

Intention and Goal-Conciliation

Intenção e conciliação de metas

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Abstract: I analyze in this study potentialities of modeling communicative interactions assuming one can conceive processes of ostensive communication as converting practical intentions into informative and communicative intentions. So, one can only achieve collaboratively a practical intention through the recognition the speaker intends to make mutually manifest or more manifest certain set of assumptions by overtly or communicatively ostensible stimuli. Firstly, I present the goal-conciliation abductive-deductive architecture in the case of self-conciliation, then I discuss a case of collaborative heteroconciliation, and finally, I draw some considerations about intention in the light of an approach to communication as a proactive agency.

Keywords: Cognitive Pragmatics, Goal-Conciliation Theory, Relevance Theory, Practical Intention.

Resumo: Analiso neste estudo potencialidades da modelação de interações comunicativas assumindo que processos ostensivos de comunicação podem ser concebidos enquanto conversão de intenções práticas em intenções informativas e comunicativas. Desse modo, assumo que somente se pode alcançar colaborativamente uma intenção prática por meio do reconhecimento que o falante pretende tornar mutuamente manifesto ou mais manifesto certo conjunto de suposições mediante estímulos ostensivos abertos ou comunicativos. Em primeiro lugar, apresento a arquitetura abdução-dedutiva da teoria de conciliação de metas em um caso da autoconciliação, em seguida discuto um caso de heteroconciliação colaborativa e, finalmente, traço algumas considerações sobre intenção à luz de uma abordagem da comunicação como agência proativa.

Palavras-chave: Pragmática Cognitiva, Teoria de Conciliação de Metas, Teoria da Relevância, Intenção Prática.

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Imagine a possible world in such a way all human beings are guided by the cognitive principle of relevance and consider relevant only the stimuli whose positive cognitive effects compensate the processing effort required to achieve them. Imagine now there is no reason to generate stimuli in this possible world.

1 Introduction

I define *goal-conciliation theory* (RAUEN, 2014) as a pragmatic-cognitive approach—based on cognitive and communicative relevance-theoretic notions (SPERBER; WILSON, 1986, 1995)—which aims to describe and explain ostensive-inferential communicative processes in the context of the speakers' plans of intentional action towards the collaborative achievement of goal self- and heteroconciliations. The proactive conceptual architecture of the theory provides a four-stage model, encompassing the projection of one goal and the formulation, execution, and checking of at least one optimal antefactual abductive hypothesis connecting a plausible antecedent action with the projected consequential state.

More recently, in the scope of this architecture, I have been conceiving speakers' ostensive processes as converting practical intentions into informative and communicative intentions. So, one can only achieve a practical intention collaboratively through the recognition the speaker intends to make mutually manifest or more manifest a certain set of assumptions through overtly or communicative ostensive stimuli¹. Therefore, communicative stimuli in general—and linguistic utterances in particular—contain a communicative intention, directed by an informational intention, directed by a practical intention.

In this study, I analyze potentialities of modeling communicative interactions considering these three layers of intention. So, I present the goal-conciliation abductive-deductive architecture in a case of self-conciliation, then I discuss the notion of intention in a case of heteroconciliation, and finally, I draw some considerations about the notion of intention in the light of an approach to communication as a proactive agency.

2 Theoretical Notes²

In goal-conciliation theory, I assume individuals are proactive and, therefore, able to formulate plans of intentional actions toward the achievement of their goals (RAUEN, 2014), and I conceive intention as a plan of action the organism chooses and commits itself in pursuing a goal (BRATMAN, 1989). Thus, I include in the scope of the concept of intention both the goal and the plan to achieve it. Also, one can describe and explain a plan of intentional action in four stages. The first of these four stages—which is axiomatic—consists of projecting a goal [1]. The next three stages consist of formulating [2], performing [3] and checking [4] at least one antefactual abductive hypothesis.

The first three stages of this model are abductive. In the case of an explanatory abduction, the individual starts from the observation of a fact

¹ See, for example, Cataneo and Rauen (2018), Rauen (2018), Rauen and Luciano (2017), and Rauen and Rauen (2018, 2019).

² In this paper, I present a revised and updated version of the theory as settled in *For a Goal-Conciliation Theory: Antefactual Abductive Hypotheses and Proactive Modelling* (RAUEN, 2014). The text incorporates several improvements developed in recent years in the *Research Group on Cognitive Pragmatics* at the University of Southern Santa Catarina (Unisul).

(*x is Q*). It follows from this observation the *ex-post-facto* abduction of a hypothesis of a nomological connection between a certain cause *P* and the fact *Q*, and the conclusion this cause *P* is the most plausible explanation for the emergence of the fact *Q* (*x is P*). Take for example the case of a murder and the finding that the weapon used in the crime contains the fingerprints of an individual. It follows that the most plausible suspect is the individual whose fingerprints are on the weapon.

I generalize this architecture to *a priori* cases, in which an individual *i* can be conceived as someone capable of projecting into a certain state of goal *Q* in the future. Thus, a description like *x is Q* may represent a certain state *x* in the future that will satisfy this expectation [stage 1], remaining to describe and explain how the individual *i* achieves such a state. So, I propose that the individual *i* abducts *ex-ante-facto* a hypothesis there is a *nomological* connection between an antecedent action *P* he/she considers minimally as plausible to achieve that consequential state *Q* [stage 2]. It follows that *x is P*, and individual *i* performs the action *P* in the expectation of reaching *Q* [stage 3].

