lack synthetic exponence. In the domain of derivational morphology, periphrastic expression is at best considered exotic (cf. Haspelmath 2000: 662); one would not, for instance, speak of compositional phrases such as Russian *samk-a tapir-a* female-NOM.SG tapir-GEN.SG 'female tapir' as a "periphrastic derivational expression" parallel to the synthetic *tigr-ic-a* tiger-**FEM**-NOM.SG 'tigress'.

These two views on inflection are certainly not equivalent. For instance, under the formal view, inflection in a particular language comprises whatever meanings and functions that are treated as obligatory and paradigmatically structured by the grammatical system of this language. Thus Japanese is famous for obligatorily tracking the complex social relations between speaker, addressee and person referred to in its verbal forms, possessing a typologically highly unusual inflectional feature of "politeness" or "honorificity" (Alpatov 1973; Shibatani 1990: 374–380). By contrast, Treis (2008: 130–148) argues that the number category in Kambaata (ktb; Cushitic, Ethiopia) is derivational rather than inflectional, with optional singulative and plurative suffixes attaching to number-neutral nouns and, moreover, not being mutually exclusive, cf. *suus-**ichch-aakk**-áta* cloth-**SING-PLUR**-ACC 'many tiny pieces of cloth' (Treis 2008: 146). The formal view thus appears to be more flexible, allowing for cross-linguistic variation both in the inventories of inflectional features and in the inflectional vs. derivational status of particular meanings.

This, however, also constitutes the inherent weakness of the approach, which has to rely on language-particular, even if potentially generalisable, diagnostics of inflectional vs. derivational status. A whole range of such diagnostics have been proposed in the literature (Dressler 1989; Plank 1994; Haspelmath & Sims 2010: 89–98), see Table 1. It has been shown quite convincingly that these diagnostics often do not correlate with each other and organise morphological phenomena of particular languages into a multidimensional space rather than two neat clusters of "inflection" and "derivation" (Spencer 2013, 2016).

Table 1. Features of inflection and derivation (Arkadiev & Klamer 2019: 443)

Parameter	Inflection	Derivation
Function	Does not change syntactic category of a word	May change syntactic category of a word
Meaning	Often has purely grammatical meaning	Tends to have lexical semantic content
Regularity	Is often semantically regular	May have unpredictable semantic content
Syntactic determinism	Is often syntactically determined	Does not require a specific syntactic environment
Obligatoriness	Function is obligatory	Function is not obligatory
Productivity	Is highly productive	Often applies only to certain words, or classes of words
Paradigmaticity	Is often organized in paradigms	Is often not organized in paradigms
Fusion	Can be marked by portmanteau morphemes	Is rarely marked by portmanteau morphemes
Recursivity	Is marked only once in the same word	May apply twice in the same word
Position	Occurs in a peripheral position near the edges of a word	Occurs in a central position close to the root

Given the difficulties of defining inflection and delimiting it from derivation on the basis of obligatoriness, paradigmaticity and other properties such as shown in Table 1, one is tempted to agree with Haspelmath (2023) that — at least for the purposes of crosslinguistic comparison — relying on semantics is unavoidable. This even does not lead to very counterintuitive results, since the list of categories pertaining to inflection given by Haspelmath (2023: 18), i.e. case, person, number, gender, tense, mood, evidentiality and polarity, is largely coextensive with the set of functional domains that are attributed to inflection in most descriptions of individual languages as well as works on morphology and typology, whatever understanding of inflection their authors espouse (cf. e.g. Talmy 1985: 126–138; Croft 2007: 342).

Having said that, in this chapter I shall pursue a somewhat eclectic perspective on inflection. On the one hand, following a meaning-based approach, in section 2 I shall overview the grammaticalisation paths leading to the functionally defined domains of inflectional morphology, adding to the list of features proposed by Haspelmath definiteness for nouns and aspect for verbs. On the other hand, I still take seriously the intuition behind thinking of inflection in terms of paradigms of obligatory features allowing for specific types of exponence and deviations from the one-form-one-meaning principle, but consider these as forming the "prototype" of inflection rather than defining its boundaries. The question of diachronic forces and pathways whereby obligatory features arise and inflectional paradigms emerge is a legitimate one and will also be addressed in section 3.

2. Grammaticalisation pathways for major inflectional categories
In this section I overview the sources and pathways of grammaticalisation leading to the cross-linguistically most salient inflectional categories (on grammaticalisation as a factor of morphological change see Narrog, this volume). Besides the common pathways found across

languages, I shall also mention some interesting rare cases showing how diverse and often unexpected the diachronic developments can be in the languages of the world. The exposition certainly does not aim at being comprehensive; for encyclopedic surveys, see Heine & Narrog eds. (2011), WLG (Kuteva et al. 2019) and Bisang & Malchukov (eds.) (2020), on which I largely draw. Importantly, I limit my discussion to inflectional categories in the most literal sense of the term, i.e. to bound morphology found in synthetic languages, to the exclusion of analytic structures as found e.g. in many languages of South East Asia (see Bisang 2004; Ansaldo et al. 2018).

It is important to note that although works on grammaticalisation often speak about lexical items turning into grammatical markers (cf. the lists of source concepts in both WLG and Bisang & Malchukov (eds.) 2020), it is recognised that lexemes do not grammaticalise in isolation, but only within specific constructions, and it is these constructions, which often consist of more than one element, that determine the actual pathways of development (see Dahl 2001, 2004: 119; Traugott 2003; Diewald & Smirnova 2012; Bisang et al. 2020: 74–77). This can be neatly illustrated by example (1) from Agul (agx; Lezgic < Nakh-Daghestanian), where the copula and the locational predicate 'be' participate in several constructions with distinct aspectual non-finite forms of the lexical verb, ultimately giving rise to a whole array of synthetic tense-aspect forms. In such cases it makes no sense to speak about e.g. the copula developing into an aorist suffix, since it is the combination of the copula with the perfective converb that gives rise to this form, while the same copula combined with the imperfective converb yields an entirely different outcome.

(1) Agul (Arkadiev & Maisak 2018: 135–136, based on Merdanova 2004: 72)

a. *ruχ-u-ne*   <   **ruχ-u-na*   *e*
   read-PFV-AOR   read-PFV-CVB   COP
   'read' (aorist)

b. *ruχ-u-na(j)a*   <   **ruχ-u-na*   *aa (aja)*
   read-PFV-PRF   read-PFV-CVB   IN.be.PRS
   'has read' (perfect)

c. *ruχ-a-j-e*   <   **ruχ-a-j*   *e*
   read-IPF-CVB-COP   read-IPF-CVB   COP
   'usually reads' (habitual)

d. *ruχ-a-(j)a*   <   **ruχ-a-j*   *aa (aja)*
   read-IPF-PRS   read-IPF-CVB   IN.be.PRS
   'is reading' (present)

e. *ruχ-a-s-e*   <   **ruχ-a-s*   *e*
   read-IPF-INF-COP   read-IPF-INF   COP
   'will read' (future)

2.1. Gender

Gender is an inflectional category related to classification of nouns and manifested in agreement within noun phrases, clauses and more complex constructions (Corbett 1991). The semantic basis of gender in most languages has to do with biological sex or animacy (Corbett 2013), although in languages with rich gender systems, e.g. Bantu (see Bostoen, this volume), other motivations can also be at play. In sex-based systems gender assignment is driven by semantics only for animate (often only for human) nouns, all other nouns being either assigned to some default gender or distributed between masculine, feminine and other (if any) genders according to principles that can appeal to the form of the nouns, to their semantics, or

both (see Corbett 1991: 33–69). Wälchli & Di Garbo (2019: 203, 221–225) suggest that referent-based gender agreement, which is determined by the properties of the noun's referent in a particular use, is historically primary to lexical gender rigidly associated with particular nouns.

Greenberg (1978) argues that one of the common sources of gender markers are demonstratives that become definite articles, then non-generic articles and subsequently turn into gender affixes. As an example of this development consider several nouns from two closely related Chadic languages, Warji (wji) and Miya (mkf), spoken in Nigeria, in Table 2 based on Schuh (1990: 600). As is clear from the table, Warji nouns show overt masculine and feminine suffixes that are lacking in Miya.

Table 2. Warji vs. Miya nouns.

gender	Warji	Miya	gloss
masculine	*ƙaasu-**na***	*kusiy*	'bone'
masculine	*zama-**na***	*dzam*	'beans'
feminine	*yir-**ay***	*wir*	'neck'
feminine	*wun-**ay***	*wun*	'girl'

According to Schuh (1990: 60), the Warji gender suffixes go back to postposed gender-agreeing determiner roots masculine *n and feminine *t (> *y* in noninitial position). The latter can be seen in examples (2a,b) from Miya, where the prenominal position of demonstratives is apparently an innovation, cf. (2c) with a postposed demonstrative in a fixed phrase.

