Speech Acts of Argumentation: Inference Anchors and Peripheral Cues in Dialogue

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Abstract

It is well known that argumentation can usefully be analysed as a distinct, if complex, type of speech act. Speech acts that form a part of argumentative discourse, and in particular, of argumentative dialogue, can be seen as *anchors* for the establishment of inferences between propositions in the domain of discourse. Most often, the speech acts that directly give rise to inference are implicit, but can be drawn out in analysis by consideration of the type of dialogue game being played. AI approaches to argumentation often focus solely on such inferences as the means by which persuasion can be effected – but this is in contrast with psychological and rhetorical models which have long recognised the role played by extra-logical features of the dialogical context. These 'peripheral' cues can not only affect persuasive effect of the logical, 'central' argumentation, but can override and dominate it. This paper presents a theory which allows both central and peripheral aspects of argumentation to be represented in a coherent analytical account based on the sequences of speech acts which constitute dialogues.

1 Introduction

This paper aims to do three things. The first is to make a relatively small extension to existing claims of the speech act basis of argumentation. Perhaps the most prominent (though certainly not the only) speech-act-based account of argumentative discourse is offered by pragma-dialectics (van Eemeren and Grootendorst 1984). One of the things that pragma-dialectics is founded upon is the notion that the speech act of arguing is inherently relational. (A related, but broader, theory of communication, Segmented Discourse Representation Theory, SDRT (Asher and Lascarides 2003) makes a similar claim, although their technical approach differs). For computational accounts, however, pragma-dialectics' approach causes problems because the locus for the relational speech act is still (the utterance of) a specific proposition, rather than the relation between (utterances of) propositions. This is fine when analysing arguments in isolation, but breaks down when adopted in an environment such as that provided by the Argument Web

(Rahwan, Zablith, and Reed 2007) where many arguments connect and intersect.

The second thing that this paper aims to do is to show how the illocutionary force of arguing can be used to *anchor* inferences between propositions in dialogical moves in a game. Specifically, in an example dialogue such as (Ex1), the simple sequence of moves (1.1), (1.2), (1.3) is intuitively in some way responsible for the establishment of an inference from the premise that *Lower taxes stimulate the economy* to the conclusion that *The government will inevitably lower the tax rate*. This intuition, however, is very rarely explored in thoretical work in pragmatics and semantics – SDRT comes closest, but fails to account for the way in which argumentative structure is established.

(Ex1)

(1.1) Bob says, The government will inevitably lower the tax rate.

(1.2) Wilma says, Why?

(1.3) Bob says, Because lower taxes stimulate the economy

Finally, the third thing that this paper sets out to do is to show that it is not just the logical or 'central' route to persuasion that is rooted in the dialogical moves but that the more contextual, 'peripheral' route can also be accounted for and brought in to the same representational model.

Our starting point for constructing a model which allows us to handle both central and peripheral argumentation with a complete account of the role of illocutionary force and dialogical moves is to explore the execution of speech acts, and, particularly, how speech acts in argument can be either explicit or implicit.

The motivation for this work lies in being able to represent, analyse and support the construction of realistic natural arguments both in theory and in practice in software tools. Many of the ideas discussed here form a foundation for extensions to the practical work involved in the development of a common representation language for argument, the Argument Interchange Format (Chesnevar et al. 2006) which in turn underpins the ambitious Argument Web initiative (Rahwan, Zablith, and Reed 2007).

2 Dialogical moves and implicit speech acts

2.1 Explicit Speech Acts

If someone utters the locution p, there is no way in general to know what speech act is being performed. In some cases, we might be reasonably confident, based on a rather complex and heuristic assessment of the verb phrase in p. Most obviously, assertions can sometimes be clear in this way: *it is sunny* would naturally be taken to be an assertive, for example. Clearly, almost any locution could fulfil the requirements of any speech act this is the challenge tackled in trying to understand indirect speech acts but even without going so far as to consider indirect speech acts, very simple locutions can simply be ambiguous when taken out of context. *I will come*, for example, could reasonably be taken to be either commissive or assertive without needing to develop an indirect interpretation. In order to assess, or analyse, or make a judgement of felicitousness of a speech act in general, we have to know more about its context.

