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Towards a theory of close analysis for dispute mediation discourse

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Abstract

Mediation is an alternative dispute resolution process that is becoming more and more popular particularly in English-speaking countries. In contrast to traditional litigation it has not benefited from technological advances and little research has been carried out to make this increasingly widespread practice more efficient. The study of argumentation in dispute mediation hitherto has largely been concerned with theoretical insights. The development of argumentation theories linked to computational applications opens promising new horizons since computational tools could support mediators, making sessions quicker and more efficient. For this, we need tools for close analysis of mediation discourse in order to explore the argumentative activity in depth, and ultimately get an accurate image of how dialogues unfold in this particular context. This paper therefore aims at laying the foundations of a theory of close analysis for discourse in dispute mediation. Theories provided by the literature serve as a basis for argumentative analyses of transcripts of mediation sessions in order to deliver a clear image of the argumentative structure. Analyses of the argumentative strategies in mediation discourse will allow for the development of a dialogue protocol that can be used to develop operational models which can be embodied in software to help make the mediation process easier and more effective.

Keywords— argument analysis, mediation, discourse, Inference Anchoring Theory

1 Introduction

1.1 What is dispute mediation?

The aim of mediation is to help conflicting parties in finding a solution to their dispute thanks to the intervention of one (sometimes more) “third neutral”: the mediator. Like other forms of Alternative Dispute Resolution (ADR) such as negotiation or arbitration, mediation offers the possibility of avoiding the high costs and delays of legal proceedings.

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Dispute mediation can take the form of face-to-face or online meetings. Indeed, the growth of Internet allowed for the development of Online Dispute Resolution (ODR), being in addition to or substituting face-to-face mediation. ODR is often provided by e-commerce sites to settle disputes arising from online transactions (e.g. *eBay* hired services from *SquareTrade* (Hammond, 2003)(Teitz, 2001)), but it generally takes the form of e-mails sent by the mediator to the parties and by each party to the mediator who then forwards the messages to the opponent. Even if face-to-face mediation and online mediation aim at the same goal and present several common characteristics, both processes are accompanied by their own advantages and drawbacks (see Section 2). The focus in this paper is mostly on face-to-face mediation, however, we sometimes mention ODR to show that this work can also be transposed to online mediation.

Dispute mediation relies on confidentiality: parties who resort to mediation are in a tricky situation and few of them agree that the process should be witnessed or recorded. That is why the discussion presented here will be illustrated by examples and analyses of “MockMediation”¹. This document is a 45-page transcript of a mock mediation session provided by Dundee’s *early dispute resolution* team². In the form of a DVD, this document was originally created for training mediators and involves graduated mediators. For this reason, the case presented and the mediation are realistic and can be exploited for the fulfillment of our task. The mediation captured in the transcript involves two parties, Viv and Eric, and two mediators, George and Mildred. Each passage presented in this paper is available in the Appendix in order to provide the context of the excerpts. Although the transcript only captures a small part of an entire typical mediation session, many relevant characteristics of the process can be revealed (e.g. how mediators suggest arguments, how they deal with impasses etc.). In this mock mediation session, Viv initiated mediation because she is not happy with the way her boss Eric regards her work and she wants more acknowledgements.

1.2 Aims

A mediation session consists in the parties discussing their disagreement while the mediator helps them in having a reasonable and effective discussion. Dispute mediation is a ‘win-win’ procedure: the resolution of the conflict has to equally satisfy all parties involved. There are different approaches to mediation (transformative, directive, facilitative, etc.); no mediator follows the exact same procedures, and, above all, the problems tackled in dispute mediation can occur in different contexts: family, labor world, communities, etc. Moreover the shape and content of any discussion depend on the context in which it occurs. The study of argumentation in mediation sessions therefore will show specificities directly linked to its practical activity context.

