

On the Dynamic Relations Between Common Ground and Presupposition

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Abstract The common ground theory of presupposition has been dominant since the seventies (Stalnaker 1974, 1978, 2002). This theory has resulted from a view of communication as transfer between minds. In this view interlocutors presume that speakers speak cooperatively, they infer that they have intentions and beliefs that are necessary to make sense of their speech acts, and treat such entities as pre-existing psychological ones that are later somehow formulated in language. Common ground is considered as a distributed form of mental representation and adopted as a basis on which successful communication is warranted (Arnseth and Solheim 2002; Kecskes and Zhang 2009). However, the theory has not gone without objection and criticism (e.g. Abbott 2008; Beaver and Zeevat 2004; von Stechow 2001, 2006; Simons 2003) because it is based on “an oversimplified picture of conversation” (Abbott 2008), and as a consequence the relationship between common ground and presupposition has also been oversimplified. In this approach presupposition is often considered as a conventional or conversational constraint of common ground, or requirement on common ground that must be satisfied in order to make an appropriate utterance. The problem of accommodation is a critical issue that has been raised against this view, and caused great challenge to the theory by stimulating diverse alternatives. The goal of this paper is to redefine the relationship between common ground and presupposition within the confines of the socio-cognitive approach (SCA). SCA (Kecskes 2008; Kecskes and Zhang 2009; Kecskes 2010a, b) adopted in this paper offers an alternative view on communication, which claims that communication is not an ideal transfer of information, and cooperation and egocentrism (Barr and Keysar 2005; Colston 2005; Keysar 2007), are both present in the process of communication to a varying extent. The SCA emphasizes the dynamics of common ground creation and

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updating in the actual process of interaction, in which interlocutors are considered as “complete” individuals with different possible cognitive status being less or more cooperative at different stages of the communicative process. Presupposition is a proposal of common ground, and there is a vibrant interaction between the two. They enjoy a cross relation in terms of content and manners in which they are formed, and their dynamism is inherently related and explanatory to each other. This claim has important implications to the solution to presupposition accommodation. After the introduction [Sect. 2](#) describes the socio-cognitive approach. [Section 3](#) reviews the assumed common ground, and [Sect. 4](#) introduces the speaker-assigned presupposition. [Section 5](#) discusses the dynamism of presuppositions and common ground, and claims that their dynamic observations are coherent and explanatory to each other. [Section 6](#) readdresses the accommodation problem with redefinition of the relations.

Keywords Presupposition · Common ground · Socio-cognitive · Egocentrism · Cooperation

1 Introduction

The common ground theory of presupposition started to be formulated in the seventies. It was first proposed by Stalnaker (1974, 1978) and adopted by several formal pragmatists (e.g. Heim 1983; Beaver 1997; von Stechow 2006). In this theory propositions that a sentence presupposes are just those that must be entailed by the common ground of any context that is to admit that sentence. This notion of presupposition relies on a concept of “common ground” according to which the common ground of a context of utterance is the conjunction of all those propositions that interlocutors take for granted in that context either because they are permanently shared beliefs in their community, or because they have been established in the course of the preceding conversation (cf. Heim 1990).

Stalnaker proposed a version of information-gathering discourse, in which assertion is intended to update common ground, and presupposition is intended to shape or narrow down common ground. Presupposition is interpreted as the speaker’s belief in the common ground status of the proposition: “A proposition *P* is a pragmatic presupposition of a speaker in a given context just in case the speaker assumes or believes that *P*, assumes or believes that his addressee assumes or believes that *P*, and assumes or believes that his addressee recognizes that he is making these assumptions, or has these beliefs” (Stalnaker 1974: 573). The formula below describes the speaker’s cognitive state in presupposing:

(1) $K_1p, K_1K_2p, K_1K_2K_1p, \dots$

In this formula number 1 denotes the speaker, number 2 denotes the hearer or the addressee, and the letter *K* denotes the state of having belief or assumption in a weak sense or knowledge in a strong sense.

Formal pragmatists (cf. Beaver and Zeevat 2004; Simons 2003; von Stechow 2001) adopted Stalnaker's common ground theory and adapted it to their own needs. They have aimed at formal description of presupposition projection which takes place in an unfolding context. The sentence requires that the presupposed proposition be taken for granted and not subject to (further) discussion and the utterance of it requires that the speaker assume that its requirements are satisfied.

The main problem with this approach is that it takes into account only the collective core part of common ground that is encapsulated in the utterance and means relatively the same for all speakers of that language community. At the same time this approach ignores the privatized knowledge and beliefs of interlocutors. It does not actually consider what is on the speaker's mind in that particular situational context. Instead, it formalizes what's going on with the sentence and its linguistic context. The formula below describes the minimal requirements of presupposition on the interlocutors' cognitive states:

(2) K_1p, K_2p

It might be difficult to clarify what exactly "taken-for-grantedness" means, but the formula may suffice to indicate that the proposition is noncontroversial and requires no further discussion. Researchers studying pragmatic presuppositions from socio-cultural or other perspectives (e.g. Soames 1982; Yule 1996) have shown concerns about the interlocutors' cognitive states.