With arguments, the situation is exacerbated, because the speech act of arguing is in some way epiphenomenal on the brute speech acts which are assertive and directive. To make this additional challenge clear, consider a naive attempt at making speech acts explicit. It would be possible to take Austin's 'hereby' test for speech-act-hood and to deploy it explicitly. If speakers said things like, *I hereby assert that p* for example, then we no longer need context and complex processing to figure out what is going on. Or at least, we don't need them for determining the simple speech acts referred to by the *hereby*. For during a discussion, it is perfectly possible for us to hear a speaker uttering *I hereby assert that p* (and to hear them doing so felicitously and appropriately), but for us still to be unsure whether an argument is being put forward or not. We would still need context in order to be able to analyse the speech act of argumentation. This follows directly from pragma-dialectical analysis which views the speech act of assertion (in this case) as occurring at the 'sentence' level, and the speech act of argument occurring at a 'higher textual level' (Houtlosser 1994).

From pragma-dialectics, then, we have that the speech act *argue(p)* is performed in virtue of the performance of the speech act *assert(p)*. The challenge that we have in the current work is that if we are to connect each record of a locution with one or more elements of the argument web in our notebook, then we can only record intrinsic features of those locutions. But the performance of argument is not an intrinsic feature of the assertion of p, but rather an extrinsic feature, dependent upon the relationship that the utterance of p has to other utterances (and specifically, in our example, the uttering of *Why q?*). An argument for q cannot be an intrinsic feature of the locution, p, or even the locution *I hereby assert that p*. It would be an intrinsic feature of the locution *I hereby assert that p so q*, but here our sloppiness in characterisation hides a hopelessly redundant analysis: we would have to maintain that the speaker's utterance of p is actually best analysed as the compound locutions of *I hereby assert that p, and that p so q, and that q, as a result* (i.e. four separate assertions). It does not seem reasonable to pack all of this into the hearer's utterance p, not least because we would undoubtedly want to analyse the speaker's utterance of p differently on a different occasion (that is, we are shifting the intrinsic/extrinsic problem from the illocution-argument$_1$ relation to the utterance-locution relation). Our goal, then is to develop an account of the speech action which reflects, on the one hand, the fact that the speech act of arguing, as (Houtlosser 1994) have argued, is being performed in some way implicitly, but which also captures the essential relational character of that speech act. In order to understand the structure of relations between the dialogical parts of arguments, we next introduce the idea of dialogue glue.

2.2 Dialogue Glue

Philosophers of language Asher and Lascarides (Asher and Lascarides 2003) have described the logical connection between dialogical moves as 'dialogue glue,' and they provide a logical characterisation in an attempt to study implicature in dialogical settings (amongst other things). Here, we take the spirit of their idea that there must be connective material lying between utterances in dialogue (and that that material plays an important role in the meaning of discourse), but we develop a rather different characterisation which focuses specifically on those facets of dialogue that are particularly important in argumentative settings. Let us revise our earlier example in (Ex2) in order to briefly explore the nature of this dialogue glue.

(Ex2)

(2.1) Bob says, The government will inevitably lower the tax rate.

(2.2) Bob says, After all, lower taxes stimulate the economy

(2.3) Bob says, because they ease cash flow for small business.

(2.4) Bob says, And any way, lower taxes are a sure-fire vote winner

For real glue to connect two items, it is necessary and sufficient that the two items are touching. (Ex2) shows why this is not the case for dialogue glue. We would certainly want our glue to adhere between (2.1) and (2.2) – the latter is acting as a premise for the former. Similarly for (2.2) and (2.3). Perhaps we might assume therefore that temporal sequence is the major component of dialogue glue. The relationship between (2.3) and (2.4) demonstrates why this is not so: despite being consecutive, there is little or no connection between them. Temporal sequence is thus not sufficient as the sort of relationship that we want our glue to capture. Equally, the relationship between (2.1) and (2.4) is very much the sort of relationship we do want to capture, despite the fact that it is not only non-consecutive, but given that the intervening subargument could be arbitrarily large, the distance between (2.1) and (2.4) could be arbitrarily great. Thus temporal sequence is not even necessary. Instead, what we are interested in are the functional relationships between components in dialogue. There are three functional relationships between the utterances in (Ex2): between (2.2) and (2.1); between (2.3) and (2.2); and between (2.4) and (2.1). In each case, the relationship is the same: *supporting*. As one might

