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To agree or not to agree? – A typology of sporadic agreement

Sebastian Fedden

Université Sorbonne Nouvelle (Paris 3), University of Surrey, University of Sydney

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1 Introduction

Canonical agreement is productively marked on all agreement targets of a given type. Corbett (2006: 17) calls the specific non-canonical deviation from this, in which agreement is restricted to a subset of items in a word class, sporadic agreement.

I define sporadic agreement in (1):

- (1) *Definition of sporadic agreement*: Two items belonging to the same word class in a language display different behaviour with respect to agreement. In the same syntactic context, one item agrees, whereas the other one does not.¹

A simple example of sporadic agreement comes from Italian. Most Italian adjectives agree in gender and number with the noun they modify. Consider examples (2) and (3).

- (2) Italian
ciel-o *azzurr-o*
 sky(M)-SG azure-M.SG
 ‘azure sky’

- (3) Italian
ciel-i *azzurr-i*
 sky(M)-PL azure-M.PL
 ‘azure skies’

In (2), the colour adjective *azzurro* ‘azure’ ends in *-o*, thus showing agreement in number (singular) and gender (masculine) with the noun *cielo* ‘sky’, whereas in (3) *azzurri* ends in *-i*, agreeing in number (plural) and gender (masculine) with the noun *cieli* ‘skies’. However, there are some adjectives, such as *blu* ‘blue’, which do not agree, hence *cielo blu* ‘blue sky’ and *cieli blu* ‘blue

¹ Sporadic agreement is a subtype of what one could call “sporadic inflection” (Matthew Baerman, p.c.), pertinent examples of which are English count nouns that do not distinguish overtly between singular and plural, such as *sheep* or *-craft* compounds, e.g. *hovercraft*. All instances of sporadic inflection are violations of Criterion 4 for canonical morphosyntactic features and their values (Corbett 2012: 163): “Canonical features and their values are distinguished consistently across lexemes within relevant parts of speech.”

skies’, where *cielo* is singular and masculine and *cieli* is plural and masculine, but there is nothing on *blu* which indicates this.

This is not to say that invariable adjectives like *blu* are exempt from the agreement rule in Italian that obtains between heads and modifiers. Invariable adjectives are part of a larger system in which the majority of items agree, with which they form a syntactically homogenous word class. But invariable adjectives are exceptions in that their morphology fails to respond to the agreement rule because of certain properties of the lexeme; in the case of *blu* these are phonological properties (ending in a stressed vowel) and (possibly) etymological properties (being a loan from French), which will be discussed further §3.2 and §3.5, respectively. Sporadic agreement is a morphological rather than a syntactic phenomenon. In the lexemes which make up the set of non-agreeing items in a word class which otherwise shows agreement, it is the morphology that fails to respond to the agreement rule, rather than the agreement rule itself not applying. However, there are interesting borderline cases which will be taken up in §4, especially modal verbs in English.

It is important to stress that the notion ‘sporadic’ is viewed across the lexicon. In order for agreement to be sporadic it has to be confined to a subset of items in a word class. This is what we find in Italian: *azzurro* belongs to a set of adjectives which always agree, *blu* belongs to a set of adjectives which never agree. This situation needs to be distinguished from optional agreement, another type of non-canonical agreement (Corbett 2006: 14), where any given item can agree or not agree, e.g. the German colour adjective *lila* ‘purple’:

(4) German

eine lila Jacke
 an purple jacket(F)[SG]
 ‘a purple jacket’

(5) German

eine lila-ne Jacke
 an purple-SG.F jacket(F)[SG]
 ‘a purple jacket’

According to the author’s native judgment, either

(4) or (5) is possible. Optional agreement, and how it differs from sporadic agreement, will be taken up in §4.2.

Unlike Italian where sporadic agreement is confined to a tiny corner of the lexicon, namely a small set of adjectives, it is pervasive in Nakh-Daghestanian languages, such as Archi (Kibrik 1977a; 1977b; Chumakina et al. 2007), Ingush and Chechen (Nichols 1989) and Tsez (Polinsky & Comrie 1999; Polinsky & Potsdam 2001; Polinsky 2015). In these languages, sporadic agreement plays a role in various word classes. In terms of range of sporadic agreement, i.e. the proportion

of affected lexemes,² we find widely different scenarios. It can be extreme as in Italian where more than 98% of adjectives agree – either in gender and number (about 65%) or only in number (about 33%) (Thornton, Iacobini & Burani 1997), or minimal as in Tsez where only 4% of adjectives agree (Gagliardi 2012; Gagliardi & Lidz 2014). Tsez adjectives clearly show sporadic agreement, whereas for Italian, where almost all adjectives do agree, we might rather speak of sporadic non-agreement.

What all situations of sporadic agreement have in common is that we need additional information about the target in order to know whether a feature will be overtly realized. In other words, there are lexical prerequisites for agreement (Corbett 2006: 81–84). This research is the first step towards a typological investigation of sporadic agreement. I have surveyed a sample of 23 languages to find an answer to the question if, in a particular language with sporadic agreement, we can predict whether an item agrees or not, and what the factors are which allow us to make such a prediction. I will show that sporadic agreement in the sample is far from random, yet that there is rarely a factor that allows us to exhaustively predict the agreement potential of a word.

Given that sporadic agreement raises interesting questions about the persistence of morphological peculiarities it is remarkable that the phenomenon itself has never been systematically investigated. On one view, sporadic agreement should not exist or should at least be ironed out over time. Since a subset of the word class in question does not agree the system seems to work unproblematically without the agreement. It seems a plausible assumption that sporadic agreement should disappear over time by regularizing all items as either agreeing or non-agreeing, particularly in skewed situations like Tsez adjectives, where the number of agreeing items is very small (4%), or Italian adjectives, where the number of agreeing items is very large (98%). However, far from a collection of random gaps, sporadic agreement in most cases follows recognizable patterns (phonotactic, phonological, morphological, semantic or etymological) which together with frequency effects might facilitate its persistence.

This chapter is structured as follows. In §2, I introduce the sample. In §3, I present the results in the form of the different factors that let us predict whether an item in a sporadic agreement system agrees. I will discuss the following factors: phonotactic (§3.1), phonological (§3.2), morphological (§3.3), semantic (§3.4), and etymological (§3.5). In §4, I present a range of interesting borderline cases which share (sometimes superficial) properties with sporadic agreement, but which I believe are ultimately different phenomena. §5 brings up the role of frequency in the persistence of morphological systems. Finally, in §6 I offer my conclusions.