However, in whatever directions the common ground theory of pragmatic presupposition has been developed, it still has drawn criticism. The critical issue is accommodation. A special type of informative presupposition raises this issue which has become a problem that no one could get by without handling it first. The following conversation shows this problem:

(3) Bob (who met Alice for the first time): Are you going to lunch?

Alice: No, I've got to pick up my sister.

This is a problematic case of presupposition concerning its common ground status. We can see this problem more clearly by the formula below:

(4) $K_1p, \sim K_2p, K_1 \sim K_2p, \dots$

Obviously this description of cognitive states does not go with either (1) or (2). Because this special case of presupposition violates the common ground theory, many researchers adopted the "common ground + accommodation" view (e.g. Karttunen 1974; Lewis 1979; Stalnaker 1974, 2002, 2008; Soames 1982; von Stechow 2000, 2006). Although in different forms of interpretation, this view generally follows the rule depicted by Lewis (1979: 417): "If at time t something is said that requires presupposition P to be acceptable, and if P is not presupposed just before t , then—*ceteris paribus* and within certain limits—presupposition P comes into existence at t ".

Although several attempts have been made to explain accommodation, none has managed to clarify properly why the speaker presupposes as such when s/he is fully aware of the presupposed not being part of common ground knowledge, and

how accommodation is achieved in the time gap after the utterance event has taken place and before it has been accepted or rejected (Zhang 2009).

This case of informative presupposition and the approach of accommodation have called the common ground theory of presupposition into question. Several researchers have proposed alternative ways which greatly challenged the extant theory. Burton-Roberts (1989) regarded accommodation as a fatal problem to the theory and insisted on a semantic version of presupposition instead. Abbott (2000, 2006, 2008) approached the issue from the angle of information structure and proposed to give up the theory altogether. Simons (2001, 2003, 2004) argued that accommodation, as construed on the common ground view, requires one to posit a conventional constraint on sentences, and therefore she was forced to abandon the common ground view of presupposition and investigated conversational constraints on utterances by analyzing the assumptions of relevance and cooperativeness.

From the above we can see that not only is the “common ground + accommodation” view problematic but objections to and criticisms of it also vary greatly. What makes things more complicated is that Stalnaker (2002, 2008) appears to have obscured the dividing line between common ground and presupposition, and occasionally tends to use them as alternative terms. This may cause even more confusion to the problems at issue. It is therefore crucial how one views the relationship between common ground and presupposition. The socio-cognitive approach with its notions of assumed common ground and speaker-assigned presupposition gives us the chance to reexamine the dynamism of these two entities and redefine their relationship.

2 The Socio-cognitive View of Communication

We think that the main problem with the common ground theory of presupposition is that it considers common ground an a priori concept, partly ignores its dynamism and relies on the assumption that cooperation is always present to the same extent in the communicative process. The Alice’s sister (3) issue may be solved within the confines of the socio-cognitive approach (SCA) to communication proposed by Kecskes (2008, 2010b) and (Kecskes and Zhang 2009). This approach is based on two claims. First, speaker and hearer are equal participants of the communicative process. They both produce and comprehend relying on their most accessible and salient knowledge expressed in their private contexts in production and comprehension. Consequently, only a holistic interpretation of utterance from both the perspective of the speaker and the perspective of the hearer can give us an adequate account of language communication. Interlocutors should be considered as “complete” individuals with different possible cognitive status, with possible different interpretation of the same core common ground information, which has a profound effect on what the same linguistic structure may mean for any of them. Second, communication is a dynamic process in which individuals are not only constrained by societal conditions but they also shape them at the same time. As a

consequence, communication is characterized by the interplay of two traits that are inseparable, mutually supportive and interactive:

Individual trait:	Social trait:
Prior experience	Actual situational experience
Saliency	Relevance
Egocentrism	Cooperation
Attention	Intention

In the socio-cognitive approach interlocutors are considered as social beings searching for meaning with individual minds embedded in a socio-cultural collectivity. Individual traits (prior experience - → saliency - → egocentrism - → attention) interact with societal traits (actual situational experience - → relevance - → cooperation - → intention). Each trait is the consequence of the other. Prior experience results in saliency which leads to egocentrism that drives attention. Intention is a cooperation-directed practice that is governed by relevance which (partly) depends on actual situational experience. Kecskes (2010b; 2012) argued that SCA integrates the pragmatic view of cooperation and the cognitive view of egocentrism and emphasizes that both cooperation and egocentrism are manifested in all phases of communication, albeit to varying extents. *Communication is the result of interplay of intention and attention motivated by socio-cultural background* that is privatized/subjectivized by the individuals in their linguistic behavior. The background is composed of knowledge of interlocutors deriving from their private prior experience and current situational experience that are both socio-cultural in nature (Kecskes 2008).

3 Assumed Common Ground

3.1 Core Common Ground and Emergent Common Ground

Kecskes and Zhang (2009) postulated that there are two sides of assumed common ground: *core common ground* and *emergent common ground*. *Core common ground* refers to the relatively static, generalized, common knowledge that belongs to a certain speech community as a result of prior interaction and experience, whereas *emergent common ground* refers to the relatively dynamic, actualized and particularized knowledge co-constructed in the course of communication that belongs to and is privatized by the individual(s). The former is a repertoire of knowledge that can be assumed to be shared among individuals of a speech community independent of the situational circumstances, such as when and where the conversation occurs, between whom it occurs, etc. In contrast, the actual

contextual part (emergent common ground) is knowledge that is aroused, co-constructed and/or involved as shared enterprises in the particular situational context that pertains to the interlocutors exclusively. This contingent circumstance draws attention of the interlocutors to the same entities or states and, with the formation of particular intentions therein, activates some of their prior individual experiences that join in this intention-directed action.

