

THE ‘BILINGUALISM FACTOR’ IN LANGUAGE CHANGE: THE CONSEQUENCES OF LANGUAGE CONTACT WITHIN AND ACROSS BILINGUAL MINDS¹

By LUNA FILIPOVIĆ  AND JOHN A. HAWKINS
University of California Davis and University of Cambridge

(Submitted: 20 September, 2025; Accepted: 8 October, 2025)

ABSTRACT

Building on Uriel Weinreich’s pioneering (1953) *Languages in Contact* and on Peter Matthews’ insightful commentary on it (2006, this volume) this paper discusses the crucial role of bilingualism, and specifically different types of bilingualism, in understanding whether and how the initial changes at the level of Saussure’s *parole* can eventually become changes in grammatical conventions, Saussure’s *langue*, in one or the other language in contact. It presents important insights of both a sociolinguistic and a psycholinguistic nature that have emerged from recent studies of bilingualism, as captured in the integrative model of bilingualism Complex Adaptive System Principles (CASP) proposed by Filipović & Hawkins (2019). It argues that different types of bilingualism so defined have different consequences for language change among different pairs of languages under different conditions of use. This application of CASP to language change in historical linguistics extends and elaborates on numerous earlier case studies and accounts for them from a multifactor perspective. The present paper also highlights the important point (often neglected) that changes arising from contact and bilingualism will be further constrained by grammatical and universal principles on the one hand, and by diachronic processes on the other involving gradualness in change and ease of innovation.

1. INTRODUCTION

The role of bilingualism in language change has been a topic of keen interest for some of the most remarkable minds in the field of linguistics, including André Martinet, Antoine Meillet, William Labov and, importantly for our current focus, Peter Matthews, whose scholarly legacy is celebrated in the present volume. In his discussion of Uriel Weinreich’s pioneering 1953 publication *Languages in Contact*, Matthews (2006, this volume) provided some critical insights into the fundamental theoretical considerations that led to the original interest in bilingualism as a factor in language change and which continue to inspire both theoretical and empirical research to this day.

¹This paper is dedicated to Peter Matthews, a pillar of theoretical linguistics, a brilliant linguistic mind and a renaissance-type intellectual. He was a mentor for the first author and a colleague at Cambridge of both authors, and these connections, as well as Peter’s legacy, continue, as is evident in this paper and this volume. The authors would like to thank the two editors of this special collection, Sylvia Adamson and Nigel Vincent, who kindly extended an invitation to us to contribute as authors and who provided supportive editorial guidance.

The main structuralist distinction proposed by de Saussure (1916) between *langue* (the abstract system) and *parole* (specific instantiations of the system in use) features prominently in Weinreich's study as well as in Matthews' revisiting of it. Matthews addresses the relevance of the *langue/parole* distinction for the question of how a linguistic theory captures language contact and change. He observes that any account of how change comes about as a result of contact must involve explanations that refer both to the abstract system (*langue*) as well as to concrete use(s) of the system by individuals in different communicative situations (*parole*). He argues that the influence of one language on another through contact can be explained by positing two 'logically successive stages', namely with *parole* being affected in the first instance (these initial contact-induced changes were termed 'interferences' by Weinreich), followed by the next step, changes to the *langue*. This second phase may occur only if circumstances allow it, when interferences at the level of *parole* settle into the new 'norms' of the *langue*. This two-step process covers numerous instances of bilingual contact, in heritage and immigrant speaker communities and also in second language acquisition (all of which we discuss in more detail and exemplify in section 2 below). However, language contact in bilingualism is far from being straightforwardly uniform or monochromatic, as Matthews himself observed. Rather, it reflects a palette of many possible outcomes in the process of the contact depending on multiple factors that are operative at the same time, namely typological similarities and differences between the two languages, psycholinguistic factors (such as proficiency or age of acquisition) and sociolinguistic factors (such as prestige or speaker numbers in a community). All of these factors need to be taken into account when modelling bilingualism and also when trying to explain both the general mechanisms and the specific reasons behind different types of bilingualism-induced language change (see section 3, also Filipović & Hawkins 2019 and Hawkins & Filipović 2024, 2025, for further details on our recent multifactor model, *CASP for Bilingualism*, in relation to both synchronic and diachronic patterns in usage and change).

Interesting theoretical questions emerge immediately about the two stages of change. For example, do the habitual interferences resulting from contact between two languages within individual speakers and speaker communities (i.e. *parole(s)*) become part of a 'new state of an existing system (*langue*)' or could they be considered as belonging to 'a new *langue*, of the immigrant community specifically', as Matthews asked? And at what point exactly do we say that the language has changed, that is when do the different *parole* variants become different *langue* systems?

We address these issues in sections 2 and 3, not least because they challenge some established views, such as the very integrity of the systems (*langues*), which for some structuralists (e.g. Meillet, as mentioned by Matthews) were supposedly 'impenetrable to each other'. Weinreich knew that this was not so – bilinguals can indeed 'not only change the use of individual forms but also develop a full new paradigm of obligatory categories on the model of another language' (Weinreich 1953: 40–41). As Hickey (2010: 7) notes, Weinreich 'saw the true locus of contact-induced change in the bilingual individual who moves between two systems' and 'if one puts aside cases of 'cultural' borrowings, e.g. from Latin or Greek into later European languages or from English into other modern languages, then it is probably true that borrowing of 'system' material – inflections, grammatical forms, sentence structures – *can only occur via bilinguals*' [our emphasis].

This full process of change, as Matthews (2006, this volume) points out, may in fact consist of three rather than two phases, namely (a) individual acts of speech, (b) 'habitualised' speech patterns in a community and (c) change in norms (i.e. the system itself). Weinreich himself (1953: 83) was acutely aware of the factors that were necessary for the changes due to contact within and across bilingual minds to be brought to the final phase, change in the

system. Namely, when a speech community brings two languages into contact, idiosyncrasies in linguistic behaviour cancel each other out and socially determined speech characteristics of the group as a whole become established. In practice, this means that strength in numbers is necessary for the change to happen and to persist on the pathway from *individual parole* to the *collective parole* to the *systemic langue*. Thus, while individual idiosyncrasies may be varied (and persist at the individual level), it is group adoption and consistency in the spread and frequency of use for the items involved that are of fundamental importance for systemic change.

These structuralist preoccupations with the mechanisms and processes of change arising from bilingual contact, finely dissected by Matthews (2006), are still very much present in today’s theoretical and empirical work that aims to assess the role of bilingualism in language change. Of course, as Matthews also observed, not all change is driven by bilingualism (see also Filipović 2019; Hickey 2010 for further discussion). For example, the history of Greek head-initial syntax appears to be a functionally and universally constrained development that is independent of any predisposing source or of contact and bilingualism (see Hawkins & Filipović 2025 building on Seržant & Rafiyenko 2021). Nonetheless, quite a lot of documented language change does seem to be, as Heine & Kuteva (2005) put it, either fully driven or at least triggered by bilingual usage stemming from contact.

As we honour the legacy of Peter Matthews and his writing on contact and change, we shall address this general topic here in relation to recent theoretical and empirical research on bilingualism and its role in language change. We first introduce the general cognitive and social factors that motivate bilingualism-induced language change (section 2), before looking at various examples of interacting typological, psycholinguistic and sociolinguistic factors that determine the specific shape that a particular change will assume (section 3). Then we focus on some universal and diachronic laws and patterns that constrain these changes coming from bilingualism and contact, namely in their sequencing and in terms of gradualness and ease of innovation (section 4). In section 5, we conclude our discussion with an invitation for further research into how different types of contact resulting from different bilingual populations have led to different types of language change.