Considering the last three stages of the model, the architecture is also deductive. This is because one can conceive the antifactual abductive hypothesis [stage 2] as a *major premise* and the antecedent action *x is P* [stage 3] as a *minor premise* in this plan of intentional action. It is precisely in the scope of these two assumptions one deduces the conclusion *x is Q*³ [stage 4].

We can see this architecture in figure 1 below.

Figure 1 – Goal-conciliation abductive-deductive architecture

Abduction	[1]		Q
	Deduction	[2]	P
		[3]	P
		[4]	Q'

Source: Rauen (2018, p. 14).

Let us take as an example the theoretical notion of *presumption of optimal relevance* in Sperber and Wilson's (1986, 1995) relevance theory. Briefly, relevance theory is a pragmatic-cognitive approach based on two principles: the *cognitive principle* the human mind maximizes the inputs to which it is submitted; and the *communicative principle* the utterances yield precise expectations of relevance.

Relevance is a potential property of these inputs. An input is relevant when the positive cognitive effects derived from its processing compensate the efforts expended to achieve them: strengthening previous assumptions, contradicting and eliminating these previous assumptions, or yielding implications derived from the interaction with these previous assumptions. Thus, *ceteris paribus*, relevance is greater when cognitive effects are greater and/or when processing efforts are smaller.

The theoretical notion of *presumption of optimal relevance* stems from the communicative principle of relevance, according to which communication stimuli are presumably relevant; just as the communicative principle itself stems from the cognitive principle of maximizing relevance.

³ *Q'* represents the goal *Q* achievement. Strictly speaking, one can perform the antecedent action materially or simulate it mentally. In any case, the apostrophe indicates a certain displacement between the initial projection of the goal and its achievement in the context of the abductive hypothesis. This displacement justifies the later notion of conciliation.

An utterance is presumed to be optimally relevant when it is (a) at least relevant enough to justify the audience's processing effort, and (b) as relevant as possible according to the speakers' abilities and preferences (SPERBER; WILSON, 1995).

It follows from the presumption of optimal relevance a *relevance-theoretic comprehension procedure*. According to such a procedure, the audience must follow a path of least effort in computing cognitive effects: (a) considering interpretations in order of accessibility, and (b) stopping when the expectation of relevance is satisfied.

I argue this architecture corresponds to an *ex-post-facto* abduction⁴. The reasoning starts from the fact that a rational speaker has produced an optimally relevant utterance. It follows the abductive hypothesis the application of the relevance-theoretic comprehension procedure allows the audience to choose at least one interpretation that fits this presumption of optimal relevance. So, the audience applies the procedure and deductively achieves at least one interpretation consistent with such an expectation.

Figure 2 – Presumption of optimal relevance as postfactual abductive-deductive architecture

Abduction	[1]		Q – Relevant Interpretation
	Deduction	[2]	P – Comprehension Procedure
		[3]	P – Comprehension Procedure
		[4]	Q' – Relevant Interpretation

Source: My elaboration.

In order to model an antifactual situation without communicative stimuli, let us take the case of Peter, who is faced with the problem of having to open the locked door of his own house⁵.

The first stage of modeling consists of projecting the goal:

[1] The individual *i* designs a goal *Q* at the time t_1 ;

[1'] Peter *i* designs the goal *Q* of opening the locked door at the time t_1 .

The formulation captures the instant t_1 of the projection of the goal *Q* of opening the locked door; so that, the goal *Q* is a future possibility that is not yet available.

One can represent this stage schematically as follows:

[1] *Q* opening the door, Peter

The second stage consists of formulating at least one antifactual abductive hypothesis to achieve the goal *Q*—the plan of intentional action—namely:

[2] The individual *i* abducts an optimal⁶ antifactual hypothesis H_a to achieve the goal *Q* at the time t_2 ;

⁴ In other words, both the *presumption of optimal relevance* and the *communicative principle of relevance* are nothing more than optimal abductions to explain the ostensive emergence of an utterance.

⁵ For convenience, I present in this text a simplified version of the example provided in Rauén (2014, p. 598-603).

⁶ I have adopted the notion of *inference to the best solution* in the first texts of the theory influenced by Harman's (1965) notion of *inference to the best explanation*. More recently, I have used a less restrictive notion of *inference to the optimal solution*. This displacement is essential to highlight that an *ad hoc* solution is always one which the individual believes to be better in his/her contextual constrictions and repertoires of preferences and abilities. This also avoids discussions throughout an epistemic notion of a better solution, which is not the case in goal-conciliation theory. Strictly speaking, solutions are not supposed to be always the best, but those plausible in the context of these constrictions and repertoires.

[2'] Peter *i* abducts the optimal antifactual hypothesis H_a to achieve the goal Q of opening the locked door at the time t_2 .

As one can check, the output of the formulation (2') is incomplete, because it does not identify the antecedent action P Peter will consider as plausible to achieve the consequent state Q of opening the locked door. To deal with this gap, let us consider the arbitrary hypothesis that Peter's encyclopedic memory contains only the following restricted set of factual assumptions S_{1-3} :

S_1 – Using a key opens locked doors;

S_2 – Calling a locksmith opens locked doors;

S_3 – Lowering the door handle opens locked doors.