Mediation is a particular form of argument in the sense of debate or discussion (O’Keefe, 1977). This paper focuses on studying the argumentative process i.e. how the arguments (in the sense of defensible and attackable claims) exchanged between conflicting parties form a reasonable discussion, and relates it with argumentation technology (i.e. computational formalisms and models). Research on the relation between mediation and argumentation is not new but the relation to Artificial Intelligence has been little explored. Despite some works focusing on the argumentative activity in mediation (e.g. Aakhus (2003); Greatbatch and Dingwall (1997); Greco Morasso (2008); Greco Morasso (2011); Jacobs (2002); Jacobs and Aakhus (2002)) there has been no attempt (to

¹available at: www.arg-tech.org/corpora

²<http://www.dundee.ac.uk/academic/edr/>

our knowledge) to relate the dialogical strategies to the argumentative structure in this particular context with the aim of supporting this growing professional area. That is why this paper aims at laying the foundations for a computational tool which could be used in dispute mediation, either to make sessions more effective or to help students during their training. Tools for close analysis of mediation discourse are needed in order to explore the argumentative activity in depth, and ultimately get an accurate image of how dialogues unfold in this context. For example, we need a close analysis of mediation discourse to detect where, in what way and for what reason mediators deploy a particular strategy (i.e. a mediators' argumentative action). We use the term "close analysis" to differentiate our work from the simplest task of corpus annotation. Here, we account for discourse analysis in order to derive the argumentative structure. More specifically, we show the connection between dialogical and argumentative structure. Our work differs from critical discourse analysis (Blommaert and Bulcaen, 2000; Fairclough, 1995) in that it does not aim at explaining mediation discourse through social-theoretical insights; rather, we are interested in explaining the relationship between dialogues, arguments and mediation strategies. This work differs as well from Rhetorical Structure Theory (RST) (Mann and Thompson, 1988) since our main interest is in the dialogical form of arguments, which is hardly handled in RST (Stent, 2000). Theories provided by the literature serve as a basis for argumentative analyses of transcripts of mediation sessions in order to get a clear image of the argumentative process; in particular, the graphical analyses of the argumentative structure of the dialogues rely on Freeman (1991) or Walton's (1996) visions of arguments: argumentation is glued by argumentation schemes of inference or conflict. Through the incorporation of insights from Inference Anchoring Theory (IAT) (e.g. dialogical structure, illocutionary connections, etc.) (Budzynska et al., 2013) we are able to show how dialogues create arguments (i.e. what arguments are made, how and, most importantly, why). Eventually, the analyses of the argumentative strategies in mediation discourse are a first step toward the development of a dialogue protocol that can be used to develop operational models which can be embodied in software to help make the mediation process easier and more effective.

Section 2 proposes an overview of the theories and studies on the argumentation in mediation as well as the tools developed so far. Starting with an evidence-based approach, the analyses in Section 3 of some of the most common and most important phenomena will show the argumentative structure and will reveal characteristics proper to mediation discourse. Section 4 describes mediators' strategies in an attempt to unpack mediation dialogue in a simple way. Section 5 concludes the paper and presents some of the next steps for future work.

2 Related work

2.1 Argumentation in dispute mediation

Dispute mediation is the ADR practice which has been least studied. The main works concerning mediation taken from its argumentative aspect are provided by (Aakhus, 2003), (Greco Morasso, 2008; Greco Morasso, 2011), (Jacobs, 2002) and (Jacobs and Aakhus, 2002). Greco Morasso (2011) proposes a detailed theoretical study of argumentation in dispute mediation based on empirical data. It offers a deep analysis of the argumentative process of mediation which serves as a basis for the following of this paper. Aakhus's work (2003; 2002) is mainly focused on the mediators' strategies and is useful to understand the mediators' tactics (see Section 4).

Referring to van Eemeren and Grootendorst (1984), the mediation process presents all the features of a *critical discussion* i.e. it is composed of four main stages: a confrontation stage (when the discrepancies of opinion appear), an opening stage (when the material and procedural points of departure are established), an argumentation stage (when the parties' standpoints are attacked and defended) and eventually, a concluding stage (the outcome of the discussion). This idealized model has significant limitations in handling the complexity of natural language argumentation but its broad structure is useful in providing us with a scaffold for close investigation.