(2)   Miya (Schuh 1990: 60; glossing added)
 a.   ***na**-ka*   *kusiy*
        M-DIST   bone(M)
        'this bone'

 b.   ***ta**-ka*   *wir*
        F-DIST   neck(F)
        'this neck'

 c.   *muku*   ***ta**-ka*
        day(F)   F-DIST
        'that day'

The prerequisite for demonstratives becoming gender markers, however, is the existence of gender in which they agree with the noun, in the first place. Besides that, the scenario outlined by Greenberg describes the development of gender markers on the nouns themselves (what Johanna Nichols called auto-gender), although Greenberg (1978: 75–78) suggests that in certain constructions demonstratives can also evolve into gender agreement on adjectives. As to the demonstratives themselves, their own gender agreement, according to Greenberg's somewhat speculative hypothesis (1978: 78–80), can go back to classifiers, i.e. elements occurring in certain constructions with nouns, most often with numerals, and whose use depends on such semantic properties of nouns as animacy, shape, form etc. (Aikhenvald 2000; see also Passer 2016). Classifiers are usually considered less grammaticalised than gender, their use being always semantically determined and subject to a certain fluidity, and the sets of classifiers being often quite extensive and partially open (on the complex relations between gender and classifiers, see Seifart 2010; Fedden & Corbett 2017). In some languages (e.g. Mayan, see Heaton & Campbell, this volume) classifiers, indeed, can function as articles. However, Seifart (2010: 727–728) shows that classifiers can develop into gender markers

without a clear demonstrative/article stage. A particularly revealing example of this comes from Ngan'gityemerri (a.k.a. Nangikurrunggurr, nam; Southern Daly, Australia), where different stages of the development of classifiers into gender markers can be observed synchronically (Reid 1997: 215–217). According to Reid, the input of the process is the construction involving a juxtaposition of a generic noun like 'animal' with a more specific noun like 'wallaby' (3a). Such generic nouns can be used in discourse anaphorically with reference to an already known noun (3b), and when they are reinforced by the more specific noun, the generic noun tends to be repeated (3c), thus becoming a *sui generis* concord marker. The next stage involves procliticisation of the former generic nouns (3d) and their further development into obligatory prefixes with nouns, as evidenced by their attracting stress, as does the "canine" classifier *wu-* (< 'dog', Reid 1997: 226) in (3e).

(3)　Ngan'gityemerri (Reid 1997: 216–217)
　　a.　***gagu*** *wamanggal* *kerre* *ngeben-da*
　　　　animal　wallaby　　big　1SG.S.AUX-shoot
　　　　'I shot a big wallaby.'

　　b.　***gagu*** *kerre* *ngeben-da*
　　　　animal　big　1SG.S.AUX-shoot
　　　　'I shot a big wallaby.'[1]

　　c.　***gagu*** *wamanggal* ***gagu*** *kerre* *ngeben-da*
　　　　animal　wallaby　　animal　big　1SG.S.AUX-shoot
　　　　'I shot a big wallaby.'

　　d.　***wa**=ngurmumba* ***wa**=ngayi* *darany-fipal-nyine*
　　　　M=youth　　　　M=mine　3SG.S.AUX-return-FOC
　　　　'My initiand son has just returned.'

　　e.　***wú**-pidìrri* ***wu**=mákarri*
　　　　CAN-dingo　　CAN=bad
　　　　'a bad dog'

A very special development of a new gender distinction is attested in Slavic, where a division of nouns into animate and inanimate has emerged as a result of generalisation of differential object marking (see Krys'ko 2009; Wälchli & Di Garbo 2019: 221–222 and references therein; on inner-Slavic variation and developments, see Sussex & Cubberley 2006: 235–241; Klenin 2009). After the nominative and accusative singular endings in the most productive declension class of masculine nouns have collapsed due to sound change, the genitive started being used in the direct object function, first establishing itself with personal pronouns and proper names, then gradually with other human nouns and still later with animal nouns, currently also pertaining even to some referentially inanimate nouns, like e.g. Russian *pokojnik* 'deceased', *kukla* 'doll', *tuz* 'ace'. This differential marking manifests itself in modifier concord, thus being an agreement category, see (4). In some Slavic languages, e.g. in Russian, the same bifurcation of the accusative into inanimate (= nominative) vs. animate (= genitive) was generalised to the plural regardless of gender and declension, thus yielding an animacy feature cross-cutting the three-gender feature inherited from Proto-Indo-European.

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[1] The translation is given by Reid; perhaps 'a big one' or even 'the big one' would be more appropriate given the description.

(4)   Slovene (Sussex & Cubberley 2006: 238; glosses added)
   a.   *Pozna-m*   *t-a*   *glas*-∅.
         know-PRS.1SG   DIST-ACC.SG.M.INAN   voice(M.INAN)-ACC.SG
         'I know that voice.' (accusative = nominative)

   b.   *Pozna-m*   *t-ega*   *fant-a*.
         know-PRS.1SG   DIST.ACC.SG.M.AN   boy(M.AN).ACC.SG
         'I know that boy' (accusative = genitive)

2.2. Number
Known sources of plural markers include lexemes like 'all', e.g. colloquial English 2ⁿᵈ plural
pronoun *y'all* (WLG: 48), 'people', e.g. West !Xoon (Tuu family; Namibia) *tûu* 'people'
> -*tu*, plural suffix of human nouns (WLG: 317). In some East African languages the
collective noun 'children' has grammaticalised into a plural suffix, e.g. Boni (a.k.a. Aweer,
bob; Cushitic, Kenya) suffix -*(i)yaalə*, which mostly pluralises kinship terms, goes back to
*ijáàl 'children' (Heine 1982: 28). Plural markers can also originate from third person plural
pronouns (WLG: 327), e.g. Baka (bkc, Niger-Congo; Congo) plural suffix -*o*, which,
according to Kilian-Hatz (1995: 87–88), derives from *wó* 'they'. Frajzyngier (1997) shows
how demonstratives/pronouns have grammaticalised into plural markers across Chadic
languages, hypothesising that a crucial factor involved at the initial stage of this development
was the use of demonstratives to signal deixis and then definiteness of full noun phrases
(Frajzyngier 1997: 209–211). This grammaticalisation path is thus a variant of the one for
gender markers discussed in §2.1.
      For the dual, as well as the much rarer trial numbers, the only apparent sources seem to
be the respective numerals (WLG: 436–7, 443-4; Corbett 2000: 21, 26, 267). Thus, in Breton
the dual with body-part nouns is formed by prefixing the gender-sensitive form of the numeral
'two', cf. *lagad* 'eye' (masculine) ~ *daou*lagad 'two eyes', *skouarn* 'ear' (feminine) ~
*div*skouarn 'two ears' (Press 1986: 71). Likewise, in Yindjibarndi (yij, Pama-Nyungan;
Australia) the dual suffix -*kuyha* is identical to the base of the numeral *kuyha-rra* 'two'
(Wordick 1982: 51, 300), and the dual and trial number suffixes in the pronouns of
Lonwolwol (crc, Austronesian; Vanuatu) are transparently related to the numerals 'two' and
'three', cf. *gam-ro* 'you two', *gam-sʊl* 'you three' and *ru* 'two', *sʊl* 'three' (Paton 1971: 16,
45). This grammaticalisation pathway has been also followed by the Melanesian pidgin and
creole languages like Tok Pisin, cf. *yutupela* 'you two' and *yutripela* 'you three' (Verhaar
1995: 19; see Bakker, this volume). Interestingly, the numeral 'four' gives rise to paucal (i.e.
small quantity) number markers rather than to alleged quadrals (see Corbett 2000: 26–30),
thus the Proto-Oceanic numeral *pati 'four' has developed into paucal suffixes such as -*hat* in
Sursurunga (sgz) or -*het* in Lihir (lih), both Western Oceanic languages of New Ireland
(Papua New Guinea), see Corbett (2000: 25–27) and Ross (2002a: 69). Such paucals can then
shift into plurals, as has apparently happened in Larike (alo, Indonesia), where the 3ʳᵈ person
plural pronoun *mati* "developed from a fusion of *ma*-, indicating 3ʳᵈ person, and *ati*, the
number 'four'" (Laidig & Laidig 1990: 99).
      Associative plural markers, which denote a group of people somehow associated with
the referent of the base (e.g. his/her relatives, friends or an occasional group s/he is a member
of, see Corbett 2000: 101–111; Daniel & Moravscik 2013), have been recently investigated
from a diachronic-typological perspective by Mauri & Sansò (to appear). Common sources
include third person plural pronouns and plural demonstratives, cf. Southern Yukaghir (yux,
Siberia) *qristos+taŋ-pe* Christ-that-PL 'Christ and his people' (Maslova 2003: 239–240),
plural possessives 'those of X', cf. Lezgian (lez, Nakh-Daghestanian) *dide-d-bur* mother-GEN-
NML.PL 'mother and those with her' (Haspelmath 1993: 79), cf. also Daniel (2004), nouns
such as 'group', 'family', 'people' and 'house', cf. the Mehweb Dargwa (dar, Nakh-

Daghestanian) associative plural marker *-qale* and the noun *qali* 'house' (Chechuro 2019: 55), as well as universal quantifiers. Associative plural markers can also develop from coordinating conjunctions, see (5) from Yidiny (yii, Pama-Nyungan; Australia), additive particles like 'also', see (6) from Tariana (tae, Arawakan; Brazil), and spatial expressions like 'close by'.

(5) Yidiny (Dixon 1977: 416; glosses from Mauri & Sansò to appear: 19)
    a.   *waguḍa-**ba**   gali-ŋ*
         man-ASS.PL   go-PRS
         'The man and other people are going.'

    b.   *waguḍa-**ba**   buṇa:-**ba**   maḍi:nda-ŋ*
         man-CONJ   woman-CONJ   walk_up-PRS
         'The man and the woman are walking uphill.'