I suggest the choice of an optimal antifactual abductive hypothesis H_a meets at least four criteria in the narrow scope of factual assumptions S_{1-3} . Consistent with the first criterion, one must map the hypothesis H_a in a hypothetical formulation "If P , then Q ," according to which, minimally, if one performs an antecedent action P , then one can achieve a consequential state Q . As we can see, one can convert all the factual assumptions S_{1-3} into such a formulation.

Consistent with the second criterion, the hypothesis H_a must contain a plausible antecedent action P to open the door. The factual assumptions S_{1-3} are executable actions. However, "lowering the door handle" in assumption S_3 —suitable in cases of unlocked doors—is insufficient and rationally useless to open a door Peter knows is locked.

Consistent with the third criterion, the hypothesis H_a must be an optimal solution to achieve the goal Q , and with the fourth criterion, it must be the first assumption consistent with the principle of relevance. S_2 "Calling a locksmith" is supposed to achieve the goal, but it is hard to see how such a solution is the first one to come to Peter's mind in front of his locked front-door.

The factual assumption S_1 of "using a key" would be an optimal solution in this restricted context of assumptions S_{1-3} , since (i) it is mapped in a hypothetical formulation, (ii) it is a plausible action, (iii) it is the lowest processing cost hypothesis in the face of the fixed effect of opening a locked door, and (iv) it meets the criterion of optimal solution, because there is no reason to call a locksmith when someone has a key to open the door.

The result of this comparison is the following antifactual abductive hypothesis:

[2''] Peter *i* abducts that if Peter *i* uses the key, then Peter *i* will open the locked door.

One can represent the output of [2'']—plan of intentional action—as follows:

[1]	Q		opening the door, Peter
[2]P	Q	using the key, Peter	opening the door, Peter

The third stage refers to the probable execution of the antecedent action P^7 :

⁷ Although I model a carried-out situation here, one can mentally simulate both execution and checking stages.

[3a] the individual i performs P to achieve Q at the time t_3 ; or

[3b] the individual i does not perform P to achieve Q at the time t_3 .

In the third stage, I have been arguing the foreground schema will be active, such that Peter will tend to use the key to open the locked door⁸.

We can see the active output of the third stage—intentional action—below:

[3'] Peter i uses the key to Peter i open the locked door at t_3 .

Or, more schematically:

[1]	Q		opening the door, Peter
[2]P	Q	using the key, Peter	opening the door, Peter
[3]P		Peter uses the key	

The fourth stage consists of deductively checking the hypothetical formulation:

(4a) The individual i checks the achievement Q' at t_4 considering [2] e [3a]; or,

(4b) The individual i checks the achievement $\neg Q'$ at t_4 considering [2] e [3b].

In the fourth stage, the agent evaluates or monitors the outcome of the antecedent action P in the deductive scope of the formulation “If P , then Q ,” so that Peter checks if the door opens with the key in the active scenario⁹.

We can see the output of the fourth stage [4a] below:

(4') Peter i checks the door opening consecution at t_4 .

Or, more schematically:

[1]		Q		opening the door, Peter
[2]	P	Q	using the key, Peter	opening the door, Peter
[3]	P		Peter uses the key	
[4]		Q'		Peter opens the door

Precisely in the fourth stage, I propose two essential concepts in goal-conciliation theory: goal-conciliation and hypothesis-confirmation.

I define by *goal-conciliation* a certain situation in which the state Q' at t_4 satisfies the goal Q at t_1 (RAUEN, 2014, p. 603). Accordingly, the outcome of the action P at t_4 is sufficiently like to the consecution projected by the individual i in t_1 .

Given this concept, one can observe four possibilities: (a) *active conciliation*, when the individual i performs the action P in the scope of the hypothesis H_a , and the state Q' at the time t_4 conciliates with the goal Q at the time t_1 ; (b) *active non-conciliation*, when the individual i performs action P in the scope of hypothesis H_a , and the state Q' at the time t_4 does not conciliate with the goal Q at the time t_1 ; (c) *passive conciliation*, when the individual i does not perform the action P in the scope of hypothesis H_a , and the state Q' at the time t_4 even so conciliates with the goal Q at the time

⁸ I follow Johnson-Laird and Byrne's (2002) argument that, in the context of the theory of mental models, negative models tend to be neglected or forgotten. Passivity can occur when, for example, the agent is unable to perform the action P , or there are conflicts, hesitations, fears, personal sabotages, which put goals and/or plans in suspicion.

⁹ Or Peter checks if the door does not open when he does not use the key in the passive scenario.

t_1 ; (d) *passive non-conciliation*, when the individual i does not perform the action P in the scope of hypothesis H_a , and the state Q' at the time t_4 does not conciliate with the goal Q at the time t_1 .

In simple terms: in an *active conciliation* (a), Peter uses the key, and the door opens; in an *active non-conciliation* (b), Peter uses the key, but the door does not open; in a *passive conciliation* (c), Peter does not use the key, and even so the door opens; and in a *passive non-conciliation* (d), Peter does not use the key, and the door does not open.

We can see the four situations in figure 3:

Figure 3 – Possibilities of goal-achievements

Stages	Active Conciliation (a)	Active Non-Conciliation (b)	Passive Conciliation (c)	Passive Non-Conciliation (d)
[1]	Q	Q	Q	Q
[2]	P Q	P Q	P Q	P Q
[3]	P	P	¬P	¬P
[4]	Q'	¬Q'	Q'	¬Q'

Source: Rauen (2014:604).