Even though Weinreich’s (1953) pioneering work made the relevance of bilingualism for language change obvious a while ago, its significance has still not made it into mainstream research in historical linguistics. This is an important point about the current state of the art that needs to be emphasised. In fact, the field of historical linguistics has rarely acknowledged the crucial role that bilingualism plays in language change. Bilingualism is mentioned only twice in around 500 pages of one of the most widely used textbooks on historical linguistics (Campbell 2021). Even in discussions of language contact, the role of bilingualism has also been labelled as ‘minor’ in comparison to certain ‘language internal’ motivations that appear to cause change (e.g. Rosenberg 2005). As noted above, we do need to acknowledge that not all change is due to bilingualism, but a substantial number of changes are brought about by bilinguals through their learning and use of both languages. In other words, bilingualism is a major cause of language change (see Heine & Kuteva 2005; Trudgill 2011; Chamoreau & Légise 2012; Muysken 2013 for an abundance of examples). This trend of ‘bilingualism neglect’ is finally beginning to change, as evidenced by recent special issues of journals (*Linguistic Vanguard* 10 (2) in 2024) and edited volumes (e.g. De Smet et al. 2025). The present paper should also be seen in this light, as a contribution towards a shift in focus that brings bilingual speakers to the forefront of research on language contact and language change.

2. FROM *PAROLE* VIA *PAROLES* TO *LANGUE(S)*: THE *HOW* AND *WHY* OF BILINGUALISM-DRIVEN LANGUAGE CHANGE

2.1. *Language change within a bilingual mind: Cognitive factors*

2.1.1. *Processing efficiency in bilingual language usage*

We begin by tackling the question of *why*, namely why two languages in contact in a single bilingual mind, or across multiple bilingual minds in bilingual societies, should give rise to substantial changes in grammar and usage for one or both of the linguistic systems involved. We have known for a long time from many psycholinguistic experimental investigations that bilinguals have both their languages activated (albeit to different degrees) at all times (Grosjean 1992, 2001; Costa et al. 1999; Schwartz & Kroll 2006; Kroll & Bialystock 2013; Fernandez et al. 2017). In other words, it is impossible to completely switch off one language while using the other. Bilingual conceptual storage and bilingual representations are shared, and accessing them via one language activates the related meanings and structures in the other language, especially if these meanings and structures are overlapping (Hartsuiker et al. 2004), and on some occasions even when the two linguistic systems have very different structural configurations (see e.g. Shin & Christianson 2009 on cross-linguistic structural priming independently of argument order in canonical Korean postpositional and English prepositional dative structures). We believe that the major driving force behind this type of activation, which enables ‘penetration’ (to use Meillet’s term) of one language into the other, is that of *efficiency* and that the desire to maximise efficiency pervades these linguistic behaviours while interacting with other factors, such as, for instance, complexity, accuracy and proficiency. Hawkins (2004, 2009, 2014) originally developed a theory of efficiency in language processing as an explanation for cross-linguistic patterns in both language usage and grammatical conventions, where efficiency is understood as a measure of how quickly and with how little processing effort and propensity for error the message is delivered to and understood by the hearer. Optimal efficiency can be achieved in different ways, sometimes by using simple forms and on other occasions by using complex forms, as required for the hearer’s comprehension. This kind of efficiency-driven usage-based model of language processing involves considerable hearer sensitivity on the part of the speaker, in accordance with insights about cooperation in conversation that have been formulated by Grice (1957) and developed further in neo-Gricean and post-Gricean theories (Sperber & Wilson 1995; Levinson 2000).

Why should it be efficient to access information that may not be relevant in a specific moment of a communicative exchange (which happens in monolingual situations as well as bilingual)? We know from psycholinguistic and neurolinguistic research that multiple activations occur in the brain when we are processing language, even in areas that are not directly related or relevant for the linguistic processing itself. For example, Pulvermüller et al. (2005) have shown that a functional link is detected in action (motor cortex) and language systems during lexical processing. This activation is not necessary for language processing *per se*, yet it does happen. Experimental psycholinguistic research has also shown that content redundancy increases learning outcomes and decreases cognitive load (Albers et al. 2023). Apparently, activation of redundant information is one of the essential features of how the brain (and other search engines) work. Namely, information that may be related or has been known in the past to be related to our current search may be activated automatically even though we may not require it at the very moment of communication. Redundant activation ultimately makes information processing more efficient because we have the information available *in case we need it*. This is why bilinguals can switch languages at a drop of a hat if they are proficient enough in both, and why the use of one language primes the

other, that is it activates meaning and structures that are not necessary for a concrete act of communication but are there and ready almost instantly if needed (Kroll & Bialystock 2013).

In other words, the meanings, structures and usage patterns from one language also ‘inspire’ the use (or creation, if they do not exist) of the same or similar features in the other language. Bilinguals accordingly activate the shared meanings and forms in both their languages, regardless of which one they are currently using, and this is why they may produce outputs that are more characteristic of one language than of the other (see Nicol et al. 2001; Filipović 2011, 2014, 2019). Using shared representations that come from reducing two linguistic systems to one whenever possible is the most efficient option, and we shall see in section 3 that all bilinguals do it though in different ways due to multiple factors that modulate the outputs. Being ‘*multi-language-ready*’ (Filipović 2014, 2019: 69), that is prepared to communicate in either language at any point and maximising the shared processing mechanisms across two languages, is the essence of *bilingual processing efficiency* (Filipović 2019), unique to bilinguals, and it represents the key difference between bilingual and monolingual language processing and linguistic behaviour. It also represents the crucial underlying cognitive motivation for bilinguals to make changes to their *parole(s)*, and if social circumstances are conducive to it, also to the *langue* within the community (see section 3 for an elaboration on this point).

2.1.2. *Tolerance for ungrammaticality in bilingual language usage*

Another interesting feature seems to characterise bilingual language processing, namely that of the apparent tolerance for ungrammaticality, which is more pronounced in bilingual than monolingual speaker populations. This was illustrated in a study by Mack (1986), whereby French-English bilinguals classified grammatically incorrect English sentences that followed a French word order pattern as correct more often than did English monolinguals. It seems that bilingualism in French and English has led to more flexibility in decision-making about grammaticality. This tolerance seems to be affected by proficiency and is more pronounced in high than in low proficiency cases. Fernandez et al. (2017) found that highly proficient Portuguese learners of English accept structures that are ungrammatical in their L1 (Portuguese) but that are grammatical in their L2 (English), while bilinguals with low L2 English proficiency find the English structures unacceptable in Portuguese, just like Portuguese monolinguals do. The bilingual tolerance for ungrammaticality, in addition to the tolerance for a breach in usage convention frequencies, is not surprising. The acceptance of fully unlicensed patterns in one language because they are licensed in the other is just an extreme point on a scale that leads to meaning innovations, whereby previously unacceptable patterns become the new norm (the case in point being changes in basic word order under language contact and bilingualism, from SVO to SOV and vice versa; see Ross 1996, 2007; Gast 2007). The tolerance for ungrammaticality has also been observed in heritage language speakers, see for example Kupisch et al. (2014) and Polinsky (2018).

2.1.3. *Intolerance for ambiguity in bilingual language usage*

When it comes to ambiguity and vagueness, we see that bilinguals are less tolerant than monolinguals in this respect (Benmamoun et al. 2013a, 2013b; Polinsky 2016), and this feature of bilingual language processing and use can also lead to change. Having ambiguity in a language is actually efficient in certain ways for the speaker and can be tolerable for the hearer as long as it can be resolved contextually. Ambiguity means having fewer distinct forms to store and access, mapping them onto the same range of meanings that can be conveyed by many more forms in other languages. This results in speaker and hearer negotiating minimal

and less explicit forms and resolving their ambiguities and vagueness in communication (see Hawkins 2004: 38–49 for a thorough discussion; see also Hawkins 1986, 2019 for more details). However, ambiguity is not good for learners who prefer a more one-to-one form-to-meaning mapping. Polinsky (2016) showed that heritage bilingual speakers communicate more effectively without ambiguity and tend to reanalyse certain ambiguous structures. And we have numerous examples from different types of bilingual speakers who show consistent disambiguation in a language that does not require it, influenced by the other language they speak that insists on it. See for example, Kupisch (2012) for the disambiguation of specific and generic subjects in the Italian of German-Italian bilinguals and L2 learners on the basis of definite articles and bare nominals, respectively.