When critiquing the common ground view of presupposition Abbott (2000) underlined that the driving idea behind this theory is that presuppositions are identified with “old” information, or information that the speaker is treating as “old.” This is not the case in the socio-cognitive approach in which common ground is perceived as an effort to converge the mental representation of shared knowledge present as memory (“old” information) that we can activate, shared knowledge that we can seek, and rapport as well as knowledge that we can create in the communicative process (“new” information). According to this approach common ground is present throughout the whole communicative process. The core and actual (emergent) components join in the construction of common ground in all stages and motivate the interplay of intention and attention in this process, although they may contribute to the construction process in different ways, to different extent, and in different phases of the communicative process.

3.2 *Dynamism of Common Ground*

Common ground is an assumption that we make in the course of actual communication. Both core common ground and emergent common ground are integrated parts of this assumed common ground. Core common ground is a general assumption in two ways. First, although core common ground is relatively static and shared among people, it can *change diachronically*. During a certain period, say a couple of years, we may safely assume that interlocutors have access to relatively similar common knowledge because components of core common ground won’t change dramatically. However, in the long run it definitely will change; people’s social life, both material and spiritual, will experience some changes over a long period of time, and as a consequence their core common ground will also be changed. For instance:

(5) Jill: I need some money.

Jack: There is an ATM over there.

It is part of core common ground what “ATM” refers to. However, thirty years ago that conversation would not have made much sense since “ATM” did not exist as a part of core common ground.

Second, core common ground may also vary among different groups of individuals within a speech community. Type of shared knowledge may be determined by different factors such as geography, life style, and educational, financial and

racial factors. This fact may restrain the accessibility of certain core common ground to particular groups only within that speech community.

Emergent common ground is assumptive in that it is contingent on the actual situation, which reflects a *synchronic* change between common grounds in different situations. However, emergent common ground is not only new shared knowledge created in the course of communication but also the use and modification of shared prior knowledge or experience. There is a dialectical relationship between core common ground and emergent common ground. The core part may affect the formation of the emergent part in that it partly restricts the way the latter occurs. In many cases the emergent part may partly originate in instances of information that are predictable in the core part. On the other hand, the emergent part may contribute to the core part in that the contingent emergent part in a frequent ritual occurrence potentially becomes public disposition that belongs to the core part. In other words, they are different components of assumed common ground, which are interconnected and inseparable.

The dialectical relationship between the two sides of common ground (core and emergent) can be illustrated by the following conversation.

- (6) Jill: I met someone today.
 Jane: Good for you.
 Jill: He is a police officer.
 Jane: Are you in trouble?
 Jill: Oh, no...

Jill met someone who was a policeman. Conforming with our society's collective salience, the concept of 'policeman' is identified with some kind of trouble. This knowledge is part of core common ground. However, this understanding of the concept is privatized in Jill's case and acquires a positive overtone, as the result of her positive (maybe even romantic) encounter with the policeman. Jane did not have this experience, so she processed the word in accordance with core common ground. What the speaker meant differed from what the hearer inferred from the same utterance. Emergent common ground was created as a modification of core common ground as required by the given situation. In brief, both shared sense and current sense can vary from case to case according to the identification of relations or roles of interlocutors, their memory of prior experiences, and their cognitive perception of the actual situational context available to them.

In the socio-cognitive view *assumed common ground works as a background on which the interplay of intention and attention occurs and communication takes place*. There are three different ways intention and attention affect the construction of common ground in the process of communication (Keckes and Zhang 2009). One is that the interlocutors *activate* mental representations of shared information that they already have. A second way of constructing common ground is that interlocutors *seek* information that potentially facilitates communication as mutual knowledge. Before the speaker makes the seeking effort, the piece of information is not salient in the hearer as background underlying the upcoming conversation.

The third contribution to common ground is when the speaker brings in her private knowledge and makes it a part of common ground. The speaker has some private information that she knows is non-accessible to the hearer, and she adopts it as common ground in the belief that it facilitates the conversation and that the hearer will accept it willingly. Example # 6 demonstrates this case.

4 The Speaker-assigned Presupposition

In this section we intend to relate presupposition to the understanding of common ground in the socio-cognitive approach. The most commonly accepted view is that presupposition is taken for granted in the sense that its assumed truth is a precondition for felicitous utterance of the sentence and places a kind of constraint on discourse contexts that admit the sentence for interpretation (Chierchia and McConnell-Ginet 1990: 283). For a sentence to be appropriate in a given context its pragmatic presuppositions should already be part of the conversational background or common ground, though it may also be easy for the hearer to *accommodate* them.