(6) Tariana (Aikhenvald 2003: 173, 486)
    a.   *nami-**sini**   na-pita-naka*
         maternal_uncle-ASS.PL   3PL-bathe-PRS.VIS
         'Maternal uncle and whoever is with him are bathing.'

    b.   *kaya-sina   diha-**sini***
         like_this-REM.PST.INFR   he-ADD
         'He also did like this.'

Similative plurals ('X and similar stuff'), according to Mauri & Sansò (to appear), mainly arise from general extenders (Overstreet & Yule 2021) like indefinite pronouns or generic nouns, e.g. the Kuuk Thayorre (thd, Pama-Nyungan; Australia) suffix *=yuk* going back to the generic noun *yuk* used for elongated objects (Gaby 2006: 209–211) and originally meaning 'tree' (Hale 1964: 260), coordinating conjunctions and uncertainty markers like Tshangla (tjs, Sino-Tibetan; Bhutan) *-te* (7).

(7) Tshangla (Andvik 2010: 425–6; glossing adapted)
    a.   *ro-ki   momse-**te**   ya-pha-la*
         3-ERG   vegetable-SIM.PL   scatter-NML-COP
         'He sowed vegetables and such.'

    b.   *onye-gi   thong-ma-**te**   u-phe   na*
         dem-ERG   see-NML-IRR   come-INF   PTC
         'That one will have seen it.'

2.3. Case

The most common source of case affixes are adpositions, more precisely, given the strong tendency of morphological case markers to be suffixal (Dryer 2013a), postpositions (Lehmann 2015[1982]: 84–92; Heine 2008; König 2011). The latter in turn go back to constructions with relational nouns denoting body parts and locations or verbs (Hagège 2010: 151–172). Clear examples of case markers arising from postpositions can be found in many languages, including Indo-Aryan (see Kulikov 2008: 440–443 and references therein and Montaut 2020: 505–512), Hungarian and Uralic in general (Laakso, this volume), Basque (Igartua, this volume), Sino-Tibetan (DeLancey 1984; Jacques, this volume). A not so frequent example of one and the same marker showing variation between a free-standing postposition and a case suffix is provided by the Abkhaz (abk, Northwest Caucasian)

instrumental; note that the postposition indexes its complement by a pronominal prefix (8a), while the suffix attaches directly to the stem (8b).

(8) Abkhaz (Hewitt 1979: 114; transcription and glosses adapted)
    a.   *a-žahʷa*   ***a-la***   *sə-jə-sə-jṭ*
        ART-hammer   3SG.IO.N-with   1SG.ABS-3SG.M.IO-hit-DCL
    b.   *a-žahʷa-**la***   *sə-jə-sə-jṭ*
        ART-hammer-INS   1SG.ABS-3SG.M.IO-hit-DCL
    a=b 'I hit him with the/a hammer.'

Table 3 shows that the locative case suffixes[2] in Ute (ute, Uto-Aztecan; USA) are transparently related to verbs of motion (see a detailed discussion in Givón 2011: 108–115).

Table 3. Verb-derived locative case suffixes in Ute (Givón 2011: 109)

case suffix	verbal source
-chukhwa 'to animate object'	*chugwa-* 'go to, meet'
-mana 'from'	*mana-* 'leave'
-naagha 'in'	*naagha-* 'enter'
-pina 'behind, after'	*pina-* 'follow'
-pa'agha 'on top'	*pa'agha-* 'ascend'
-rukwa 'under'	*rukwa-* 'descend'
-yukhwi 'after'	*yugwi-* 'sit'

McGregor (2008) argues that case-markers in some Australian languages arise from indexical elements such as demonstratives and third-person pronouns. This can be illustrated by Kitja (gia, Jarrakan), where the originally verbal pronominal enclitics distinguishing dative, locative and ablative forms started attaching to nominals (McConvell 2003), cf. (9).

(9) Kitja (McConvell 2003: 81)
    a.   *Jarrak*   *pe-rne=**ngiyi***   *Ngaji-l*
        talk   IMP-do=3SG.F.LOC   sibling-F
    b.   *Jarrak*   *pe-rne*   *Ngaji-l=**ngiyi***
        talk   IMP-do   sibling-F=3SG.F.LOC
    a=b 'Talk with sister!'

Postpositional and ultimately nominal or verbal origin is more obvious for markers of peripheral and spatial cases. Grammatical cases, such as nominative (when non-zero), accusative, ergative, dative and genitive often arise by means of gradual extension of functions of older peripheral and spatial cases (Lehmann 2015[1982]: 117–119; Heine 2008: 466–468; see also Narrog 2014 for a more nuanced view). Thus, benefactive or directional markers give rise to datives, which, in turn, can develop into (definite or animate) accusatives (this happened in many Indo-Aryan languages, Montaut 2020: 509); another mechanism whereby accusatives arise from datives is a reanalysis of detransitive (antipassive) constructions, as e.g. in Kartvelian (Tuite, this volume). Genitives can descend from ablatives or locatives and in turn develop into ergatives via reanalysis of deverbal nominalisations with agents marked as possessors (as has been argued e.g. for the Eskimoan languages, see Fortescue 1995), or of possessive resultative or perfect constructions (as in Iranian, Haig

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[2] According to the hyphenation conventions of Givón (2011: 30–31) these markers are part of the word, even though Givón calls them "post-positions".

2008). Example (10) shows the parallelism between transitive verbal and nominal possessive constructions in Kalaallisut (a.k.a. West Greenlandic, kal, Eskimo-Aleut), both featuring the so-called "relative" case. The other common sources of ergatives (see Palancar 2002, McGregor 2017) are markers of cause and agents of passive constructions, e.g. instrumental or ablative.

(10) Kalaallisut (Fortescue 1995: 63)
      a. *piniartu-**t**   terianniaq   taku-a-at*
          hunter-REL.PL   fox.ABS   see-IND-3PL>3SG
          'The hunters saw the fox.'

      b. *piniartu-**t**   anguta-at*
          hunter-REL.PL   father-3PL.PR.SG
          'the hunters' father'

The reanalysis of nominalised verbs with genitive objects can lead to the development of genitive into accusative; initial stages of such a development can be observed in Irish, where the periphrastic progressive constructions consisting of a copula and a verbal noun take the object in the genitive (11). The other pathway from genitive to accusative is via differential object marking, as in Slavic (see §2.1).

(11) Irish (Doyle 2001: 69)
     *Tá   Séamas   ag   oscailt   an   **dorais**.*
     is   James   at   open.NML the   door.GEN
     'James is opening the door.'

The nominative case, in those languages where it is overtly marked (see Handschuh 2014), can arise through an extension of the former ergative, as has happened e.g. in Mingrelian (xmf, Kartvelian; Georgia; see Tuite, this volume) and some Nilotic languages (see Dimmendaal, this volume). Other sources include definiteness and topic markers, as argued e.g. for East Cushitic by Tosco (1994), which is due to the cross-linguistic tendency of subjects to be definite and topical. Another possible source of marked nominatives is the genitive, which can turn into a subject-marker by extension from nominalised subordinate clauses. This has happened in the history of Japanese (Frellesvig 2010: 366–367; Narrog 2014: 80), whereby the genitive marker *ga,* which in Old and Early Middle Japanese (8th–12th cent.) marked both possessors (12a) and subjects of nominalised subordinate clauses (12b), by the end of the Late Middle Japanese period (16th cent.) had almost lost its adnominal use and expanded as a marker of (non-topical) subjects, including in main clauses (13). This process was obviously facilitated, if not triggered, by the collapse of the morphological distinction between adnominal and finite verbal forms (Frelleswig 2010: 354–355).

(12) Old Japanese (Frelleswig 2010: 129–130)
      a. *titi-papa   **ga**   tame   ni*
          father-mother   GEN   sake   COP.INF
          'for the sake of father and mother'

      b. [*kimi   **ga**   yuku*]   *miti*
          my.lord   GEN   do.ADN   way
          'the way my lord goes'

(13) Late Middle Japanese (Frelleswig 2010: 366)
    Amonia to yuu sato **ga** *odyaru*
    Amonia COMP call village NOM exist.HON
    'There is a village called Amonia.'

Kulikov (2008: 445–447) mentions case forms arising from denominal adjectives, e.g. the Ossetic (Iranian) inessive case arguably going back to a Proto-Iranian suffix of relational adjectives (Cheung 2008: 94). New cases can also arise via reanalysis and exaptation of the erstwhile allomorphic oppositions, as has happened in the history of Russian (Kulikov 2008: 449–450). Table 4 shows how the merger of the old *u-* and *o-*declensions resulted in the novel distinctions between the two genitive and two locative cases, both of which are attested with a limited number of nouns (Brown 2007; Ter Avanesova & Daniel 2023); on the role of Finnic substrate in this development see Breu (1994: 48–52).

Table 4. Development of new cases in the history of Russian (Kulikov 2008: 450)

	Old East Slavic		Modern Russian	
	o-type	*u*-type 'honey'		
Nominative	*lěs-ъ* 'forest'	*med-ъ*	*měd-∅*	*les-∅*
Genitive 1	*lěs-a*	*med-u*	*měd-a*	*les-a*
Genitive 2	—	—	*měd-u*	*les-u*
Dative	*lěs-u*	*med-ovi*	*měd-u*	*les-u*
Locative 1	*lěs-ě*	*med-u*	*(o) měd-e*	*(o) les-e*
Locative 2	—		*(v) med-ú*	*(v) les-ú*

2.4. Definiteness

The cross-linguistically most frequent sources of markers of definiteness are demonstratives, and of markers of indefiniteness the numeral 'one' (de Mulder & Carlier 2011; Becker 2021). While in most languages with definite and/or indefinite markers these are independent words traditionally called "articles" (Dryer 2013b, 2013c), there are also many languages with affixal markers of (in)definiteness, often interacting with other morphological categories. A well-known case of determiners becoming suffixes of definiteness is North Germanic (Nübling & Kempf 2020: 116–118), cf. the indefinite and definite paradigms of Modern Icelandic in Table 5, where the double inflection of the latter shows clear traces of univerbation of the original agreeing determiner.

