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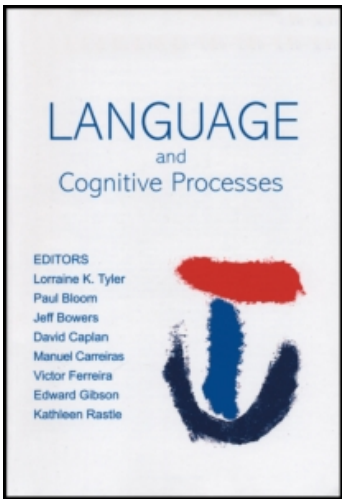

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Alignment in second language dialogue

Albert Costa [a]; Martin J. Pickering [b]; Antonella Sorace [b]
[a] Universitat de Barcelona, Barcelona, Spain [b] University of Edinburgh, Edinburgh, UK

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Alignment in second language dialogue

Albert Costa
Universitat de Barcelona, Barcelona, Spain

Martin J. Pickering and Antonella Sorace
University of Edinburgh, Edinburgh, UK

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This paper considers the nature of second language dialogues, involving at least one non-native (L2) speaker. We assume that dialogue is characterised by a process in which interlocutors develop similar mental states to each other (Pickering & Garrod, 2004). We first consider various means in which interlocutors align their mental states, and suggest why such alignment may be different in second language dialogues from dialogues involving native (L1) speakers. Specifically, we consider alignment in L2 speakers conversing with L1 speakers, L1 speakers conversing with L2 speakers, and L2 speakers conversing with each other, and sketch a range of experimental predictions.

INTRODUCTION

A dialogue (or conversation) is a collaborative action usually aimed at exchanging information. Given that dialogue is an extremely common and natural activity, models of speech processing should try to understand the mechanisms involved in it. In fact, it may well be that our cognitive machinery is better designed for dialogue than for processing language in an isolated context. However, perhaps because of the intrinsic difficulties of studying language processing in dialogue, most experimental research has

Correspondence should be addressed to Albert Costa, Dept. Psicologia Basica, Universitat de Barcelona, P. Vall d'Hebron, 171, 08035 Barcelona, Spain. E-mail: acosta@ub.edu

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focused on isolated language use. As a consequence, our understanding of the basic mechanisms of dialogue is still limited.

This article is an exploration of several issues related to dialogue in which at least one interlocutor uses a second language (henceforth, L2 dialogue). That is, it considers whether the main assumptions of current models of dialogue can be extrapolated to conversations in which one of the interlocutors is using a second language (henceforth, L1–L2 dialogue) or in which both are doing so (henceforth, L2–L2 dialogue). Conversations of this sort are very common, given the high proportion of people who speak more than one language and their increasing mobility.

In the article we (a) describe the basic tenets of a particular model of dialogue, (b) assess how such tenets can be applied to those situations in which the conversation involves at least one non-native speaker and review some studies that have addressed this issue, (c) discuss the various factors that may affect the success of communication in L2 dialogue, and (d) derive hypotheses to be tested in future studies. We also consider how knowledge of processing mechanisms involved in dialogue can contribute to an understanding of some questions that have been debated in the field of L2 acquisition and in the relatively new field of L1 attrition.

Dialogue is an example of a joint activity (such as playing a duet or using a two-handed saw), in which the interlocutors collaborate to reach a (largely) common goal (Clark, 1996). For this to be successful, the interlocutors need to be flexible enough to rapidly adapt their behaviour in response to each other's behaviours. If one or both interlocutors are not sufficiently flexible, the 'flow' of the dialogue will be impaired. Furthermore, it is important that the choices the interlocutors make in order to coordinate their actions can be taken in a largely resource-free or automatic manner, so that the conversation can remain relatively fluent. Thus, flexibility and automaticity are necessary for smooth and successful dialogue. As we will argue, on some occasions the interlocutors may not have enough flexibility, and the dialogue may be impaired. Alternatively, they may only be able to succeed by drawing heavily on attentional systems, which may not be perfectly adapted for this task. Such difficulties may be particularly likely in L2 dialogues, either as a direct result of an L2 speaker's non-native representation of linguistic knowledge or following from the strategies used by an L1 speaker under such circumstances.

As the literature on second language acquisition (SLA) reveals, there are many reasons why conducting a conversation in L2 can be difficult. These include the speaker having a restricted vocabulary, word-finding problems, faulty prosody, incomplete knowledge of grammar, and so on. This article does not focus on these properties themselves, but rather assesses how such

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difficulties can affect the representations and processes that underlie dialogue, both in L2 speakers and also in L1 interlocutors.[1]

ALIGNMENT AND DIALOGUE

One reason why dialogue often flows smoothly even though it is a complex joint activity is that the interlocutors tend to align those aspects of their mental states that relate to the dialogue. This makes it easier for them to coordinate their actions appropriately. The interactive-alignment account (Pickering & Garrod, 2004) attempts to explain how such alignment comes about during dialogue. In this paper, we propose that this account can facilitate the understanding of L2 dialogue. We therefore begin by outlining and clarifying key characteristics of the account.

According to this account, dialogue is successful to the extent that interlocutors come to understand the relevant aspects of the world in the same way as each other. More specifically, interlocutors construct mental models of the situation under discussion, and successful dialogue occurs when these situation models become aligned. In accord with the text-comprehension literature, we assume that situation models include information about people, time, space, causality, and intentionality (e.g., Zwaan & Radvansky, 1998). In the interactive-alignment account, such alignment of situation models is linked to the tendency for interlocutors to repeat each other's choices at many different linguistic levels, such as words, sounds, and grammar.

Representations, behaviour, and mechanisms

Let us first clarify terminology relating to representations, behaviour, and mechanisms. Alignment is defined with respect to representations (see Pickering & Garrod, 2004, p. 172) not behaviour. Hence, alignment of situation models refers to the critical level of representation that corresponds to understanding (and thus successful communication). In addition, alignment can occur at every linguistic level. For example, two interlocutors are lexically aligned if both of them strongly activate the association between the concept of a couch and the word *sofa*; they are not lexically aligned if one strongly activates this association but the other associates the concept with the word *couch*. Similarly, they might align on strong activation of the passive construction or on a particular pronunciation of /p/. In other words, they are aligned on the state of linguistic representations that potentially give

[1] We focus on conversational settings in which codeswitching is not a possible choice for the interlocutors. Hence our discussion is entirely about conversations conducted in a single language.

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rise to patterns of behaviour. In this respect, alignment of linguistic representations is similar to alignment of situation models, but it is only alignment of situation models that corresponds to understanding.

When interlocutors use the same words, we say they are *lexically entrained* (Brennan & Clark, 1996); similarly, they are syntactically entrained if they both use the passive (and so on). Non-linguistic aspects of behaviour can also become entrained, as for example when interlocutors come to mimic each other's posture (Shockley, Santana, & Fowler, 2003) or body movements (Chartrand & Bargh, 1999). (Entrainment typically refers to a long-term process of behavioural repetition, but a single instance of repetition can be seen as short-term entrainment.) Importantly, alignment refers to the underlying representations that give rise to the behaviour. In fact, alignment can occur without entrainment, as for example when a speaker refers to a couch as *the sofa* and the addressee would tend to respond with the same term but never has the chance. However, the term *alignment* is often loosely used to refer to observable behaviour (i.e., entrainment).

An important complication is that entrainment is often used as an indicator of alignment. For example, the fact that interlocutors tend to repeat each other's lexical choices (Brennan & Clark, 1996; Garrod & Anderson, 1987) suggests that they are aligned, with their mental lexicons showing similar patterns of activation (see Pickering & Garrod, 2006). Likewise, experiments showing that interlocutors repeat each other's grammatical choices thereby suggest alignment of grammatical representations (Branigan, Pickering, & Cleland, 2000). However, there are other potential indicators of linguistic alignment. For example, interlocutors might tend to look at the same objects at similar times when discussing a scene, or they may display similar ERP signatures in relation to particular linguistic dimensions. But the typical experimental and naturalistic evidence for linguistic alignment comes from linguistic behaviour (e.g., Pickering & Garrod, 2004, pp. 171–172).

Finally, we need to distinguish alignment and entrainment from the mechanisms that bring about alignment and entrainment. Pickering and Garrod (2004) emphasise an automatic mechanism that they refer to as priming. (In this approach, priming is seen as a mechanism rather than as merely a phenomenon to be explained.) Very crudely, an interlocutor hears a particular word (e.g., *chef*) or grammatical form (e.g., passive) and activates mental representations associated with that word or grammatical form. These representations do not decay immediately and thereby increase the likelihood that the associated words or forms will be used again. Priming refers to this mechanism, and obviously it can be explored in detail (e.g., by investigating its time-course or susceptibility to interference). In other words, priming brings about alignment of representations and hence linguistic entrainment. Importantly, there are other routes to alignment and

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entrainment that do not involve priming. For example, a conscious decision to entrain (e.g., saying 'let's call him 'the chef'' followed by the addressee's assent) may lead to alignment (e.g., because the explicit negotiation emphasises the word *chef*), but this route to alignment is not dependent on the process whereby use of a word or form activates the corresponding mental representations. Garrod and Pickering (2007a) discuss many routes to alignment of situation models. Here, we make two distinctions regarding routes to alignment: one between linguistic and non-linguistic routes, and the other between automatic and non-automatic routes.