According to the SCA this is a restricted view on common ground that relies mainly on what we called “core common ground” that the interlocutors take for granted in that context either because they are permanently shared beliefs in their community. *In the SCA presupposition is always related to the speaker’s and hearer’s state of mind that works with both prior and current experience.* Presupposition is a joint business, in which the speaker and the hearer play different roles. An analogy to an oral contract can be made. The first party (the speaker) draws a draft of this contract by uttering a sentence, and once it is agreed on by the second party (the hearer) giving a positive response to it, the contract becomes valid between them. Similarly, presupposing by the speaker is to common ground as what draft is to a contract. The speaker proposes a background of the conversation in his/her presupposition, and this action will receive a response from the hearer, who either agrees with it and a mutual background is formed, or has no idea about it and (or) feels doubt about it, and then the common ground is at stake. This analogy illustrates the dynamic nature of presupposition. Aiming to shape out a systematic vision of dynamic presupposition, Zhang (2009) proposed the definition of speaker-assigned presupposition, which can be formalized as follows:

The speaker presupposes that p in her/his utterance, iff:

1. s/he proposes that p be common ground;
2. s/he assigns propositional attitudes and communicative interests about p to the proposal; and
3. s/he observes truthfulness principles and intention principles in the proposal.

This definition emphasizes the dynamic nature of presupposition, and reveals the effect of attention (substantiated by the speaker’s propositional attitudes) and intention (by form of communicative interests) on the formation of presupposition.

The three points of the definition offer us answers to the basic questions concerning the nature of presupposition: what is presupposition, where does it come from, and how is it made. According to the SCA it is not the truth value of the proposition or its common ground status as triggered by linguistic expressions or means that must be satisfied as a precondition for the utterance of the sentence; instead, it is the propositional attitudes and the communicative interests concerned as assigned by the speaker that make the utterance appropriate and comprehensible.

4.1 Categorization

The formal analysis of the speaker's knowledge set (or belief set)¹ enables us to investigate specific ways the speaker relies on her propositional attitudes and communicative interests and makes his/her proposal through presupposition. Presupposition can be categorized into three groups according to values of the speaker's belief set: truthful presuppositions, assumptive presuppositions, and fake presuppositions.² The table below is a summary.

As we can see from the Ep value in the table, the speaker commits herself/himself to the truth value of the proposition for the group of truthful presuppositions, suspends it for assumptive ones, and forges a fake value for fake ones. This indicates that the speaker doesn't necessarily commit herself/herself to the truth value of presupposition. In addition, Cp-1 and Cp-2 indicate that the speaker assumes the truth value of presupposition to be shared knowledge for canonical presupposition, but not for the rest groups or subtypes. That is to say, the speaker doesn't always hold a common ground belief of presupposition.

We have no space here to explain each sub-categories so we will give only one example for each category.

The most often addressed case is *informative presupposition*. It deviates from the speaker's common ground belief and reveals her communicative interests. Previous research, however, did not establish a systematic view of it. By defining presupposition as the speaker's assignment of both propositional attitudes and communicative interests, we are able to examine informative presupposition in a more reliable way. Let us turn to Alice's case.

¹ According to epistemic logic, we assume that the agent's knowledge that p is a strong version of her belief that p. As presupposition usually reflects the speaker's beliefs about p and its common ground status, we use the logic operator K to denote the agent's strong belief; i.e., if the speaker who utters "John regrets beating his dog" presupposes that p ("John has beaten his dog before") the way she believes that p is common ground, then the formal analysis of the speaker's knowledge set about p is: $K_1p, K_1K_2p, K_1K_2K_1p, \dots$

² The first two groups are categorized in Zhang (2009), and the third group will be elaborated in an upcoming paper.

(7) (adopted from 3) Bob (who met Alice for the first time): Are you going to lunch?

Alice: No, I've got to pick up *my sister*

» p: Alice has a sister

The presupposition is proposed when Alice is aware of Bob's ignorance of it, as she intends to speak in an economic way.

(8) A daughter to her dad who has no idea about her engagement: - Oh Dad, I forgot to tell you that *my fiancé* and I are moving to Seattle next week. (Simons 2004: 14)

» p: The speaker is engaged

In this example the speaker intends to achieve certain rhetoric effects via indirect conveyance of new information that p.³

Assumptive presuppositions

Subtype: Partial presupposition

The speaker does not have common ground beliefs about p; however, s/he believes that p will be common ground if the hearer contributes that p.

(9) Mary does not know if Jill is married or not. However, she wants to find it out indirectly.

Mary: Why do you want to take a bus to the meeting? Can't your husband drive you?

Jill: No, he cannot. He is too busy.

» p: Jill has a husband (Jill is married)

Fake prepositions

Deceptive presuppositions:

The speaker does not have common ground beliefs about p, the utterance does not have truth-value. Some presupposition acts are designed only to facilitate certain communicative interests and the truth-conditional commitment is falsely made. For example:

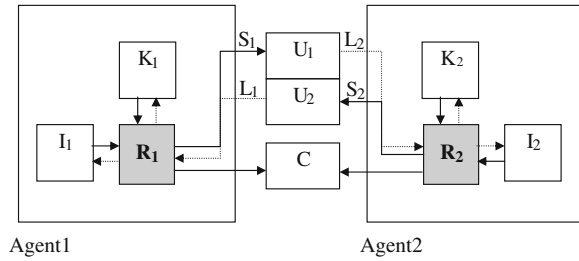
(10) Washington to the neighbor who has stolen his horse (the fact is that the horse is not blind): *Which of the horse's eyes is blind?*

» p: One of the horse's eyes is blind

When interrogating the neighbor who had stolen his horse, Washington deliberately offers a false presupposition, for which he made a false commitment

³ However, at present there is no reliable criterion based on which we can distinguish the two effects. .