2 The sample

Sporadic agreement has been noted in a range of unrelated languages, e.g. in Italian and in Nakh-Daghestanian languages (Nichols 1989; Chumakina & Corbett 2008; Chumakina & Corbett 2015),

² On the notion of ‘range’ as a measure of the number of lexemes displaying non-canonical behaviour, see Corbett (2012: 163).

but also in Papuan languages, such as Mian (Fedden 2010, 2011, in press; Corbett, Fedden & Finkel, in press) and other Mountain Ok languages (Healey 1964; Fedden, in press) and Teiwa (Klamer 2010; Fedden et al. 2013).

This pilot study is based on a (convenience) sample of 23 languages. I have tried to introduce some geographical spread, but languages from areas where sporadic agreement is known to be common like the Caucasus are overrepresented. The full list of languages can be found in the Appendix. While this sample is appropriate for identifying types of sporadic agreement, it will not tell us much about the distribution of the phenomenon. Hence, a word of caution. The results, which I will present in the following section, are based on qualitative observations from the sample. I will not make any claims about the quantitative significance of the identified types.

3 Predictors of sporadic agreement

Based on the sample we can identify the following predictors of sporadic agreement. Phonotactic predictors in Tsez and Ingush, phonological predictors in Italian, morphological predictors in Archi, semantic predictors in Mian and Teiwa, and etymological predictors in (western varieties of) Basque. I will discuss these cases in more detail in this section. Borderline cases have been found in Hausa, Ngan'gityemerri, English and Russian (see §4).³

3.1 Phonotactic predictors

The Nakh-Daghestanian language Tsez shows agreement in gender and number. Four genders are distinguished in the singular (I-IV), which are collapsed to two in the plural. Gender assignment uses a combination of semantic and formal criteria: male humans are gender I, female humans and some inanimates are gender II, animals and some inanimates are gender III, and the rest of the inanimates are gender IV. Tsez is morphologically ergative, i.e. the verb agrees with the absolutive argument. This is illustrated for an intransitive verb in (6) and for a transitive verb in (7).

- (6) Tsez (Polinsky & Comrie 1999: 112)
- | | |
|--------------------|---------------------|
| bikori | b-exu-s |
| snake(III)[SG.ABS] | III.SG-die-PST.EVID |
| 'The snake died.' | |

³ For the following languages the sources as specified in the Appendix do not provide any evidence of sporadic agreement: Abkhaz, Apurinã, Barasano, Guarani, Hixkaryána, Plains Cree, Fijian, Egyptian Arabic, Hausa, Finnish and Burushaski.

- (7) Tsez (Polinsky & Comrie 1999: 110)
 žek'-ā yutku r-oy-xo
 man(I)[SG]-ERG house(IV)[SG.ABS] IV.SG-make-PRS
 'The man is building a/the house.'

The agreement forms of Tsez are given in Table 1.

Table 1. Tsez agreement prefixes (Polinsky & Comrie 1999: 111)

gender	number	
	SG	PL
I	∅-	b-
II	y-	r-
III	b-	
IV	r-	

The agreement system of Tsez is sporadic in the sense that only 27% of verbs and 4% of adjectives listed in the dictionary agree (Gagliardi 2012; Gagliardi & Lidz 2014: 68). No consonant-initial verb agrees, while almost all vowel-initial verbs agree. This is illustrated with the agreeing verb -*ʹaqʹil*- 'increase, grow' in (8), and the non-agreeing verb *kʹoʹli*- 'run' in (9). These examples were provided by Maria Polinsky (p.c.).

- (8) Tsez
- a. uži ʹaqʹil-si
 boy(I)[SG.ABS] [I.SG]grow-PST.EVID
 'The boy grew up.'
 - b. kid y-ʹaqʹil-si
 girl(II)[SG.ABS] II.SG-grow-PST.EVID
 'The girl grew up.'
 - c. meši b-ʹaqʹil-si
 calf(III)[SG.ABS] III.SG-grow-PST.EVID
 'The calf grew up.'
 - d. lu r-ʹaqʹil-si
 water(IV)[SG.ABS] IV.SG-grow-PST.EVID
 'Water increased.'

- (9) Tsez
- | | |
|-------------------|--------------|
| a. uži | k'oʎi-s |
| boy(I)[SG.ABS] | run-PST.EVID |
| 'The boy ran.' | |
| b. kid | k'oʎi-s |
| girl(II)[SG.ABS] | run-PST.EVID |
| 'The girl ran.' | |
| c. meši | k'oʎi-s |
| calf(III)[SG.ABS] | run-PST.EVID |
| 'The calf ran.' | |
| d. lu | k'oʎi-s |
| water(IV)[SG.ABS] | run-PST.EVID |
| 'Water ran.' | |

In order for a Tsez verb to agree with the absolutive argument it is a prerequisite to be vowel-initial: while consonant-initial verbs never agree, there are a few vowel-initial verbs – Polinsky & Comrie (1999: 111) list 10 –, for which one assumes the presence of an underlying laryngeal which blocks agreement prefixes, just like any other consonant (Maria Polinsky, p.c.). Besides verbs, agreement prefixes can be found on some vowel-initial adjectives, some vowel-initial adverbs, and several particles.

Tsez is a case where sporadic agreement is subject to phonotactic constraints (Polinsky & Comrie 1999: 111). Since the agreement prefixes (given in Table 1 above) are mainly single consonants their affixation to consonant-initial stems would lead to illicit word-initial consonant clusters. In Tsez, the morphology fails to respond in lexemes displaying a phonotactic structure which prevents agreement prefixes from being realized. A similar situation can be found in the related Nakh-Daghestanian language Ingush, where about 30% of verbs agree (Bickel & Nichols 2007: 172). Ingush examples can be found in Corbett (2006: 82). As in Tsez, being vowel-initial is a prerequisite for agreement.