expect, there are more relationships, however. In (Ex1), for example, the relationship between (1.2) and (1.3) is not one of support, but one of response, or, perhaps more perspicuously, *substantiating*.[1] Between (1.1) and (1.2) it is one of *challenging*. Once we see that there are a number of such relationships, we must ask where they come from, how many they are, and how they are specified, lest they multiply out of control with ever more ad hoc unprincipled additions to our bag of relationships.

In order to tackle this challenge, we need a structure which defines the set of ways in which utterances in a dialogue can be related, laying out which types of utterance can follow which others, and how making one sort of utterance can license or demand the making of another. These structures are precisely what are provided by dialogue games, particularly those in the style of Lorenzen (Lorenzen 1987); Hamblin (Hamblin 1970); Rescher (Rescher 1977); Mackenzie (Mackenzie 1990) and Walton and Krabbe (Walton and Krabbe 1995). Such dialogue games, however, rarely (that is to say, as far as I know, never) specify exhaustively the functional relationships between moves explicitly. Rather, they use a far more compact and efficient representation which describes rules of dialogue (and specifically here we are interested in the structural and locution rules). It is straightforward to compute the set of relationships from those rules however: if a locution rule states that an assertion much be followed by a challenge or a concession, then we have two functional relationships: the assertion-challenge relationship and the assertion-concession relationship. [2] Both the process of computing such relationships, and the set that then results, are well known in computer science, where the ways in which a system (such as that described by a dialogue game) can change can be modelled using a particular class of representation depending on the underlying complexity. The least complex class of representation is suitable for many dialogue games, which is why the technique is frequently adopted in distributed AI systems. This is the class of Finite State Machines, which are comprised of a network of nodes which represents states the system can be in and connections between them which represent transitions between states. A state, for example, is something like, 'everything asserted has been conceded' and a transition, something like, 'the asserted proposition is challenged.' To be consistent with the language of this computational heritage, we refer to the connections between components in a dialogue not as relationships but as *transitions*. The possible transitions in a given dialogue are specified by the dialogue game that is being played. Thus we have that our dialogue glue sets of transitions is in fact already available to us in the specifications of various different dialogue games. Claiming that transitions specified (usually implicitly) in dialogue games can be used to model the functional

relationships between utterances in dialogue is relatively uncontroversial. It is, rather, a slightly different way of construing a familiar idea. Slightly more controversial is the idea that these transitions play a more active role in the communicative process.

2.3 Implicit Speech Acts

The idea of implicit or missing components in arguments is old and well established. Though something of a misnomer (as Walton and Reed (2005) point out), such enthymemes are ubiquitous. Rarely is an argument presented with its warrant or major premise stated explicitly to do so is (almost always) unacceptably cumbersome rhetorically. Reconstructing implicit parts of arguments is a common if challenging task to be given to students of critical thinking. If one is dealing with argumentation in the wild, in natural settings, then it is an inescapable part of analysis.

How exactly the speaker introduces or sets up such implicit material is still very unclear. Van Eemeren and colleagues have explored how implicit speech acts are connected with argumentation, and with enthymemes in argument (van Eemeren and Grootendorst 1984, Ch.6); (van Eemeren and Grootendorst 1992, p.54). Propositions introduced by the means that van Eemeren et al. advocate are not, however, the only components of argument that are left implicit. In most analyses of argument$_1$ (in particular), what is drawn out is the set of components and the connections between them. In many diagramming methods the connections are drawn as lines or arrows between boxes that encapsulate components (premises and conclusions and so on). This has one major limitation: as Pollock (Pollock 1995) has argued quite convincingly, there are good reasons to distinguish attacks which rebut an argument (directly attacking components of the argument) from those which undercut an argument (attacking the application of inference in a given situation). The example he gives is that the inference "This object looks red therefore it is red" is presumptively strong, but can be undercut by the fact that "The object is illuminated by a red light". Crucially, this attack makes no claim pro or contra with respect to the conclusion that the object is, in fact, red it merely says that this inference is inapplicable. Such undercutters have been linked to the critical questions associated with a variety of presumptive argumentation schemes (Gordon, Prakken, and Walton 2007).