A further example comes from native speakers of Slavic languages who speak English as a second or additional language and who make explicit distinctions in verbal aspect in their L2 English that are not required in that language. The English simple past tense is ambiguous with regard to the perfective/imperfective distinctions that characterise the verbal system of, for example Serbian. For instance, if one says *I cleaned the house*, it can be used in contexts where an imperfective verb form would be appropriate in Serbian: *I cleaned the house a bit* [Čistila-IPFV sam kuću malo], and in another context, the right equivalent would be the perfective, which is signalled by the use of the prefixed perfective verb form as in: *I cleaned the house completely* [Počistila-PFV sam kuću]. L1 Serbian/L2 English bilinguals (and speakers of other Slavic languages) tend to use the L2 English past tense predominantly only in the perfective sense, and they tend to ensure the clarity of this meaning choice by adding a particle as well, as in ‘I cleaned *up* the house’ (see Filipović 2019 for detailed discussion and further exemplification).

By the same token, in another domain, causation, bilingual L1 Spanish speakers with English as their L2 tend to say explicitly in English whether an event they are describing happened on purpose or not because Spanish draws explicit intentionality distinctions via the use of different verbs and constructions while in English this information is regularly left unspecified and ambiguous. For example, while English speakers describe both intentional and non-intentional actions in a similar way, for example by saying *He dropped the bag in the park* [on purpose or not?], Spanish speakers and balanced, proficient bilinguals (as well as unbalanced ones with Spanish as the stronger language) consistently draw explicit distinctions, in both English and Spanish. They disambiguate intentional from non-intentional meanings in Spanish, for example by saying *Tiró el bolso en el parque* [He threw the bag in the park] to describe an intentional event and *Se le cayó el bolso en el parque* [It happened to him that the bag fell] for non-intentional events. In English, these bilinguals regularly add adverbials (such as *on purpose* vs. *by accident*) in order to ensure that this distinction is drawn as well even though English does not require it (Filipović 2018, 2019, 2020). Such bilingual practices result in changes to individual and perhaps also group language usage in English, and under the right kind of social conditions (see section 2.2), this can then lead to more firmly established changes at the level of the system, either in the direction of a loss of this distinction in Spanish (if English monolingual speakers outnumber the bilingual L1 Spanish/L2 English speakers) or in the direction of a gain in English (if the L1 Spanish/L2 English or balanced bilingual speakers outnumber the English monolinguals; see section 3 for more details).

2.2. Language change across bilingual minds: Social factors

We turn now to the social factors that convert cognitively motivated changes in the individual *paroles* of bilingual speakers into *collective changes in parole* and eventually into innovations at the level of *langue*. These involve primarily numbers of speakers in the dominant and less dominant languages, but also social cohesion and prestige. Sociolinguistic studies of

bilingualism provide evidence for the importance of these three factors in the environments in which bilinguals live and interact and for their impact on the kinds of language changes that have been observed.

2.2.1. *Speaker numbers and social cohesion*

One example of attested language change due to specific community features is that of Pennsylvania German. It has adopted the progressive (‘be doing’) aspect construction from English (Heine & Kuteva 2005: 65), which is not found in the Standard German spoken in Germany where such constructions exist but are extremely marginal (‘am Arbeiten sein’ = ‘be at working’; Heine & Kuteva 2005: 129). This example is directly connected to the discussion in Matthews (2006) in relation to the status of a linguistic system that has undergone change. This is a case of a large number of individuals in a community where one language (German) is spoken in ways that are similar under the influence of another (English) because all of the speakers ‘individually, are in a similar situation’ and certain features of their speech ‘become habitualised’, and transmitted as such to the new generation that does not have access to the original German brought to Pennsylvania but only to the altered, habitualised variant influenced by English. Matthews (2006) questions the status that such a form of speech has and refers to Weinreich, who points out that these forms of speech may ‘crystallise’ as a ‘new language’. The prime examples of this would be ‘hybrid languages, such as creoles and pidgins’ (Weinreich 1953: 69). In the case of Pennsylvania German, the whole system did not change to such a drastic level holistically, so it is more of a dialect-type variant of the system that is still German, but a systemic change has nonetheless happened to the *langue* – it contains a new feature that is part of the Pennsylvania German grammar both within and across the minds of the speakers of this variant, in usage and in native acquisition. This change was made possible both by a large enough population size in the Pennsylvania German community and by the social cohesion of their speakers being united due to their shared heritage of German migration to Pennsylvania. Plus, in this case, it was the numerically and socially dominant surrounding language, English, with which the Pennsylvania Germans were in bilingual contact and from which this change originated.

2.2.2. *Language dominance and prestige*

Societal dominance (in terms of power or number of speakers) can interact with prestige (determined by speakers’ socio-economic status and the potential for prosperity in society) in interesting ways to determine whether features are borrowed from one language into another. Consider the category of evidentiality, which was borrowed from the socially and politically dominant Turkish into Bulgarian during the period of Ottoman rule, but interestingly not into Greek during the same period, for reasons having to do ultimately with the prestige of this latter language within the Ottoman empire (as discussed in Filipović 2019, Chapter 2).

By contrast, a less prestigious language can even become the source of material that is incorporated into a more prestigious, albeit less socially dominant one in terms of numbers of speakers. Examples to this effect are Quechua and Tariana, indigenous languages of the Andes and Northwest Amazonia, respectively, in bilingual contact with Spanish and Portuguese, the languages of their respective colonisers. A new category of evidentiality was introduced into local varieties of Spanish and Portuguese as a result of these bilingual interactions (Aikhenvald 2002). Hence, a socially subjugated population can introduce a grammatical feature into the language of a socially dominant group if strength in numbers lies with the former and not with the latter (i.e. if the speakers of the socially non-dominant

language outnumber the speakers of the socially dominant language in the community, as is the case with these Quechua and Tariana speaker communities). This is a not infrequent development in many former colonies.

Hickey (2010: 10) reminds us that when looking at elements of the grammatical system like this, one must bear in mind an essential distinction, namely that between a grammatical category and the exponence of this category. A language can adopt a grammatical category from another language but *not the manner of expressing* it in the source language, as was the case with evidentiality in Quechua Spanish:

- (1) a. Hoy día llegó su mamá de él.
 today arrive.PST.3SG his mother of him
 ‘Today his mother arrived (and I saw her arrive).’
- b. Hoy día había llegado su mamá de él.
 today have.PST.3SG arrive.PPT his mother of him
 ‘Today his mother arrived (but I didn’t see her arrive).’

Similarly, Hickey (2010: 11) cites the following example from Irish English:

- (2) a. Bíonn sí ag déanamh inní faoi na leanaí.
 be.HABIT.3SG she at do.NMLZ worry about the children
- b. She does be worrying about the children. (vernacular Irish English)

What we observe here is that the category of evidentiality in Quechua and of habitual aspect in Irish Gaelic is being transferred into Quechua Spanish and Irish English, respectively, but the actual *exponence* is different from that in the original source. This is a frequent mechanism of change, whereby a morphological category from the source language becomes grammaticalised in the receiving language in a new constructional form because assigning a new meaning to an existing construction and thereby creating a new construction is easier than changing the morphological system or introducing new morphology. Thomason & Kaufman (1988) refer to this process as ‘interference through shift’ (see further section 4; also MacWhinney 2005; Hawkins & Filipović 2024).