3.2 Phonological predictors

Unlike Tsez and Ingush where sporadic agreement is tied to phonotactic constraints, the relevant factors in Italian are phonological. Italian has three main types of adjective: those that agree in gender (masculine vs. feminine) and number (singular vs. plural), e.g. *azzurro* 'azure', which has four forms *azzurro/azzurra/azzurri/azzurra*, those that agree only in number (singular vs. plural), e.g. *veloce* 'fast', which has two forms *veloce/veloci*, and those which are invariable, e.g. *blu* 'blue'. According to Thornton, Iacobini & Burani (1997: 68, 74), out of a total of 1129 adjectives in the *Italian Basic Vocabulary* 1.9% are of the invariable type. On (non-)canonicity in the inflection of Italian adjectives, see Thornton (this volume).

However, the factors underlying sporadic agreement in Italian is phonological rather than phonotactic. There is nothing in Italian phonotactics which would prohibit the sequences /uo, ua, ui, ue/. The adjective *blu* fits into a larger phonological pattern in Italian, according to which nouns and adjectives ending in a stressed vowel remain uninflected, cf. the invariable nouns *città* ‘city’, *virtù* ‘virtue’. The other relevant phonological pattern is that all adjectives that end in /i/ are invariable, e.g. *pari* ‘even’, *dispari* ‘odd’.⁴ Again, there are no phonotactic constraints against agreement in these words, and as for *blu*, the pattern is operational in the language more widely, as can be seen from the following non-inflecting nouns, e.g. *ipotesi* ‘hypothesis’, *estasi* ‘ecstasy’, ending in /i/ (D’Achille & Thornton 2003: 225). The fact that *blu* is also a loanword (from French *bleu*) might have an effect as well, as there are cases of sporadic agreement which are sensitive to the etymological status of a word; see §3.5. In fact, there is another set of invariable adjectives in Italian, all ending in a consonant, e.g. *chic* ‘chic’ (D’Achille & Thornton 2003: 225). Their phonology does not prevent them from agreeing, so they do not fit into the patterns discussed here. These adjectives are non-agreeing because they are loanwords (see §3.5).

In Italian, sporadic agreement affects so few items that it would be more felicitous to speak of sporadic non-agreement, but for adjectives which either end in a stressed vowel or in /i/, this peculiar behaviour is predictable from their phonology.

3.3 Morphological predictors

For Archi, the morphological build of a verb, that is the number of stems a verb has, is the best predictor of whether it agrees. The overwhelming majority of verbs with five stems agrees, while almost no verb with one stem agrees. The situation is less clear for the other word classes which show sporadic agreement.

The Archi system is complex, therefore I will discuss it in some detail. In Archi, items from a wide range of word classes can realize agreement (Chumakina & Corbett 2008; Bond et al. 2016). However, at the level of the lexicon, the extent of agreement is much more limited, with most major word classes containing both agreeing and non-agreeing items. Proportions of agreeing items for the major word classes in Archi are given in Table 2.

⁴ Further, we find the invariable conversions *rosa* ‘pink’ and *viola* ‘purple’, from the nouns *rosa* ‘rose’ and *viola* ‘violet’, respectively. However, being a conversion is not a sufficient condition for an adjective to be invariable, as can be seen from *marrone* ‘brown’ (< *marrone* ‘type of chestnut’), which can (but does not have to) agree in number (Thornton 2004: 530).

Table 2. Lexical items and their agreement potential (reported in Chumakina & Bond 2016: 111, based on the Archi dictionary (Chumakina et al. 2007))

Word class	Total	Agreeing	% agreeing
Verbs	1248	399	32.0
Adverbs	383	13	3.6
Postpositions	34	1	2.9
Discourse clitics/particles	4	1	(25.0) ⁵

Table 2 shows this based on data from the Archi dictionary, there are clear differences in coverage. Around a third of verbs (32%), about a dozen of adverbs, a single postposition, and the emphatic enclitic agree in Archi. Some personal pronouns also agree, but there are no figures (see Chumakina & Corbett 2015: 95). The rest are non-agreeing.

Archi has four genders (I-IV) and two number values (singular and plural). In terms of gender assignment, males are gender I, females gender II, and the rest of the noun vocabulary is divided between genders III and IV (Chumakina & Corbett 2015: 96). Relevant agreement domains are the NP where modifiers agree with the head noun in number and gender, and the clause where a range of targets agrees with the absolutive argument.

The ensuing discussion of sporadic agreement in Archi will be confined to the verbs.⁶ Table 3 is a representation of the gender and number agreement system of Archi verbs (*x-* is the prefixal form, and *<x>* the infixal form)⁷ (Kibrik, Kodzasov, Olovjannikova & Samedov 1977: 55–66). The paradigms for other targets look slightly different.

Table 3. Gender and number in Archi (verbal agreement)

gender	number	
	SG	PL
I	w-/⟨w⟩	b-/⟨b⟩
II	d-/⟨r⟩	
III	b-/⟨b⟩	∅-/⟨∅⟩
IV	∅-/⟨∅⟩	

Unlike Tsez and Ingush, where the phonological form of the verb stem is a very solid predictor (no consonant-initial verb agrees, almost all vowel-initial verbs agree), the situation in Archi is

⁵ This figure appears in brackets to reflect the small numbers that this percentage is based on.

⁶ For the other word classes which display sporadic agreement, both Chumakina & Corbett (2015) and Chumakina & Bond (2016) are more pessimistic when trying to find factors which allow us to predict agreement potential. On the agreeing agreeing postposition *eq'en* ‘up to’, which is derived from an irregular converb of the verb *eq'is* ‘reach’, see Chumakina & Brown (2015).

⁷ Archi verbs use prefixes and infixes to show agreement. Once determined whether a verb agrees at all, there are further complications related to the realization of the agreement, some verbs take a prefix, some take an infix, and some take either a prefix or an infix depending on the stem. For details, see Chumakina & Corbett (2015: 105–115).

more complex and phonology is a less useful predictor of sporadic agreement. Both vowel-initial and consonant-initial verbs can be either agreeing or non-agreeing. Examples of agreeing verbs are *acu* ‘milk’ and *q’a* ‘come’, examples of non-agreeing verbs are *abc’u* ‘hew’ and *barhu* ‘look after’. The Archi agreement markers are single consonants like in Tsez and Ingush, but Archi allows vowel epenthesis between the prefix and the consonant-initial stem, pronounced as [ə], spelled the same as the stem vowel (Chumakina & Corbett 2015: 108), so that word-initial consonant clusters do not arise. An example is (10).