Linguistic versus non-linguistic routes to alignment

By a *linguistic* route, we mean any route to alignment of situation models that results from alignment of linguistic representations. For example, if two interlocutors use the same word (e.g., *terrorist*) to refer to a particular entity, they are more likely to have aligned models with respect to that entity than if they use different words (e.g., *terrorist* vs. *freedom fighter*), because interlocutors are more likely to assume the same connotations for the same word than for different words. So a linguistic route requires alignment at a linguistic level, which then leads to alignment of situation models.

In contrast, a *non-linguistic* route to alignment of situation models does not result from linguistic alignment. For example, a speaker who assumes her addressee is not an expert in a particular domain is likely to use simplified terminology which the addressee does understand (e.g., Isaacs & Clark, 1987). Thus, the speaker might use *The Chrysler Building* when addressing a New Yorker, but a circumlocution when addressing a non-New Yorker. This means that the addressee will understand which building the speaker is referring to, and hence the interlocutors will align their situation models. In this case, there is no linguistic entrainment. Instead, the speaker's decision about whether to use a name or a circumlocution facilitates alignment of situation models.

Notice that such alignment may be due to the speaker's beliefs about the addressee (whether she assumes he is a New Yorker or not) or may result from feedback provided by the addressee. If the addressee makes it clear that he fails to understand, for example by querying the speaker (e.g., *eh?*), the speaker will have to reformulate in order to be understood. If the speaker now reformulates with an expression that the addressee does understand, their situation models become more aligned. In this case, there is no evidence that alignment of linguistic representations facilitated alignment of situation models. Following this exposition, our main focus will be on linguistic alignment.

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Automatic versus non-automatic routes to alignment

Traditionally, psychologists have identified automatic processes as being involuntary, not drawing on general resources, and resistant to interference from other mental processes; whereas non-automatic or controlled processes are voluntary, draw on general resources, and are subject to interference (e.g., Posner & Snyder, 1975; Shiffrin & Schneider, 1977). This dichotomy has been challenged in many areas of psychology. For example, the Stroop task is often seen as a good method for distinguishing controlled and automatic processing, but Cohen, Dunbar, and McClelland (1990) proposed that it could be interpreted in terms of degree of automaticity, depending on the extent of learning. Likewise, Bargh (1994) proposed that complex social behaviours inevitably involve degrees of automaticity on four dimensions, namely awareness, intentionality, efficiency, and controllability (i.e., interruptability), and there is no reason to assume that dialogue is any different. However, it may be possible to distinguish automatic and non-automatic routes to alignment in dialogue (see Garrod & Pickering, 2007b).

For non-linguistic alignment, most decisions that take place in the absence of feedback appear to be non-automatic. For example, we assume that speakers make a deliberate decision to use technical vocabulary when they know they are about to speak to experts but non-technical vocabulary otherwise. In doing so, they may quite explicitly reason about this decision ('I think he looks like an expert . . .'). In such cases, the speaker may follow a Gricean maxim of manner (specifically, avoiding obscurity of expression), by working out which expression is most likely to be understood (Grice, 1975). Indeed, a speaker of two languages may go through such processes in deciding which language her addressee is likely to know and hence which language to use. In contrast, decisions following feedback are more likely to be automatic, and pay no attention to specific knowledge about an addressee. For example, if a speaker uses a referring expression and gets feedback suggesting misunderstanding (e.g., *eh?*), she can then use simple strategies of reformulation. To do this, the speaker would not need to model the addressee's mental state at all; for instance she might follow a simple strategy of expanding any referring expression following a query (e.g., replacing pronouns with full noun phrases). This indicates an important limitation to the Gricean analysis, which relates better to the production of utterances in the absence of feedback than to interactive conversation. Of course, deliberate decisions about how to reformulate presumably do occur, but may be a last resort, as they tend to require modelling the addressee's mental state (Pickering & Garrod, 2004). As noted above, we do not focus on non-linguistic alignment in this paper.

Linguistic alignment can also be automatic or non-automatic. Most of the time, speakers align with each other as a result of priming (this is the basis of

the interactive-alignment model). There is a great deal of evidence for linguistic alignment in dialogue, and in particular that this alignment takes place at many different linguistic levels simultaneously. This evidence principally comes from entrainment at different linguistic levels (rather than, for instance, from interlocutors comprehending utterances in the same way or aligning on patterns of brain activation).

Interlocutors align their models of the situation under discussion, for example producing similar descriptions of spatial layouts (Garrod & Anderson, 1987; Watson, Pickering, & Branigan, 2004). Also they align with respect to their lexical, syntactic, and phonological choices. They entrain on the same referring expressions for particular objects (Brennan & Clark, 1996; Garrod & Anderson, 1987). For example, if one interlocutor uses a specific word to refer to an object (e.g., *sofa*), the other is much more likely to use the same word than a (near) synonym (e.g., *couch*). Interlocutors also entrain on syntactic structures (Branigan et al., 2000; Levelt & Kelter, 1982), phonetic realisations of repeated words (Pardo, 2006), and accent and speech rate (Giles, Coupland, & Coupland, 1991). Thus, speakers are constantly priming each other, affecting their choices of words, syntactic structures, and so on. This means that they are aligning their underlying representations. (Note that speakers are also primed by their own prior productions, so that they perseverate at various linguistic levels; e.g., Bock, 1986.)

Such linguistic alignment may be pervasive, but it is not immediately obvious why it should promote alignment of situation models. To see why this comes about, recall the example of interlocutors using the same versus different referring expressions (*terrorist* vs. *freedom fighter*). Here, linguistic alignment promotes alignment of situation models, so that interlocutors who use the same expression are more likely to come to see the world in similar ways than those who do not. Indeed, interlocutors fail to use common terms when they quite specifically do not want to be associated with the same position (e.g., in courtroom trials in adversarial legal systems; Danet, 1980).[2] But in addition, there is good evidence that alignment at one linguistic level enhances alignment at other levels (Branigan et al., 2000; Cleland & Pickering, 2003). Thus, Branigan et al. found that experimental participants tended to repeat the syntactic form that their (confederate) interlocutor had just used when describing cards to each other. But this tendency was considerably enhanced when they also repeated their interlocutor's verb than when they used different verbs. In this case, the claim is that lexical alignment

[2] In Danet (1980), the lack of entrainment presumably indicates a non-automatic override of the tendency to align. This would explain why deliberate lack of entrainment may be difficult, and why some lawyers may be much better at it than laypeople.

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(of the verb) enhanced grammatical alignment. Gries (2005) found similar results in corpus data.

Note, however, that the effect of priming (e.g., on entrainment) does not have to be constant between speakers and between conversation settings. For example, in social psychology, there is a well-attested tendency toward behavioural mimicry (e.g., Chartrand & Bargh, 1999), in which people tend to imitate each other's behaviour (e.g., head-scratching) without being aware of it. Importantly, this tendency can be enhanced by non-conscious activation of the goal of affiliation by priming with affiliation-related words (e.g., *friend*, *together*); see Lakin and Chartrand (2003). So the appropriate notion of automaticity does not require constant alignment in all situations. In accord with this, syntactic entrainment can be affected by participant role in multi-party dialogue, specifically whether the speaker served as the previous addressee or as a previous side-participant (Branigan, Pickering, McLean, & Cleland, 2007). One mechanism that may underlie such differences involves speakers associating particular speakers with particular linguistic representations via a compound cue (see Horton & Gerrig, 2005), for example associating Speaker *A* with one grammatical construction and Speaker *B* with a different grammatical construction.

But speakers can make a *decision* to use an expression that involves the same linguistic representations as one's interlocutor. Examples include entrainment to indicate affiliation with a previous speaker (e.g., *A*: 'I really really love you'; *B*: 'and I really really love you too'), entrainment in a way that makes fun of her choice of words (*B*: 'oh, you really really love me, do you?'), and so on. Clearly, such entrainment involves some priming, but the speaker also decides to repeat for a particular rhetorical effect.

A different kind of example (of more current relevance) occurs when *A* uses an inappropriate term and *B* has to decide whether to repeat that term or to correct it. In such cases, the natural tendency might be to replace it with an appropriate term (using an 'embedded repair'; see Jefferson, 1987). But *B* can instead continue to use the inappropriate term, for example if she judges that *A* is unlikely to understand (or be able to produce) the appropriate term. This can occur when *A* is a non-native speaker and *B* is a native speaker. In one example of this, *A* referred to a tyre as a *wheel*, and *B* entrained on this inappropriate term (Bortfeld & Brennan, 1997). This example appears to show non-automatic linguistic alignment (by overriding the tendency not to entrain).