Table 5. Indefinite and definite declension of the Icelandic *hestur* 'horse' (Nübling & Kempf 2020: 117)

	indefinite		definite	
	singular	plural	singular	plural
Nominative	*hest-ur*	*hest-ar*	*hest-ur-inn*	*hest-ar-nir*
Accusative	*hest*	*hest-a*	*hest-inn*	*hest-a-na*
Genitive	*hest-s*	*hest-a*	*hest-s-ins*	*hest-a-nna*
Dative	*hest-i*	*hest-um*	*hest-i-num*	*hest-u-num*

The Northwest Caucasian language Abaza (abq; Russia) has a definite prefix *a-* clearly cognate with one of the demonstrative roots found throughout the family (Chirikba 1996: 365) and an indefinite suffix *-ḳ* cognate with one of the forms of the numeral 'one' and still retaining this meaning when used as a "unitiser" in numeral phrases, cf. (14a,b).

(14) Abaza (own fieldnotes, textual examples)
    a.   *qáça-ḳ*   *há*   *ʕa.čə́.χ-ra*   *d-c-ə́j-d*
        man-INDF   pear   collect-NML   3SG.H.ABS-go-PRS-DCL
        'A man goes to gather pears.'
    b.   *awə́j*   *a-ʕʷ-pájš'-ḳ*
        DIST   DEF-two-room-one
        'those two rooms'

In the closely related Abkhaz the marker *a-* developed into a generic article and no longer signals definiteness (Chirikba 2003: 23–24), which is evidenced by the rarity of unmarked indefinite nouns like *ha* 'pear' in (14a) in Abkhaz.

It is worth noting here that demonstratives thus serve as lexical sources for all major nominal inflectional categories (cf. Diessel 1999: 115–155), the exact pathway being determined by the source construction and the demonstratives' original specification for such properties as noun class, quantification, semantic or grammatical role etc.

A peculiar source of (in)definiteness markers are evaluative affixes. Thus, the definite suffix *-aga*/*-aka* in Southern Kurdish (sdh; Iranian; Iraq, Iran; Fattah 2000: 245–247) goes back to the common Iranian diminutive suffix *-aka (Korn 2020: 471). A particularly interesting situation is reported by Pakendorf & Krivoshapkina (2014) for the Lamunkhin dialect of Ėven (eve, Tungusic; Siberia; see also Malchukov 2008: 380–383), where two sets of augmentative and diminutive suffixes, *-ńdʒA* and *-čAn* vs. *-mAjA* and *-k(A)kAn*, are used as markers of definiteness vs. indefiniteness, respectively, cf. (15).

(15) Ėven (Pakendorf & Krivoshapkina 2014: 298; glossing modified)
    a.   *ńolte-**ńdʒe***   *ńahmị*   *baɣajï-t*   *koje:t-če-le-n*
        sun-AUG.DEF   warm   very-INS   watch-PRF.PTCP-LOC-3SG.PR
        'when the sun looked (i.e. was) very warm…'

    b.   *ńolti-**čen***   *bọlla*   *i:-d-de-n*
        sun-DIM.DEF   PTC   enter-PROG-NFUT-3SG
        'The sun however was setting…'

    c.   *ịla:-**maja***   *hie-če*
        moon-AUG.INDF   appear-PRF.PTCP
        'A big moon appeared.'

    d.   *kullu:-**kken***   *ńolti-**kken***   *be-h-ni*
        small.EMP-DIM.INDF   sun-DIM.INDF   be-NFUT-3SG
        'There is a little sunshine…'

Nonspecific articles marking nominals as lacking a specific referent can go back to verbal irrealis markers (Becker 2021: 282–287). Thus, in Hidatsa (hid, Siouan, USA) the conditional suffix *-rug* (16a) when attaching to nouns can trigger a nonspecific interpretation (16b).

(16) Hidatsa (Park 2012: 228, glossing simplified)
    a.   *Ee<wá>hgee-**rug***   *oorii-wa-hgiwéʔ-he*
        know<1.A>-COND   IRR+2.P-1.A-tell-EMPH
        'If I knew it I would tell you.'

b. *Hiraacawíà-**rug*** *aru-w-úáwaa-c*
Hidatsa.woman-NSPEC   IRR-1.A-marry-DCL
'I'm going to marry a Hidatsa woman.' (lit. If she is a Hidatsa woman I will marry her.)

A special case is presented by Slavic and Baltic languages (on Germanic parallels and possible contact effects see Rießler 2016: 183–229; Andersen 2021), where definiteness marking emerged in adjectives without a concomitant development in nouns (apart from later innovations like the Balkan Slavic "mobile" definite article, see Topolinjska 2009). The formally more complex definite declension of adjectives originates from encliticisation to the adjective of the pronoun with the root *j- (Petit 2009). It remains unsettled whether this pronoun was originally relative (Koch 1992) or demonstrative (Sommer 2019). Upon morphologisation, the definite forms underwent various processes of morphophonological simplification and fusion (Stolz 2010; Wandl 2022), which can be seen in Table 6 comparing some of the more archaic Lithuanian forms with the more advanced Latvian ones. On the functional side, the opposition related to (in)definiteness was operative in Old Church Slavonic and is retained in Baltic (Holvoet & Spraunienė 2012), cf. (17), and Serbo-Croat (Aljović 2002), while in all other modern Slavic languages the former definite adjectives became the default forms ousting the former indefinite forms to predicative contexts, or altogether.

Table 6. Lithuanian vs. Latvian (in)definite adjectives (selected forms, Stolz 2010: 222, 237–238)

	Lithuanian		Latvian	
	indefinite	definite	indefinite	definite
NomSgF	*jaun-à* 'young'	*jaun-ó-j-i*	*lab-a* 'good'	*lab-ā*
GenSgM	*jáun-o*	*jáun-o-j-o*	*lab-a*	*lab-ā*
AccSgM	*jáun-ą*	*jáun-ą-j-į*	*lab-u*	*lab-o*
DatSgF	*jáun-ai*	*jáun-a-j-ai*	*lab-ai*	*lab-aj-ai*
NomPlF	*jáun-os*	*jáun-os-i-os*	*lab-as*	*lab-ās*
GenPlM/F	*jaun-ų̃*	*jaun-ų̃-j-ų*	*lab-u*	*lab-o*
InsPlM	*jaun-aĩs*	*jaun-aĩs-i-ais*	—	—
LocPlF	*jaun-osè*	*jaun-õs-i-ose*	*lab-ās*	*lab-aj-ās*

(17) Lithuanian (Holvoet & Spraunienė 2012: 66)
a. *Duo-k*   *man*   ***raudon-ą***   *skarel-ę.*
give-IMP.2SG   1SG.DAT   red-ACC.SG.INDF   scarf-ACC.SG
'Give me a red scarf.'

b. *Duo-k*   *man*   ***raudon-ąją***   *skarel-ę.*
give-IMP.2SG   1SG.DAT   red-ACC.SG.F.DEF scarf-ACC.SG
'Give me the red scarf.'

2.5. Person(-number) cross-reference

Morphologically bound person(-number) markers encoding arguments of verbs, such as subject and object, as well as possessors of nouns and complements of adpositions fall within the domain of "head-marking" (Nichols 1986; Lander & Nichols 2020) or "indexing" (Haspelmath 2013). I shall limit my discussion to verbal person marking, which is traditionally called "agreement", although this term is not fully appropriate given that languages where person-inflected verbs obligatorily co-occur with overt pronouns constitute an extreme minority (Kibrik 2011: 216–221). A more useful distinction is the one between

person markers that are in complementary distribution with overt (pro)nominal arguments (called "anaphoric agreement" by Bresnan & Mchombo 1986 and "alternating bound pronouns" by Kibrik 2011) and those that can co-occur with them (respectively, "grammatical agreement" and "tenacious bound pronouns"). It is commonly assumed (Siewierska 2004: 261–273; Kibrik 2011: 238–260, 279–280) that tenacious pronominal markers evolve from alternating ones, which in turn go back to free pronouns (see also Givón 1976; Ariel 2000; Siewierska 2004: 251–255; van Gelderen 2011). This can be illustrated by a remarkable example of Tabasaran (tab, Nakh-Daghestanian; Russia), where an array of case forms of independent first and second person pronouns have developed into person-marking enclitics on verbs (Bogomolova 2018), see Table 7 and (18).

Table 7. Tabasaran free 2SG pronouns and 2SG person enclitics (Bogomolova 2018: 825)

	uvu **'you (singular)'**	**2sg verbal person marker**
DAT	*uvu-z*	*=vu-z*
APUD(-ESS)	*uvu-x*	*=vu-x*
POST(-ESS)	*uvu-q*	*=vu-q*
SUPER(-ESS)	*uvu-ʔin*	*=vu-ʔin*
APUD-LAT	*uvu-x-na*	*=vu-x-na*
APUD-LAT-DIR	*uvu-x-in-ʤi*	*=vu-x-in-ʤi*

(18) Tabasaran (Bogomolova 2018: 826)
  rasul **uz-ux-na** *ʁa-f-un=**zu-x-na***
  Rasul(ABS) 1SG-APUD-LAT PFV-come-PST=1SG-APUD-LAT
  'Rasul came to me.'