(10) Archi (Chumakina & Bond 2016: 112)

ajša da-q’a
 PN(II)[SG] II.SG-come.PFV
 ‘Aisha came.’

The best predictor of agreement potential is the morphological build of an Archi verb (Chumakina & Corbett 2015; Chumakina & Bond 2016: 112). ‘Morphological build’ refers to whether a verb has five stems, namely perfective, imperfective, finalis, potential and imperative, or only one stem, which is used on all word forms in the paradigm (Chumakina et al. 2016: 36). 5-stem verbs can be further divided into simple verbs and complex verbs, the latter consisting of an uninflected first part followed by a simple verb. There is a high correlation between the morphological build and the semantics of a verb: 1-stem verbs typically refer to states (Chumakina et al. 2016: 36, fn7), e.g. *a’nt* ‘be strong’ or *č’iq’w’* ‘have protruding teeth’, while 5-stem verbs typically refer to processes, e.g. *c’ar* ‘melt’, or actions, e.g. *árt’ur* ‘cut’.⁸

Looking at sporadic agreement in Archi verbs from the perspective of their morphology a clear picture emerges. Chumakina & Corbett (2015: 104, 115) report conspicuous correlations based on verbs listed in Kibrik (1977b). Within the set of simple 5-stem verbs the proportion of agreeing items is 87% (rounded to full numbers), i.e. 142 of 163 verbs. Hence, it is the default expectation for a simple 5-stem verb to agree. We find the converse situation for 1-stem verbs. Only seven of 190 stative verbs agree, that is 4% (rounded to full numbers), the default expectation being that stative verbs do not agree.⁹

Given the high correlation between morphological build (5-stem vs. 1-stem verbs) and lexical semantics (dynamic vs. stative meaning) the question remains whether a verb’s morphology is really better than its semantics in predicting agreement potential. For by far the most Archi verbs the morphology and the semantics are either both correct in their prediction or they are both wrong. We can distinguish four cases:

⁸ Kibrik (1977a) uses the terms ‘stative’ and ‘dynamic’. Stative verbs have a single stem, whereas dynamic verbs have five stems. Kibrik’s choice of terminology is due to the very high correlation between morphological build and semantics. Since I am evaluating the predictive power of a verb’s morphology as opposed to its semantics with respect to agreement potential I will keep these notions terminologically apart, using ‘stative’ and ‘dynamic’ only for the semantics and resorting to the terms ‘5-stem verb’ and ‘1-stem verb’ to refer to the morphological build.

⁹ As these figures are based on Kibrik (1977b), rather than the Archi dictionary, the proportion of agreeing verbs is not entirely parallel to the one given in Table 2.

- (11) a. Morphology (5-stem) and semantics (dynamic) both correctly predict agreement, e.g. *áʳšur* ‘deforest’ (which agrees and should agree according to both criteria)
- b. Morphology (1-stem) and semantics (stative) both correctly predict non-agreement, e.g. *aʳnt* ‘be strong’ (which does not agree and should not agree according to both criteria)
- c. Morphology (5-stem) and semantics (dynamic) both get it wrong, e.g. *abcʳu* ‘hew’ (which does not agree, but should agree according to both criteria)
- d. Morphology (1-stem) and semantics (stative) both get it wrong, e.g. *á:čʳatʳi* ‘be empty’ (which agrees, but should not agree according to both criteria)

This would not give us any reason to say that the morphology is any better than the semantics in its predictive power: they are either both correct or both wrong. However, in total there are more cases where the morphology is right and the semantics is not than vice versa. For example, *ák:ur* ‘see’ or *kor* ‘hear’ (5-stem verbs, stative semantics) agree, *χ:ánkʳbos* ‘snore’ or *batár* ‘become impudent’ (1-stem verbs, dynamic semantics) do not agree. In these cases, the agreement potential is correctly predicted by the morphological build, but not by the semantics. There are hardly any examples in the opposite direction, a possible one being *órl:ur* ‘be silent’, a 5-stem verb with stative semantics which does not agree.

Of course, an exact characterization of Archi lexical verb semantics is difficult and for any given verb it can be hard to tell whether it has dynamic or stative semantics: does *lak:á* mean ‘limp (slightly)’ or ‘be lame’; does *órl:ur* mean ‘be silent’ or ‘shut up’? This makes the morphology more reliable than the semantics (it is easy to distinguish one-stem verbs from five-stem verbs, while it can be less straightforward to tell stative from dynamic meanings); another reason to privilege the morphology over the semantics for Archi.

3.4 Semantic predictors

Semantic factors are relevant in the systems of the Papuan languages Mian and Teiwa. In Mian verbal semantics allow us to identify several classes of agreeing verbs, at least to some extent, while it is the default for a verb not to agree.

All finite verbs in Mian agree with their subject in person (1, 2, 3), number (singular or plural) and gender (masculine, feminine, neuter 1 or neuter 2). Object agreement in transitive verbs, however, is sporadic. There are transitive verbs that agree in person, number and gender, such as *nâ* ‘hit, kill’ in (12), verbs that agree only in number, such as *walò* ‘cut off, split’ in (13), and verbs that never agree with their object, such as *bou* ‘hit with the palm, swat’ in (14). Note that verbs that fail to agree with their object are not invariable, as they still agree with their subject.

(12) Mian (Fedden, field notes)

máam=e a-nâ'-n-ebo=be
 mosquito(M)=SG.M 3SG.M.OBJ-hit-REALIS-2SG.SBJ=DECL
 'You hit the mosquito.'

(13) Mian (Fedden 2011: 268)

dāb=e wa-lò-n-i=be
 seed(N1)=SG.N1 cut.off.SG.OBJ-hit.PFV-REALIS-1SG.SBJ=DECL
 'I cut off a seed.'

(14) Mian (Fedden, field notes)

máam=e bou-n-ebo=be
 mosquito(M)=SG.M swat-REALIS-2SG.SBJ=DECL
 'You swatted the mosquito.'