An example of how beliefs may affect alignment occurred in a study that manipulated whether participants believed they were interacting with either a computer or a person via a computer terminal (Branigan, Pickering, Pearson, McLean, & Nass, 2003; Branigan, Pickering, Pearson, McLean, Nass, & Hu, 2004). In fact, scripted responses simply appeared on the screen, and so the 'interlocutor' did not really exist. Participants entrained with the interlocutor whether they believed it was a person or a computer, mirroring

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the interlocutor's choice of words and sentence form. However, they did so to a greater extent when they believed they were interacting with a computer. Hence, the tendency to entrain more with a 'computer' interlocutor than with a 'human' interlocutor occurred irrespective of the actual behaviour that the interlocutor displayed. A possible explanation of this effect is that participants assume that the computer has more limited linguistic abilities than the human, and hence that it might not understand words or constructions that it did not use.[3] In any case, this suggests that imitation can be affected by participants' beliefs under some circumstances, and moreover that beliefs about one's interlocutor's linguistic performance may be important. This situation may be analogous to L1 speakers' choices when communicating with L2 speakers (see below).

However, explicit agreement to use a term in a particular way seems to be very rare in many forms of dialogue. For example, Garrod and Anderson (1987) found that interlocutors came to describe mazes in similar ways, but very rarely negotiated how to refer to their positions. One player would simply use a particular expression (e.g., *I'm at A4*) and the other would follow suit (e.g., *and I'm at B3*). In this situation at least, non-automatic entrainment was almost non-existent.

According to Pickering and Garrod (2004), alignment of situation models is normally the result of automatic linguistic alignment. Hearing a particular utterance activates a series of representations associated with that utterance, concerned with its sound, grammar, meaning, lexical items, and so on. Because the model assumes that the same linguistic representations are used in production and comprehension (the parity assumption), the speaker will tend to use those linguistic representations in subsequent production. In this way, interlocutors are more likely to develop aligned linguistic representations, and hence their situation models are more likely to become aligned as well. The account does not exclude alignment via non-automatic linguistic alignment or via non-linguistic alignment, but it does assume that automatic linguistic alignment is the dominant route to the alignment of situation models and hence conversational success in everyday conversation. But things may be rather different in L2 dialogue, as we now discuss.

ALIGNMENT IN L2 DIALOGUE

Pickering and Garrod's (2004) account tacitly assumes that both interlocutors are fully competent speakers of the language in which the conversation is

[3] In accord with this, another study showed that participants align more with an apparently antiquated computer than an apparently modern one (Pearson, Hu, Branigan, Pickering, & Nass, 2006).

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carried out. But in a high proportion of conversations, some or all interlocutors are not fully competent. For example, the conversation might involve children, aphasics, or non-native speakers. In general, such dialogues are less likely to be 'fluent' than dialogues between fully competent interlocutors. Is it possible that such dialogues in general involve an increased (and qualitatively different) dependence on non-automatic routes to alignment? In particular, automatic linguistic alignment may become less central than otherwise. Very importantly, these differences will occur both for interlocutors who are not fully competent and for their partners who may be fully competent.

Consider a conversation between two friends, when one is a native speaker of English and the other is not. The conversation is informal, the participants are of equal status, and they decide themselves who speaks when and what they talk about (i.e., it is 'internally managed'). The automatic component should be highly prominent, and we might therefore predict rapid alignment of situation models and hence conversational success. However, the language of the conversation does not have the same status for the interlocutors. What effects will this have on the native speaker and the non-native speaker? In particular, how might such conversations differ from conversations between native speakers? Clearly, it might affect the balance between automatic and non-automatic linguistic alignment; it might also affect non-linguistic alignment.

We predict at least some degree of automatic linguistic alignment in any dialogue. In other words, the priming mechanism that leads to alignment will be used whenever possible, with no further effort by either of the interlocutors. Thus, the L2 speaker should entrain on similar utterances to the L1 speaker and vice versa, and the alignment that underlies such entrainment should lead to alignment of situation models. However, as we will see, the degree of shared knowledge between the interlocutors may not be enough for automatic linguistic alignment to function in the same way it does when the two interlocutors are native speakers.

Perhaps the most obvious prediction is that automatic linguistic alignment will be less pronounced in non-native dialogues than native dialogues, and that interlocutors will tend to rely more on other routes to alignment, or be more likely to fail to align their linguistic representations or their situation models. Such predictions could be tested by comparing native and non-native dialogues using various experimental paradigms (see below).

The nature of interactions involving L2 speakers has been extensively studied from a different perspective, within the field of second language acquisition (e.g., Doughty & Long, 2003; Oliver, 1998; Pica, 1983, 1994; Pica, Young, & Doughty, 1985; Pica & Doughty, 1987; for a recent overview see Mackey, in press). However, such studies have mainly focused on the factors promoting learning in L2 speakers. They provide some descriptive data

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about how L1 speakers interact with L2 speakers, but they are not informative about the cognitive processes underlying alignment in dialogue. Our goal here is not so much to assess the relevance of alignment for learning, but to examine the process of alignment in non-native dialogue.

In this section, we consider alignment in dialogues between an L2 speaker and an L1 speaker, and look at the L2 speaker and L1 speaker in turn. In Section 4, we consider alignment in dialogues between two L2 speakers.

Alignment by the L2 speaker

Let us examine two examples of L1–L2 dialogue. In (1), the conversation is about a letter that the two roommate speakers want to write to their landlord to complain about poor maintenance of the property.

(1) L2 speaker: I need a piece of paper with nothing on it
L1 speaker: A blank sheet of paper?
L2 speaker: Yeah, a blank piece of paper.

The L2 speaker's second utterance reveals a partial failure to entrain to the L1 speaker at the lexical level, since she has used the adjective *blank* but not the noun *sheet*. Why is this the case? Assuming that the L2 speaker knows the word *sheet* and also knows that it means the same thing as the term *piece* when it is immediately followed by *of paper*, why has priming not led to lexical entrainment? An answer to this question points to the role of automaticity in the retrieval of linguistic representations. It is possible that the L2 speaker has used the term *sheet* infrequently and hence its representation is less available than the representation of *piece* (with its currently relevant meaning). Thus the lexical representation of *sheet* does not receive sufficient activation for the word to be used. Consequently, the L2 speaker will continue to use *piece*, even though she has entrained on *blank*.

This example relates to Pickering and Garrod's (2006) claim that interlocutors tend to align their activation profiles for different words, grammatical rules, and so on. Use of a word or syntactic structure enhances activation of that representation in both interlocutors, and hence means that their activation profiles become more similar. But as our example shows, there are limits to this alignment. If one interlocutor strongly prefers one term and the other prefers a different term to refer to the same object, they may sometimes fail to align. In other words, their activation profiles are so different that the tendency to continue with one's own term cannot be overridden.

Such situations occur in conversations between L1 speakers and in conversations involving L2 speakers. However, they are more likely to occur in the latter case because the L1 and L2 speakers' exposure to the language will be very different and hence their activation profiles will be very different too.

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This is most dramatically demonstrated when the L2 speaker finds it impossible to use the L1 speaker's term, for instance if she is unable to pronounce the word. But it can also occur if she is afraid of potentially embarrassing mispronunciations (as in the case of 'sheet' pronounced by an L2 speaker who does not have the /I/-/i/ distinction in her native language). In this case at least, the L2 speaker non-automatically overrides her tendency to align lexically.

A similar situation occurs if an L2 speaker does not understand how to use a syntactic construction that her L1 interlocutor has just used, as in the following conversation (about MP3 players):

(2) L2 speaker: Someone gave one to me as gift
L1 speaker: Someone gave you one as a gift?
L2 speaker: Yes, they gave one to me as a gift

Again, the L2 speaker shows signs of partial alignment with the L1 speaker. She repeats the indefinite article which is provided in the L1 speaker's clarification request, but not the double-object construction found in 'gave you one'. Instead, she perseverates with her original prepositional-object construction by saying 'gave one to me'. The lack of syntactic entrainment may be due to incomplete or uncertain knowledge of the dative alternation allowed with English verbs such as *give*.

In addition, recall that alignment at one level of representation enhances alignment at other levels (Pickering & Garrod, 2004). For example, syntactic alignment is stronger when both interlocutors use the same verb versus when they do not (Branigan et al., 2000). So, if an L1 speaker uses a particular verb (e.g., *loan*) an L1 addressee is likely to respond with the same verb; but an L2 addressee who is not comfortable with that verb may respond with an alternative (e.g., *lend*). Thus the L1 addressee is more likely to use the same syntactic construction (e.g., the prepositional-object construction) than the L2 addressee. In this respect, alignment by L2 addressees is likely to be impaired at different levels of linguistic representation.