At the beginning of a mediation process, the two parties find themselves in a position where no sound discussion is possible: they both stand firm and are unable to talk reasonably, and as Greco Morasso stresses, "the mere contraposition of different (or even opposed) standpoints is not sufficient to make an argumentative discussion" (Greco Morasso, 2011). This situation is the *confrontation stage* as defined in (van Eemeren and Houtlosser, 2003) and this is where the necessary third neutral's role lays; the mediators' questions and remarks show that they are trying to shift from an unfruitful situation to a convenient framework for discussion. Nevertheless, the parties are considered competent and responsible for the resolution of the conflict. In our corpus, the mediator George reminds the parties:

(1)

"It is not our role to make decisions on your part. It is not our role to decide whether you're right or wrong. We are here to help you to arrive at a solution that you both can agree with" (see Appendix A, turn 4).

In other words, it is the parties who are responsible for the quality, and therefore for the outcome, of their discussion.

Mediators must ensure that they help in setting-up a well-constructed opening stage. Indeed, this will play a crucial role in the development of the session: a clear definition of the context and issues is more likely to translate into a viable and mutually agreeable solution. At the very beginning of the mediation process the parties are sometimes unable to identify their differences of opinion and to clearly specify their positions. The mediator thus insists "on hearing the narrative of their conflict", (Greco Morasso, 2011, p 210), that is, their view regarding the chronological development of the conflict. This triggers the discussion. In other words, the mediator sets up an *argumentative space* where the parties can start arguing efficiently (Greco Morasso, 2011). Their changing of attitude, from conflicting parties to argument partners, shows that the communicative situation is unblocked and signals the *argumentation stage*.

With the guidance of mediators, the parties' argumentation consists, first, in each of them giving the reasons why they believe there is a conflict and then in providing one or more propositions they think could solve the issue (what is usually referred to as *option generation* (Greco Morasso, 2011; Moffitt and Bordone, 2012)). The parties interaction finally takes the form of a *negotiation*: together, they will bring forward arguments, make propositions and concessions in order to find a solution upon which they both agree.

Despite the fact that they are considered as third neutrals and have no right to provide arguments, mediators have a major role in the argumentative process; that's why their role is said to be paradoxical (Greco Morasso, 2008; Greco Morasso, 2011). Their participation in the argumentation

is very subtle. They never state something as being their own point of view. On the contrary, they give clues to take the discussion to the right way. Van Eemeren and Houtlosser (2003) and Greco Morasso (2011) refer to the delicate task carried out by a mediator as an example of *strategic maneuvering*: mediators take advantage of their third-party position to contribute to arrangements (Greco Morasso, 2011). Our first major task therefore relies on the exploration of the subtle argumentative role of mediators.

The mediator's first moves during the argumentation stage are guided toward the identification of the origin of the conflict. Parties very often consider a particular difference of opinion as the source of their conflict, but they usually do not identify the original one. The mediator will then lead them to that specific issue (Greco Morasso, 2011).

Once the major issue has been identified and acknowledged by everyone, the mediator shifts the discussion toward *options* i.e. the discussion moves to what possibilities are available to solve the problem. In the corpus, the mediators ask the disputants to take

(2)

“perhaps five or six or seven minutes, just to give your view of how you think this whole thing started” (see Appendix A, turn 10)

and the first reason for conflict is brought forward by Viv:

(3)

“I just feel that any suggestions I make, you're constantly questioning what I do.” (see Appendix A, turn 28)

Then Mildred asks (turn 34):

(4)

“What would you like out of today?”

and the first *option* is given by Eric on turn 35:

(5)

“Well, I would like Viv to become part, a productive member of the team.”

The disputants, along with the mediators, will generally have to face impasses throughout the mediation. Impasses refer to situations in which the discussion leads nowhere and nothing constructive comes out of it. Aakhus (2003) studies the three main types of impasse that can occur during mediation: *irreconcilable facts*, *negative collateral implications* and *unwillingness to be reasonable*. Irreconcilable facts are discussants' claims concerning their opponent's state of mind, or “unwitnessable events” that cannot be verified and are subject to digressions. Negative collateral

implications refer to disputants' claims challenging their opponent's character or competence. On turn 53, Eric says:

(6)

“But I’m just a bit reluctant to hand over to Viv at this early stage, because of the complexity and if you make a mistake, you waste such a lot of time. But I don’t know whether Viv thinks that she’s up to it or whether you think you could handle that project.”