The verb *nâ* 'hit, kill' in (12) agrees with its object *máam* 'mosquito' in person, number and gender through a prefix, whereas the verb *bou* 'hit with the palm, swat' in (14) does not agree. The verb *walò* 'cut off, split' in (13) agrees only in number with the object, but not in person or gender. For this verb class number is always marked through apophony (/a/ for singular and /ɛ/ for plural). If the object were plural the verb form would have to be *welò*.¹⁰

In addition Mian has a set of verbs which obligatorily take a classificatory prefix for their object.¹¹ This system is called a system of 'verbal classifiers' in Fedden (2011, ch. 5), mainly in order to differentiate it terminologically from the Mian gender system. The classifiers are in many respects gender-like in terms of assignment and agreement-like expression. Moreover, recent work has shown that a strict gender-classifier opposition should be abandoned (Fedden & Corbett 2017; Corbett, Fedden & Finkel, in press). Therefore I am including the classificatory prefixes here.

An example of the M-classifier *dob-* is given in (15), which is used for males and some inanimates, like *báangkli* 'stone adze (axe-like tool for cutting and digging)'.¹²

¹⁰ This is an ambitransitive verb that works on an absolutive basis, i.e. it agrees in number with the object if used transitively, or with the subject if used intransitively (with the sense 'spilt', cf. *the wood split*). In the latter case the verb agrees doubly with the subject. Number is indicated by apophony, and person, number and gender are indicated through the subject suffix.

¹¹ Like the verbs which only agree in number, classifiers work on an absolutive basis. In transitive verbs that obligatorily take a classifier classification extends to the object, for the single intransitive verb *mêin* 'fall' classification extends to the subject.

(15) Mian (Fedden 2011: 185)

báangkli=e *dob-ò-n-o=a*
 stone.adze(N1)=SG.N1 3SG.M_CL.OBJ-take.PFV-SEQ-3SG.F.SBJ=MED
 ‘she took the *báangkli* adze and then ...’

There is also an F-classifier, which is used for females and many inanimates, and there are classifiers for long objects (e.g. arrow), covering objects (e.g. blanket), bundles (e.g. stringbag) and a residue classifier for the rest. For details on Mian nominal classification, see Fedden (2011, chs. 4 and 5) and Corbett, Fedden & Finkel (in press).

In terms of proportions of these four types of transitive verb in comparison to a total of 302 transitive verbs (31 of which are ambitransitive, i.e. they can be used either transitively or intransitively), we find the following distribution (Table 4).

Table 4. Proportion of Mian transitive verb types

Transitive verb type	Count	Percentage
Verbs that take a classifier	40 ¹²	13.2%
Verbs that agree only in number	7	2.3%
Verbs that agree in person, number and gender	7	2.3%
Verbs that never agree	248	82.1%

Each Mian verb belongs to one and only one of these types. There is a substantial correlation between membership in the class of verbs that obligatorily take classifiers and lexical verb semantics of handling or movement. Some examples are given in (16).

(16) Mian transitive verbs that take a classifier

atou ‘put into the fire’
bià ‘throw’
êb ‘take (in order to carry)’
fâ ‘put’
klafâ ‘put on back (piggy-back style)’
meki ‘hang up’
mikì ‘take (child) into arms to lull to sleep’
môu ‘put (pig or child) on shoulder’
ò ‘take’
ski ‘turn’
tangâa’ ‘hang up (item of clothing) to dry’
waa ‘hide (tr.)’

¹² Corbett, Fedden & Finkel (in press) give the number of Mian verbs which obligatorily occur with the prefixal classifier as 37. This figure is based on a slightly different counting procedure.

However, there is leakage either way. On the one hand, this class contains some verbs without handling semantics, notably *halin* ‘worry’ and *suan* ‘hate’; on the other hand, there are handling verbs which do not take a classifier, e.g. *mengge* ‘pull’.

Next are transitive verbs that only agree in number with their object. This class is very small and only contains ‘cut-and-break’ verbs. All forms attested in the Mian corpus are given in Table 5.

Table 5. Mian verbs that only agree in number

Meaning	SG object	PL object
cut, split	balò	belò
break off	dalò	delò
cut, break (wood)	halò	helò
cut off	talò	telò
cut off, split	walò	welò
break, tear apart	batlâa’	betlâa’
pry out	datlâa’	detlâa’

Despite the neat ‘cut-and-break’ meanings of verbs in this class, semantics is of limited use in its definition since Mian has at least as many ‘cut-and-break’ verbs that are non-agreeing and therefore do not belong to this class. Superficially we find formal factors at work in this verb class. Prima facie, members look as if they could be compounds consisting of one of a set of specific ‘cut-and-break’ verbs and a semantically more general verb, namely *lò* ‘hit’ or *tlâa* ‘remove’, which would give this verb class a morphological definition. However, while these putative first elements exist as independent words, i.e. *bà* ‘cut across’, *dà* ‘break off’, *hà* ‘cut alongside’, *tà* ‘cut off’, or *wà* ‘cut’, these do not follow the ablaut pattern found in verbs which agree in number only. Thus, *hà* ‘cut alongside’ is *hà* regardless of object number; there is no form **hè* for a plural object.

Finally, there are transitive verbs that agree in person, number and gender with their object. Again, this class is extremely small, only consisting of seven items, which are given in (17). Their inherent aspect value is noted in brackets.

(17) Mian transitive verbs that agree in person, number and gender

<i>e</i>	‘hit, kill (IPFV)’
<i>fû’</i>	‘grab (PFV)’
<i>lò</i>	‘hit, kill (PFV)’
<i>nâ’</i>	‘hit, kill (PFV)’
<i>ntamâ’</i>	‘bite (PFV)’
<i>têm’</i>	‘see (PFV)’
<i>temê’</i>	‘look at (IPFV)’

All of these transitive verbs – with the exception of *têm* ‘see’ and *temê* ‘look at’ – are high on the transitivity scale (Hopper & Thompson 1980), in that they implicate or entail a change of state in the object, which makes the object rank high in affectedness (Tsunoda 1985; Beavers 2011). On the other hand, there are many other transitive verbs, e.g. *klutaka* ‘smash’, which have a highly affected object, but which do not agree.

For Mian, we can say that semantics is helpful to some extent. This is particularly the case for the verbs which take a classifier, which mostly have meanings involving handling an object or movement. Semantics works less well for the other classes because of the higher degree of leakage.