Automatic alignment may also be affected by a deviant or atypical speech rate. It has been argued that the reason interlocutors appear so good at speaking in turn – why interlocutors do not regularly interrupt each other on the one hand or leave large gaps between contributions on the other (Sacks, Schegloff, & Jefferson, 1974) – is because they entrain on a rate of syllable production, and get into 'counterphase', so that one interlocutor is ready to speak when the other is not, and vice versa (Wilson & Wilson, 2005). This entrainment allows interlocutors to predict efficiently and automatically the point at which their partner is likely to stop his production. This can explain why turn-taking is so remarkably efficient: speakers rarely interrupt each other (except deliberately, of course, or because of cultural conventions characteristic of certain language communities), but also rarely leave long

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pauses before they contribute. If one of the functions of priming is to promote linguistic alignment (e.g., Ferreira & Bock, 2006), then it may well be 'tuned' to be most effective at normal speech rates, and so deviations from those speech rates may reduce its effectiveness. However, the speech rate of the two interlocutors may be so different that entrainment on a common rate may be impossible. In particular, the L2 speaker will simply not be able to speak fast enough, or may only be able to do so by making mistakes. This may be so even considering the fact that L1 speakers tend to modify their speech rate when talking to L2 speakers (see below, Henzl, 1974). Under such conditions, L2 speakers may try to speak faster than they are able to; and they will also have to concentrate on not interrupting their interlocutor, not leaving pauses, and so on. This extra attentional demand adds processing load, reducing the automaticity of the conversation and therefore impairing automatic alignment.[4] Obviously, this will also put strain on the L1 speakers.

We have so far discussed several aspects of L2 dialogues that may affect alignment via automatic priming. Note, however, that reduced alignment by the L2 speaker may also stem from conscious decisions about what linguistic representations to use. That is, the L2 speaker may deliberately avoid entraining on the words or structures used by the L1 speaker, by virtue of metalinguistic awareness about her degree of L2 knowledge at different levels of representation (see Bortfeld & Brennan, 1997; Faerch & Kasper, 1983; Schachter, 1974). For example, the L2 speaker may not know whether there is a subtle difference between the meanings of the two words [e.g., sheet vs. piece, in example (1)] and as a consequence prefers to use the one that she thinks conveys better her intention. This is not an uncommon situation, given that acquiring certain 'shades' of the meanings of L2 words is sometimes difficult, especially for abstract words (de Groot, 1989; de Groot & Keijzer, 2000; Van Hell & Mahn, 1997; see Francis, 2005, for a review). In such cases, the L2 speaker overrides her 'natural' tendency towards automatic linguistic alignment.

These control processes may also help guarantee that a decision taken at one level of representation will not involve inaccuracies when retrieving information at other levels of representation. That is, it is possible that the L2 speaker foresees some problems with the use of a particular word at subsequent levels of processing. For example, in languages with grammatical gender, this speaker has to retrieve the grammatical gender for every noun she produces. In such situations, even if she knows the meaning of a word, she may be uncertain of its grammatical gender and as a consequence may

[4] One way in which this might occur is that the activation of particular words, syntactic structures, and the like may decay too rapidly for the interlocutors to make appropriate use of them. Here again, the speaker's need to consciously monitor her production, in this case for the sake of speech rate, may interfere with automatic linguistic alignment.

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decide not to use this word, thus reducing alignment with her L1 interlocutor. Similarly, uncertainty about the morphological properties of the word to be expressed may prevent the L2 speaker from using that word. For example, imagine that the L1 speaker has used the word 'build', and now the L2 speaker wants to refer to the same meaning but in the past tense. She may realise that it is irregular but not know the correct form. She may therefore decide not to align and instead use a synonym for which she knows the past tense (e.g., 'constructed').[5] This lack of entrainment therefore reduces alignment of lexical representations.

These examples reveal that the alignment of L2 interlocutors may be reduced or even absent, and highlights the possible impact on dialogue of (a) the lack of automaticity in the retrieval of linguistic representations and (b) the conscious processes associated with the choice of such representations. It may be that the L2 speaker evaluates possible trade-offs between re-using the linguistic structures provided by the L1 interlocutor and producing utterances that preserve clarity and smooth communication.

The degree of alignment of the L2 speaker may also be affected by the similarity between the linguistic systems of her first and second languages at various different levels of representation. First, the phonological similarity between the translation-equivalent words of the two languages of a bilingual may affect the likelihood with which an L2 speaker aligns with the L1 speaker. Consider the following example:

(3) Native speaker of English: Was he finally sent to jail?
Native speaker of Spanish: Yes, he waits for the decision in prison.

In this exchange, the native speaker of Spanish (i.e., L2 speaker of English) does not use the word 'jail', despite the fact that she clearly knows what it means. The choice of a different word (less frequent, longer, and phonologically more complex) very likely stems from the fact that 'prison' is a cognate word in Spanish (prisión) and therefore is more available to her (for evidence of the particularly high availability of cognate words, see Costa, Caramazza, & Sebastián-Gallés, 2000; Costa, Santesteban, & Caño, 2005; Gollan & Acenas, 2004). It means that the L1 and L2 speakers' activation profiles may be different because the L2 speaker's profile is strongly influenced by his L1 knowledge (in a way that is hard to change). This affects the choice of the speaker and can override effects of automatic priming.[6]

[5] Similarly, the L2 speaker may avoid syntactic alignment if she foresees some difficulties in producing a given syntactic structure, as in (2), or even in producing the appropriate prosodic form or stress pattern for that structure.

[6] Note that this sort of influence from the first language of the speaker on her L2 production may also explain why L2 speakers sometimes end up producing words that are relatively uncommon in their L2. This may also hamper alignment by the L1 speaker (see the arguments about different activation profiles discussed above).

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Linguistic similarities may affect sensitivity to automatic priming in ways that depend on the extent to which speakers of two languages share information between those languages. In fact, there is much evidence for linguistic transfer between the speakers' L1 and L2. That is, those representations that are similar enough in the two languages will be transferred from a language into another. This may enhance priming for those representations that are similar across languages (see the recent review by Odlin, 2003). There is good evidence of cross-linguistic priming of syntactic choices, with speakers of two languages being more likely to use a particular construction in one language (e.g., a passive) if they have just used or heard the equivalent construction in their other language (Hartsuiker, Pickering, & Veltkamp, 2004; Loebell & Bock, 2003; Schoonbaert, Hartsuiker, & Pickering, 2007). Thus, speakers of two languages may share at least some syntactic information between their languages. Now, passives are more common in English than in languages such as Spanish. If so, English L1 speakers may be influenced by patterns of usage in English to use passives in Spanish more often than Spanish native speakers. As a consequence, if an L1 Spanish speaker produces an utterance in the passive in Spanish, the likelihood that the L2 speaker (native of English) will align and therefore produce a passive construction would be higher than if she were a native speaker of Spanish (or a native speaker of another language in which the passive voice is less frequent). Recent results by Flett, Branigan, and Pickering (2007) speak to this issue. These authors conducted a series of experiments assessing the presence of syntactic priming in second language production (English). They found that English L1 speakers produced more passives in Spanish than Spanish L1 speakers. This may have been because passives are more common in English than Spanish (though of course other explanations are possible). They also found that English L1 speakers were primed more by (Spanish) passives than were Spanish L1 speakers. This presumably occurred because of the difference in frequency of the passive between the two languages.

However, Flett et al. (2007) also tested the priming of the dative alternation in English for L2 speakers whose L1 either allowed the dative alternation (German) or did not (Spanish). Despite this important difference in the L1 of the speakers, the magnitude of syntactic priming was comparable for both non-native groups, and also comparable to that of English L1 speakers. This study therefore did not find that L2 speakers' syntactic behaviour was influenced by preferences from their L1. Note, however, that the experimental setting in these experiments was not that of interactive conversation. Thus, it remains an open question whether syntactic priming for L2 and L1 interlocutors is of the same magnitude in normal conversation, and how it is related to the degree of similarity of the linguistic expressions of the first and second language of the L2 interlocutor.

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In any case, the study showed that the syntactic preferences of L1 and L2 speakers remained different, and hence their activation profiles did not become fully aligned.

In contrast, there are also cases when L2 speakers may align especially strongly with L1 speakers. The L2 speaker typically has a goal of learning the language, and entrainment may facilitate such learning, because it will guarantee the production and repetition of well-formed examples of the target language. It may also stimulate more dialogue and thus lead to more input. Researchers in second language acquisition have pointed out that production by the L2 speaker, especially when she is not entirely clear of its meaning or usage, allows her to test her working hypothesis about that item against the reaction of the L1 speaker (e.g., Mackey, Gass, & McDonough, 2000). When this involves repeating the L1 speaker's previous words or structures, it increases the amount of non-automatic linguistic alignment.

Note, however, that the mere repetition of the native interlocutor's production does not guarantee learning (e.g., Bortfeld & Brennan, 1997; Gass & Varonis, 1989; Polio & Gass, 1998). That is, the L2 speaker may repeat, for example, the lexical item produced by the L1 speaker (e.g., *sheet*), without a real understanding of this item: indeed, no study has proved the long-term benefits of interactional modifications. Such verbatim repetition may actually impede communication, because the L1 speaker may erroneously assume comprehension and therefore fail to provide further reformulations of the L2 speaker's original utterance, or 'recasts' (Hawkins, 1985; see Gass, 2003). Still, despite such caveats, the positive role of interactive communication in second language learning seems to be undisputed (e.g., Bortfeld & Brennan, 1997; Gass & Varonis, 1994; Mackey, 1999; see Gass, 2003 for a review) and it is likely that L2 speakers may deliberately use entrainment to facilitate learning.