Fig. 1 Mechanism for presupposition processing Agent1 Agent2



for its truth value so as to mislead the neighbor. In such presuppositions the speaker violates, rather than just exploits the common ground status in order to realize certain communicative effects.

In brief, the categorization of speaker-assigned presupposition describes the dynamism of various presuppositional phenomena in an exhaustive and systematic way. Presupposition is a proposal of common ground, and during the process of communication the speaker’s attentional resources and intentional state affect the ways presupposition is proposed and common ground is updated. The mechanism below formalizes the process.

4.2 The Mechanism

We propose the following mechanism to regulate the dynamic processing of presupposition by the interlocutors. Figure 1 describes that two agents (Agent1 and Agent2), with their cognitive states (consisting of knowledge set K and intention set I), make speech acts (S) and listen to (L) the utterance set (U₁ and U₂ by two agents) by observing the rules set (R). The presupposition act as component of the speech act may result in the update of the common ground set (C) of the utterance. In this mechanism the presupposed proposition p, which is proposed to be common ground, may be added to the common ground set (C) but not necessarily so.⁴

There are altogether the following components involved in the mechanism: two agents (Agent1 and Agent2), four elements that interact with each other (K, I, U, C), two components of speech act (S, L), and one set that regulates all connections (R). So we get the Cartesian products below:

⁴ Here the ‘update of’ or ‘adding to’ the common ground should be perceived from a technical perspective; i.e., in formal computation of information conveyed in a conversation, there is an update effect of presupposition on the common ground set, as dynamic semantics has claimed (cf. Heim 1983). It is different from psychological concerns; it does not mean every presupposed proposition is proposed to update the common ground that the interlocutors have already had in mind at the utterance time, as we understand that the speaker does hold common ground belief for some cases of presupposition. .

$$\begin{aligned}
 R &= \{R_K, R_I, R_U, R_C\} \\
 R_K: C \times U \times I &\Rightarrow K \\
 R_I: C \times U \times K &\Rightarrow I \\
 R_U: C \times K \times I &\Rightarrow U \\
 R_C: U \times K \times I &\Rightarrow C
 \end{aligned}$$

These products reveal that each of the four elements (K, I, U, C) are functions of the other three by the relation R. Each time an utterance is made (update of U), all the other three elements (K, I, C) will be updated accordingly. The question is about the nature of the information encoded in the presupposed proposition of U and the way the relation R is specified. *Does the proposition refer to/activate/seek prior knowledge and/or information, or does it create new knowledge and/or information that can be considered emergent common ground?* As the categorization shows, presupposition may contribute to common ground of the conversation in many different ways, but sometimes it does not contribute to it at all. The mechanism connecting the four elements and regulating the update of common ground information by presupposition is based on truthfulness principles and intention principles formulated by Zhang (2009). By observing the principles or ‘exploiting’ them, the speaker shapes presupposition in different ways, and the update of common ground also varies accordingly.

4.3 Dynamism of Presupposition

The dynamic nature of presupposition has been explored in the definition of speaker-assigned presupposition and the subsequent categorization and processing mechanism. In the SCA dynamism reveals itself in two dimensions, namely *synchronic variation and diachronic change*. Synchronic dynamism is reflected by the variety of participants’ common ground belief at the utterance time, whereas diachronic dynamism by the change of such belief during the course of communication.

Synchronic dynamism means that the speaker’s common ground beliefs about p and p’s common ground status at the utterance time vary in different types of presuppositions. The speaker’s belief in common ground should be:

$$K_1 = \{p: K_1p, K_1K_2p, K_1K_2K_1p\}$$

As we can see in Table 1, the speaker holds different beliefs about p in different types of presuppositions, each related to common ground in different ways. The speaker’s belief about p varies from case to case, and many do not go with the expected common ground status. Informative presupposition, for instance, is a case where the speaker deviates from his/her common ground belief as we illustrated in example (3). Also see the example below:

- (11) Joe: Look at that poster.
 Bill: Which one?
 Joe: *The green one about car insurance*. Just over there, on the wall.

Table 1 Categorization of presuppositions (ps)¹⁰

Group	Subtype	Ep	Cp-1	Cp-2
Truthful ps	Canonical	K_1p	K_1K_2p	$K_1K_2K_1p$
	Informative	K_1p	$K_1 \sim K_2p$; $K_1 \wedge K_2p$; $\sim K_1?K_2p$	$K_1K_2^+K_1p$
Assumptive ps	Partial	$\sim K_1p$	$K_1K_2p^!$	$K_1 \sim K_2 \sim K_1p$; $K_1K_2 \sim K_1p$
	Temporary	$\sim K_1p$	$K_1 \sim K_2p$	$K_1K_2 \sim K_1p$
Fake ps	Figurative	$K_1\neg p$	$K_1K_2\neg p$	$K_1K_2K_1\neg p$
	Deceptive	$K_1\neg p$	$K_1 \sim K_2p$	$K_1 \sim K_2K_1\neg p$

Bill: Wow, it’s huge!