Now we turn to semantic factors in Teiwa sporadic agreement, which work along the lines of animacy of the object. In Teiwa, and in Alor-Pantar languages more generally (Klamer 2014), verbs do not agree with their subject, shown in (18), while a proper subset of transitive verbs agrees with their object, shown in (19). The object of an agreeing verb is typically animate.

(18) Teiwa (Klamer 2010: 169)

a her
3SG climb
‘He climbs up.’

(19) Teiwa (Klamer 2010: 159)

name, ha’an n-oqai g-unba’?
sir 2SG 1SG.POSS-child 3SG-meet
‘Sir, did you see (lit. meet) my child?’

The following example (20) illustrates the use of a transitive verb *kiri* ‘pull’, which does not agree with its (inanimate) object.

(20) Teiwa (Fedden et al. 2013: 35)

bif eqar kopang nuk tei baq kiri
child female small one tree log pull
‘A little girl is pulling a log.’

In Teiwa 22% of transitive verbs agree with their object. In contemporary Teiwa the two verb classes are not semantically fully transparent. Almost all transitive verbs belong either to the agreeing class or to the non-agreeing class and they allow objects of any animacy value as long as the lexical semantics of the verb permits this. For example, the verb *kiri* ‘pull’ (see example 20) could be used to describe a situation in which a person is pulling another person and *kiri* would not suddenly agree with the object. So while arbitrary verb classes have formed in Teiwa they are probably a development from a semantically transparent earlier stage of differential object marking

(DOM),¹³ in which animate objects required the verb to agree whereas there was no agreement with inanimate objects. The formation of the present-day verb classes are likely related to the animacy value of the objects a verb typically occurs with (Fedden et al. 2013; 2014; Fedden & Brown 2014).

While sporadic agreement in Teiwa is not transparently related to object animacy anymore, semantics remains a powerful predictor in Teiwa of whether a verb agrees with its object. In Teiwa, as in Mian, agreeing and non-agreeing verbs are essentially verb classes whose membership a verb has to be lexically specified for. Semantics is of limited use in predicting class membership.

3.5 Etymological predictors

Loanwords can be a source of sporadic agreement. This is not unexpected given that loanwords often behave differently from native words as far as their phonology and morphology are concerned. An example can be found in western varieties of Basque (Trask 2003: 137), where a number of adjectives, mostly borrowed from Spanish, exceptionally mark gender, whereas Basque normally does not have gender. Examples are given in (21):

(21) Basque

- a. *majo/maja* ‘nice’
- b. *tonto/tonta* ‘foolish’
- c. *katoliko/katolika* ‘Catholic’

These adjectives show gender agreement even though native Basque adjectives are invariable. All of these adjectives are Romance loanwords, i.e. they come from languages in which adjectives usually agree in gender. But unlike these Romance languages which rely on a combination of semantic and formal gender assignment, Basque uses these borrowed adjectives in a semantically transparent fashion, employing the feminine form for female humans and the masculine form for everything else. According to Trask (2003: 137), Bizkaian Basque has hundreds of these agreeing adjectives, whereas the eastern varieties only borrowed the masculine form of a Romance adjective, which would then be as invariable as native Basque adjectives. A similar case is the Austronesian language Chamorro (Stolz 2012), which also borrowed a gender distinction together with Spanish adjectives.

The special status of loanwords can be found in other languages of the sample as well. In §3.2 we have seen that the Italian adjective *blu* ‘blue’ not only belongs to a set of invariable items which can be defined by their phonology, but that it is also a French loan. Being a loanword can supersede the phonology. In Italian, adjectives ending in a stressed vowel or in /i/ do not agree. Consonant-

¹³ For differential object marking and relevant factors like animacy, volitionality and affectedness, see Hopper & Thompson (1980), Tsunoda (1985), Croft (1988), Bossong (1991), Aissen (2003), von Heusinger & Kaiser (2011), Fedden et al. (2013), Fedden et al. (2014), and references there.

final adjectives, such as *chic* ‘chic’ and *super* ‘super’, do not meet this phonological description. They do not agree because they are loans. Similarly, in Macedonian, vowel-final adjectives are invariable, the ones which were typically borrowed from Turkish, e.g. *taze* ‘fresh’ (Friedman 1993: 266–267), but Macedonian has a small number of consonant-final adjective loans that do not agree, e.g. *super* ‘super’, which is invariable though it does not meet the phonological structure of invariable adjectives in the language (Friedman 1993: 266–267; Corbett 2006: 81).

4 Borderline cases

The sample contains examples which *prima facie* might look like sporadic agreement but which on reflection should be excluded from it. These are cases in which phonological processes make morphological ones invisible, for example like-segment coalescence in Hausa adjectives (§4.1), optional agreement in Ngan'gityemerri (§4.2), separate word classes illustrated by English modal auxiliaries (§4.3) and word-class continua as exemplified by cardinal numerals in Russian and Italian (§4.4). In this section, I will briefly discuss each of these phenomena and provide reasons for excluding them.

4.1 Phonology obscuring morphology: Like-segment coalescence in Hausa adjectives

Sometimes phonological processes can render morphological processes invisible. In Hausa, like-segment coalescence after inflection can lead to homophony and thus give the impression of invariability. Hausa adjectives agree in gender and number. The feminine form is built by adding a suffix *-ā* to the masculine form. If the masculine form ends in a short or a long /a/, both forms are identical, e.g. *jā* ‘red (M)’ and *jā* ‘red (F)’ (Newman 2000: 23). Only looking at the singular (Hausa adjectives do agree in number), we might get the impression that the adjective *jā* ‘red’ does not agree in gender, when what actually happens is that the feminine suffix is invisible on the surface due to like-segment coalescence.

In such cases, there is no reason to say that the target does not agree. Rather, it does agree, but the morphological process is obscured by the phonology.

4.2 Optional agreement: Modifiers in Ngan'gityemerri

In contrast to canonical agreement, which is obligatory, there are cases of optional agreement (Corbett 2006: 14) and it is important to keep it apart from sporadic agreement. Optional agreement can be found in modifiers in Ngan'gityemerri, a Daly language from north Australia. Ngan'gityemerri has 15 genders. An example of the animate gender is given in (22):

- (22) Ngan'gityemerri (Reid 1997: 181)
 a-syensyerrgimi (a=)tyentyenmuy
 ANIM-white.rock.wallaby (ANIM=)tame
 'a tame white rock wallaby'

Phonological processes account for the analysis of the marker on the noun as a prefix and the marker on the agreement target as a proclitic (Reid 1997: 212–215). All of these agreement-marking proclitics on modifiers in Ngan'gityemerri are optional (Reid 1997: 168).