Paradigms of bound person markers often show asymmetries which can be explained diachronically (Mithun 1991). One of the most frequent asymmetries is related to the distinction between first and second (locutor) vs. third person, the latter often being zero, which is related to the fact that many languages lack third person pronouns (Siewierska 2004: 5–7; Cristofaro 2021). When all persons are overtly expressed, third person markers can occupy a distinct position, as in Algonquian languages, where locutors are expressed by prefixes and third persons by suffixes, which suggests distinct paths of development (Mithun 1991: 86–87). Another type of asymmetry is related to subject vs. object person markers, the latter often betraying a more recent origin than the former (Mithun 1991: 89–90), which can be manifested in their greater optionality and discourse sensitivity (Siewierska 1999; Haig 2018) or lesser degree of integration into the verb (see e.g. Kibrik 2011: 240–242 on Northern Athabaskan).

There are also other sources of bound person markers besides free pronouns (see e.g. Seržant 2021). A cross-linguistically prominent one is conjugated auxiliaries or copulas in periphrastic constructions undergoing cliticisation and fusion (Siewierska 2004: 257–260). A good example is the admirative (evidential) forms in Albanian, consisting of a truncated participle with a suffixed auxiliary — in contrast to the non-evidential perfect, where the free auxiliary precedes the full form of the participle, cf. Table 8.

Table 8. Aorist, perfect and admirative of Albanian 'study' (Buchholz & Fiedler 1987: 102–103, 110–111)

	Aorist	**Perfect**	**Admirative present**
1Sg	*mëso-va*	**kam** *mësuar*	*mësua-***kam**
2Sg	*mëso-ve*	**ke** *mësuar*	*mësua-***ke**
3Sg	*mëso-i*	**ka** *mësuar*	*mësua-***ka**
1Pl	*mësua-m*	**kemi** *mësuar*	*mësua-***kemi**
2Pl	*mësua-t*	**keni** *mësuar*	*mësua-***keni**
3Pl	*mësua-n*	**kanë** *mësuar*	*mësua-***kan**

Less common sources for person markers are impersonal pronouns derived from nouns like 'person', cf. the development of the French *homme* 'person' first into an impersonal pronoun and then into a 1PL subject marker in spoken language (Lambrecht 1981: 6, 15), or a parallel development of the Belhare (byw, Sino-Tibetan; Nepal) noun *maʔi* 'person' into a 1PL object verbal prefix (19) through a stage of antipassive (on the diachronic connections between antipassives and person markers see Auderset 2021). Likewise, in Karelian (krl, Uralic; Russia), the impersonal suffix has developed into a 3pl subject marker (Sarhimaa 2022: 280).

(19) Belhare (Bickel & Gaenzle 2015: 68; glossing modified)
　　a.　*un*　　　**maʔi**　　*ni-yu*
　　　　3SG.NOM　person　　see-NPST
　　　　'S/he sees people.'

　　b.　*un-na*　　**maʔi**-*ni-yu*
　　　　3SG-ERG　1PL.OBJ-see-NPST
　　　　'S/he sees us.'

Particular person(-number) markers may also arise from non-finite forms, e.g. in some Finnic languages the 3SG present suffix -*b* goes back to the ancient present participle suffix *-v/pA (Laanest 1982: 230); on the development of first person markers from participles in some Nakh-Daghestanian languages see Sumbatova (2011: 148–149). Another source is deictic markers, e.g. cislocative indicating direction towards the speaker and/or hearer, that have developed into locutor object markers in several Amerindian and Sino-Tibetan languages (see Mithun 1996; Konnerth 2015), consider Cayuga (cay, Iroquoian; USA) 1SG object prefix of imperatives *tak*- related to the cislocative prefix *ta*- (Mithun 1996: 427–433). Plural person forms can develop from pluractionals, as e.g. the Masai (mas, Nilotic; Kenya) 2PL, which uses reduplication related to the intensive or continuous derivation (Dimmendaal, this volume). On the peculiar cases of reinterpretation of gender marking as person see Baerman & Corbett (2013).

A special type of person markers are portmanteau affixes expressing certain combinations of the persons of subject and object, found in many languages of the world, e.g. Tibeto-Burman, Algonquian, Siouan, Tupi-Guarani and non-Pama-Nyungan Australian (Heath 1991, 1998). While some of such markers can be reconstructed as fused combinations of regular person markers (see e.g. Rose 2015 on Tupi-Guarani), others have arisen wholesale from different sources. Thus, Jacques (2018) shows how a portmanteau prefix encoding the 2→1 combination in the Gyalrongic branch of Sino-Tibetan developed from a nominalisation prefix through a stage of generic person marker. The tendency to employ special formal strategies to encode role combinations including speech act participants is motivated by sociopragmatic factors such as politeness (Heath 1991; DeLancey 2018).

2.6. Tense, aspect, mood

The domains of tense, aspect and mood (TAM) are extremely complex, also due to their non-trivial interactions, and show huge cross-linguistic variability in their modes of expression, as well as in the historical origins of the latter (see Bybee et al. 1994; Hengeveld 2011; Hengeveld, Narrog & Olbertz eds. 2017; Gvozdanović ed. 2022). For this reason I won't attempt to give justice to this huge domain here, limiting myself to a number of rather disparate observations.

One of the main sources of TAM morphology in the languages of the world are lexical verbs, which become parts of serial verb constructions or auxiliaries combining with non-finite forms of main verbs and further undergo morphologisation and fusion turning into affixes (see Popova, this volume, on the development of the future tense forms in Romance languages). Table 9, largely based on Bybee et al. (1994) and WLG presents a tentative list of common source verbs for a number of widespread morphological TAM categories.

Table 9. Verbal sources for the major TAM categories

TAM category	source verb
completive/perfective	'finish', 'leave', 'put', 'take'
durative	'go', 'keep', 'lie', 'remain', 'sit', 'stand'
experiential	'cross', 'know', 'pass', 'taste', 'touch'
future	'come', 'go', 'love', 'take', 'want'
habitual	'go', 'lie', 'know', 'live', 'remain', 'sit', 'use'
imperative	'come', 'give', 'go', 'leave'
imperfective	'stand'
past	'finish', 'get', 'pass', 'come from'
perfect	'have', 'finish', 'throw'
progressive	'come', 'do', 'exist', 'go', 'keep', 'lie', 'live', 'sit', 'stand'
prohibitive	'stop'
proximative/prospective	'come to', 'love', 'promise', 'threaten', 'want'

More "exotic" verbal sources of TAM morphology include e.g. the verb 'eat' giving rise to the completive suffix in Chepang (cdm, Sino-Tibetan; Nepal, Caughley 1982: 97–98), the verbs 'hit' (> completive) and 'sleep' (> hesternal past) in Mian (mpt, Trans-New-Guinean; Papua New Guinea, Fedden 2020: 1021–1023), or the verb 'be bored' together with the element 'already' giving rise to the remote past suffix in Kalaallisut (Fortescue 1984: 273). On components of serial verb constructions becoming tense and aspect markers see e.g. Daniels (2022) on the Sogeram languages of New Guinea.

TAM markers also arise from non-verbal sources, most prominent of which are perhaps those expressing various spatial meanings. This is a well-known source of a special type of markers of perfective aspect which tend to be closer to derivation than to inflection and prominently occur in Slavic and other languages of Eastern Europe (see Bybee et al. 1994: 87–90 on "bounder-based perfectives" and Dahl 1985: 84–89; Breu 1992 and Arkadiev 2014 on "Slavic-style" aspectual systems). Grammaticalisation of spatial markers into aspectual ones is also attested in other regions, e.g. the Aymara elative suffix *-su* has developed into a completive-intensive marker (Haude 2003). Spatial markers can also yield imperfectives, as e.g. the 'downwards' directional prefix > past imperfective in Gyalrongic languages (Sino-Tibetan; China; Lin 2011). Directionals can also give rise to temporal markers, e.g. the Iroquoian cislocative 'hither' prefix *tV-* developed into a future marker in Cherokee (chr;

Montgomery-Anderson 2008: 326–332) and the translocative 'thither' prefix *w- into a past marker in the Northern Iroquoian languages (Mithun 2020: 963–965). Temporal adverbs can give rise to affixes of tense, especially in systems with degrees of remoteness (Bybee et al. 1994: 102–103), cf. the Baka (bkc, Niger-Congo; Congo) recent past suffix -ngi from ngili 'yesterday' (WLG: 461) or Lingala ndé 'then' > future prefix (WLG: 429); see also Dimmendaal (this volume) on Luo (luo, Nilotic).