Understanding the nature of the contact between populations who speak different languages cannot be complete without an understanding and discussion of their social interactions. Hickey (2010: 9) rightfully points out that ‘if centuries lie between the period of contact and the present it may be difficult to reconstruct the social circumstances of the contact’ but then he adds that the nature of the contact can nevertheless ‘often be gleaned from the results it engendered’. This can be seen clearly in the history of English and in the strikingly different lexical borrowings during the Middle English period from the ruling Norman French, on the one hand, and from the Norse and Anglo-Saxon co-inhabitants of the Danelaw in the Old English period and their continued interactions into Middle English, on the other (see Pyles & Algeo 1993; Trudgill 2011; Emonds & Faarlund 2014). The Norman French words that became conventionalised in the English lexicon are the administrative, legal, military and social rank terms characteristic of a social and political elite. The Norse borrowings are everyday words like *egg*, *bread*, *skirt* and *husband* indicative of lexical exchanges between groups that are more socially equal. Recent research such as that by Trudgill (2011) and Emonds & Faarlund (2014) has also shown that the effects of Norse-English bilingualism on the morphology and syntax of English and on the abandonment of many features of Anglo-Saxon were far more profound than traditional scholarship has recognised. The written records of Middle English reveal a grammar that is distinctly non-West Germanic in many respects, and it shows striking parallels with North Germanic languages in its grammatical formatives and in many syntactic rules (though

arguably not sufficient that we need to say, with Emonds & Faarlund 2014 that Middle English is actually descended from Old Norse, as opposed to being a bilingually induced blend of the two languages in the Danelaw). We return to aspects of this interaction between English and Norse in section 3.

2.2.3. *Speaker numbers and language change*

It is important to emphasise the role that the size of a bilingual population has in bringing about language change at the level of the system, some aspects of which we have already mentioned in our previous examples. Let us return to our basic thesis (defended here and in more detail in Hawkins & Filipović 2024, 2025) that there are truly multiple outcomes that are possible in principle in bilingualism-induced language change. For example, even bilinguals with unbalanced command of their two languages (see section 3) can bring about regular changes in their second (weaker) language, and these may eventually be conventionalised depending on social demographics. So Filipović (2020) has shown that unbalanced second language learners of English with Spanish as their native language regularly add information about intentionality (or the lack of it) when they talk about causation (see section 2.1.3 above). We can say that this change is at the level of *parole*, and in order to get an upgrade to the level of *langue*, there needs to be strength in numbers, that is these L1 Spanish/L2 English bilinguals would need to outnumber the local population of monolingual English speakers in England – which is currently not a viable or realistic option, but in principle, this would be a pathway for introducing a change into the second language English. When the strength in numbers was there, as in the case of Quechua Spanish speakers, the grammaticalisation of a new syntactic feature in the non-native/second/weaker language, Spanish, was fully achieved, resulting in Quechua Spanish having an additional grammaticalised category, evidentiality, that does not exist in the mainland Spanish of Spain.

We can see the mechanisms of borrowing and change at work in these examples of a socially dominant language (see Silva-Corvalán & Treffers-Daller 2016 for a useful discussion of ‘language dominance’) acquiring features of the dominated and less prestigious, albeit numerically stronger, language when we consider what has been reported by language learners visiting a country full of monolingual speakers of the language they are learning. The effects of such residential interactions with monolinguals can affect the use of the stronger, first language. Slobin (2016 & personal communication) reports that upon his return to the US from Turkey he found it difficult, when speaking English, not to express the evidential meanings that are obligatory in Turkish. Saying something like ‘The market will crash’ was not enough for him. He would have to preface it with information about the source of the evidence being reported, as in, for example ‘It has been said that/it seems that the market will crash’. Obviously, the strength in numbers, prestige and social cohesion were not there in this case for this to have any long-term effect and to bring about change in American English – it was only Slobin’s idiolect that was affected, and perhaps only temporarily due to the recency effect (Slobin op. cit.). The important point here is that these kinds of changes happen automatically within bilingual minds, but they need a society of similar others, interacting with one another, together with the right social demographics and social relations, for any such changes to be taken further. The exact direction in which a change will go depends on the social factors illustrated in this section, but also on the additional typological and psycholinguistic factors to be summarised in the next section (section 3), all of which are constrained by the universal and diachronic laws of change which we refer to briefly in section 4.

3. INTERACTIONS OF TYPOLOGICAL, PSYCHOLINGUISTIC AND SOCIOLINGUISTIC FACTORS IN BILINGUALISM-INDUCED LANGUAGE CHANGE

We have stressed that when bilingual speakers interact either with other bilinguals or with monolinguals, there are different possible linguistic outputs. They can all use a single common language, or both their languages can be employed in a single interaction, for example, asking questions in one and answering in another, or the two languages can be mixed within a single utterance when one bilingual converses with another who shares both languages. This multiplicity of options is directly responsible for the many directions that language change can take. Can we theoretically capture and somehow constrain this diversity in the outcomes of bilingual interactions, as a function of the typologically different language combinations spoken in geographically different locations, with different acquisition histories for the bilinguals concerned and their habits of social interaction as summarised in the last section?

3.1. *The CASP model*

To this end, we introduce here, briefly, an integrated typological, psycholinguistic and sociolinguistic model of bilingualism developed in Filipović & Hawkins (2013, 2019), referred to as ‘CASP (short for *Complex Adaptive System Principles*) for Bilingualism’ which attempts to do this and which has been applied to considerations of language change in Hawkins & Filipović (2024, 2025). This model is built on general principles of communicative and processing efficiency, as advocated in recent psycholinguistic models (e.g. Gibson et al. 2019) and in linguistic models of efficiency in grammars (Hawkins 2004, 2009, 2014). CASP has five core principles: *Minimise Learning Effort* (‘master shared properties between the two languages first’), *Minimise Processing Effort* (‘make use of simple properties rather than complex ones whenever possible’), *Maximise Expressive Power* (‘master complex properties when this is needed in order to express all meanings in both languages’), *Maximise Efficiency in Communication* (‘use complex properties only when simple ones are not enough for the purpose’), and *Maximise Common Ground* (‘use the same outputs in both languages, if available, or create them if not available’). The first four capture any kind of language learning and processing, monolingual and bilingual, while the final principle, Maximise Common Ground, is bilingual-specific.

These principles sometimes collaborate and sometimes compete depending on both psycholinguistic and sociolinguistic factors in relation to the languages involved (Filipović 2019; Filipović & Hawkins 2019). The psycholinguistic factors are the ones that determine the specific profiles of the bilingual speakers (such as age of acquisition, proficiency level and whether one language is more dominant than the other). The sociolinguistic factors include specific features of the concrete communicative situations that bilinguals find themselves in (e.g. single or dual language use when talking to other bilinguals or one or more monolinguals in each language; or formal vs. informal mode; see Filipović 2019: 56–60 for details and examples), in addition to the general characteristics of whole groups of bilinguals, such as numerical dominance and prestige, etc., as discussed in the last section. These psycholinguistic and sociolinguistic factors, together with the specific typological factors in a given two-language combination, will affect the final outcomes of bilingual language contact within and across minds.

3.2. *Balanced and unbalanced bilingualism*

A psycholinguistic factor that is increasingly being shown in the literature to be vital for understanding and predicting different types of historical changes, in addition to the social factors we have exemplified so far, involves whether the level of language command among bilinguals is more or less balanced, that is one language more like an L2 or is there more balance and both languages are like an L1? Balanced, competent bilinguals tend to maximise their expressive power and express the same meanings as well as draw the same meaning distinctions (e.g. whether something that happened was intentional or not; section 2) in both their languages (see Filipović 2019). Balanced bilingualism also means that social circumstances are conducive to its maintenance – these bilinguals use both their languages equally or nearly equally and communicate regularly both with monolinguals and other bilinguals in their social environment and across different contexts (formal and informal). If the bilingual interactions outnumber the monolingual ones in a society, we can expect more contact effects (i.e. more spreading of a feature into monolingual usage as well) and vice versa – if the monolinguals outnumber the bilinguals, the changes will persist only in the bilingual *parole* of the official language (as we saw in section 2 in the example of L1 Spanish/L2 English speakers in England).

Trudgill (2011) has argued that unbalanced bilingualism, whereby one of the bilingual’s languages is an L2 and where the L2 speakers are numerous enough in relation to monolinguals to have an impact on the ambient language, is strongly associated with language changes involving L2-like errors and simplifications. For example, he attributes the many simplifications in the inflectional morphology of mainland Scandinavian compared to Old Norse and Modern Icelandic to the presence of large numbers of Low German speakers in Scandinavia north of the Baltic during the extended period of the Hanseatic League. A similar argument has been made by Lupyan & Dale (2010) and by Bentz & Winter (2013) for many more languages showing, for example, that loss of case marking occurs when there are many bilingual speakers present in the relevant speech community who have L2-like command of the relevant language. Kauhanen (2022) puts forward an intriguing proposal for quantifying how many L2 speakers are needed in order to bring about such inflectional simplifications (with particular reference to Afrikaans compared to Dutch).