Optional agreement is a different phenomenon from sporadic agreement. While both are non-canonical, the former presupposes that agreement is possible, the question is whether it is obligatory, whereas for the latter we have to compare items across the lexicon, the question being whether any given item can agree at all (Corbett 2006: 17).

4.3 Different word class: Modal auxiliaries in English

Sometimes a case can be made for treating agreeing and non-agreeing items as belonging to separate word classes subject to different syntactic rules or sets of syntactic rules, rather than treating them as lexemes of the same word class that show different agreement behaviour. Contrary to English full verbs, modal verbs do not show any agreement in the third person singular present tense (cf. *John sings often vs. John must sing all night*).

Is this a case of sporadic agreement, or rather, non-agreement (agreeing verbs being much more numerous than non-agreeing (i.e. modal) verbs in English)? While it might be possible to analyze English modals as verbs which lack agreement in the third person singular present tense, it seems more promising to me to say that English modals are actually their own word class, which lacks subject agreement altogether. The reason for this lies in the fact that modals differ substantially from full verbs in their syntactic behaviour with respect to complementation, negation and question formation (among others). For all criteria and examples, see Quirk et al. (1985: 121–128). Full verbs take infinitival complements with 'to', modal auxiliaries take bare infinitives as complements; full verbs need do-support under negation, modals simply take *not* (or =*n't*); finally, full verbs require do-support in questions, while modals require inversion.

The syntactic peculiarities of English modal auxiliaries prompt me to treat them as a word class of their own rather than as an instance of sporadic non-agreement in verbs.

4.4 Word-class continua: Cardinal numerals in Russian and Italian

Corbett (1978) proposes a typological universal: if there is a syntactic difference between lower and higher numerals, the former behave like adjectives, while the latter behave like nouns. Corbett uses Russian as a particularly clear instance of this universal. The Russian numerals from 'one' to

‘four’ display adjective-like morphology and syntax to varying degrees. The numeral *odin/odna/odno* ‘one’ agrees in case and gender with the noun. It also agrees in (syntactic) number, as can be seen with pluralia tantum nouns, e.g. *odni sani* [one.PL sled(PL)] ‘one sled’ (Corbett 1978: 356). From here, numerals start to lose adjectival properties. The numeral *dva* ‘two’ agrees in gender in the nominative, but not in the oblique cases where it agrees in case. The numerals *odin* ‘one’, *dva* ‘two’, *tri* ‘three’ and *četyre* ‘four’ mark animacy of the noun (in the sense that they take the animate accusative). Numerals from *pjat’* ‘five’ onwards do not agree at all. Larger numerals – *sto* ‘hundred’ (only to a very limited extent), *tysjača* ‘thousand’, and *million* ‘million’ – start to display noun properties. They can (or must) take agreeing determiners, have their own inflectional paradigms, and/or take the noun in the genitive plural throughout. The distribution of adjective-like and noun-like properties in Russian cardinal numerals is given in Table 6, brackets indicating a limited extent, ± indicating an alternative.

Table 6. Adjectival properties of Russian cardinal numerals (from Corbett 1978: 359)

	<i>odin</i>	<i>dva</i>	<i>tri</i>	<i>pjat’</i>	<i>sto</i>	<i>tysjača</i>	<i>million</i>
	‘one’	‘two’	‘three’	‘five’	‘hundred’	‘thousand’	‘million’
1. Agrees with noun in syntactic number	+	–	–	–	–	–	–
2. Agrees in case throughout	+	–	–	–	–	–	–
3. Agrees in gender	+	(+)	–	–	–	–	–
4. Marks animacy	+	+	+	–	–	–	–
5. Does not have own plural	+	+	+	+	(–)	–	–
6. Does not take agreeing determiner	+	+	+	+	+	–	–
7. Does not take the noun in the genitive plural throughout	+	+	+	+	+	±	–

Italian also fits the universal, and its system is simpler: The numeral ‘one’ agrees in gender with the noun (*uno/una*) and numerals from *due* ‘two’ onwards are invariable.¹⁴ *Milione* ‘million’ displays noun syntax in that it takes a determiner and is followed by the preposition *di* ‘of’.

As Russian cardinal numerals from *pjat’* ‘five’ onwards and Italian cardinal numerals from *due* ‘two’ onwards do not agree, one might treat this as a case of sporadic agreement. However, here we do not have one word class which contains agreeing and non-agreeing items, but rather a word-class continuum which stretches from items which are mostly like adjectives to items which are mostly like nouns (Corbett 1978: 355). Higher numerals are less like adjectives (and more like nouns), and a symptom of this is that they lose their ability to agree.

¹⁴ Even *duecento* ‘two hundred’ is invariable in Italian, in contrast to Latin and Spanish, where it is in fact declinable (Corbett 1978: 364).

5 Frequency

Frequency of usage is often implicated in the stability of irregularities in language, for instance in the persistence of irregular verbs in the Germanic languages (Booij 2005: 240). We also have some enlightening frequency figures for Tsez. In this language only 27% of verbs and 4% of adjectives (dictionary entries) agree. Such low proportions of agreeing items raise the question how children can learn the gender of nouns and how the system can persist.

Gagliardi (2012) shows in a study of a Tsez corpus of child-directed speech that the corpus frequency of agreeing verbs and adjectives is actually much higher than a count of dictionary entries would suggest. The results of this study are set out in Table 7.

Table 7. Proportions of agreeing and non-agreeing verbs and adjectives in a Tsez corpus of child-directed speech (Gagliardi 2012: 50)

	Agreeing verbs	Agreeing adjectives
Dictionary	27%	4%
Corpus types	60%	35%
Corpus tokens	84%	77%

In the Tsez corpus agreeing types (i.e. agreeing lexemes in the corpus) are more frequent with 60% and 35% for verbs and adjectives, respectively, while corpus tokens (i.e. individual agreeing word forms in the corpus) are more frequent still, with 84% and 77% for verbs and adjectives, respectively. While the number of types showing agreement may be comparatively low in the dictionary the number of corpus types and corpus tokens is much higher as highly frequent adjectives and verbs show agreement. This frequency effect contributes to the learnability and the stability of the Tsez agreement system.