Another important source of TAM morphology is non-finite forms such as participles, converbs, nominalisations and infinitives. For instance, the common-Circassian future tense suffix -n is clearly related to the action nominal/infinitive suffix of the same shape (cf. Serdobolskaya 2009), while the past tense suffix -ʁe probably goes back to a resultative participle or nominaliser (Kumakhov 1971: 216); for a striking development of the noun 'wood' to classifier to nominaliser to future marker in Hup (jup, Naduhup; Colombia), see Epps (2008) and Emlen et al. (this volume). The processes involved in this development are either loss of auxiliaries in former periphrastic constructions or insubordination of former dependent clauses and their reanalysis as main clauses (Evans 2007; Malchukov & Czerwinski 2021). An example of the first is the development of the Common Slavic periphrastic perfect consisting of a resultative participle with the suffix -l and an inflected 'be'-auxiliary into the synthetic past forms with the suffix -l in East Slavic, schematised in (20), see also Hill (this volume). Likewise, the Modern Hebrew present tense form originates from an imperfective participle (Gordon 1982). Both forms betray their origins by inflecting for gender instead of person. A common source of habitual forms are agent nominalisations, see e.g. Shluinsky (2008) and Koch (2022: 89–93) on some Australian languages.

(20) Old East Slavic   Modern Russian
    *děla-**l**-a*   *jesmь / jesi / jestь*   >   *(ja/ty/ona)*   *dela-**l**-a*
    do-PTCP-SG.F   be.PRS.1SG/2SG/3SG   1SG/2SG/3SG.F   do-PST-SG.F
    'I/you/she has done.'   'I/you/she did.'

An example of insubordination of non-finite dependent clauses giving rise to TAM forms is several developments in Tungusic languages (Malchukov 2013), consider the Èven purposive converb > distant imperative in (21). On parallel developments in other Transeurasian languages, see Robbeets (this volume).

(21) Èven (Malchukov 2020: 425)
    a.   [*Bej*   *em-**de**-n*]   *gön-em*
           man   come-PURP-3SG.PR   say-AOR.1SG
           'I said that he should come.'

    b.   *Em-**de**-n!*
           come-IMP.DIST-3SG.PR
           'Let him come (later)!'

There are languages whose whole systems of finite verbal forms go back to erstwhile nominalisations, as described for some Tibeto-Burman languages by DeLancey (2011) and Genetti (2013). Perhaps the most striking example of this kind is presented by Kayardild (gyd, Tangkic; Australia), where a complex interplay of morphosyntactic changes including insubordination of nominalised clauses bearing the co-called complementising case (Dench & Evans 1988) has led to a system where most verbal inflections originate from nominalisations inflected for case (Evans 1995: 274–275, 423–450), see Table 10.

Table 10. Verbal forms and nominal case in Kayardild (Evans 1995: 255)

Verbal form	Positive	Negative	Cognate case
Imperative	*-TH.a*	*-na*	Nominative *-Ca*
Negative actual	—	*-TH.arri*	Privative *-warri*
Immediate	*-TH.i*	*-nang.ki*	Locative *-(k)i(ya)*
Potential	*-TH.u(ru)*	*-nang.ku(ru)*	Proprietive *-(k)u(ru)*
Past	*-TH.arra*	—	Consequential *-ngarrba*
Hortative	*-TH.inja*	*-nang.inja*	Oblique *-inja*
Apprehensive	*-NHarra*	—	Utilitive *-marra*
Directed	*-THiring*	—	Allative *-(k)iri(ng)*

An important source of irrealis moods are tense forms or their combinations. Haspelmath (1998) shows how old forms of present tense competing with newly grammaticalised forms such as progressive can become restricted in their usage to subordinate or non-assertive clauses thus becoming subjunctives, as has happened e.g. in Eastern Armenian, Persian, Hindi/Urdu and Cairene Arabic, cf. also Bybee et al. (1994: 230–236) and Hilpert (this volume). Such subjunctives are usually less formally marked than their more recent indicative counterparts, cf. Cairene Arabic present ***bi-yi-ktib*** 'he is writing' vs. subjunctive (< old present) *yi-ktib* 'that he write' (Haspelmath 1998: 44). By contrast, "overmarked" moods can arise from combinations of tense markers; an example is Kabardian (kbd, Northwest Caucasian; Russia), where the subjunctive is expressed by stacking the imperfective past suffix to the future tense suffix, cf. *wə-ḳʷe-**ne-t*** 2SG.ABS-go-FUT-IPF.PST 'you would go' (own records, Besleney dialect).

2.7. Evidentiality

Evidential markers develop from various sources (Willett 1988; Aikhenvald 2004: 271–302; 2011). One of them is again verbs, i.e. *verba dicendi* for quotatives and reportatives and *verba sentiendi* for sensory evidentials. Thus, the hearsay suffix *-lda* in Lezgian is transparently related to *luhuda*, the habitual form of the verb 'say' (Haspelmath 1993: 148). For Tariana, Aikhenvald (2004: 273) traces the present-tense visual evidential suffix *-nuka/-naka* to the 1SG form of the verb *-ka* 'see', and the non-visual suffix *-mha* to the verb *-hima* 'hear, feel'. Other verbs can also serve as sources for evidential markers, e.g. the inferred evidential =*sud* in Hup is probably related to the verb 'be inside' (Epps 2005: 631–634); see also Emlen et al. (this volume).

Lexemes of other verb classes can also give rise to evidential affixes. The Northern Samoyedic auditive suffix is traced back to the noun 'sound' heading a nominalised relative clause which underwent insubordination (Jalava 2017: 152–155), see (22).

(22)   Northern Samoyedic reconstruction (Jalava 2017: 155)
    a.   V-*ma-h*   ***mon**-ta*   *so*
          V-NML-GEN   sound-3SG.PR   be.heard.3SG
          'The sound of V-ing was heard.'

    b.   V-*ma-h*   ***mon**-ta*   [*so*]
          V-NML-GEN   sound-3SG.PR   [be.heard.3SG]
          'The sound of V-ing was heard.'

    c.   V-***m(an)on**-ta*
          V-AUD-3SG
          'It is perceived that s/he/it V.'

As with other verbal categories, spatial markers are also involved in the development of evidentiality. Thus, in Japhug (jya, Sino-Tibetan; China) the egophoric evidential *ku-* expressing "personally experienced knowledge" and the sensory evidential *ɲu-* expressing "knowledge mediated through observation or second-hand report" (Jacques 2020: 560) are related to the cislocative and translocative prefixes, respectively, their development involving "a metaphorical extension" of the opposition "between motion towards vs. away from the speaker" (Jacques 2020: 557–560).

Evidentiality markers can arise as semantic extensions of other verbal categories, such as tense and mood (Aikhenvald 2004: 276–281). The most salient of these are resultatives and perfects (Bybee et al. 1994: 95–97; Lindstedt 2000), which gave rise to evidentials in many languages of Eurasia (Johanson & Utas ed. 2000), but also elsewhere, consider the experiential and the non-witnessed evidential uses of the suffix *-sima-* in Kalaallisut (23). The semantic mechanism of such an extension is conventionalisation of implicature arising when resultatives/perfects are used with reference to observable results of unwitnessed events as in (25b).

(23) Kalaallisut (Fortescue 1984: 272, 294)
    a.   *Nuum-miis-**sima**-vunga*.
        Nuuk-be_in-PRF-IND.1SG
        'I have been to Nuuk.'

    b.   *siallir-**sima**-vuq*
        rain-EVID-IND.3SG
        'It must have rained [on seeing puddles of water outside].'

Evidential uses of non-indicative moods can be exemplified by German, where the subjunctive mood is systematically employed in reportative meaning (e.g. Wiemer 2010: 77), cf. *Er **habe** eine ruhige Nacht verbracht* 'He [the Pope] is said to have had a peaceful night'[3].

Evidentials can also arise from non-finite forms via insubordination of nominalised complements of verbs of speech. This is apparently the source of the evidential forms in Lithuanian, Latvian and Estonian, although the perfect-related pathway must have also played an important role there (Wiemer 1998; Wälchli 2000; Holvoet 2007: 92–96; Kehayov & Siegl 2007), cf. the evidential uses of the Lithuanian active participles in (24).

(24) Lithuanian (constructed, own knowledge)
    a.   *Aldon-a*   *gyven-**ant-i***   *Klaipėd-oje*.
        Aldona-NOM.SG live-PTCP.ACT.PRS-NOM.SG.F Klaipeda-LOC.SG
        'Aldona reportedly lives in Klaipeda.'

    b.   *Aldon-a*   *gyven-**us-i***   *Klaipėd-oje*.
        Aldona-NOM.SG live-PTCP.ACT.PST-NOM.SG.F Klaipeda-LOC.SG
        'Aldona reportedly lived in Klaipeda.'

    a.   *Aldon-a*   *gyven-**si-ant-i***   *Klaipėd-oje*.
        Aldona-NOM.SG live-FUT-PTCP.ACT-NOM.SG.F Klaipeda-LOC.SG
        'Aldona reportedly will live in Klaipeda.'

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[3] https://www.faz.net/aktuell/gesellschaft/papst-franziskus-muss-mit-einer-lungenentzuendung-ins-krankenhaus-18786205.html, accessed on 1 April 2023.

2.8. Voice

I follow a narrow understanding of "voice" as morphologically encoded diathesis operations preserving the lexical meaning and semantic participants of the verb (Kulikov 2010: 372), hence the discussion below is largely limited to passives and antipassives, although it is well-known that drawing rigid boundaries between "voice proper" and "valency-changing derivations" is difficult; for the latter, see Rainer (this volume). An up-to-date discussion of all diathesis-related grammatical processes, including their diachronic origins, is Zúñiga & Kittilä (2019).

The major survey of the origins of passive morphology is Haspelmath (1990), who postulates four main sources. The first is constructions consisting of a non-finite form and an auxiliary, familiar from the European languages. The auxiliaries include not only 'be' or 'become', but also 'fall', 'go', 'eat', 'suffer', 'receive' etc. (Haspelmath 1990: 39–42). Such periphrastic passives can become synthetic when the auxiliary merges with the nonfinite form, as e.g. in Mapudungun (arn, Araucanian; Chile), where the passive suffix is related to the existential verb (25).