By *confirmation of an antefactual abductive hypothesis* H_a , I define the case in which the state Q' at the time t_4 satisfies the hypothesis H_a at the time t_2 (RAUEN, 2014, p. 604). Accordingly, the consequence of the action P reinforces the antefactual abductive hypothesis H_a the antecedent action P minimally enables the consequent state Q .

The evaluation of an abductive antefactual hypothesis H_a depends on the degree of confidence or strength attributed to it by individuals, according to the following scale:

- a) *categorical antefactual abductive hypothesis*. It is a $P \Leftrightarrow Q$ formulation, whose consecution is true whenever P and Q are true¹⁰. Here, P and Q are sufficient, necessary, and certain, and one can only assume active conciliation (1a)¹¹;
- b) *biconditional antefactual abductive hypothesis*. It is a $P \leftrightarrow Q$ formulation, whose consecution is true whenever P and Q are or true, or false. Here, the mere consideration of the $\neg P \rightarrow \neg Q$ possibility weakens the initial hypothetical categorical formulation. Since P and Q are now sufficient and necessary, but they are not certain, one can assume passive non-conciliations (1d);
- c) *conditional antefactual abductive hypothesis*. It is a $P \rightarrow Q$ formulation, whose consecution is true whenever the antecedent action P is sufficient, but it is not necessary for the consequent state Q —*material implication*. Here, one can also assume passive conciliations (1c);
- d) *enabling antefactual abductive hypothesis*. It is a $P \leftarrow Q$ ¹² formulation whose consecution is true whenever the antecedent action P is necessary, but it is not sufficient to achieve the consequent state Q .

¹⁰ The notation ' \Leftrightarrow ' captures the idea of a sufficient, necessary and certain connection between the antecedent action and the consequent state.

¹¹ I state the hypothesis that antefactual abductive hypotheses H_a emerge by default as categorical both in conscious and unconscious instances (RAUEN, 2014, p. 605). Accordingly, the abductive mechanism works either in innate or learned automatic situations, when the individual does not have conscious access to the mechanism, as in situations of deliberation, when the hypothesis itself emerges as relevant.

¹² I loan the terminology from Johnson-Laird and Byrne (2002, p. 661).

If P enables, but does not guarantee Q , one can also assume active non-conciliations (1b)¹³;

e) *tautological antefactual abductive hypothesis*. It is a $P—Q$ formulation¹⁴, whose consecution is true in cases where both P and Q are sufficient, but they are not necessary, modeling situations like “If P , then possibly Q ,” and assuming all kinds of achievements. We can summarize these possibilities in the figure 4 below:

Figure 4 – Possibilities of success in achieving intentional action plans¹⁵

Types of Conciliation	Antecedent Action P	Consequent State Q	Categorical Hypothesis $P \leftrightarrow Q$	Biconditional Hypothesis $P \leftrightarrow Q$	Conditional Hypothesis $P \rightarrow Q$	Enabling Hypothesis $P \leftarrow Q$	Tautological Hypothesis $P—Q$
(a) Active Conciliation	+	+	+	+	+	+	+
(b) Active Non-Conciliation	+	-	-	-	-	+	+
(c) Passive Conciliation	-	+	-	-	+	-	+
(d) Passive Non-Conciliation	-	-	-	+	+	+	+

Source: Rauén (2018, adapted).

Considering a *categorical abductive antefactual hypothesis* scenario, for example, we can describe the different accomplishments as follows. In an *active conciliation*, Peter achieves the goal Q of opening the door and confirms the antefactual abductive hypothesis H_a the key opens the door. This hypothesis is strengthened and dynamically stored in the encyclopedic memory as a factual assumption to be triggered in future situations.

- [1] Q Peter designs opening the door;
- [2] $P \leftrightarrow Q$ Certainly, if Peter uses the key, then Peter opens the door;
- [3] P Peter uses the key;
- [4] Q' Peter opens the door.

In an *active non-conciliation* (1b), Peter cannot open the door $*-Q'$, even using the key. So, the key is necessary, but it is not sufficient to open it—*enabling hypothesis* $P \leftarrow Q$ ¹⁶.

- [1] Q Peter designs opening the door;
- [2] $P \leftrightarrow Q$ Certainly, if Peter uses the key, then Peter opens the door;
- [3] P Peter uses the key;
- [4] $*-Q'$ Peter does not open the door;
- [5] $P \leftarrow Q$ The key is necessary, but it is not sufficient to open the door.

In cases of determination, the goal Q is stronger than the achievement $-Q'$. So, the processing cannot stop at stage [5]. To maintain the goal's pursuit, I suggest matching Q and $-Q'$ with an *introduction-and rule*,¹⁷

¹³ When I accept enabling hypotheses and, later, tautological hypotheses, I abandon the epistemic claim that true premises necessarily generate true conclusions. The notation ' \leftarrow ' captures the idea of a necessary, but not sufficient connection between the antecedent action and the consequent state.

¹⁴ I also loan this terminology from Johnson-Laird and Byrne (2002, p. 660-661). The notation ' $—$ ' captures the idea of no certain, necessary or sufficient connection between the terms of the proposition.

¹⁵ These achievements were presented in earlier versions of the theory in terms of a truth table. The current version avoids compromises with epistemological aspects and reinforces compromises with a practical rationality.

¹⁶ By the way, it is worth emphasizing this active non-conciliation is relevant both when it constrains the individual to seek new solutions, and when it leads him to formulate post-factual or explanatory abductive hypotheses to deal with the setback.