The issues raised in this section can be addressed experimentally by using the paradigms that have been developed to study the mechanisms of dialogue between L1 speakers, with the most straightforward approach probably being to compare conditions involving two L1 speakers with conditions involving an L1 speaker and an L2 speaker. An important distinction is between experiments using 'free' dialogue, in which two participants converse while performing a task (such as finding their way around a maze; Garrod & Anderson, 1987), and experiments in which there are restrictions on when they are permitted to speak (e.g., when taking turns to describe cards to each other; Branigan et al., 2000). The former type of experiment is much harder to control, so that, for example, it would be difficult to determine whether effects occurred because L2 participants behaved differently from L1 participants (i.e., the topic of this section) or whether L1 participants behaved differently when interacting with L2 participants than when interacting with L1 participants (the topic of the next section). However, it

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has the advantage of reflecting most conversations outside the laboratory. In the latter type of experiment, it is possible to focus entirely on the behaviour of the L2 participant, and (under some circumstances) to control the behaviour of the L1 participant (who may be a confederate producing scripted responses).

There are many manipulations that one can entertain to address the questions described above. Consider, for example, the role that formal similarities between translations (the cognate dimension) may have on the likelihood of alignment by the L2 speaker. One could address this issue by having a confederate (L1) describe pictures for which there are two synonyms (e.g., *jail* and *prison*), but only one of them is similar to the term in the naïve participant's L1 (e.g., *prison* in English vs. *prision* in Spanish). So, the confederate would describe the same picture using either *jail* or *prison*, or an unrelated picture in a control condition. It would then be possible to see whether degree of entrainment differed across conditions. Ideally, of course, one should include an L2 control group for which these two terms (*jail* and *prison*) are non-cognates in their L1. Other experiments could address issues such as whether or not alignment of the L2 speaker is affected by his/her phonological performance, by the phonological complexity of the target word), or by the type of feedback (if any) provided by the L1 speaker.

Alignment by the L1 speaker

A dialogue between an L1 and an L2 speaker is likely to differ from a dialogue between two L1 speakers not only because the L2 speaker behaves differently from L1 speakers, but also because an L1 speaker behaves differently towards an L2 speaker than another L1 speaker. To see this, let us first consider evidence from the L2 acquisition literature. It is well-attested that the L1 speaker adapts his/her speech according to her perception of the knowledge of the L2 speaker. These adaptations involve modifications leading to a form of 'simplified' speech, usually called 'foreigner talk', which is characterised by the use of shorter sentences, more frequent terms, fewer idiomatic expressions, more repetitions, and so on (Arthur, Wemer, Culver, Lee, & Thomas, 1980; Ferguson, 1971; Long, 1981, 1983; Ramamurti, 1980; for a review, see Wooldridge, 2001).[7] Thus Long (1983) found that interacting with L2 speakers caused L1 speakers to overuse the verbal present tense, and to produce shorter and grammatically simpler clauses, more high-frequency nouns and verbs, a larger number of questions, more comprehension and confirmation checks, more clarification requests, more

[7] Many of the characteristics of foreigner talk are similar to those of the speech addressed to children (Snow, 1995), which has also been found to be 'simplified' in a variety of ways (slower rate, repetition, exaggerated intonation, higher pitch, etc.), without being ungrammatical.

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self repetitions, and more other-repetitions, among other things (see also Arthur et al., 1980; Gass, 1997; Warren-Leubecker & Bohannon, 1982).[8]

Foreigner talk could reflect different types of alignment by the L1 speaker. First, this speaker may produce foreigner talk because she believes that such speech is more likely to lead to aligned situation models than normal speech. Therefore she may use simplified descriptions because she believes that the L2 addressee is more likely to understand them; and the extent of this simplification will depend on her beliefs about the L2 addressee's level of linguistic competence. It is possible that such foreigner talk would be effortful, because the L1 speaker would have to decide how much to simplify her utterances and might have to monitor her addressee's level of understanding. Alternatively, she may simplify her utterances on the basis of feedback from the L2 speaker that indicates failure to understand; such feedback is of course more likely from a less-competent L2 speaker than a more-competent L1 speaker. (See for example the experimental study conducted by Warren-Leubecker and Bohannon (1982) which considered the effects of feedback and expectation in L2 dialogues.) In both cases, foreigner talk constitutes a form of non-linguistic alignment.

It is interesting to compare non-linguistic alignment by the L1 speaker with non-linguistic alignment by the L2 speaker. Presumably, the L1 speaker aligns more with the L2 speaker than vice versa (in other words, such non-linguistic alignment is asymmetric), for two reasons. First, simplifying speech is in general much easier than complicating speech (because all speakers presumably talk fairly close to the limits of their abilities). Second, the L1 speaker has more resources available to monitor the L2 speaker's comprehension than vice versa and therefore is better placed to judge when a modification is necessary.

However, foreigner talk may also be partly due to linguistic alignment. Thus, the L1 speaker may automatically entrain with the linguistic choices made by her interlocutor. If the L2 speaker tends to use high frequency words or simple syntax, then the L1 speaker is likely to follow suit. Such alignment may also be asymmetric, because the L1 is more likely to know the L2 speaker's simple choices than the L2 speaker is to know the L1 speaker's more complex choices. Whereas the L2 speaker may of course learn from the

[8] These adaptations may even, in some cases, lead to ungrammatical production by an L1 speaker when addressing an L2 speaker (e.g. Ferguson, 1975; Meisel, 1976). For this to occur, Long (1983) claimed that at least two of the following properties need to be the case: (a) the L2 speaker's proficiency is very low, (b) the L1 speaker thinks that she is of higher status than the L2 speaker, (c) the L1 speaker has prior experience talking to L2 speakers, (d) the conversation occurs spontaneously and not in an experimental setting. Thus, it seems that ungrammatical speech, although possible, does not usually occur.

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L1 speaker's choices, such learning is much harder than repeating known words or syntax.

In addition, the L1 speaker may deliberately entrain on the L2 speaker's choices to a greater extent than would otherwise occur. Presumably the L1 speaker is aware of the L2 speaker's difficulties, and if the L2 speaker uses a word or construction, it is much safer to repeat that word or construction than use a different form. This would explain why the L1 speaker might be prepared to use inappropriate words (e.g., *wheels* for tyres) or mildly ungrammatical constructions on occasion. As already noted, Bortfeld and Brennan (1997) discuss examples of such behaviour, for example, when an L1 speaker starts referring to wheels as *tyres* as a result of the L2 speaker's use of this term. This accords with Branigan et al. (2004), who found that participants were more likely to align with what they believed to be a computer than what they believed to be another person (see discussion above).

These processes may underlie three features of foreigner talk. First, native speakers (as pointed out above) tend to repeat the production of their interlocutors more when these are L2 speakers than when they are L1 speakers (e.g., as a means of comprehension checks). In such cases, they use non-automatic linguistic alignment as an indicator of understanding. Second, L1 speakers appear not only to incorporate some of the non-native expressions produced by the L2 speaker, but on some occasions they re-structure them to make them grammatically correct (e.g., Bortfeld & Brennan, 1997; Lytser & Ranta, 1997; Mackey & Philp, 1998). This type of re-structuring is often called a 'recast' and is defined by Gass (1997) as 'those instances in which an interlocutor rephrases an incorrect utterance with a corrected version, while maintaining the integrity of the original meaning'; both examples (1) and (2) contain clarification requests that are recasts, and involve only partial entrainment. This sort of correction may represent a source of implicit negative evidence to the non-native speaker, which may enhance second language learning (see Braidi, 2002, and Gass, 1997, for a discussion of the effectiveness of recasts in second language learning). Again, this seems to be an example of non-automatic linguistic alignment. Third, the adjustments made by L1 speakers also affect their type of discourse. For example, an L1 speaker produces more descriptions or circumlocutions when speaking to an L2 addressee than to an L1 addressee (Henzl, 1979; see also Bortfeld & Brennan, 1997, for experimental evidence). The use of recasts and circumlocutions (together with other devices) will promote alignment of situation models. However, note that recasts and circumlocutions do not seem to be a product of automatic priming but rather of a deliberate choice by the L1 speaker, and hence presumably incur a processing cost.

The contribution of these different features of foreigner talk to the promotion of alignment can be studied experimentally. Here again we can

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make use of the dyadic interactions involving a confederate and a naïve participant. In this case, the naïve participant would be an L1 speaker and the confederate an L2 speaker. For example, in a recent study (Ivanova, Costa, Pickering, & Branigan, 2007), we assessed whether L1 speakers of Spanish would be more likely to align with L2 than with L1 speakers when the confederates use non-preferred terms when referring to pictures (e.g., *spectacles* rather than *glasses*). The results of the experiment revealed this to be the case and, in this very simple task in which the two alternative names were correct, L1 speakers tended to produce non-preferred terms about twice as often when these were produced by an L2 confederate than by an L1 confederate.

There will be occasions on which the L1 speaker fails to align situation models with the L2 speaker. For example, when the production of the L2 speaker is not appropriate (e.g., when a word or grammar is wrong) and the contextual information is not enough to guess its meaning, it may be impossible for the native speaker to align. On such occasions, neither automatic priming nor recasts can promote alignment, because a recast requires the L1 speaker to know the L2 speaker's intended meaning. Thus, the L1 speaker may need to explicitly query the L2 speaker (see Gass, 1997), and the smooth flow of communication will be hampered.