By contrast, Trudgill proposes that simultaneous early acquisition of two languages is more likely to result in features being added from one language to another, that is in greater complexity, rather than in the simplification of the language in question. Simplification in a bilingual contact situation is the result of language learning by adults and shorter-term contact, while complexification occurs in long-term territorial contact situations that involve more tightly knit social cohesion plus child bilingualism (Trudgill 2011: 34). Interestingly, the history of English shows both simplifications and complexifications in the consequences of Norse-English bilingualism, suggesting that the interactions between Anglo-Saxons and Norse speakers involved unbalanced bilingualism initially leading to the morphological simplifications, followed by the more balanced bilingualism that could result in the large-scale exchange of grammatical formatives and syntactic rules (such as preposition stranding and subject raising) documented at length in Emonds & Faarlund (2014). There are parallel examples of both complexification and simplification in Arabic. There was simplification in Nubi Arabic, spoken as a second language in southern Sudan and northern Uganda (Trudgill 2011: 44), while in different places, Cyprus and Afghanistan, Arabic was complexified as a result of its closer social connections, namely with Cypriot Greek in the case of Kormataki Cypriot Arabic (Borg 1985) and with Uzbek and Tajik in the case of Afghan Arabic (Ingham 1994).

3.3. Typological contrasts in CASP

Let us return to the linguistic category of evidentiality discussed above and examine in more detail how it is manifested in Turkish–English bilingualism in order to illustrate the choices that are made in specific instances of language use and change and show how CASP would account for those different outcomes. As mentioned earlier, evidentiality refers to the identification of the source of one’s information in linguistic descriptions. It is an obligatory grammatical category marked on the verb in languages like Turkish (Arslan et al. 2015):

- (3) a. Adam elmayı yedi.
 man apple.ACC eat.DIRECT EVIDENTIAL
 ‘The man ate the apple.’ [witnessed]
- b. Adam elmayı yemiş.
 man apple.ACC eat.INDIRECT EVIDENTIAL
 ‘The man ate the apple.’ [reported or
 inferred]

The grammar of English does not draw this distinction – the source of one’s evidence (direct vs. indirect) is not habitually given in English, but there are somewhat similar meanings involving speakers distancing themselves from their statements that appear to be understood in a similar way (e.g. *It seems that he has eaten the apple*). Such phrases in English are perceived as meaning equivalents by Turkish–English bilinguals (Slobin 2016; Tosun & Filipović 2022, 2024, 2025), though the distancing in English that is achieved through this expression could ultimately be due to other pragmatic reasons (e.g. politeness or a face-saving act) rather than to any indication of indirect evidence as such. This influence of English (and of other languages without grammaticalised evidentials) on the meaning and use of Turkish evidentials, as well as the reverse influence from Turkish onto English usage among bilinguals has been amply documented. Arslan et al. (2015) report on a simplification of the Turkish evidentiality system in Turkish heritage grammars among the bilinguals in their study (who do not reside in Turkey and who by default have Turkish as the weaker language). The direct evidential morpheme *-di* has become the default past tense marker in heritage Turkish, without reference to any specific evidential content. By the same token, there has been an alteration in the meaning of the indirect evidential morpheme *-miş* which has been ‘bleached’ of its strict reference to an indirect/less certain/third-party information source and is increasingly understood as being equivalent to distancing for politeness purposes in heritage Turkish–English bilinguals in the USA and the UK (see a report on similar trends in Japanese-English bilingualism in Filipović et al. 2023). In long-term language contact, evidentiality can also completely disappear. A small Turkic population (a Turkish dialect in the Trabzon area on the eastern Black Sea) surrounded by non-Turkic speakers has lost the evidentiality system from its grammar altogether (Johanson 2003).

We thus have ample evidence from both language acquisition and historical linguistics illustrating the different ways in which bilingual speakers bring about change in accordance with the Maximise Common Ground principle of CASP, either through the loss of the original evidentiality distinctions due to the social dominance of another, non-evidential, language in the living or working environment (in the case of heritage acquisition or immigrant language use in English-speaking countries) or by gaining evidentiality distinctions through language change due to bilingual contact with a socially dominant language even when that language has a smaller population size (as was the case with Quechua Spanish and Tariana Portuguese; section 2).

CASP for Bilingualism helps us explain these processes that lead to variable outcomes. Maximise Common Ground will result in the expression of evidential meanings in both

languages by balanced bilinguals, significantly more so in situations when both languages are highly/near equally active in a communicative situation and reinforced with balanced daily frequencies of use. This may be seen as going against monolingual communicative efficiency because excessive information about the source is not required in English and results in syntactically longer and semantically richer expressions. Maximise Common Ground trumps the pressures in favour of language-specific communicative efficiency and minimised processing effort in English since, we would argue, it is more efficient overall to use the same pattern in both languages than to constantly keep switching between two different ones. If the proficiency is unbalanced and the language without evidentials is the stronger one in a bilingual, then the evidential system can be reduced and possibly gradually disappear (as we see in immigrant communities of heritage Turkish around the world such as Trabzon Turkish) (see Tosun & Filipović 2022, 2024, 2025, for a detailed account of both heritage and migrant bilingual Turkish–English populations; see also Johanson 2003).

Concrete social circumstances in a specific instance of interaction will also determine the extent to which evidentiality will be explicitly expressed. For example, in bilingual interactions within a single communicative situation (e.g. chatting at a dinner table simultaneously in Turkish and English) we can expect more maximising of common ground and more frequent use of evidentiality expressions in both languages. In interactions with English monolinguals, we can expect fewer instances of common ground by bilinguals if they are equally proficient in both languages (because they can exercise strong, monolingual-like control), but more if they have Turkish as their stronger language and habitually use Turkish more often.

3.4. *Typological distance in CASP*

It is important now to consider how the typological distance between two languages impacts change, in combination with the psycholinguistic and sociolinguistic variables that characterise different types of bilingualism. Extreme typological distance can lead to a suppression of maximising common ground. For example, Hawkins & Filipović (2012) found that head-final word orders from Japanese do not transfer into L2 English even at early stages of second language acquisition. Hickey (2010: 12) appeals to (an unverifiable and untestable) parameter resetting in cases of typological contrast between the two languages of a bilingual as the motivation for a lack of transfer in such cases. But there is a much simpler communication explanation that can possibly account for these (and many other) non-changes. As Filipović & Hawkins (2013, 2019) argue, transfers that would lead to a complete communication breakdown are extremely inefficient and rarely attested in bilingual and learning data. Imagine that you were to transfer a Japanese (rigid OV) word order into (VO) English and say something like ‘**I yesterday cinema to went*’ to a monolingual native English speaker – he or she would abandon both you and the conversation pretty rapidly after a few utterances of this kind. For a similar reason, SVO patterns are not transferred among L1 English learners into L2 Japanese (Rutherford 1983). In these cases, the CASP principle of Maximise Efficiency in Communication (see section 3.1 above) blocks Maximise Common Ground.

By contrast, word order errors in L2 English by Spanish L1 learners (e.g. *I read yesterday the book*), that is between two typologically similar languages with generally similar word order patterns, are well attested in the Cambridge Learner Corpus (Hawkins & Filipović 2012) in the areas of small divergence between these two otherwise close (head-initial) languages (see Hawkins 2004, 2014 for the typology and processing of head ordering in word order). Having a single, shared word order is indeed efficient in general— this is why

such word order changes (from head-initial to head-final and vice versa) have happened throughout history (see Hawkins & Filipović 2024, 2025, for a summary). But the social circumstances that led to such drastic mirror-image changes in the system over the long term (e.g. from head-initial to head-final syntax among Austronesian languages of coastal New Guinea, see Ross 1996, 2007) must have been such as to justify this extreme departure from earlier norms, including social dominance, close physical proximity and strength in population numbers as discussed above. These social circumstances were not in place for the learners of L2 English with L1 Japanese (as seen in the Cambridge Learner Corpus, Hawkins & Filipović 2012), nor have they been observed, as we mentioned, in the reverse L2 learning of Japanese by L1 English speakers (Rutherford 1983).