(25) Mapudungun (Zúñiga & Kittilä 2019: 224)
  a. ***nge**-la-i*   *chadi*
      exist-NEG-IND   salt
      'There is no salt.'

  b. *ḻangüm-**nge**-i*   *chi*   *wentru*
      kill-PASS-IND   DEF   man
      'The man was killed.'

The second source of passives is reflexive markers (Haspelmath 1990: 42–46), which themselves usually go back to such nouns as 'head', 'body', 'soul' etc. (Schladt 2000). This development is familiar from Slavic, Baltic and Scandinavian languages; however, it should be borne in mind that reflexive markers normally develop into a broad category of "middle" (Kemmer 1993; Holvoet 2020; Inglese 2023) rather than into dedicated passives. The development from reflexives to passives usually goes through the stages of anticausative and potential (Zúñiga & Kittilä 2019: 237–241), consider the reflexive, anticausative and passive uses of the middle prefix *tə-* in Amharic (amh, Semitic; Ethiopia) in (26).

(26) Amharic (Amberber 2000: 325, 315; glossing modified)
  a. *ləmma*   ***tə**-lač'č'ə*
      Lemma   MID-shave.PRF.3SG.M
      'Lemma shaved himself.'

  b. *bər-u*   ***tə**-kəffətə*
      door-DEF   MID-open.PRF.3SG.M
      'The door opened.'

  c. *t'ərmus-u*   *bə-liǰ-u*   ***tə**-səbbərə*
      bottle-DEF   INS-boy-DEF   MID-break.PRF.3SG.M
      'The bottle was broken by the boy.'

The third source of passives is causatives (Haspelmath 1990: 46–49), which is well-attested in the languages of North and East Asia (Washio 1993). The intermediate stage of this development are reflexive causatives of the type *I have myself shaved by the barber*, cf. the two interpretations of the combination of causative suffix with intransitive person inflection in Kalaallisut (27).

(27) Kalaallisut (Fortescue 1990: 265; Haspelmath 1990: 48)
    a.   *nanuq*   *taku-**tip**-puq*
        polar_bear.ABS   see-CAUS-IND.3SG
        'The polar bear let itself be seen.'

    b.   *qimmi-mut*   *kii-**sip**-puq*
        dog-ALL   bite-CAUS/PASS-IND.3SG
        'He got bitten by a dog.'

The fourth source of passives is impersonal constructions with "generalised subjects" (Haspelmath 1990: 49–50), which can be reflected in passive markers coinciding with plural or indefinite person markers, as e.g. in Kimbundu (kmb, Niger-Congo; Angola, Givón 1994: 26).

The diachronic origins of antipassives have been investigated by Sansò (2017). Notably, at least two of the main sources for antipassives coincide with those of passives, i.e. reflexive markers and impersonal constructions. For the former, both passive and antipassive are extensions of the middle domain (e.g. Janic 2013, 2016); thus, in Russian the middle marker -*sja* has reflexive (28a), passive (28b) and antipassive (28c) uses distributed over different types of verbs.

(28) Russian (constructed; own knowledge)
    a.   *Devušk-a*   *pričës-yva-et-**sja***
        girl-NOM.SG   comb-IPF-PRS.3SG-MID
        'The girl is combing herself.'

    b.   *Direktor*   *izbira-et-**sja***   *učën-ym*   *sovet-om.*
        director[NOM.SG]   elect.IPF-PRS.3SG-MID   scientific-INS.SG   council-INS.SG
        'Director is elected by the scientific council.'

    c.   *Mal'čik-i*   *bros-aj-ut-**sja***   *kamnj-ami.*
        boy-NOM.PL   throw-IPF-PRS.3SG-MID   stone-INS.PL
        'The boys are throwing stones.'

The development from indefinite object markers or generic nouns to antipassives can be illustrated by (29) from Mohave (mov, Cochimi-Yuman; USA), where the element 'something' can incorporate into the verb as a detransitiviser; all such antipassives are apparently incompatible with overt expression of the object.

(29) Mohave (Munro 1974: 260; Mithun 1993: 333)
    a.   *ʔič*   *m-amaꞏ-m*
        something   2-eat-ind
        'You ate (something).'

    b.   *m-**ič**-amaꞏ-m*
        2-INDF.OBJ-eat-IND
        'You ate.'

Another source of antipassive markers are agent and action nominalisations (Sansò 2017: 180–182, 189–193). The former can be illustrated by Huastec (hus, Mayan; Mexico, Edmonson 1988: 162–167) in (30).

(30) Huastec (Edmonson 1988: 164, 166; glossing simplified)
    a.   *peːl   ʔin   nuːh-**ul***
        be   1SG.ABS   sell-AGT.NML
        'I am a seller.'

    b.   *wawaːʔ ʔu   taleyi¢   t-u   nuːh-**ul** k'al ʔan boliːm*
        we   1PL.ABS finished SBD-1PL.ABS sell-AP with DEF big_tamale
        'We already finished tamale-selling.'

The origins of symmetrical voice systems, which are most prominently, although not exclusively, attested in the Western Austronesian languages (Zúñiga & Kittilä 2019: 120–150), are subject to debate, see Ross (2002b) and Donohue (this volume).

2.9. Negation

Negation is frequently expressed morphologically (Miestamo 2005; Dryer 2013d). Its diachronic development has attracted considerable attention starting from the classic work by Jespersen (1917), see van der Auwera (2010), Moosegaard Hansen (2011), Willis et al. eds. (2013), Mosegaard Hansen & Visconti eds. (2014). Most discussions revolve around the so-called "Jespersen's cycle" (van Gelderen 2008), whereby the older negative marker is reinforced by an intensifying polarity-sensitive expression like English *at all* or French *pas* 'step', which then loses its force and becomes conventionalised as a new negative marker. This leads to common bipartite (e.g. circumfixal, Zingler 2022: 66–70) expressions of negation, which subsequently may be simplified if the older negative marker is completely reduced. A clear example is Abaza, where in addition to the common Northwest Caucasian positionally variable negator *m(ə)-* a novel negation prefix *g'ə-* used in indicative forms has emerged from an additive/emphatic clitic (Pazov 2019), compare its two uses in (31).

(31) Abaza (own fieldwork, textual example)
    *ḳap̀ajḳa-ḳ-**g'**-əj   j-**g'**-ʕa-hə-rə-**m**-t.χ-wa-z-d*
    penny-one-EMP-ADD   3SG.N.ABS-NEG.EMP-CSL-1PL.IO-3PL.ERG-NEG-give-IPF-PST-DCL
    'They wouldn't give us a single penny.'

Apart from such polarity-sensitive expressions, lexical sources of clausal negators include verbs such as 'lack' and 'leave' (WLG: 251, 255–256) and most notably negative existentials (Croft 1991; Veselinova & Hamari eds. 2022). Thus, in Kanuri (knc, Saharan; Nigeria), the negative existential verb (32a) also occurs suffixed in negative imperfective tenses (35b).

(32) Kanuri (Hutchison 1981: 172, 117)
    a.   *mátò-ndé   **bâ***
        car-1PL.PR NEG+exist
        'We don't have a car.'

    b.   *cìdàj-în-**bâ***
        work.3SG-IPF-NEG
        'S/he is not working.'

Negative verbal forms can also arise via insubordination of nominalised forms with caritive/privative markers like *without asking*, cf. the Chukchi privative circumfix (***a-tlʔa-ka*** 'motherless', Dunn 1999: 140) also used as a verbal negator (***a-nmə-ka*** 'don't kill', Dunn

1999: 293) precluding the appearance of the otherwise rich TAM and cross-reference morphology.

2.10. Summary

The fragmentary overview above could certainly not do justice to the cross-linguistic diversity of diachronic pathways giving rise to different inflectional features and their values. Still, some tentative generalisations emerge. Thus, we have seen that demonstrative and deictic elements are involved in many grammaticalisation scenarios — all nominal ones and a number of verbal ones as well. A further type of elements giving rise to both nominal (case) and verbal (TAM) categories are spatial adverbials, many of which go back to body-part nouns. More generally, one can observe that many grammaticalisation pathways stride the boundaries between word classes; thus, verbs can give rise to nominal case markers while nominals of different kinds are common sources of verbal categories. Developments of the latter type are often made possible by insubordination of nominalised dependent clauses, a mechanism which has been shown to be responsible for a broad variety of diachronic changes.

3. The rise of paradigmatic structure in inflection

Having reviewed the diachronic sources of the major inflectional categories, let us turn to the more general question of how paradigmatic structures emerge. This is not a trivial question, since the dynamic and emergent view of grammar offered by grammaticalisation theory suggests that grammatical systems are in constant flux, with newer expressions of certain meanings or functions coexisting and competing with older ones (Hopper 1987, 1991). This presupposes a core-periphery structure with fuzzy boundaries rather than neat and clearly delineated paradigms familiar from grammar textbooks.

Hopper himself (1991: 21) suggests that Lehmann's (2015[1982]) parameters of grammaticalisation, such as paradigmaticisation and obligatorification, are applicable primarily to those grammatical elements that have attained a fairly advanced stage of grammaticalisation. This view is developed by Dahl (2004: 181–207), who proposes the term "featurization" for the processes of "maturation" creating more abstract (higher-level) structures that underly morphological paradigms and complex patterns of exponence. Cf. also Diewald & Smirnova (2012), who speak of "paradigmatic integration" as the "fourth stage" in their model of grammaticalisation.