Furthermore, these inaccuracies may affect linguistic alignment at other levels of processing. That is, a mistake at one level of representation may reduce alignment at other levels, despite the fact that the L2 speaker's production has been error-free at those levels. This again follows from Pickering and Garrod's (2004) proposal that alignment at one level of representation leads to alignment at other levels. This percolation of alignment will be broken in cases in which the L2 speaker errs in her production. For example, if the L2 speaker has produced the sentence 'he gived one to me', the L1 speaker should block alignment at the morpho-syntactic level, since such an utterance is ungrammatical. By blocking alignment at this level, the likelihood of alignment at other levels of representation will be reduced. Certainly, the L1 speaker may decide which information from the L2 speaker's production should be copied and which should not. However, this will require conscious processing and hence attentional resources, which are normally not involved in automatic priming.

An example of how one can assess whether errors at one level of representation may block alignment at other levels is to explore whether errors in the assignment of grammatical gender affect lexical alignment. Note that grammatical gender errors are very pervasive in L2 speakers. To do so, the L2 confederate can be instructed to produce some descriptions with the wrong gender value (e.g., *la mapa* [*mapa* is masculine and takes the determiner *el* rather than the feminine one *la*]), while using the correct gender value for others (e.g., *el problema*). A difference in the re-using of the word

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produced by the L2 speaker (*mapa*) in these two conditions would suggest that lexical alignment is affected by grammatical information. A reasonable expectation is that lexical alignment (as indicated by entrainment) should be greater when no gender errors are made, since a grammatical error may block such alignment. However, it is also possible that the L1 speaker tends to align more with an L2 speaker who makes an error; the L1 speaker can produce the right gender value and therefore use the interaction to correct the L2 speaker's faulty production (i.e., an embedded repair; Jefferson, 1987). Another related prediction is that the lexical boost to syntactic priming should be reduced when the speaker makes an error. For example, using Branigan et al.'s (2000) method, a participant should be more likely to say 'the farmer gives the book to the teacher' (rather than 'the farmer gives the teacher the book') after the confederate has correctly said 'the doctor gave the present to the burglar' than erroneously said 'the doctor gived the present to the burglar'.

We have so far discussed alignment by L1 speakers in dialogues that involve low-proficiency L2 speakers. When the L2 speaker is more proficient, L1-L2 dialogues will be more similar to L1-L1 interactions, and so we predict that automatic linguistic alignment should take place relatively normally in both speakers. An interesting situation arises when the L1 speaker is removed from the L1 community and entirely uses the L2 in daily life. It is possible that her only interactions in the L1 are with L2 speakers of her native language, or with other native speakers who are in the same language contact situation. This is the context in which language attrition typically occurs: changes in the L1 start at the individual level, and when an entire community experiences prolonged L2 exposure, changes spread to other speakers and, over time, to other generations of speakers (Lapidus & Otheguy, 2005; Montrul, 2004; Tsimpli, Sorace, Heycock, & Filiaci, 2004). In such a context, alignment is a powerful mechanism for the consolidation and diffusion of changes due to language contact. For example, redundant overt subject pronouns in Italian are characteristic of both the L1 Italian spoken by speakers in a long-term contact situation with English and of the L2 Italian spoken by L1 English speakers. Such inappropriate forms tend to be reproduced via linguistic entrainment in dialogues involving two L1 speakers experiencing attrition or an L1 speaker interacting with an L2 speaker (see Sorace, 2005 for a discussion of convergence between L1 attrition and L2 acquisition). Repeated interactions of this sort will reinforce language change, and ultimately give rise, in some situations, to a different variety of the language (DeGraff, 1999). An understanding of alignment mechanisms can thus shed light on processes of attrition and change (see Garrod & Doherty, 1994, for the effects of community membership on alignment).

Overall, the L1 speaker is more flexible than the L2 speaker (because they know as a result of having easier access to a larger range of linguistic

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devices), and so we might expect that the L1 speaker would linguistically align more with the L2 speaker than vice versa. However, it is less clear whether an L1 speaker will align more or less with an L2 speaker than with another L1 speaker. Most likely, non-automatic alignment will be greater for L1 to L2 than L1 to L1, because a cooperative L1 speaker will (1) speak to an L2 speaker like a novice, and it can be argued that novice-speak is particularly geared toward alignment of situation models; and (2) echo an L2 speaker's 'wrong' choices even though she would not echo an L1 speaker's 'wrong' choices. However, automatic linguistic alignment (e.g., of words) may be disrupted for L1 speakers in L1-L2 conversations because of lack of alignment at other levels (e.g., speech rate, phonology, prosody) and this may percolate up to affect linguistic alignment. Moreover, the L2 speaker's slow or hard-to-follow speech may disrupt the timing of the L1 speaker's responses, and we hypothesise that getting this timing just right may affect some aspects of linguistic alignment.

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CONVERSATION BETWEEN TWO NON-NATIVE SPEAKERS

On some occasions, native speakers are surprised by the fact that two L2 speakers (e.g., a Spanish L1 speaker and an Italian L1 speaker) are often able to communicate with each other in their L2 (e.g., English) with greater ease than either of them is able to communicate with a L1 speaker. In this section we discuss some of the factors that may affect the ease of alignment in L2-L2 dialogue.

Perhaps the most important factor is the similarity between their respective first languages at various levels of representation. Speakers of more closely related L1s are likely to produce the same L2 in more similar ways than speakers of less closely related L1s. Thus automatic linguistic alignment should be stronger for the former than the latter. For example, if the phonological repertoire and structure of the L1s are similar, then they will probably exhibit similar inaccuracies in their L2. It should therefore be easier and faster for them to phonologically decode each other's messages than if the languages differ greatly (because they will be more tuned to that specific foreign accent and manner of speaking; see Bent & Bradlow, 2003). This will support automatic linguistic alignment. The same may hold for other linguistic properties such as vocabulary or syntax. For example, if there is a tendency for L2 speakers to use words that are cognates of L1 words, then the likelihood that L2 speakers will make the same word choices will be higher for more closely related languages.

Note, however, that if similarity between the L1s of the interlocutors promotes automatic alignment, then dissimilarities between them may lead to great problems. For example, if the accents of the two interlocutors are

very different, then the attentional resources needed to decode the message may be sufficiently great that alignment will be reduced. Certainly, this would also be a problem for an L1 interlocutor. However, given that the L1 speaker is more flexible than the L2 speaker, the effort needed to decode a strongly accented message will be less. Therefore, we can derive the following hypothesis: alignment in a conversation between two L2 speakers of very different languages will be reduced. In such occasions, an L1 speaker may be able to align better than the L2 speakers. Additionally, the existence of cross-linguistic influences from their L1 to their L2 (as evidenced by cross-linguistic syntactic priming; e.g., Hartsuiker et al., 2004) should mean that speakers of similar L1s should have more similar activation profiles in their L2s than speakers of dissimilar L1s.

This hypothesis can be tested using a similar experimental strategy to those discussed above. We can design an experiment in which Spanish L1 speakers interact with L1 speakers of a similar language (e.g., Italian) or with L1 speakers of a dissimilar language (e.g., Japanese) in their L2 (e.g., English). In this experiment, we could manipulate not only the degree of phonological similarity between the accent of the two L2 speakers but also the cognate status of the words included in the experiment. If our hypothesis is correct, alignment in English will be present to a larger extent between Spanish and Italian interlocutors than between Spanish and Japanese ones.

But not all benefits of L2-L2 conversations may relate to similarity between the L2s and the L1. It may be that the fact that two L2 speakers have similar knowledge of the L1 benefits communication to a greater extent than if one speaker were an L1 speaker. Clearly, their representations are likely to be aligned with respect to any dimension in which knowledge of their L2s differs from the knowledge of L1. One relevant example concerns speech rates. We have argued that differences in speech rates between L1 and L2 speakers may be sufficiently great to disrupt communication, because the speakers find it difficult or impossible to align them with each other. This should be much less of a problem for two L2 speakers, because their speech rates should be more similar to each other. Accordingly, they should be able to entrain on the same syllable rate, therefore promoting smooth dialogue (Wilson & Wilson, 2005). At least in this respect, L2-L2 dialogue may therefore contain a larger automatic component than L1-L2 dialogue.

However, there are also some features of L2-L2 dialogues that may make smooth conversation difficult, the most important perhaps being the need by both interlocutors to assess each other's proficiency level. When addressing an L1 interlocutor, an L2 speaker can assume the L1 interlocutor has complete knowledge of the language and is therefore likely to understand any acceptable use of the language. But when addressing an L2 interlocutor, an L2 speaker needs to assess the likelihood that her linguistic choices will be understood. In other words, she must keep a model of her interlocutor's

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linguistic knowledge. Such modelling uses attentional resources and impairs automatic linguistic alignment (Pickering & Garrod, 2004). Thus, L2 interlocutors need to monitor their productions for L2 addressees to a greater extent than they do for L1 addressees. As we have noted, this is also a problem for an L1 speaker addressing an L2 interlocutor, but the L1 speaker should have more resources available. In particular, they should be more flexible, so that they are more likely to have different ways of conveying the same information.