We can now see that the general cognitive and social prerequisites that were considered in sections 2.1 and 2.2, along with the more specific typological, psycholinguistic and sociolinguistic factors that we have considered in this section, can be drawn on in order to describe and explain where changes occur and why they follow the direction and take the form they do. These potential changes and their directionality defined by CASP can now be shown to be further constrained by general laws of a more narrowly linguistic nature, involving universal patterns of co-occurrence among linguistic features and some general laws of diachrony involving how grammars progress from one stage to another through time.

4. UNIVERSAL AND DIACHRONIC LAWS IN LANGUAGE CHANGE: SEQUENCING ORDER, GRADUALNESS AND EASE OF INNOVATION

Implicational universals and hierarchies of features ($A > B > C > D$, that is if a language has D then it has C, if C then B, if B then A), as discussed in the field of language typology (Greenberg 1966; Keenan & Comrie 1977; Croft 2003; Song 2011), constrain the kinds of properties that can co-occur with one another within a linguistic system, that is within a single *langue*. If the two languages of a bilingual are at different points on this hierarchy, for example one has property A (e.g. relativisation on a subject in Keenan & Comrie's 1977 Accessibility Hierarchy) and the other has the full cluster of implicationally related properties in the (more fine-grained) grammatical or semantic domain that includes A ($A + B + C + D$, for example all the other relativisable positions on the Keenan-Comrie hierarchy), then the Common Ground envisaged by CASP will be attained by either gaining or losing properties, depending on the sociolinguistic and psycholinguistic factors that determine dominance and direction of transfer, as we discussed earlier. But universal co-occurrences must always be respected in the process and in the interlanguages. For example, the language with A cannot first innovate property C without also innovating B, since then the implication 'if a language has C, then it has B (and also A)' will not be satisfied (see Hawkins & Filipović 2025, for a concrete illustration of this universal hierarchy constraining bilingual language changes and their relative sequencing).

With respect to general laws of diachrony, all of language change, including the changes that are in focus here due to bilingualism, happens *gradually*. Gradualness can be explained as a consequence of the need to preserve communication between generations of speakers in a community. For example, patterns of gradualness have been observed in the bilingualism between Sorbian, a Slavic dialect spoken in East Germany and German (Heine & Kuteva 2005, 2006). One of the grammatical features to be incorporated into Bilingual Sorbian was the definite article, which is absent in other Slavic languages. Bilingual Sorbian did not immediately (or even eventually) acquire all uses of the German definite article: it underwent a gradual progression along an implicational scale of definite article usage that

was very similar to that which has been observed in the grammaticalisation of the article in languages that now possess a productive article category (see Hawkins 2014). Some definiteness properties present in German that could have been transferred into Sorbian at successive stages of bilingualism by *Maximise Common Ground* were *not* transferred, therefore, and still have not been transferred to this day (see Breu 2004). The shifts in grammar under bilingualism are gradual, therefore, just as they are in all language change. The conventions of a grammatical system do not all change at once. The co-occurrence patterns inherent in cross-linguistic universals constrain the relative sequencing of many changes, while gradualness specifies that these changes happen in a stepwise fashion, even when a clear model for more such changes is present in the bilingual mind and the sociolinguistic and psycholinguistic factors that encourage change are also present.

The other fundamental diachronic constraint on bilingualism-induced change is the *ease of innovation*. Hickey (2010: 13) says that anything can be transferred through contact given sufficient intensity and duration and that all linguistic subsystems, even core morphology, can be affected. However, different areas of language exhibit clearly different degrees of affectedness in contact situations. Some are much easier to borrow or transfer, for example single words, phrases, pragmatic markers or sentence adverbials (Matras 1998). The reason is the lack of a need for restructuring or changing the grammatical system of a language. Several ‘borrowability hierarchies’ have been extensively documented in historical linguistics by numerous scholars (Weinreich 1953; Moravcsik 1978; Harris & Campbell 1995): lexical items are borrowed more readily than grammatical function words, nouns more readily than verbs, free-standing grammatical words more than affixes in general and derivational affixes more readily than inflectional affixes. Ease of innovation is exemplified in the early borrowing of free-standing prepositions ahead of words with affixal morphology in the transition from head-final to head-initial word order among Quechua & Spanish bilinguals (Luján et al. 1984). More generally, we see single-word adjectives changing their ordering before more phrasal dependents do, which results in the variable orderings across and within languages such as *yellow book* and *book yellow* in Romance co-existing with consistently post-nominal adjective phrase modifiers like *book yellow with age* (Dryer 1992; Hawkins 2004, 2014; also Hawkins & Filipović 2024, 2025). Numerous further examples supporting these ease of innovation hierarchies, among bilinguals and more generally in language change, can be found in the references cited in this paragraph.

5. CONCLUSION

This paper began by introducing the early structuralist view of bilingualism as a factor in language change, as put forward by Weinreich (1953), and the theoretical account of how change progresses from bilingual speakers’ *parole(s)* to established changes in the systems, *langue(s)*, for all users in a community. We then focused on gaining greater clarity in understanding multiple factors that affect bilingualism and how their interactions can lead to change. We first explained how general cognitive and social factors underlie language changes that have resulted from bilingual language contact within individuals and societies. We argued that the CASP model of Filipović & Hawkins (2019) and Filipović (2019), with its focus on the fine-grained typological, psycholinguistic and sociolinguistic particulars of different contact situations, can clarify when contact does or does not lead to language change. For example, the regional proximity of Sorbian to German and the socially dominant status of German provide compelling evidence for bilingualism as the driving force of language change: these changes did not happen in Slavic languages that were not in contact with languages possessing articles. We also highlighted the importance of

typological universals and hierarchies as constraints on bilingualism-induced changes and of diachronic constraints involving gradualness and ease of innovation.

We feel that not enough progress has been made hitherto in understanding when and where innovations due to contact and bilingualism will occur, and we believe that this is because there has not been enough focus on different types of bilingualism and on the nature of bilingualism itself. We hope that a reading (or re-reading) of Weinreich (1953) and Matthews' (2006) theoretical commentary on it, together with the empirical studies summarised in this paper, will create a fresh, multi-faceted view of a phenomenon that needs to take centre stage in linguistic theory, in historical linguistics, and in interdisciplinary empirical research: we need more methodologically diverse studies that shed light on how multiple factors cause or constrain different outcomes in bilingual language contact and in the ensuing language change.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Correspondence

Luna Filipović

Department of Linguistics

270 Kerr Hall

University of California Davis

Davis, CA 95616

USA

Email: lfilipovic@ucdavis.edu

REFERENCES

- AIKHENVALD, ALEXANDRA, 2002. *Language Contact in Amazonia*. Oxford: Oxford University Press.
- ALBERS, FABIAN, MELANIE TRYPKE, FERDINAND STEBNER, JOACHIM WIRTH & JAN L. PLASS, 2023. 'Different types of redundancy and their effect on learning and cognitive load', *British Journal of Educational Psychology* 93(2). 339–352.
- ARSLAN, SEÇKIN, ROELIEN BASTIAANSE & CLAUDIA FELSER, 2015. 'Looking at the evidence in visual world: Eye-movements reveal how bilingual and monolingual Turkish speakers process grammatical evidentiality', *Frontiers in Psychology* 6. 1387
- BENMAMOUN, ELABBAS, SILVINA MONTRUL & MARIA POLINSKY, 2013a. 'Defining an 'ideal' heritage speaker: Theoretical and methodological challenges. Reply to peer commentaries', *Theoretical Linguistics* 39(3–4). 259–294.
- BENMAMOUN, ELABBAS, SILVINA MONTRUL & MARIA POLINSKY, 2013b. 'Heritage languages and their speakers: Opportunities and challenges for linguistics', *Theoretical Linguistics* 39(3–4). 129–181.
- BENTZ, CHRISTIAN & BODO WINTER, 2013. 'Languages with more second language learners tend to lose nominal case', *Language Dynamics and Change* 3(1). 1–27.
- BORG, ALEXANDER, 1985. *Cypriot Arabic: A Historical and Comparative Investigation into the Phonology and Morphology of the Arabic Vernacular Spoken by the Maronites of Kormakiti Village in the Kyrenia District of North-Western Cyprus*. Stuttgart: Deutsche Morgenlandische Gesellschaft.
- BREU, WALTER, 2004. 'Der definite Artikel in der obersorbischen Umgangssprache', in Marion Krause & Christian Sappok (eds.), *Slavistische Linguistik 2002*. Munich: Sagner. 9–57.