Joe: Soon I will need to renew *my insurance*.

In this conversation, Joe makes the two presuppositions of insurance in different ways. These are different cases of informative type (see Table 1 for formal analysis). Whereas the first one is seeking shared information in that current situation which may add to current sense of emergent common ground, the latter also contributes to current sense, but by way of creating it with the speaker’s individual knowledge.

Diachronic dynamism means that p’s common ground status changes at different times of the conversation. After the presupposition is made, it goes through a process in which the participants’ knowledge adapts to each other’s, and p’s common ground status may experience some change. The proposition p that is not common ground at the utterance time may be added to common ground set later. The addition of p to C is a joint effort of the interlocutors. A proposition p that is eligible for common ground should be:

$$C = \{p: K_1p, K_2p, K_1K_2p, K_2K_1p, K_1K_2K_1p, K_2K_1K_2p, \dots\}$$

In example (11) after the hearer *accommodates* his knowledge the propositions will then be added to the common ground of the actual conversation.

¹⁰ The formal system goes in this way: “1” denotes the speaker. “Ep” (“everyone knows that p”) here denotes the status of p in the speaker’s knowledge; “ K_1p ” denotes that the speaker knows that p, “ $\sim K_1p$ ” the speaker does not know that p (which entails that the speaker believes that $\neg p$), and “ $K_1\neg p$ ” the speaker knows that p is false.

“Cp” (“it is common knowledge among the agents that p”) here denotes the speaker’s belief about status of p in the agent’s knowledge, which consists of two parts (Cp-1 and Cp-2). In Cp-1: “ K_1K_2p ” denotes that the speaker believes that the hearer knows that p, “ $K_1 \sim K_2p$ ” denotes that the speaker believes that the hearer does not know that p, “ $K_1 \wedge K_2p$ ” denotes that the speaker believes that the hearer has a false belief about p, “ $\sim K_1?K_2p$ ” denotes that the speaker does not know whether the hearer knows that p, “ $K_1K_2p^!$ ” denotes that the speaker believes that the hearer knows that p or not p, “ $K_1K_2\neg p$ ” denotes that the speaker believes that the hearer knows that p is false. In Cp-2: “ $K_1K_2K_1p$ ” denotes that the speaker believes that the hearer believes that the speaker knows that p, “ $K_1K_2^+K_1p$ ” denotes that the speaker believes that the hearer will believe (upon hearing the utterance) that the speaker knows that p, “ $K_1K_2K_1\neg p$ ” denotes that the speaker believes that the hearer believes that the speaker knows that p is false, and so forth

Also see example (12) illustrating a partial presupposition:

- (12) Sally: Sorry, I must go now.
 Mary: So you are going to meet *your boy-friend* tonight?
 Sally: Yes, he will come to pick me up.

In this example interlocutors make joint effort to add partial *p* to common ground. Sally's contribution to common ground can be dubbed as *compensation*. Both accommodation and compensation are instances of dynamic change of common ground belief (and status) of *p* in an unfolding conversation.

The projection problem also can be perceived as disclosure of diachronic dynamism. Let us explain this by the example below.

- (13) Student: The prime minister of Tahiti is a woman.
 Teacher: Tahiti's prime minister is not a woman because there is no prime minister in Tahiti.⁵

>> There exists a prime minister of Tahiti.

The speaker's (teacher) belief is that not *p* remains unaltered, but the hearer (student) will experience an update of her belief, and this is done diachronically: she may not change her belief that *p* when hearing the first clause of the utterance but change it soon when hearing the second clause. The utterance can be interpreted in two steps: the first is that the speaker claims that the student's assertion does not hold, and the second is that she justifies her claim by arguing that the presupposition (precondition) of the false assertion does not hold. It is after the second step is made that the hearer detects the negation of presupposition and updates her knowledge accordingly.

5 The Dialectic Relation Between Common Ground and Presupposition

In this section we will analyze the dialectic relations between the two phenomena and argue that they enjoy a cross relation in respect of their content and the particular ways they are formed.

Dynamism of common ground in terms of its components (core common ground and emergent common ground) explains why dynamic processes of presupposition formation should occur. As there is no perfect match between the

⁵ We hold that the speaker wouldn't make the presupposition out of the blue (see Kecskes and Zhang 2009). S/he makes it to achieve coherence in the conversation; that is, it is her/his priority to deny what is asserted by the student. In other cases when such coherence is not needed, the speaker would assert "There is no prime minister of Tahiti" directly without presupposing as such.

interlocutors' common ground in a particular situation, for the benefit of smooth communication a variety of methods to build up and develop common ground becomes necessary. Presupposition is to propose common ground based on which the present utterance can be made and comprehended. Different types of presupposition are required by different mental representations of shared knowledge the speaker has obtained, and this variety also enables her/him to aim for particular communicative interests.

Presupposition is among the various ways common ground can be formed and updated. Assertion and implicature may also contribute to common ground in different ways. All these sources converge to build up common ground and facilitate smooth communication. *In the socio-cognitive approach we proposed it is not the quantity but the quality of common ground that counts.* Efficiency of common ground constructions depends on their attention-raising quality that must be adjusted to the actual situational context. Hearers sometimes may ignore common ground that is activated by a presupposition, or they may also miss the information updated by an assertion and so forth. This may occur because of lack of attention, or there exist other cognitive obstacles, such as amnesia or other mental disorders. In such cases more strenuous efforts are called for to achieve common ground for the participants. The following dialogue⁶ demonstrates this point.