In order to be able to clearly identify the target for undercutters, we need some sort of locus to capture the application of inference, or more precisely, to represent the application of a rule of inference. If we admit such rule applications into our analyses then it becomes clear that these too are often left implicit in natural dialogue. We can also adopt the same approach as was advocated by van Eemeren et al. in expecting them to be associated with implicit speech acts. More specifically, we can associate specific parts of the dialogue with those implicit speech acts and thereby the rule applications. The challenge now is to determine which components of dialogue generate, or give rise to, or are responsible for, rule applications. Before we can do tackle the challenge, however, a brief summary of the way in which other components of dialogue are connected to argument structures is

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[1]It is a common but unfortunate feature that there is not really a good single term in English for 'responding to a challenge with a further support.' Terms such as *defend* or *parry*, are too overloaded (not to mention martial); whilst terms such as *response* and *reply* too general.

[2]For both of which we would need to invent some appropriate name, *vide supra*.

required.

Philosopher of argument O'Keefe (O'Keefe 1977) has distinguished between two sense of the English word *argument*: the sort of argument which one prepares or presents, which he calls argument$_1$; and the sort of argument in which two or more parties engage, or that people have, which he calls argument$_2$. The distinction has been influential and useful in argumentation theory – but their interrelation has been little studied. Connections between an explicit assertion in an argument$_2$ and the proposition in an argument$_1$ structure to which it refers are usually very easy to account for. As described in more detail in (Reed and Budzynska 2011 to appear), the basic approach is to use speech act theory to give us the machinery to account for the connection from the propositional report of a dialogue event (such as *Bob says, The government will inevitably lower the tax rate*) and the proposition to which it refers (viz., *The government will inevitably lower the tax rate*). The type of the connection is the type of the speech act, or more specifically, the type of illocutionary force. The various types can be schematised in a way that is very similar to (and uses much of the same theoretical techniques as) argumentation schemes. In place of critical questions, for example, these 'illocutionary schemes' have constitutive conditions. In the same way that there are taxonomies of argumentation schemes from different authors (Perelman and Olbrechts-Tyteca 1969); (Walton 1996); Walton et al. (Walton, Reed, and Macagno 2008); etc.) so too are there various taxonomies of illocutionary scheme (such as those proposed by Searle (Searle 1969); (Bach and Harnish 1979); (Searle and Vanderveken 1985); etc.). Thus, (the propositional report of the utterance in) (1.1) is connected to its propositional content by an application of the *asserting* illocutionary scheme, and the (propositional report of the utterance in) (1.2) is connected to the same propositional content by an application of the *challenging* illocutionary scheme.[3]

So if the relationship between argument$_1$ and argument$_2$ is captured by the connection between components of dialogue on the one hand, and components of argument structure one the other, mediated by illocutionary schemes, then we can refine our search for the dialogical origins of rule applications: we need to identify both a component of the dialogue and also an appropriate (class of) illocutionary scheme. The intuition is straightforward. In (Ex1), it is precisely in virtue of the fact that (1.3) is substantiating (1.2) (that is, the transition between (1.2) and (1.3) is of type substantiating, as described in the previous section) that an argument is being offered. That is, the inferential link between p and q is generated not by the utterance in (1.3), but by the relationship that holds between the question at (1.2) and its reply at (1.3). Responding with an assertion to this sort of challenge is precisely where the act of arguing (for something) lies. The illocutionary scheme that is employed is, naturally, arguing. And the speech act locution that conveys the illocution is, often, implicit.

At first glance, it is perhaps a little surprising that the rule application connecting p and q might not supervene on a dialogical relation (that is, a transition) between the utterance of p and the utterance of q.[4] The surprise arises from overlooking that utterance is of course not the same as assertion. The propositional content of the challenge move at (1.2) is, indeed, p, so the transition between (1.2) and (1.3) is indeed connecting utterances referring to p and to q, as we would expect.