¹⁷ I include an introductory rule despite Sperber and Wilson's (1986, 1995) argument the relevance-theoretic deductive mechanism works exclusively by elimination rules. This introduction rule does not incorporate arbitrary material since it is the resumption of the goal Q . Luciano (2014) develops the argument in her master's thesis *Relevance and Goal-Conciliation: Logical Adequacy and Empirical Plausibility*.

and—since both propositions are true—I suggest keeping Q by *elimination-and rule*. Once the goal is maintained, a new problem and a new abductive-deductive cycle emerges¹⁸.

- [6] $Q \wedge \neg Q'$ 1, 4 by *introduction-and*;
 [7] Q by *elimination-and*.

In a *passive non-conciliation* (1d)—when, for example, Peter does not find the key $*\neg P$ ¹⁹ to open the door—one has two cognitive effects: the weakening of the hypothesis, which now turns out to be biconditional $P \leftrightarrow Q$ ²⁰, and the implied conclusion the door cannot be opened $\neg Q$ in the context of this new hypothesis. Once more, if the goal Q is stronger than the achievement $\neg Q'$, the processing can go on at the stages [6-7].

- [1] Q Peter designs opening the door;
 [2] $P \leftrightarrow Q$ Certainly, if Peter uses the key, then Peter opens the door;
 [3] $*\neg P$ Peter cannot use the key;
 [4] $P \leftrightarrow Q$ If and only if Peter uses the key, then Peter opens the door;
 [5] $\neg Q$ Peter will not open the door;
 [6] $Q \wedge \neg Q'$ 1, 5 by *introduction-and*;
 [7] Q by *elimination-and*.

In a *passive conciliation* (1c), the door opens despite Peter's passivity—someone opens the door on the other side without Peter having used the key, for example. In this scenario, Peter concludes the key is sufficient, but it is not necessary to open the door $P \rightarrow Q$. As Peter achieves his goal, it is likely the door will no longer be relevant, and he will pay attention to other goals or demands²¹.

- [1] Q Peter designs opening the door (internal goal);
 [2] $P \leftrightarrow Q$ Certainly, if Peter uses the key, then Peter opens the door;
 [3] $*\neg P$ Peter does not use the key;
 [4] $P \leftrightarrow Q$ If and only if Peter uses the key, then Peter opens the door;
 [5] $*Q'$ The door was opened without the key (accident/surprise);
 [6] $P \rightarrow Q$ The key is sufficient, but it is not necessary to open the door.

3 Collaborative Goal-Heteroconciliation

In the previous section, I model what I call goal-self-conciliation. Peter has designed opening the door himself and has checked himself whether the key would open it. However, more than one individual can trigger conciliation processes, setting up situations in which it is necessary to coordinate common goals and sub-goals.

Let us take, for example, the case where Peter meets the same closed door, but now Anne has the key to open it. In this situation, for Peter to open the door with the key Q , he needs to use Anne's key P ; and for Peter to use Anne's key P , he needs Anne to get the key to him O .²²

¹⁸ According to the restricted set of assumptions S_{1-3} , calling a locksmith could be raised as an abductive hypothesis H_a .

¹⁹ The asterisk '*' represents a problem-situation.

²⁰ I claim it does not follow from the rejection of the categorical degree of the hypothesis $P \leftrightarrow Q$ that one rejects the biconditional hypothesis $P \leftrightarrow Q$. This *ad hoc* flexibility precisely characterizes the architecture I develop here.

²¹ This sudden conciliation, however, may also require a post-factual explanation—when involuntary—, or even source of new problems—when inaction stems from hesitations, fears, etc. (RAUEN, 2014, p. 608).

²² The next formulation—with goals and sub-goals only—is a simplified version of the one presented in the self-conciliation.

- [1] Q – opening the door, Peter
- [2] ... P – using the key, Peter
- [3] O – giving the key, Anne
- [4] O – Anne gives the key
- [5] ... P' – Peter uses the key
- [6] Q' – Peter opens the door

The obvious obstacle in this context is that the practical goal *O* that Anne gives the key to Peter needs to be communicated²³. For that, I propose three layers of intentions: a *practical intention* that superordinates an information intention, an *information intention* that superordinates a communicative intention, and a *communicative intention* itself²⁴.

Here, the practical intention *N* that Peter asking for the key—as a way of achieving the highest practical intentions *O*, *P* and *Q* of Anne gives the key and Peter using the key to open the door—superordinates an informational intention *M* to make manifest or more manifest an information set {*I*} consistent with this practical intention *N*²⁵. This informative intention *M*, in turn, superordinates a communicative intention *L*, through an open ostensive stimulus, to make mutually manifest or more manifest to both, Anne and Peter, Peter makes manifest this set of information {*I*} consistent with the practical intention *N*, which superordinates this chain of intentions. Finally, consistent with this practical intention *N*, which superordinates the chain of intentions, Peter produces an open ostensive stimulus that makes mutually manifest or more manifest to both, Anne and Peter, he makes manifest this set of information {*I*}, the communicative intention *L* itself.

One can see this chain of intentions below:

- [1] Q – opening the door, Peter;
- [2] P – using the key, Peter;
- [3] O – giving the key, Anne;
- [4] N – asking for the key, Peter;
- [5] ... M – informing the asking, Peter;
- [6] L – communicating the asking, Peter;
- [7] L – Peter communicates the asking;
- [8] ... M' – Peter informs the asking;
- [9] N' – Peter asks for the key;
- [10] O' – Anne gives the key;
- [11] P' – Peter uses the key;
- [12] Q' – Peter opens the door.