- CAMPBELL, LYLE, 2021. *Historical Linguistics: An Introduction* (4th ed.). Cambridge, MA: MIT Press.
- CHAMOREAU, CLAUDINE & ISABELLE LÉGLISE, 2012. *Dynamics of Contact-Induced Language Change*. Berlin: Mouton de Gruyter.
- COSTA, ALBERT, MICHELE MIOZZO & ALFONSO CARAMAZZA, 1999. ‘Lexical selection in bilinguals: Do words in the bilingual’s two lexicons compete for selection?’, *Journal of Memory and Language* 41(3). 365–397.
- CROFT, WILLIAM, 2003. *Typology and Universals* (2nd ed.). Cambridge: Cambridge University Press.
- DE SAUSSURE, FERDINAND, 1916. *Course in General Linguistics*. London: Duckworth.
- DE SMET, HENRIK, GUGLIELMO INGLESSE & Malte Rosemeyer (eds.), 2025. *Acting on Actuation*. Berlin: Language Science Press.
- DRYER, MATTHEW S., 1992. ‘The Greenbergian word order correlations’, *Language* 68. 81–138.
- EMONDS, JOSEPH & JAN TERJE FAARLUND, 2014. *English: The Language of the Vikings*. Olomouc: Palacký University Press.
- FERNANDEZ, EVA M., RICARDO AUGUSTO DE SOUZA & AGUSTINA CARANDO, 2017. ‘Bilingual innovations: Experimental evidence offers clues regarding the psycholinguistics of language change’, *Bilingualism: Language and Cognition* 20(2). 251–268.
- FILIPOVIĆ, LUNA, 2011. ‘Speaking and remembering in one or two languages: Bilingual vs. monolingual lexicalization and memory for motion events’, *International Journal of Bilingualism* 15(4). 466–485.
- FILIPOVIĆ, LUNA, 2014. ‘Efficiency of the bilingual mind: Clues from processing, memory and second language acquisition studies’, in Luna Filipović & Martin Pütz (eds.), *Multilingual Cognition and Language Use: Processing and Typological Perspectives* [Human Cognitive Processing Series 44]. Amsterdam, The Netherlands: John Benjamins. 205–227.
- FILIPOVIĆ, LUNA, 2018. ‘Speaking in L2 but thinking in L1: Language-specific effects on memory for causation events in English and Spanish’, *International Journal of Bilingualism* 22. 180–198.
- FILIPOVIĆ, LUNA, 2019. *Bilingualism in Action: Theory and Practice*. Cambridge: Cambridge University Press.
- FILIPOVIĆ, LUNA, 2020. ‘Bilingual memory advantage: Bilinguals use a common linguistic pattern as an aid to recall memory’, *International Journal of Bilingualism* 24(3). 542–555.
- FILIPOVIĆ, LUNA, MIKA BROWN & PAUL E. ENGELHARDT, 2023. ‘Evidential meanings in native and learner Japanese and English: Implications for the assessment of speaker certainty’, *Pragmatics and Society* 14(3). 484–508.
- FILIPOVIĆ, LUNA & JOHN A. HAWKINS, 2013. ‘Multiple factors in second language acquisition: The CASP model’, *Linguistics* 51(1). 145–176.
- FILIPOVIĆ, LUNA & JOHN A. HAWKINS, 2019. ‘The CASP model of bilingualism: Language interactions within and across bilingual minds’, *International Journal of Bilingualism* 23(6). 1223–1248.
- GAST, VOLKER, 2007. ‘From phylogenetic diversity to structural homogeneity: On right-branching constituent order in Mesoamerica’, *Sky Journal of Linguistics* 20. 171–202.
- GIBSON, EDWARD., RICHARD FUTRELL, STEVEN T. PIANTADOSI, ISABELLE DAUTRICHE, KYLE MAHOWALD, LEON BERGEN & ROGER LEVY, 2019. ‘How efficiency shapes human language’, *Trends in Cognitive Sciences* 23(5). 389–407.
- GREENBERG, JOSEPH H., 1966. *Language Universals, with Special Reference to Feature Hierarchies*. The Hague: Mouton.
- GRICE, H. PAUL, 1957. ‘Meaning’, *The Philosophical Review* 66(3). 377–388.
- GROSJEAN, FRANÇOIS, 1992. ‘Another view of bilingualism’, in Richard J. Harris (ed.), *Cognitive Processing in Bilinguals*. Amsterdam/New York: North Holland. 51–62.
- GROSJEAN, FRANÇOIS, 2001. ‘The bilingual’s language modes’, in Janet L. Nicol (ed.), *One Mind, Two Languages: Bilingual Language Processing*. Oxford: Blackwell. 1–22.
- HARRIS, ALICE C. & LYLE CAMPBELL, 1995. *Historical Syntax in Cross-Linguistic Perspective*. Cambridge: Cambridge University Press.
- HARTSUIKER, R. J., M. J. PICKERING & E. VELTKAMP, 2004. ‘Is syntax separate or shared between languages? Cross-linguistic syntactic priming in Spanish-English bilinguals’, *Psychological Science* 15(6). 409–414.
- HAWKINS, JOHN A., 1986. *A Comparative Typology of English and German: Unifying the Contrasts*. London: Routledge.
- HAWKINS, JOHN A., 2004. *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.
- HAWKINS, JOHN A., 2009. ‘Language universals and the performance-grammar correspondence hypothesis’, in Morten H. Christiansen, Christopher Collins, & Shimon Edelman (eds.), *Language Universals*. Oxford: Oxford University Press. 54–78.
- HAWKINS, JOHN A., 2014. *Cross-Linguistic Variation and Efficiency*. Oxford: Oxford University Press.
- HAWKINS, JOHN A., 2019. ‘Word-external properties in a typology of modern English: A comparison with German’, *English Language and Linguistics* 23(3). 701–723.
- HAWKINS, JOHN A. & L. FILIPOVIĆ, 2012. *Criterial Features in L2 English: Specifying the Reference Levels of the Common European Framework*. Cambridge: Cambridge University Press.
- HAWKINS, JOHN A. & LUNA FILIPOVIĆ, 2024. ‘Bilingualism-induced language change: What can change, when and why?’, *Linguistics Vanguard* 10(2). 115–124.
- HAWKINS, JOHN A. & LUNA FILIPOVIĆ, 2025. ‘Contact-induced language change and its constraints in relation to actuation’, in Hendrik De Smet, Guglielmo Inglesse, & Malte Rosemeyer (eds.), *Acting on Actuation*. Berlin: Language Science Press. 15–39.
- HEINE, BERND & TANIA KUTEVA, 2005. *Language Contact and Grammatical Change*. Cambridge: Cambridge University Press.
- HEINE, BERND & TANIA KUTEVA, 2006. *The Changing Languages of Europe*. Oxford: Oxford University Press.