There is an interesting complication in treating transitions as being associated with implicit speech acts which arises from the fact that transitions are not strictly propositional reports of dialogue steps. Rather, the signature of transitions is one of connecting propositional reports of dialogue locutions. That is, transition applications are relations between (locutional) propositions. This is by direct analogy to rule applications. Here too, rule applications are relations between (general) propositions they are not propositions in themselves. The relations they capture are, roughly, entailment[5] relations. With both rules and transitions, it is possible to propositionalise after all, one can say things like, *we infer p from q*. In the same way, one could say, *p substantiates the challenge of q*. But in both cases, these propositions have to be calculated from the basic entailment or transitional structure (for further details of calculated properties, see (Reed 2010)). The reason that this presents a complication is that if transition applications are treated as corresponding to implicit speech acts, then they are non-propositional (but rather express a relation between explicit acts in the dialogue) and their contents are non-propositional (but rather express a relation between propositional contents of explicit acts in the dialogue).

Finally, it is worth pointing out that not all implicit speech acts associated with transitions are completely mute. In this regard, (1.3) is particularly interesting. From a purist grammatical point of view, **Because lower taxes stimulate the economy* is ill formed: the 'because' indicator introduces a relative clause, and does not produce a grammatical sentence. Yet in the context of the dialogue (Ex1) this criticism is rather weak. (1.3) seems perfectly well formed. We might want to consider (1.3) elliptical; an abbreviated form of *The government will inevitably lower the tax rate because lower taxes stimulate the economy*. Yet, in the context, if (1.3) were spelled out like this it would, rhetorically, be laughably redundant. For, a challenge like that at (1.2) acts to license, or even to demand, a response which could start with '*because*' in other words, it is the move from the challenge to its substantiation which is associated with the discourse cue *because*. That is not to say that the *because* is not signalling a relationship between p and q clearly it is; but the speech act which is generating this surface form is associated with the transition between the *Why* move at (1.2) and its (substantiating) response at (1.3). As shown above, this transition is illocutionarily connected to the rule application

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[3]The *challenging* illocutionary scheme is a special type of a directive.

[4]It could do in some contexts, but even this trivially simple example demonstrates that it need not.

[5]Here, the use of the term 'entailment' is appealing to the strictly logical, proof-theoretic notion, rather than the much broader notion of textual entailment.

that connects p and q so the surface linguistic form in the dialogue move is appropriately associated with the entailment relationship in the argument$_1$ structure.

An analysis of more discourse cues and their relation to dialogue transitions (along the lines of the exemplary work of (Knott 1996)) is very interesting, but far beyond the scope of the current research (for a connection between discourse cues and argumentation structure, see (Henkemans, van Eemeren, and Houtlosser 2007). It suffices now to note that the speech acts associated with transitions are not always completely implicit, and offers an exciting avenue to connecting discourse cues with the generation or navigation of argument$_1$ structure. What remains unclear, however, is the types of transitions that are available and the way in which it is possible to specify how generic transitional forms instantiated in argument$_2$ structures govern the creation and navigation of argument$_1$ structures. It is to this problem that we turn next.

3 Inference Anchoring Theory

All the communicative phenomena described in the previous section can be represented in Inference Anchoring Theory (IAT) introduced by Budzynska and Reed (Budzynska and Reed 2011). There are many models that allow the representation of inference structures and some models that allow the representation of dialogical structures, however, as far as we are aware there are no models which describes both of these types of structures at the same time (i.e., in a one model). IAT was designed to bridge the gap between those two types of models. The main challenge was to explain how the inferential structures interacts with dialogical ones. Recall the example from the introduction:

(Ex1)

(1.1) Bob says, The government will inevitably lower the tax rate

(1.2) Wilma says, Why?