Perhaps the most straightforward of such processes is phonological fusion whereby morphotactically more transparent and linearly organised strings of morphemes created by grammaticalisation coalesce (Haspelmath 2011) with each other yielding cumulative exponents of several distinct categories or with the lexical stem resulting in nonconcatenative expression or stem alternations of varying opacity (see e.g. O'Neil this volume; however, Haspelmath 2018 argues that clear cases of cumulative markers arising through fusion of erstwhile separate markers are rare). Provided that these morphophonological developments do not affect semantics, they obliterate the once transparent meaning-form relations and lead to the emergence of abstract features whose values are mapped on complex patterns of exponence. The same processes of fusion and morphophonological accommodation with subsequent loss of phonotactic conditioning or analogical extension can create allomorphy, e.g. inflectional classes (see Gardani, this volume).

Another process, which Dahl (2004: 185–187) discusses with reference to suppletion, is merger of (partial) paradigms of distinct lexical items into a paradigm of a single lexeme resulting in a complementary distribution of stems over sets of paradigmatic cells (on development of suppletion, see Juge 2000, 2019, this volume). As Dahl observes, "suppletion

gives evidence for, or rather presupposes, the reality of paradigms, and thus of lexical items as abstract entities which are separate from their concrete realizations" (2004: 186). More generally, this process can apply to derivationally related lexemes which become integrated into one paradigm (cf. Dahl 2004: 190) without any significant changes in form. An instructive example is the perfective:imperfective aspectual opposition in Slavic. Despite the fact that its status with respect to the inflection-derivation divide has been hotly debated, it is beyond doubt that aspect in Slavic is a highly grammaticalised category encompassing the whole verbal lexicon and showing a significant level of regularity in the distribution of the two aspects across different functions and syntactic contexts, even if with a large degree of inter-linguistic variation (Dickey 2000; Fortuin & Kamphuis 2015). The diachronic processes leading to this situation were the expansion of application of originally unequivocally derivational categories such as Aktionsart prefixes (> perfectivity) and iterative/frequentative suffixes (> imperfectivity) across the verbal lexicon, as well as the regularisation of the use of these derivational categories in various contexts and functions to the extent that their occurrence — as well as occurrence of morphologically simplex verbs, which became associated with either perfective or imperfective poles of the opposition, — became largely obligatory (Lehmann 2004; Wiemer & Seržant 2017; Wiemer 2022). Even if Slavic aspect in many respects diverges from "prototypical inflection", e.g. by perfectivisation and imperfectivisation being able to recursively apply to each other's outputs, the basic mechanism of expansion of derivational categories is clearly relevant for the creation of paradigmatic oppositions in morphology.

A related question concerns the integration of (newer) periphrastic forms alongside (older) synthetic ones into one paradigm (see e.g. Wischer 2008; Smith 2022). The exact mechanisms probably differ for the three types of periphrastic expressions distinguished by Haspelmath (2000: 655), viz. (i) where a periphrastic construction fills a cell in the otherwise synthetic paradigm which for some reason cannot be expressed by a single word, as the Latin future subjunctive of the type *factūrus sit* in contrast to both future indicative *faciet* and present subjunctive *faciāt*; (ii) where a periphrastic construction serves to express a certain meaning with one class of lexemes that is expressed synthetically with another class, as the English comparative *more beautiful* as opposed to *warmer*; and (iii) where a periphrastic construction expresses a grammatical meaning that does not have a synthetic exponent in the language system at all, as the perfect or progressive in English. In the first two cases, which Haspelmath calls "suppletive periphrasis", paradigmatic integration of periphrastic expressions depends on how well their functions and distribution match the paradigmatic or lexical "gaps" in the system. Still, as Haspelmath (2000: 659–660) observes, strict "compartmentalisation" of synthetic vs. periphrastic forms is more an ideal than reality, and in many cases such forms may coexist and compete, with new periphrases gradually encroaching into the domain of synthetic forms (cf. the English *prettier ~ more pretty*). The third case, named "categorical periphrasis" by Haspelmath, is different in that there is no formal "gap" in the system to begin with, which would motivate the innovation of a periphrastic construction. Instead, new periphrases arise to express meanings "that are more specific than the meanings already expressed grammatically in the language" (Bybee et al. 1994: 133), hence they can only be in competition with less specific forms (as e.g. a new perfect with an old general preterite). Paradigmatic integration of such periphrases increases with their opposition with the synthetic (or, probably, unmarked, cf. Bybee 1994: 238–239) forms becoming complementary and their use obligatory. An instructive example is the etymologically identical periphrastic perfects in Lithuanian and Latvian; as Daugavet & Arkadiev (2021) show, the Lithuanian present perfect can be replaced by the simple preterite in most contexts, while the use of its Latvian counterpart is more obligatory. Hence, the degree of paradigmatic integration of the perfect is greater in Latvian than in Lithuanian.

This has immediate parallels in the emergence of zero-marking, i.e. situations where the absence of any overt expression has a fixed interpretation in terms of particular inflectional values rather than being merely "unmarked". Zero-marking may arise from phonological erosion, in which case its distribution over paradigmatic cells can be idiosyncratic, as e.g. in Slavic nominal inflection, where some declensions feature zero-exponence in the genitive plural, cf. *noga* NOM.SG 'leg' ~ *nog-∅* GEN.PL < Proto-Slavic **nag-u* (Olander 2015: 74; for a recent cross-linguistic study of the distribution of inflectional zeroes see Becker Ms.). Another source of zero-marking is reanalysis of former overtly marked forms as bare stems by "Watkins' law" applying to forms that are frequent and "semantically basic", like singular, third person etc. (Bybee 1985: 55–57; Koch 1995; see Haspelmath 2021 for a more general perspective on the role of frequency in the cross-linguistic distribution of overt vs. zero coding). Both of these processes presuppose the existence of a paradigm and mutually exclusive values of inflectional features.

However, zero-marking also emerges as a "residue" of grammaticalisation processes giving rise to overt expressions (Bybee 1994). The crucial change involves a pragmatically-based reinterpretation of absence of marking as significant in itself, which is possible if overt marking of some meaning(s) become obligatory (Bybee 1994: 240–242; Dahl 2004: 188–190). Thus, absence of a morpheme expressing plural can only be interpreted as a zero-marking of singular if the former is systematically employed whenever plurality of referents is implied. If the plural marker is only used optionally and does not appear when plurality of referents can be determined from the context, its absence will rather signal "number neutrality" — or nothing at all (cf. Lehmann 2015[1982]: 14; Dahl 2004: 189). This is a manifestation of a more general process whereby "the new grammatical meaning comes to be dependent <…> on the meanings of the other paradigmatic members" (Diewald & Smirnova 2012: 127).

To summarise this rather fragmentary discussion, development of paradigmatic structure in inflection involves an interplay of processes affecting both the formal and functional sides of expressions. The most crucial changes, however, pertain to the content plane and concern (i) the increasing uniformity of distribution of formally distinct and even historically unrelated expressions ending up as allomorphic exponents of the same set of meanings; (ii) the increasing complementarity of the distribution of forms originally competing in a single functional domain (e.g. as a more general and a more specific) and concomitant obligatorification of morphological oppositions. These and other processes are always gradient (Diewald & Smirnova 2012: 129), hence grammatical systems of languages more often than not comprise a historically older tightly structured "core" of paradigmatically organised features and a "periphery" consisting of categories of varying age and degrees of paradigmatic integration.

Acknowledgments

Abbreviations

1 — 1st person; 2 — 2nd person; 3 — 3rd person; A — agent; ABS — absolutive; ACC — accusative; ACT — active; ADD — additive; ADN — adnominal; AGT — agent; ALL — allative; AN — animate; AOR — aorist; AP — antipassive; APUD — apud localisation; ART — article; ASS — associative; AUD — auditory evidential; AUG — augmentative; AUX — auxiliary; CAN — canine gender; CAUS — causative; COMP — complementiser; COND — conditional; CONJ — conjunction; COP — copula; CSL — cislocative; CVB — converb; DAT — dative;

DCL — declarative; DEF — definite; DIM — diminutive; DIR — directional; DIST — distal demonstrative; EMP — emphatic; ERG — ergative; ESS — essive; EVID — evidential; F — feminine; FEM — feminitive; FOC — focus; FUT — future; GEN — genitive; H — human; HON — honorific; IMP — imperative; IN — in(essive); INAN — inanimate; IND — indicative; INDF — indefinite; INF — infinitive; INFR — inferential; INS — instrumental; IO — indirect object; IPF — imperfective; IRR — irrealis; LAT — lative; LOC — locative; M — masculine; MID — middle; N — neuter; NEG — negation; NFUT — non-future; NML — nominalization; NOM — nominative; NPST — non-past; NSPEC — nonspecific; OBJ — object; OBL — oblique; PASS — passive; PFV — perfective; PL — plural; PLUR — plurative; POST — post localisation; PR — possessor; PRF — perfect; PROG — progressive; PRS — present; PST — past; PTC — particle; PTCP — participle; PURP — purposive; REL — relative case; REM — remote past; S — single argument of canonical intransitive verb; SBD — subordinator; SBJ — subject; SG — singular; SIM — similative; SING — singulative; SUPER — super localisation; VIS — visual.

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