The above discussion leads to a conflicting situation between factors that may help alignment in L2-L2 dialogues and others that may hamper it or tax the attentional system of L2 speakers. The similarity between the L2 speakers may promote automatic linguistic alignment between them, as discussed above. However, the conscious monitoring of the linguistic decisions taken when dialogue involves the L2 of the interlocutors will interfere with linguistic alignment. One possible consequence of this conflict is that, in order to avoid extensive monitoring, L2 speakers may align on a set of representations (lexical, grammatical, etc.) that they know are shared between them. This alignment does not necessarily guarantee that their utterances will be completely accurate. However, these utterances are likely to be sufficient for conveying the intended meanings and will promote efficient communication way. This rapid alignment may be at the expense of the linguistic richness of the messages exchanged by the interlocutors. But this is probably the least of the problems that two L2 speakers face.

CONCLUSION

In this article we have reflected on the nature of the processes that promote alignment in second language dialogues. Thus, our main goal was to lay down a theoretical discussion which may provide a framework for future experiments. In doing so, we have considered dialogues between L1 and L2 interlocutors and dialogues between two L2 interlocutors. We have argued that the basic alignment mechanisms proposed for dialogues between L1 speakers should function in dialogues involving L2 speakers. However, these mechanisms will tend to be impaired for L1-L2 dialogues, in part because L2 speakers find making linguistic decisions more effortful, in part because L1 speakers may be uncertain how to cope with L2 speakers' lack of linguistic knowledge or abilities, and in part because their linguistic differences may impair the process of alignment. L2-L2 dialogues may also be impaired, though we suspect that such impairment may (under some conditions at least) be less than L1-L2 dialogues.

More theoretically, we have considered differences between linguistic and non-linguistic alignment, and between automatic and non-automatic

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alignment, and suggested that the relative contributions of each form of alignment may be different in second language dialogues from dialogues between native speakers. Pickering and Garrod (2004) proposed that automatic linguistic alignment is the central mechanism leading to communicative success, but their analysis was based on dialogues between native speakers. We have suggested that the situation may be very different in second language dialogue. We hope that our analysis will stimulate experimental research that will prove informative about both bilingualism and dialogue.

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REFERENCES

Arthur, B., Wemer, R., Culver, M., Lee, Y. J., & Thomas, D. (1980). The register of impersonal discourse to foreigners: Verbal adjustments to a foreign accent. In D. Larsen-Freeman (Ed.), *Discourse analysis in second language research* (pp. 111–124). Rowley, MA: Newbury House.

Bargh, J. A. (1994). The four horsemen of automaticity: Awareness, intention, efficiency, and control in social cognition. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 1, pp. 1–40). Mahwah, NJ: Lawrence Erlbaum.

Bent, T., & Bradlow, A. R. (2003). The interlanguage speech intelligibility benefit. *Journal of the Acoustical Society of America*, *114*, 1600–1610.

Bock, J. K. (1986). Syntactic persistence in language production. *Cognitive Psychology*, *18*, 355–387.

Bortfeld, H., & Brennan, S. (1997). Use and acquisition of idiomatic expressions in referring by native and non-native speakers. *Discourse Processes*, *23*, 119–147.

Braidi, S. M. (2002). Reexamining the role of recasts in native speaker/nonnative speaker interactions. *Language Learning*, *52*, 1–42.

Branigan, H. P., Pickering, M. J., & Cleland, A. A. (2000). Syntactic coordination in dialogue. *Cognition*, *75*, B13–B25.

Branigan, H. P., Pickering, M. J., Pearson, J., McLean, J. F., & Nass, C. I. (2003). Syntactic alignment between computers and people: The role of belief about mental states. *Proceedings of the 25th Annual Conference of the Cognitive Science Society* (pp. 186–191). Mahwah, NJ: Lawrence Erlbaum.

Branigan, H. P., Pickering, M. J., Pearson, J., McLean, J. F., Nass, C. I., & Hu, J. (2004). *Beliefs about mental states in lexical and syntactic alignment: Evidence from human-computer dialogs.* Poster presented at the 17th CUNY Conference on Human Sentence Processing, College Park, MA.

Branigan, H. P., Pickering, M. J., McLean, J. F., & Cleland, A. A. (2007). Participant role and syntactic alignment in dialogue. *Cognition*, *104*, 163–197.

Brennan, S. E., & Clark, H. H. (1996). Conceptual pacts and lexical choice in conversation. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*, 1482–1493.

Chartrand, T. L., & Bargh, J. A. (1999). The chameleon effect: The perception-behavior link and social interaction. *Journal of Personality and Social Psychology*, *76*, 893–910.

Clark, H. H. (1996). *Using language.* Cambridge, UK: Cambridge University Press.

Cleland, A. A., & Pickering, M. J. (2003). The use of lexical and syntactic information in language production: Evidence from the priming of noun-phrase structure. *Journal of Memory and Language*, *49*, 214–230.

Cohen, J. D., Dunbar, K., & McClelland, J. L. (1990). On the control of automatic processes: A parallel distributed processing account of the Stroop effect. *Psychological Review*, *97*, 332–361.

Costa, A., Caramazza, A., & Sebastián-Gallés, N. (2000). The cognate facilitation effect: Implications for the models of lexical access. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *26*, 1283–1296.

Costa, A., Santesteban, M., & Caño, A. (2005). On the facilitatory effects of cognate words in bilingual speech production. *Brain and Language*, *94*, 94–103.

Danet, B. (1980). 'Baby' or 'fetus'?: Language and the construction of reality in a manslaughter trial. *Semiotica*, *32*, 187–219.

De Groot, A. M. (1989). Representational aspects of word imageability and word frequency as assessed through word association. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *15*, 824–845.

De Groot, A. M. B., & Keijzer, R. (2000). What is hard to learn is easy to forget: The roles of word concreteness, cognate status, and word frequency in foreign-language vocabulary learning and forgetting. *Language Learning*, *50*, 1–56.

DeGraff, M. (1999). *Language creation and language change*. Cambridge, MA: MIT Press.

Doughty, C., & Long, M. H. (2003). *Handbook of second language acquisition*. New York: Basil Blackwell.

Faerch, C., & Kasper, G. (1983). *Strategies in interlanguage communication*. New York: Longman.

Ferguson, C. A. (1971). Absence of copula and the notion of simplicity: A study of normal speech, baby talk, foreigner talk, and pidgin. In D. Hymes (Ed.), *Pidginization and creolization of languages* (pp. 141–150). Cambridge, UK: Cambridge University Press.

Ferguson, C. A. (1975). Towards a characterization of English foreigner talk. *Anthropological Linguistics*, *17*, 1–14.

Ferreira, V. S., & Bock, K. (2006). The functions of structural priming. *Language and Cognitive Processes*, *21*, 1011–1029.

Flett, S. J., Branigan, H. P., & Pickering, M. J. (2007). *Syntactic representation and processing in L2 speakers*. Unpublished manuscript.

Francis, W. S. (2005). Bilingual semantic and conceptual representation. In J. F. Kroll & A. M. B. de Groot (Eds.), *Handbook of bilingualism: Psycholinguistic approaches* (pp. 251–267). New York: Oxford University Press.

Garrod, S., & Anderson, A. (1987). Saying what you mean in dialogue: A study in conceptual and semantic co-ordination. *Cognition*, *27*, 181–218.

Garrod, S., & Doherty, G. (1994). Conversation, co-ordination and convention: An empirical investigation of how groups establish linguistic conventions. *Cognition*, *53*, 181–215.

Garrod, S., & Pickering, M. J. (2007a). Alignment in dialogue. In G. Gaskell (Ed.), *Oxford handbook of psycholinguistics* (pp. 443–451). Oxford, UK: Oxford University Press.

Garrod, S., & Pickering, M. J. (2007b). Automaticity in language production in monologue and dialogue. In A.S. Meyer, L. R. Wheeldon, & A. Krott (Eds.), *Automaticity and control in language processing* (pp. 1–21). Hove, UK: Psychology Press.

Gass, S. M. (2003). Input and interaction. In C. Doughty & M. H. Long (Eds.), *The handbook of second language acquisition* (pp. 224–255). Oxford, UK: Blackwell.

Gass, S. M. (1997). *Input, interaction, and the second language learner*. Mahwah, NJ: Lawrence Erlbaum.

Gass, S. M., & Varonis, E. (1989). Incorporated repairs in nonnative discourse. In M. Eisenstein (Ed.), *The dynamic interlanguage* (pp. 71–86). New York: Plenum Press.

Gass, S., & Varonis, E. (1994). Input, interaction, and second language production. *Studies in Second Language Acquisition*, *16*, 283–302.