(1.3) Bob says, Because lower taxes stimulate the economy

In the dialogue (1), Bob and Wilma jointly build argumentation: *The government will inevitably lower the tax rate, because lower taxes stimulate the economy*. At the level of the inferential structures, their basic type of units are built from propositions which may refer to any situation. They can describe someone's speech act (e.g. Bob's assertion that the government will inevitably lower the tax rate) as well as to any other action or situation (e.g. the government's lowering the tax rate). The main types of relations between those units are inferences denoted by RA (see Fig. 1). At the level of the dialogical structures, the basic type of units are propositions describing communication acts. The relations between communication acts are governed by dialogue rules, TA.

The communication acts in a dialogue (e.g. Bob's assertion that the government will inevitably lower the tax rate) have their propositional contents in a dialogue domain (e.g. the government's lowering the tax rate). The relations between the inferential structures and dialogical structures are
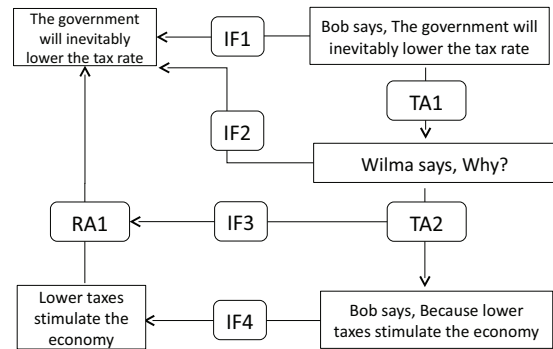

Figure 1: Basic inference anchoring

assumed to be governed by illocutionary connections, IF, related to the illocutionary force (see (Searle 1969)) of a communication act and the contents in inferential structures. The illocutionary force of an utterance can be of a number of types (assertive, directive, etc.) and can involve various presumptions and exceptions of its own.

The dialogical context enables keeping track of the agents' interaction: argumentation is invoked by Wilma's communication act, and provided by Bob's communication acts. IAT assumes that argumentative illocutionary connection is structurally different than e.g. assertive connection, since it begins at TA rather than at a communication act and aims at RA rather than at an act's content. As described in the previous section, this is related to the distinction between explicit (like assertion) and implicit (like argumentation) types of speech acts. Summarizing, RAs map from propositional contents to a propositional content, TAs map from a communicative act to a communicative act and IFs map from a communicative act to its content or from a transition between communicative acts to a transition between the acts' contents.

In IAT, the transition between the acts in a dialogue and their contents in the dialogue domain is warranted by the authorization granted to the performer of this act (Fig. 2). That is, the content of the act will be transferred into the dialogue domain only if the speaker is allowed to perform this act. The specific conditions of when the speaker is granted the authorization can be represented by different models, e.g. in (Budzynska and Reed 2011) the specification is built upon Searle's speech act theory (Searle 1969).
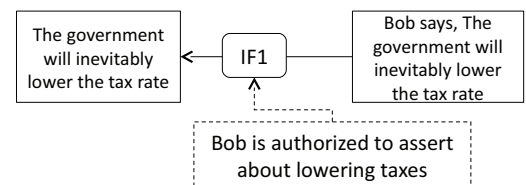

Figure 2: Authorization on illocutionary acts

4 Perlocutionary effects of persuasive speech acts

4.1 Processing persuasive communication

One of the most influential contemporary model of persuasion is the Elaboration Likelihood Model (ELM) introduced by Petty and Cacioppo (Petty and Cacioppo 1986). ELM assumes that there are two routes to persuasion and two types of means of influence characteristic for each of them: central and peripheral. The central route to persuasion is related to content-based arguments, while the peripheral route is related to extra-logical kind of impact, such as credibility or attractiveness of the source of information or the influence on emotions of the receivers (audience).

In the central route, the outcome of persuasive effort is the result of the hearer's thoughtful consideration of issue-relevant content of the message. When the central route processes are activated, the quality (strength) of arguments' content is likely to influence persuasive success. On the other hand, in the peripheral route the outcome of persuasion is the result of less thoughtful processes, such as some heuristic (a simplifying decision rule). The persuasive success is influenced by cues other than an argument's content, e.g., the receiver might reach a conclusion based on the communicator's credibility or likeability. In consequence, the peripheral means using speaker's credibility were an important factor in the experiments, in which the peripheral route was activated, while it was insignificant in those cases, in which the central route was dominant (Petty, Cacioppo, and Goldman 1981).