In this case, given Peter's preferences—he wants to open the door—and abilities—his expertise in interacting with Anne—, Peter could say what follows:

Peter – Could you give me the key?

From Anne's point of view, the first step is mobilizing the relevance-theoretic comprehension procedure. Following a path of minimal effort,

²³ According to Lindsay and Gorayska's (2004, p. 69) formal definition of goal-dependent relevance, "P is relevant to G if and only if G is a goal and P is an essential element of any plan that is sufficient to achieve G". So, any ostensive-communicational stimulus is not relevant by itself, but relevant in a context that fits his/her purposes or fits others' purposes.

²⁴ On this three-layers intentional modeling, see Bez (2016), Caldeira (2016), Cataneo e Rauen (2018), Luciano (2018), Rauen e Rauen (2018), Rauen e Ribeiro (2016, 2017).

²⁵ On the notions of *manifestability* and *mutual manifestability*, see Sperber and Wilson (1995, p. 38-46).

Anne would fit the linguistic formulation of Peter's utterance into a logical form and elaborate the respective explicature²⁶.

(1a) Linguistic Form: Could you give me the key?

(1b) Logical form: (can give someone, something, to someone).

(1c) Explicature: could you [ANNE] give me [TO PETER] the [FRONT DOOR] key.

(1d) Expanded explicature: *PETER WANTS TO KNOW IF ANNE CAN GIVE TO PETER THE FRONT DOOR KEY.*

According to relevance theory, there are three essential questions the audience must answer to identify the speaker's meaning: what did the speaker intend to communicate explicitly; what did the speaker intend to communicate implicitly; and what is an appropriate context to use in identifying both the explicit and implicit meaning (WILSON, 2004).

The explicature (1d) corresponds to the explicit meaning of Peter's utterance (1a), but it does not correspond to the implicit meaning made manifest or more manifest by its utterance yet. To obtain the implicit meaning, it is necessary for Anne to be able to infer Peter wants her to give the key. For that, Anne must be able to produce, among other chains of inferences, the following chain of inferences:

S₁ – The front-door is locked (implied premise from the context);

S₂ – Peter wants to know if Anne can give Peter the front-door key (implied premise from Peter's utterance explicature);

S₃ – Peter probably asks for Anne her front-door key (implied conclusion: S₁∧S₂→S₃ by *conjunctive modus ponens*);

S₄ – Peter probably wants to open the front-door with Anne's front-door key (implied conclusion: S₃→S₄ by *modus ponens*);

S₅ – Peter probably wants Anne to give the front-door key to Peter to open the front-door with Anne's front-door key (implied conclusion: S₃∧S₄→S₅ by *conjunctive modus ponens*).

Only when Anne infers the supposition S₃ Peter probably asks for Anne to give him the front-door key—practical intention *N*—she can give the key to Peter and, thereby, achieve Peter's practical intention *O*.

S₅ – Peter probably wants Anne to give the front-door key to Peter to open the front-door with Anne's front-door key (implied premise);

S₆ – Anne should probably give the front-door key for Peter (implied conclusion S₅→S₆ by *modus ponens*).

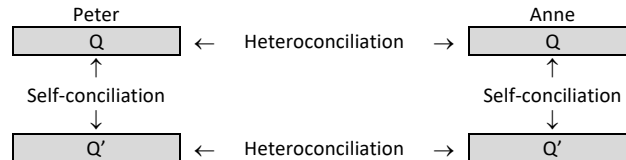
In other words, based on Peter's plan of intentional action, he heteroconciliates three layers of intention when Anne collaboratively provided the front-door key. Concerning the communicative intention *L*, it was up to Pedro make mutually manifest or more manifest his desire to inform the set of information {I} of knowing if Anne could give the front-door key; and Anne had to make the utterance relevant enough to process it. Concerning the informative intention *M*, it was up to Pedro to inform the set of information {I} of knowing whether Anne could give the front-door key; and Anne had to trigger the comprehension procedure to yield the

²⁶ On the descriptive methodology, see, for example, Rauen (2011, 2009).

correct interpretation of Peter's utterance. Concerning the practical intention N , it was up to Peter to suggest the correct inference in the context was he was asking for the key.

In short, for Peter to open the door with Anne's key, a complex chain of heteroconciliations has entered the scene. For that to be possible, both Peter and Anne should be able to monitor, each one in his way, the course of actions—self conciliations²⁷.

Figure 5 – Basic scheme for goal self- and heteroconciliations



Source: Rauen (2014, p. 613).

However, this chain of inferences can fail in different ways, because they depend on the ostensive stimulus that makes up the lower-level action in the chain of sub-goals and goals. Strictly speaking, utterances act as enabling abductive antefactual hypotheses $P \leftarrow Q$, since, for the most part, although necessary, they are not sufficient for the heteroconciliation of practical intentions.

Let us consider Anne's verbal and non-verbal reactions (2a-2h) to Peter's question to see how to model these failures in terms of goal-conciliation.

- (2a) Anne says nothing.
- (2b) Anne says, "What?"
- (2c) Anne says, "I can," but does not provide the key.
- (2d) Anne says, "I do not have [the key]" and does not provide the key.
- (2e) Anne says, "No" and does not provide the key.
- (2f) Anne says, "You can let me open it" and open the door.
- (2g) Anne says nothing and gives the front-door key to Peter.
- (2h) Anne says, "Take it" and give the key to Peter.