Giles, H., Coupland, N., & Coupland, J. (1991). Accommodation theory: Communication, context, and consequence. In H. Giles, J. Coupland, & N. Coupland (Eds.), *Contexts of accommodation:*

Downloaded By: [Swets Content Distribution] At: 09:51 31 May 2009

Developments in applied sociolinguistics (pp. 1–68). Cambridge, UK: Cambridge University Press.

Gollan, T. H., & Acenas, L. A. (2004). What is a TOT? Cognate and translation effects on tip-of-the-tongue states in Spanish–English and Tagalog–English bilinguals. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *30*, 246–269.

Grice, P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics. Vol. 3: Speech Acts* (pp. 41–58). New York: Academic Press.

Gries, S. Th. (2005). Syntactic priming: A corpus-based approach. *Journal of Psycholinguistic Research*, *34*, 365–399.

Hartsuiker, R. J., Pickering, M. J., & Veltkamp, E. (2004). Is syntax separate or shared between languages? Cross-linguistic syntactic priming in Spanish/English bilinguals. *Psychological Science*, *15*, 409–414.

Hawkins, B. (1985). Is an 'appropriate response' always so appropriate? In S. M. Gass & C. G. Madden (Eds.), *Input and second language acquisition* (pp. 162–180). Rowley, MA: Newbury House.

Henzl, V. (1979). Foreigner talk in the classroom. *International Review of Applied Linguistics*, *17*, 159–167.

Horton, W. S., & Gerrig, R. J. (2005). The impact of memory demands on audience design during language production. *Cognition*, *96*, 127–142.

Isaacs, E. A., & Clark, H. H. (1987). References in conversations between experts and novices. *Journal of Experimental Psychology: General*, *116*, 26–37.

Ivanova, I., Costa, A., Pickering, M., & Branigan, H. (2007). *Lexical alignment of L1 speakers with L2 speakers*. Poster presented at AMLaP–2007 (Architectures and Mechanisms of Language Processing Conference), Türkü, Finland.

Jefferson, G. (1987). On exposed and embedded corrections in conversation. In G. Button & J. R. E. Lee (Eds.), *Talk and social organisation* (pp. 86–100). Clevedon, UK: Multilingual Matters.

Lakin, J. L., & Chartrand, T. L. (2003). Using nonconscious behavioral mimicry to create affiliation and rapport. *Psychological Science*, *14*, 334–339.

Lapidus, N., & Otheguy, R. (2005). Contact induced change? Overt nonspecific ellos in Spanish in New York. In L. Sayahi & M. Westmoreland (Eds.), *Selected Proceedings of the Second Workshop on Spanish Sociolinguistics* (pp. 67–75). Somerville, MA: Cascadilla Press.

Levelt, W. J. M., & Kelter, S. (1982). Surface form and memory in question answering. *Cognitive Psychology*, *14*, 78–106.

Loebell, H., & Bock, K. (2003). Structural priming across languages. *Linguistics*, *41*, 791–824.

Long, M. H. (1983). Native speaker/nonnative speaker conversation and the negotiation of comprehensible input. *Applied Linguistics*, *4*, 126–141.

Long, M. H. (1981). Questions in 'foreigner talk discourse'. *Language Learning*, *31*, 135–157.

Lyster, R., & Ranta, L. (1997). Corrective feedback and learner uptake: Negotiation of form in communicative classrooms. *Studies in Second Language Acquisition*, *19*, 37–66.

Mackey, A. (1999). Input, interaction and second language development: An empirical study of question formation in ESL. *Studies in Second Language Acquisition*, *21*, 557–587.

Mackey, A. (in press). *Input, interaction and corrective feedback in L2 learning*. Oxford, UK: Oxford University Press.

Mackey, A., Gass, S., & McDonough, K. (2000). Do learners recognize implicit negative feedback as feedback? *Studies in Second Language Acquisition*, *22*, 471–497.

Mackey, A., & Philp, J. (1998). Conversational interaction and second language development: Recasts, responses and red herrings? *Modern Language Journal*, *82*, 338–356.

Meisel, J. (1976). Linguistic simplification: A study of immigrant workers' speech and foreigner talk. In S. Felix (Ed.), *Second language development*. Tubingen, Germany: Narr.

Montrul, S. (2004). Subject and object expression in Spanish heritage speakers: A case of morphosyntactic convergence. *Bilingualism: Language and Cognition*, *7*, 125–142.

Downloaded By: [Swets Content Distribution] At: 09:51 31 May 2009

Odlin, T. (2003). Cross-linguistic influence. In C. Doughty & M. Long (Eds.), *The handbook of second language acquisition* (pp. 436–486). Oxford, UK: Blackwell.

Oliver, R. (1998). Negotiation of meaning in child interactions. The relationship between conversational interaction and second language acquisition. *Modern Language Journal*, *82*, 372–386.

Pardo, J. S. (2006). On phonetic convergence during conversational interaction. *Journal of the Acoustical Society of America*, *119*, 2382–2393.

Pearson, J., Hu, J., Branigan, H. P., Pickering, M. J., & Nass, C. I. (2006). Adaptive language behavior in HCI: How expectations and beliefs about a system affect users' word choice (pp. 1177–1180). *Proceedings of CHI 2006*, Montreal, Canada.

Pica, T. (1983). Adult acquisition of English as a second language under different conditions of exposure. *Language Learning*, *33*, 465–497.

Pica, T. (1994). Research on negotiation: what does it reveal about second language learning conditions, processes and outcomes? *Language Learning*, *44*, 493–527.

Pica, T., & Doughty, C. (1987). The role of group work in classroom second language acquisition. *Studies in Second Language Acquisition*, *7*, 233–248.

Pica, T., Young, R., & Doughty, C. (1985). The impact of interaction on comprehension. *TESOL Quarterly*, *21*, 737–758.

Pickering, M. J., & Garrod, S. (2006). Alignment as the basis for successful communication. *Research on Language and Computation*, *4*, 203–228.

Pickering, M. J., & Garrod, S. (2004). Toward a mechanistic psychology of dialogue. *Behavioral and Brain Sciences*, *27*, 169–225.

Polio, C., & Gass, S. M. (1998). The role of interaction in native speaker comprehension of nonnative speaker speech. *Modern Language Journal*, *82*, 308–319.

Posner, M. I., & Snyder, C. R. R. (1975). Facilitation and inhibition in the processing of signals. In P. M. A. Rabbitt & S. Dornic (Eds.), *Attention and Performance V* (pp. 669–682). New York: Academic Press.

Ramamurti, R. (1980). Strategies involved in talking to a foreigner. *PENN Review of Linguistics*, *4*, 84–93.

Sacks, H., Schegloff, A. E., & Jefferson, G. (1974). A simplest systematics for the organization of turn-taking for conversation. *Language*, *50*, 696–735.

Schachter, J. (1974). An error in error analysis. *Language Learning*, *24*, 205–214.

Schoonbaert, S., Hartsuiker, R., & Pickering, M. J. (2007). The representation of lexical and syntactic information in bilinguals: Evidence from syntactic priming. *Journal of Memory and Language*, *56*, 153–171.

Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending, and a general theory. *Psychological Review*, *84*, 127–190.

Shockley, K., Santana, M., & Fowler, C. A. (2003). Mutual interpersonal postural constraints are involved in cooperative conversation. *Journal of Experimental Psychology: Human Perception and Performance*, *29*, 326–332.

Snow, C. (1995). Issues in the study of input: Fine-tuning, universality, individual and developmental differences, and necessary causes. In P. Fletcher & B. MacWhinney (Eds.), *The handbook of child language* (pp. 180–194). Oxford, UK: Blackwell.

Sorace, A. (2005). Syntactic optionality at interfaces. In L. Cornips & K. Corrigan (Eds.), *Syntax and variation: Reconciling the biological and the social* (pp. 46–111). Amsterdam: John Benjamins.

Tsimpli, T., Sorace, A., Heycock, C., & Filiaci, F. (2004). First language attrition and syntactic subjects: A study of Greek and Italian near-native speakers of English. *International Journal of Bilingualism*, *8*, 257–277.

Downloaded By: [Swets Content Distribution] At: 09:51 31 May 2009

Van Hell, J. G., & Mahn, A. C. (1997). Keyword mnemonics versus rote rehearsal: Learning concrete and abstract foreign words by experienced and inexperienced learners. *Language Learning*, *47*, 507–546.

Warren-Leubecker, A., & Bohannon, J. N. (1982). The effects of expectation and feedback on speech to foreigners. *Journal of Psycholinguistic Research*, *11*, 207–215.

Watson, M., Pickering, M. J., & Branigan, H. P. (2004). Alignment of reference frames in dialogue. *Proceedings of the 26th Annual Conference of the Cognitive Science Society.* Mahwah, NJ: Lawrence Erlbaum.

Wilson, M., & Wilson, T. P. (2005). An oscillator model of the timing of turn-taking. *Psychonomic Bulletin and Review*, *12*, 957–968.

Wooldridge, B. (2001). Foreigner Talk: An important element in cross-cultural management education and training. *International Review of Administrative Sciences*, *67*, 621–634.

Zwaan, R. A., & Radvansky, G. A. (1998). Situation models in language comprehension and memory. *Psychological Bulletin*, *123*, 162–185.

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