The likelihood that a receiver will engage in elaboration (issue-relevant thinking) depends on the elaboration ability (such as e.g. prior background knowledge or the presence of distraction in the communication setting) and the elaboration motivation (such as e.g. the receiver involvement, i.e., the personal relevance of the issue). For example, when an issue is not involving and there is some distraction present, the receiver may rely on peripheral cues such as the communicator's expertise. In such a case, high-credibility communicators will be more successful than low-credibility communicators. On the other hand, when the issue is personally relevant, the quality of argument content becomes more important.

The paper considers an idealized communication situation assuming purely central or purely peripheral processing of the message. The aim of this idealization is to clearly demonstrate the difference between those two types of communication elaboration. Yet, in the real-life practice people often use both of those routes simultaneously since they are not mutually-exclusive, but rather the prototypical forms representing the extremes of an elaboration continuum.

4.2 Processing persuasion in IAT

According to the ELM, in the central route the hearer evaluates message arguments ("the true merits of the advocacy" (Petty and Cacioppo 1986):205) while in the peripheral route he focuses on the message source. In the latter case the receiver accepts a claim not on the basis of cognitively expensive reasoning, but on the basis of some short-cut "without engaging in any extensive cognitive work relevant to the issue under consideration" ((Petty and Cacioppo 1986):256). The peripheral cues are based not on the mechanism of comparing and inferring message's contents, but on a mechanism of social influence (such as e.g. the mechanisms of authority or liking (Cialdini 2001) which are based on people's built-in (automatic) reactions.

In an experiment described in (Petty, Cacioppo, and Goldman 1981) students listened to a message advocating that seniors should take a comprehensive exam in their major prior to graduation. One group of subjects was highly involved, since they were said the policy would begin next year, and the other group was lowly involved, since they were said the policy would begin in ten years. The results of the experiment showed that the students of the second group were influenced by the speaker's expertise (a professor of education at Princeton University vs. a junior at a local high school) regardless of the quality of arguments, while in the first group source expertise had no impact on students' attitudes.
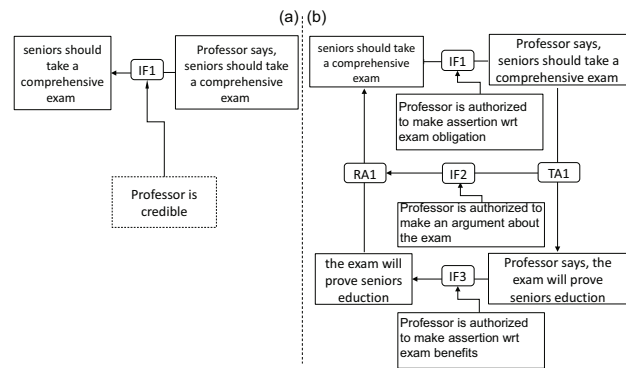

Figure 3: Central and Peripheral Routes

Consequently, in IAT, the communication structures will be differently processed depending on what route is activated. In the peripheral route, the hearer takes into account only the cues related to the message source (Fig. 3a), while in the central route he will process all the communication structures including inferential structures (Fig. 3b). As a result, the quality of the arguments will become influential on the persuasion outcome. Using the terminology of speech act theory, we may say that an illocutionary act has different perlocutionary effect depending on the route in which it is elaborated. In the central route, a communication act of the credible source will be accepted only on the grounds of the quality of its content, while in the peripheral route it may be believed just because of the credibility of the communicator. In the central-based elaboration, the authorization component serves as a mean allowing the transition of the content to the dialogue domain, while in the peripheral-based elaboration it is the only indicator taken into account to the assessment of the message credibility (in the central route the main indicator remains the message's quality).

4.3 Attack on the authorization component in the central route

In the central route, the evaluation of message credibility can influence the evaluation of source credibility. In particular, it may serve as a counterargument for IF-component.