Whether what has been shown for Tsez is the case for other systems of sporadic agreement is an empirical question, but the Tsez case is a plausible scenario.

6 Conclusions

Sporadic agreement is a type of non-canonical agreement where two items belonging to the same word class in a language display different agreement behaviour: in the same syntactic context, one item shows agreement, whereas the other one does not. All situations of sporadic agreement have in common that we require additional information about a potential agreement target. Just to know its word class is not sufficient. In this sense the phenomenon of sporadic agreement (or sporadic non-agreement) can be treated as an extreme case of inflectional classes where one class marks nothing.

In this typological study I have tried to show that sporadic agreement is not random but follows recognizable patterns: phonotactic, phonological, morphological, semantic or etymological.

Phonotactic patterns account for the fact that in Tsez and Ingush agreement prefixes can only attach to vowel-initial stems. Phonological patterns in Italian define a very small subset of adjectives as invariable. The phonological patterns of ending in a stressed vowel or ending in /i/ are operational outside the word class of adjectives; they are also relevant for nouns. In Archi, the best predictor of whether a verb agrees is its morphological build, i.e. whether a verb has a single stem or five stems. In many cases the morphology and the semantics make the same prediction as to whether a verb agrees, but the former is ultimately the better predictor for Archi. Semantic factors are at work in Mian and Teiwa, if to a limited extent. In Mian, not to agree with the object is the default for transitive verbs. It is possible to pick out one verb class relatively reliably by appealing to lexical semantics. It is expected that verbs with a meaning of handling or movement take a classifier. In Teiwa, verb classes presumably have formed according to the animacy value of objects that a verb typically occurs with. Finally, we have seen in Basque that loan adjectives can be agreeing while the native members of the same word class are invariable, or the opposite situation in Macedonian, where loan adjectives do not agree, whereas native adjectives do. Four borderline cases were discussed and distinguished from sporadic agreement, phonological processes rendering morphological ones invisible (Hausa), optional agreement (Ngan'gityemerri), word class differences (English) and word-class continua (Russian).

Despite the existing phonotactic, phonological, morphological, semantic and etymological patterns in sporadic agreement there is rarely a factor which would allow us to predict in all cases whether an item agrees or not. It seems that most inflectional systems involving sporadic agreement show leaks which ultimately have to be stopped by lexical specification. But the salient nature of the underlying patterns might actually contribute to the persistence of sporadic agreement. In addition, it has been found in the Nakh-Daghestanian language Tsez that agreeing verbs and adjectives – although the minority in the dictionary – are very frequent in discourse, both in term of types and in terms of tokens, and thus are highly visible to the child learner.

Further research on sporadic agreement will have two main tasks: (i) to study a larger and more balanced sample of languages, which would enable us to be more confident about the statistical distribution of the phenomenon in the languages of the world, and (ii) to engage in corpus studies of language with sporadic agreement to either substantiate or disprove the frequency effects that have been found for Tsez, which apparently greatly contribute to the learnability and survivability of sporadic agreement.

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Abbreviations

1 - first person, 2 - second person, 3 - third person, I - gender I, II - gender II, III - gender III, IV - gender IV, ABS - absolutive, ANIM - animate, DECL - declarative, ERG - ergative, F - feminine, IPFV - imperfective, M - masculine, M_CL - M-classifier, MED - medial verb, N - neuter, N1 - neuter 1, NOM - nominative, OBJ - object, PFV - perfective, PL - plural, PN - proper name, POSS - possessive, PRS - present, PST.EVID - past evidential, SBJ - subject, SEQ - sequential, SG - singular.

Appendix

This is the list of languages in the sample, together with genealogical affiliations, ISO 396-3 and Glottolog codes and the sources which were consulted.

Language	Genealogical affiliation	ISO 396-3 code	Glottolog code	Sources
Abkhaz	Northwest Caucasian	abk	abkh1244	Hewitt 1979
Archi	Northeast Caucasian, Lezgian	aqc	arch1244	Kibrik 1977a, 1977b; Chumakina et al. 2007; Bond et al. 2016
Ingush	Northeast Caucasian, Nakh	inh	ingu1245	Nichols 1989; Bickel & Nichols 2007
Tsez	Northeast Caucasian, Tsezic	ddo	dido1241	Polinsky & Comrie 1999; Polinsky & Potsdam 2001; Polinsky 2015; Maria Polinsky p.c.

Apurinã	Arawakan, Southern Arawakan	apu	apur1254	Da Silva Facundes 2000
Barasano	Tucanoan, Eastern Tucanoan	bsn	bara1380	García & Sánchez 1975; Jones & Jones 1991
Guarani	Tupi-Guarani	gug	para1311	Guasch 1996; Valentín 2000
Hixkaryána	Carib	hix	hix1239	Derbyshire 1985
Plains Cree	Algonquian	crk	plai1258	Dahlstrom 1991
Chamorro	Austronesian, Nuclear Malayo- Polynesian	cha	cham1312	Topping 1973; Stolz 2012
Fijian	Austronesian, Oceanic	fij	fiji1243	Dixon 1988
Egyptian Arabic	Afro-Asiatic, Semitic	arz	egyp1253	Aboul-Fetouh 1969; Gairdner 1926
Hausa	Afro-Asiatic, Chadic	hau	haus1257	Newman 2000
English	Indo-European, Germanic	eng	stan1293	Quirk et al. 1985
Italian	Indo-European, Romance	ita	ital1282	Thornton, Iacobini & Burani 1997; Anna Thornton p.c.
Russian	Indo-European, Slavonic	rus	russ1263	Timberlake 1993; Corbett 1978; Alexander Krasovitsky p.c.
Finnish	Uralic, Finnic	fin	finn1318	Niemi 1945
Ngan'gityemerri	Non-Pama- Nyungan, Daly	nam	nang1295	Reid 1997
Mian	Trans New Guinea, Ok	mpt	mian1256	Fedden 2010, 2011, in press; field notes
Teiwa	Alor-Pantar	twe	teiw1235	Klamer 2010; Fedden et al. 2013
Basque	Isolate	eus	basq1248	Trask 2013
Burushaski	Isolate	bsk	buru1296	Yoshioka 2012

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