When Anne does not say anything (2a), one of the plausible explanatory hypotheses H_e is the ostensive stimulus was not relevant enough to get her attention. In this case, a failure to perform the antecedent action L of communicating the request—communicative intention—has compromised the achievement of the sub-goal M of informing the request—informational intention—and, consequently, of the highest-level sub-goal of Anne to provide the key—practical intention N . Considering such inconsistencies and the probable maintenance of the goal, Peter can reiterate or even modify the request.

- [1] Q – opening the door, Peter;
- [2] P – using the key, Peter;
- [3] O – giving the key, Anne;
- [4] N – asking for the key, Peter;
- [5] ... M – informing the asking, Peter;
- [6] L – communicating the asking, Peter;
- [7] \neg L – Peter does not communicate the asking;

²⁷ This modeling is in line with Tomasello and colleagues' (2005, p. 680-681) argument that the crucial difference between human cognition and the cognition of other species is the human capacity to participate in collaborative activities with common goals and intentions—shared intentionality or we-intentionality.

- [8] ... $\neg M'$ – Peter does not inform the asking;
- [9] ... $\neg N'$ – Peter does not ask for the key;
- [10] ... $\neg O'$ – Anne does not give the key;
- [11] ... $\neg P'$ – Peter does not use the key;
- [12] ... $\neg Q'$ – Peter does not open the door.

When Anne says “What?” (2b), one of the plausible explanatory hypotheses H_e is the ostensive stimulus was sufficiently relevant to get her attention, but it was insufficient to be fully processed. In such a case, a partial failure to perform the antecedent action L to communicate the request—communicative intention—has compromised the achievement of the sub-goal M of informing it—informational intention—and, consequently, of the highest-level sub-goal of asking for the key—practical intention N . The reiteration or modification of the request as represented in the situation (2a) follows from these active non-conciliations and the maintenance of the goal.

Higher-level practical intentions can fail to be achieved even in contexts in which the ostensive stimulus L of communicating the request—communicative intention—does not compromise the achievement of the sub-goals M and N —informational and lower-level practical intention of inform and ask for the key. For example, the fact Anne does not say anything (2a) may be an indication she had achieved these intentions but failed to pretend she had not paid attention. Here, the ostensive stimulus was sufficiently relevant to be worth processing, to enable the correct mobilization of the comprehension procedure and to obtain the appropriate inferences; but Anne refuses to cooperate with Peter for some reason.²⁸

- [1] ... Q – opening the door, Peter;
- [2] ... P – using the key, Peter;
- [3] ... O – giving the key, Anne;
- [4] ... N – asking for the key, Peter;
- [5] ... M – informing the asking, Peter;
- [6] L – communicating the asking, Peter;
- [7] L – Peter communicates the asking;
- [8] ... M' – Peter informs the asking;
- [9] ... N' – Peter asks for the key;
- [10] ... $\neg O'$ – Anne does not give the key;
- [11] ... $\neg P'$ – Peter does not use the key;
- [12] ... $\neg Q'$ – Peter does not open the door.

A more complex situation happens when Anne says, “I can,” but does not provide the key (2c). Supposedly, Peter achieves the intentions L , M and N ; but it is unclear why Peter does not achieve the practical intention O . From such a situation, there are a lot of possibilities ranging from the plain lack of cooperation to the inability to mobilize the correct inferences—misunderstanding.

When Anne says, “I do not have [the key]” and does not provide the key (2d), or when Anne says, “No” and does not provide the key (2e), the most plausible explanatory hypothesis H_e —assuming her cooperation—is that Peter achieves the intentions L , M and N , but does not achieve the practical intention O because Anne does not have the key.

²⁸ The sequence of such a situation is, as might be expected, unpredictable.

When Anne says, “You can let me open” and open the door (2f), the most plausible explanatory hypothesis H_e —assuming her cooperation—is that Peter achieves the intentions L , M and N , but Anne figures out a different practical intention. This active non-conciliation suggests that Anne has correctly mobilized the relevance-theoretic comprehension procedure, in such a way that she has found the explicature (1d), but she has integrated it into an inferential chain whose outcome—Peter wants Anne to open the door—diverges from that one expected by him. Let us see:

S_1 – The front-door is locked (implied premise from the context);
 S_2 – Peter wants to know if Anne can give Peter the front-door key (implied premise from Peter’s utterance explicature);
 S_3 – Peter probably wants Anne to open the door (implied conclusion: $S_1 \wedge S_2 \rightarrow S_3$ by *conjunctive modus ponens*/implied premise);
 S_4 – Anne should probably open the door (implied conclusion: $S_3 \rightarrow S_4$ by *modus ponens*).

Finally, only when Anne does not say anything or when Anne says, “Take it” and provides the key to Peter (2g-2h)—since she allows Peter to use key P to open door Q —Peter conciliates all the intentions at stake—communicative, informative, and practical.

4 Discussion

In the last two sections, I presented a revised and updated version of how goal-conciliation theory deals with cases of self- and heteroconciliation, stressing the pertinence of describing and explaining communicational exchanges in terms of communicational, informative and practical intentions as a collaborative agency. In this section, I propose to draw some considerations on this triad of intentions itself.