- (14) Mother: Josh, *your grandma' called* (Assertion 1)
 Josh (working on the computer): What?
 Mother: *She is having a birthday party on Sunday* (Assertion 2)
 Josh: Who is having a party?
 Mother: You never listen.. *Your grandma' does* (Assertion 3)

Josh's mother made three assertions, among which the first two were not easily received by Josh or added to common ground of the conversation because of attention and quality problems. The information "grandma's called" in Assertion 1 did not get common ground status because Josh did not pay close attention to what was said, and as a remedy it was restated by Assertion 3 in an explicit way.

On the other hand, dynamism of presupposition, revealed in its variety of types and change in the communication, affects the dynamic process of common ground construction. As we have explained earlier, different types of presupposition may contribute to common ground in different ways. They enjoy different belief representations at the utterance time and add to common ground after the joint effort of the interlocutors. Not all presuppositions will invariably contribute to common ground successfully. Sometimes they fail. The failure may be caused by

⁶ This can be taken as counterevidence to Stalnaker's (2002) claim that what is asserted is no longer new information and must be treated as common ground. In the grandma case, the proposition p is not new information to the participants, but it's not part of common ground either, as it is not mutually activated as relevant information in this conversation. Also see Kecskes and Zhang (2009: 351).

undesirable complexity of the interlocutors' cognitive state. They may have a store of different set of core common ground knowledge because of age as illustrated by (15), or they lack facilities to achieve common ground status as illustrated by (14) or the same emergent one as in (16). For different components of knowledge or belief about/in a proposition their sharedness varies according to situational factors, such as absent-mindedness in (14), cultural gap in (15), and loss of deictic tracking in (16). When these occur, the presupposed part has to be readdressed so that it can be added to common ground. In (14) 'grandma's called' is asserted, in (15) 'ATM' is brought under discussion, and in (16 below) no remedy can be made, as 'blonde hair' is not longer within sight.

- (15) Jiang: I need some money.
 Jack: There is an ATM over there.
 Jiang: I beg your pardon? What is that, uh, 'ATM'?
- (16) Bob: Look at that girl. Her blonde hair looks so nice.
 Tom: Where is she?
 Bob: Oh forget it, she's gone.

Still there are cases when it is the speaker's intention not to take presupposed propositions as common ground. S/he 'exploits' their common ground status. Temporary presuppositions and fake ones are such cases. These presuppositions are designed for the speaker's intention to achieve certain communicative interests and as a consequence their truth conditions are rated lower in value. The exploited presuppositions are distinct from common ground, or they are 'contaminated' by communicative intentions. They don't contribute to common ground in a traditional way, but enjoy some similar temperaments of implicature with intentions joined in.⁷ Some of them may be added to common ground later after the truth values are mutually recognized, as (12) illustrates, and others may not, as (17) goes (see also 10).

- (17) Washington to the neighbor who has stolen his horse (the fact is that the horse is not blind): *Which of the horse's eyes is blind?*
 >> p: One of the horse's eyes is blind

From the above analysis, we can see that there is a vibrant interaction between presupposition and common ground. Their dynamism is inherently related and explanatory to each other. Both of them can be explained within the confines of the socio-cognitive approach that we have proposed. The individual factors of attention and societal factors of intention affect the dynamic processes in which

⁷ Simons (2001, 2004) observed this similarity and attempted to search for the same theoretical frames to interpret presupposition and implicature. However, this effort was not quite successful as she blurred their distinctions and did not offer an adequate approach to identify and explain different phenomena of presupposition (Zhang 2008).

presupposition is proposed and common ground is formed. As a result, they enjoy a cross relation in terms of content and manners in which they are formed. In terms of content, presupposition partly contributes to the formation of common ground, as it is just one source of common ground. It is added to common ground selectively, and there are cases when it fails.

Presupposition and common ground also overlap in terms of manners they are formed. Different types of presupposition serve to activate, seek shared knowledge present as memory in both/all interlocutors, and create new knowledge to enrich their common ground. While canonical presupposition is a process in which old information is activated, informative one is a typical example when common ground is actually created on the spot. Common ground can be sought, and created by other forms, such as Assertion 3 in (14). The ways through which common ground can derive from assertion and implicature are still generally ignored.

6 The Accommodation Problem Revisited

As said above the accommodation problem has brought great challenge to the common ground theory of presupposition. Not only supporters of this theory vary in their arguments, but its opponents hold different views as well. Zhang (2009) pointed out that the attempts to justify accommodation did not clarify properly why the speaker presupposes as such when s/he is fully aware of the presupposed not being part of common ground knowledge, and how accommodation is achieved in the time gap after the utterance event has taken place, and before it has been accepted or rejected.

The main problem with those attempts is that they take into account only the collective core part of common ground that is encoded in the utterance, and means relatively the same for all speakers of that language community. In other words, a relatively static view of presupposition and common ground and their relations has hampered the development of a proper theory. Accommodation is an inherent problem for the common ground theory which might not be solved properly within its confines.