> (...) consider an expert source (Professor of Education at Princeton) who suggests that tuition be increased at his university. When elaboration likelihood is low (e.g. as a result of low personal relevance or high distraction), this prestigious source might serve as a simple positive cue. When the elaboration likelihood is high, however, a subject considering the source and message together might realize that the expert source is biased or has a vested interest in the presentation of some arguments (e.g., an argument to raise tuition to increase faculty salaries) ((Petty and Cacioppo 1986):205)

In the communication structures, the argument "faculty salaries should be increased" could undermine the professor's credibility, i.e. it may attack (CA1 in Fig. 4) the component of authorization. Thus, even though in this route the authorization component is not crucial for the acceptability of the content of communication act (as it was claimed in the previous section), it still plays an important role, since the successful attack on this component may block the transition of the act's content to the dialogue domain.
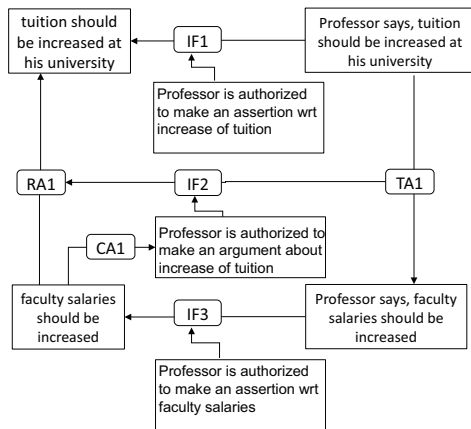
Figure 4: Authorization attack

The hearer's attack on the authorization component is rather uncommon in the peripheral route because of the implicit nature of the peripheral authorization component. Still, speaker's credibility (or any other peripheral source cue) may be undermined by the third party which can have a direct effect on the evaluation of communication executed by the peripheral participant of communication.

4.4 Peripheral cue vs. peripheral argument

According to ELM, the source factors may serve both as arguments and cues ((Petty and Cacioppo 1986):205) what in

IAT corresponds to the distinction between peripheral IP-RAs (Budzynska 2010a; 2010b) and peripherally processed IFs.

(Ex3)

(3.1) Bob says, The government will inevitably lower the tax rate.

(3.2) Wilma says, Why?

(3.3) Bob says, Because the Prime Minister said so

In the dialogue (3), the content of Bob's second communication act (3.3) is the sentence "The Prime Minister said that the government will inevitably lower the tax rate". Yet, it is still a report of another communicative act which is linked by means of illocutionary connection (IF_5 in Fig. 5) with the content "The government will inevitably lower the tax rate" (which constitutes with the conclusion of Bob's argument). Thus, primarily, the connection between "The Prime Minister said that the government will inevitably lower the tax rate" and "The government will inevitably lower the tax rate" is via illocutionary structure. Nevertheless, since Bob uses The Prime Minister's words with an argumentative illocution, the connection between those two sentences secondary obtains also an inferential character (RA_1 in Fig. 5).
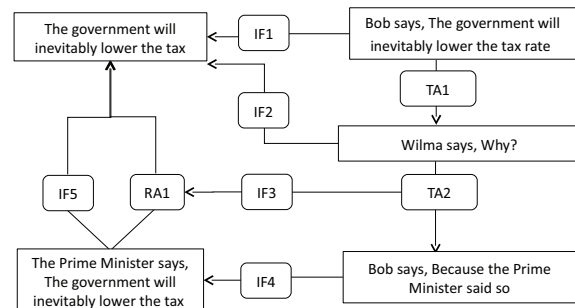
Figure 5: Using others' speech

5 Conclusions

This paper has covered a lot of ground in fairly short order, in order to convey how both central and peripheral routes in argumentation can be described and explained using a single coherent model with its roots in theories of dialogue games, of argument structures and of speech acts. One of the key advantages of the approach is that it clearly explains how the intrinsically relational nature of the speech act of arguing can be anchored to transitions between moves in dialogical games, thus explaining, at least in principle, how dialogical context can to some extent control the way in which arguments are constructed – a very natural and intuitive idea, but not one that has previously been explored. Much remains to be done, but the integration of the central/peripheral distinction demonstrates the flexibility and power of the theoretical foundation, and hints at its representational expressivity, marking out a particularly fertile furrow of research that is to be ploughed.

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