In *Meaning*, Grice (1957) has argued the concept of intention is crucial to deal with the processing of non-natural meaning of language. In this text, to intend to say something with an utterance corresponds to wish the recognition of this intention yields certain behaviors in the audience.

“A meant_{NN} something by x ” is (roughly) equivalent to “A intended the utterance of x to produce some effect in an audience by means of the recognition of this intention”. (GRICE, 1957, p. 385 apud STRAWSON, 1971, p. 446, Strawson’s quotes).

As Strawson (1971) develops Grice’s seminal idea, the speaker must fulfil three intentions to mean non-naturally something by a stimulus x . According to the intention (a), the utterance of x must yield a response in the audience; according to the intention (b), the audience must recognize the intention (a); according to intent (c), the recognition of the intention (a) must work at least in part as a reason for the audience to give that response.

S non-naturally means something by an utterance x if S intends (a) to produce by uttering x a certain response (r) in an audience A and intends (b) that A shall recognize S ’s intention (a) and intends (c) that this recognition on the part of A of S ’s intention (a) shall function as A ’s reason, or a part of his reason, for his response r . (STRAWSON, 1971, p. 446, adapted)²⁹.

²⁹ I have translated Strawson’s original notations (i_1), (i_2), and (i_3) into (a), (b), and (c), respectively, in order to make easier correspondences with Sperber and Wilson’s (1986, 1995) claims.

Sperber and Wilson (1995, p. 28-29) argue the recognition of the speaker's intention (*b*) is sufficient for the speaker to be successful in communicating a set of information {I}, regardless of whether intentions (*a*) and (*c*) have been fulfilled. Therefore, only intention (*b*) is truly communicative. The intention (*a*) cannot be an intention to communicate, precisely because the communication can be successful without the intention (*a*) being fulfilled. Thus, one can better understand it as an intention to inform the audience of something—the set of information {I} itself. The intention (*c*) is even less necessary since it can only be fulfilled if intention (*a*) is fulfilled. Unfortunately, although they recognize Grice's merit in demonstrating that “the recognition of an informative intention can lead to its fulfilment,” and this is often the reason why the speaker is willing to communicate—*practical intentions* in my terms—the authors drop intention (*c*) without further discussion because they do not find a justification for “turn this possibility into a definitional necessity”.

Therefore, one describes and explains communicational processes only by communicative (*b*) and informative intention (*a*) in relevance theory. Sperber and Wilson (1995, p. 29-30) argue an overt ostensive stimulus has an informative intention “to inform the audience of something” and a communicative intention “to inform the audience of one's informative intention”³⁰. “The communicative intention is itself a second-order informative intention: the communicative intention is fulfilled once the first-order informative intention is recognized”. So, although the recognition of the informative intention itself leads to its fulfilment in general, it does not guarantee, because there are cases where only the communicative intention is fulfilled.

As I have illustrated in the third section, it seems reasonable, to some extent and with some risk, that Peter's “Could you give me the key?” utterance enabled him to make mutually manifest or more manifest—communicative intention—his intention to make manifest or more manifest—informative intention—that he wished to know if Anne could give him the front-door key—explicature—; and that he intended with that explicature that Anne provided the key for him to open the door—implicature.

Let us assume Anne does indeed achieve these two intentions: she realizes this set of information {I} has become mutually manifested or more manifest by the public emergence of Peter's utterance, and she yields both the correct explicature and the correct implicature. As relevance theory predicts, nothing else is necessary. It is sufficient for Anne to know Peter wants her to provide the key for him to open the door. However, something seems to be missing here. Just wanting Anne to know Peter wants her to give the key is not what is at stake in this dialogue. Peter wants Anne to give the key—practical intention—and providing this information only makes sense in a context of conciliating that practical goal.

³⁰ Wilson (2004, lesson 1, p. 6) distinguishes three types of information transmission: *accidental*, which are not intentionally transmitted, and do not form part of the speaker's meaning; *covert*, which involves a speaker's intention, but one which is not intended to be recognized or shared with an audience, and also does not form part of the speaker's meaning; and *overt*, when the speaker not only intends to convey a certain message, but intends her hearer to recognize this intention. Only in the overt information transmission there are two layers of intention for the hearer to pick up: a basic speaker's intention to inform the audience of something, and a higher-order intention the hearer should recognize that basic intention.

In the third section, we saw how the chains of inferences of Peter's request fail in different ways, and we assume that derives from the lowest-level action in the chain of goals and sub-goals at a stake. The utterance here works as an enabling antifactual abductive hypothesis $P \leftarrow Q$, that is, it is necessary, but not sufficient for the heteroconciliation of higher-level intentions. These failures are due from problems in the accomplishment of the action L of communicating the request for the front-door key (2a), passing by problems in the processing of the sub-goal M of informing the request (2b) and, mainly, problems in the processing of the practical goal $N-Q$ of asking for the key to open the door himself (2c-f).

If that is correct, one should describe and explain communicative intentions in service of informational intentions under the scope of plans of intentional action towards collaborative heteroconciliation of practical goals. So, it is essential to reintegrate Strawson's intention (c), noticing the connection between the audience's response r , and the recognition of the informational intention (a) through the communicational stimulus (b). Hence, one can integrate communicative and informative intentions in a descriptive-explanatory approach aiming at the study of human intentional action and allowing to include the speaker as a proactive agent capable of producing ostensible communicational stimuli to fulfil his/her practical purposes.

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