SCA offers an alternative approach to this problem. We argue that accommodation is normal occurrence, not a problem or exception to presupposition theory. The case of informative presupposition is one form of speaker-assigned presuppositions, and its accommodation process can be well explained by the dynamism in two dimensions (synchronic and diachronic). As shown in the categorization (4.1), informative presupposition is one type of truthful presuppositions to which the speaker assigns a truth value commitment, but differs from canonical one in that its common-groundness is an outcome of co-constructing by both/all participants. The speaker creates new information to become part of common ground, and only after the hearer accommodates her belief to it can this common ground be achieved.

The two unsolved issues concerning accommodation can be explained through the analysis of the dynamic and dialectical relationship between presupposition

and common ground. Why should (or can) the speaker presuppose as such when s/he lacks common ground belief? This is answered by the *synchronic dynamism*. As the speaker holds different propositional attitudes and targets for different communicative interests, presuppositions she makes are also of different types. Informative presupposition is proposed for economic effect, saving energy by packing new information in the form of presupposition and making space for more new information coming up in the form of assertion. This may also achieve an effect of coherence, as the information most closely related to communicative intentions is asserted and made focus of the participants' attention. Then the second issue is: how is accommodation achieved? Accommodation is the process through which presupposition gets added to common ground; the participants' common ground beliefs for the proposition are co-constructed. There is a problem, however, about how accommodation is fulfilled. From the formal analysis below, it is unknown why the speaker should assume that the hearer will accommodate ($K_1K_2^+p?$), and why the hearer should accommodate as expected by the speaker ($K_2^+p?$) and even believe that the latter should believe so ($K_2K_1K_2^+p?$).

- (18) a. at t (utterance time): $K_1p, \sim K_2p, K_1 \sim K_2p, K_1K_2^+p$;
 b. at t + 1 (after t): $K_2^+p, K_2K_1K_2^+p$;
 c. at t + 2 (after added to CG): $K_1p, K_2p, K_1K_2p, K_2K_1p, K_1K_2K_1p, K_2K_1K_2p, \dots$

According to *diachronic dynamism* of speaker-assigned presupposition, accommodation is one of the dynamic processes through which presupposition gets added to common ground. The addition of p to common ground is a joint effort of the interlocutors, and in this joint effort of accommodation, they abide by related truthfulness principles.⁸ *Truthfulness principles 1* (for truthful presuppositions): The speaker's principle: presuppose that p iff K_1p ; The hearer's principle: accept that p unless $K_2\neg p$. For more details, please refer to Zhang (2008, 2009). The formal analysis below describes the process.

- (19) a. at t_0 (before t): $K_1p, \sim K_2p, K_1 \sim K_2p$;
 b. at t: $\sim K_2K_1p, K_1K_2^+K_1p, K_1K_2^+p$;
 c. at t + 1 (after t): $K_2^+k_1p, K_2^+p, K_2K_1K_2^+p$;
 d. at t + 2 (after added to common ground): $K_1p, K_2p, K_1K_2p, K_2K_1p, K_1K_2K_1p, K_2K_1K_2p, \dots$

At time t, the speaker infers according to truthfulness principles that the hearer will infer her truth value commitment ($K_1K_2^+K_1p$) and therefore assumes that the latter will accommodate ($K_1K_2^+p$). At time t + 1, the hearer, also based on truthfulness principles, infers that the speaker knows p ($K_2^+k_1p$), accommodates her belief (K_2^+p), and also infer that the speaker believes so ($K_2K_1K_2^+p?$). In this

⁸ Please refer to Sect. 4. The related principles for truthful presuppositions are:

process the interlocutors ‘take for granted’ that each part should abide by the truthfulness principles and therefore truth values are derived.

In addition, informative presupposition and its accommodation are indispensable processes for the formation of common ground. SCA distinguishes core common ground from emergent common ground. In the course of communication there is always a chance (or necessity) to bring in some new information as emergent common ground, as the current situation adapts to changes of various elements and the same with the interlocutors’ perceptions of them. Informative presupposition plays an important role in creating emergent common ground. It is a reliable source for common ground, as the speaker assigns a true proposition to it and the hearer will safely adopt it and update their common ground information. The exception, which is rare, is that the speaker’s knowledge turns out to be false.

7 Conclusion

In this paper we examined the dynamism of presupposition-common ground relation within the confines of SCA and redefined deictic relations between them. The SCA emphasizes the dynamics of common ground creation and updating in the actual process of interaction, in which interlocutors are considered as “complete” individuals with different possible cognitive status, being less or more cooperative at different stages of the communicative process. Presupposition is a proposal of common ground, and there is a vibrant interaction between the two. They enjoy a cross relation in terms of content and manners in which they are formed, and their dynamism is inherently related and explanatory to each other.

Presupposition and common ground share similarities and differ from each other. When we agree on their close correlations, we should also pay respect for their separateness. While presupposition is an important subject of linguistic pragmatics which relies on formal analysis, common ground embraces a broader area with rich resources of information that do not always derive from verbal cues. Presupposition is significant in its linguistic neatness,⁹ truth-conditional concern and recent conversational incorporation. In contrast, common ground outstands for its psychological, philosophical reflection and recent experimental observation. SCA offers an alternative to explain their complex relationship.

⁹ It is not as neat as expected, though.

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