- HICKEY, RAYMOND, 2010. 'Language contact: reconsideration and reassessment', in Raymond Hickey (ed.), *The Handbook of Language Contact*. Chichester: Wiley Blackwell. 1–28.
- INGHAM, BRUCE, 1994. 'The effect of language contact on the Arabic dialect of Afghanistan', in Jorge Aguadé Bofill, Marina Marugán, & Federico Corriente Córdoba (eds.), *Actas de Congreso Internacional sobre Interferencias Lingüísticas Arabo-Romances y Paralelos*. Zaragoza: Navarrio. 287–308.
- JOHANSON, LARS, 2003. 'Evidentiality in Turkic', in Alexandra Y. Aikhenvald & R. M. W. Dixon (eds.), *Studies in Evidentiality*. Amsterdam: John Benjamins. 273–290.
- KAUHANEN, HENRI, 2022. 'A bifurcation threshold for contact-induced language change', *Glossa* 7(1). 1–32.
- KEENAN, EDWARD L. & BERNARD COMRIE, 1977. 'Noun phrase accessibility and universal grammar', *Linguistic Inquiry* 8. 63–99.
- KROLL, JUDITH F. & ELLEN BIALYSTOCK, 2013. 'Understanding the consequences of bilingualism for language processing and cognition', *Journal of Cognitive Psychology* 25(5). <https://doi.org/10.1080/20445911.2013.799170>
- KUPISCH, TANJA, 2012. 'Specific and generic subjects in the Italian of German-Italian simultaneous bilinguals and L2 learners', *Bilingualism: Language and Cognition* 15(4). 736–756.
- KUPISCH, TANJA, TATJANA LEIN, DAGMAR BARTON, DAWN JUDITH SCHRÖDER, ILSE STANGEN & ANTJE STOEHR, 2014. 'Acquisition outcomes across domains in adult simultaneous bilinguals with French as weaker and stronger language', *Journal of French Language Studies* 24(3). 347–376.
- LEVINSON, STEPHEN, 2000. *Presumptive Meanings*. Cambridge, MA: MIT Press.
- LUJÁN, MARTA, LILIANA MINAYA & DAVID SANKOFF, 1984. 'The universal consistency hypothesis and the prediction of word order acquisition stages in the speech of bilingual children', *Language* 60(2). 343–371.
- LUPYAN, GARY & RICK DALE, 2010. 'Language structure is partly determined by social structure', *PLoS One* 5(1). e8559
- MACK, MOLLY, 1986. 'A study of semantic and syntactic processing in monolinguals and fluent early bilinguals', *Journal of Psycholinguistic Research* 15(6). 463–488.
- MACWHINNEY, BRIAN, 2005. 'A unified model of language acquisition', in Judith F. Kroll & Annette M. B. de Groot (eds.), *Handbook of Bilingualism: Psycholinguistic Approaches*. New York: Oxford University Press. 49–67.
- MATRAS, YARON, 1998. 'Utterance modifiers and universals of grammatical borrowing', *Linguistics* 36(2). 281–331.
- MATTHEWS, P. H., 2006. 'On re-reading Weinreich's languages in contact', in Anna Laura Lepschy & Arturo Tosi (eds.), *Rethinking Languages in Contact: The Case of Italian*. London: Routledge. 1–11. (Reprinted in this special issue.)
- MORAVCSIK, EDITH A., 1978. 'Language contact', in Joseph H. Greenberg, Charles A. Ferguson, & Edith A. Moravcsik (eds.), *Universals of Human Language*, Volume 1. Palo Alto: Stanford University Press. 93–122.
- MUYSKEN, PIETER, 2013. 'Language contact outcomes as the result of bilingual optimisation strategies', *Bilingualism: Language and Cognition* 16(4). 709–730.
- NICOL, JANET L., MATTHEW TELLER & DELIA GRETH, 2001. 'Production of verb agreement in monolingual, bilingual and second-language speakers', in Janet L. Nicol (ed.), *One Mind, Two Languages: Bilingual Language Processing*. Oxford: Blackwell. 117–158.
- POLINSKY, MARIA, 2016. 'Bilingual children and adult heritage speakers: The range of comparison', *International Journal of Bilingualism* 22(5). 547–563.
- POLINSKY, MARIA, 2018. *Heritage Languages and their Speakers*. Cambridge: Cambridge University Press.
- PULVERMÜLLER, FRIEDEMANN, OLAF HAUK, VADIM V. NIKULIN & RISTO J. ILMONIEMI, 2005. 'Functional links between motor and language systems', *European Journal of Neuroscience* 21(3). 793–797.
- PYLES, THOMA & JOHN ALGEO, 1993. *The Origins and Development of the English Language* (4th ed.). Fort Worth, Texas: Harcourt Brace Jovanovich, Inc.
- ROSENBERG, PETER., 2005. 'Dialect convergence in the German language islands', in Peter Auer, Frans Hinskens, & Paul Kerswill (eds.), *Dialect Change: Convergence and Divergence in European Languages*. Cambridge: Cambridge University Press. 221–235.
- ROSS, MALCOLM D., 1996. 'Contact-induced change and the comparative method: Cases from Papua New Guinea', in Mark Durie & Malcolm D. Ross (eds.), *The Comparative Method Reviewed: Regularity and Irregularity in Language Change*. Oxford: Oxford University Press. 180–217.
- ROSS, MALCOLM D., 2007. 'Calquing and metatypy', *Journal of Language Contact* 1(1). 116–143.
- RUTHERFORD, WILLIAM, 1983. 'Language typology and language transfer', in Susan M. Gass & Larry Selinker (eds.), *Language Transfer in Language Learning*. Rowley, MA: Newbury House. 358–370.
- SCHWARTZ, ANA & JUDITH F. KROLL, 2006. 'Bilingual lexical activation in sentence context', *Journal of Memory and Language* 55(2). 197–212.
- SERZANT, ILJA A. & DARIYA RAFIYENKO, 2021. 'Diachronic evidence against source-oriented explanation in typology. Evolution of prepositional phrases in Ancient Greek', *Language Dynamics and Change* 11(2). 167–210.
- SILVA-CORVALÁN, CARMEN & JEANINE TREFFERS-DALLER, 2016. *Language Dominance in Bilinguals: Issues of Measurement and Operationalization*. Cambridge: Cambridge University Press.
- SHIN, JEONG-AH & KIEL CHRISTIANSON, 2009. 'Syntactic processing in Korean–English bilingual production: Evidence from cross-linguistic structural priming', *Cognition* 112(1). 175–180.
- SLOBIN, DAN I., 2016. 'Thinking for speaking and the construction of evidentiality in language contact', in Mine Güven, Didar Akar, Balkiz Öztürk, & Meltem Keleşir (eds.), *Exploring the Turkish Linguistic Landscape: Essays in Honor of Eser Erguvanli-Taylan*. Amsterdam: John Benjamins. 105–120.
- SONG, JAE JUNG, 2011. *The Oxford Handbook of Linguistic Typology*. Oxford: Oxford University Press.

- SPERBER, DAN & DEIRDRE WILSON, 1995. *Relevance: Communication and Cognition* (2nd ed.). Oxford: Basil Blackwell.
- THOMASON, SARAH G. & TERRENCE KAUFMAN, 1988. *Language Contact, Creolization and Genetic Linguistics*. Berkeley: University of California Press.
- TOSUN, SÜMEYRA & LUNA FILIPOVIĆ, 2022. ‘Lost in translation, apparently: Bilingual language processing of evidentiality in a Turkish–English translation and judgment task’, *Bilingualism: Language and Cognition* 25(5). 739–754.
- TOSUN, SÜMEYRA & LUNA FILIPOVIĆ, 2024. ‘Better late than early: The effect of formal second language training on processing of evidentiality in Turkish-English bilinguals’, *International Journal of Bilingualism* 29(4). <https://doi.org/10.1177/13670069241266340>
- TOSUN, SÜMEYRA & LUNA FILIPOVIĆ, 2025. ‘Bilingual language processing of evidentiality in a Turkish-English translation and judgment task: the effect of translator training’, *Language Awareness*. <https://doi.org/10.1080/09658416.2025.2499589>
- TRUDGILL, PETER, 2011. *Sociolinguistic Typology*. Oxford: Oxford University Press.
- WEINREICH, URIEL, 1953. *Languages in Contact: Findings and Problems. Supplement to Word*. New York: Linguistic Society of New York. (Reprinted 1963, The Hague: Mouton).