Here, Eric merely casts doubts on Viv's competence; it turns out to be pointless and does not help the discussion move forward. Jackson and Jacobs (1992) describe this frequent situation in dispute mediation i.e. when the parties make claims that have potential argumentative strength but their relevance is lost by the fact that they appear in a moment when they do not serve the argumentative process. Here, Eric's argument is irrelevant considering the current discussion. The mediator is supposed to detect this and to restore the argumentative relevance (van Eemeren et al., 1993). Unwillingness to be reasonable refers to moments when a disputant recognizes the opponent's argument is legitimate, but refuses to take it into account in the pursuit of the argument. A good example of this can be found in the disputants' moves (turns 56-57):

(7)

Viv: *Well come on, you employed me, surely you thought I had the ability to, you know. But...*
Eric: *Well I did, so there is a way forward then.*

In this passage, Viv says that if Eric has hired her it is because he knew she was able to do the job; Eric agrees but then says that, since it was a long time ago, it does not count anymore: he accepts Viv argument but does not take it account.

Obviously, the three types of impasse given in (Aakhus, 2003) are not the only situations that endanger the mediation process. There are many other things that can threaten the smooth progress of the discussion, and some of them directly depend on the context of the mediation e.g. some impasses are more easily addressed while others can be worse in the online context (Eisen, 1998; Raines, 2005).

Given that impasses threaten the discussion, dispute mediators have to set up strategies to get rid of them. Aakhus (2003) and Greco Morasso (2011) identify three strategies to deal with impasses: *redirection*, *temporizing* and *relativizing*. Mediators relativize the assumptions by discounting the party's claims or actions; they temporize the dispute by fostering temporary arrangements when no agreement seems possible on key issues; finally, they redirect the discussion toward more relevant issues when it seems to lead nowhere. This is exactly what Mildred does on turn 34: after Eric's criticism about Viv's attitude and Viv's ironical response (turns 31-33), the mediator interrupts the discussion and shifts to another issue:

(8)

“What would you like out of today?”

Problems of communication are (probably) one of the most important difficulties in a dispute. At some point, mediators may want the parties to clarify their standpoints. Indeed, misunderstanding is very often the origin of a difference of opinion e.g. when people use the same word but give it a different meaning. In the context of mediation, the clarification of misunderstandings is usually concerned with the disputants' relationship. As an example, in the corpus, where the dispute is about Viv and her superior's jobs, George draws their attention on turn 42:

(9)

“The other thought that occurred to me is, it strikes me you may have slightly different views about the role of, let's call it, Team Leader and Number Two.”

George wants them to clarify their view on their respective jobs and expectations. According to Greco Morasso, it is the role of mediators to make sure that the misunderstandings are brought to light and that no other ambiguity arises. They have then a role of “definition, precization, amplification, explication and explicitization”, (Greco Morasso, 2011, p 247). Some people argue that miscommunication is more likely to appear in the online environment: “Since written communication is more vulnerable to misinterpretation than verbal communication, online mediation may actually cause as much miscommunication as it seeks to rectify” (Raines, 2005, p 438). For people supporting online dispute resolution, on the contrary, the online environment offers the advantage of giving to parties and mediators the time to calmly think about what they want to write and to express their ideas in a clear and precise way (Raines, 2005). However, according to Eisen (1998), in online mediation the misconstruction may come from the part of the mediator: unable to read the body language and feel the tone of the participant, the mediator might wrongly interpret an email, or a silence, and the discussion risks being skewed.

We have just seen that, in order to help the parties in getting to an agreement, mediators have to deal with their paradoxical role of non-argumentative agent who must foster argumentation. To do so, they argue without taking part in the argument. Mediators generally suggest arguments (in the sense of standpoint) by means of questions (Aakhus, 2003; Greco Morasso, 2011; Jacobs, 2002). For instance (turn 39), George says:

(10)

“There are obviously discussions that need to happen around the team. Would that be a fair statement?”

The structure of his question enables him to provide an argument without it being seen as his own point of view. Asking questions is a very convenient technique. Indeed, with a question, a mediator does not commit herself or explicitly argues, but typically triggers the disputants' argumentation. In the corpus, turn 61, the mediator Mildred asks

(11)

“You think a joint meeting might be a good idea?”

The way it is structured will probably imply a “yes” as an answer, whereas the structure of a question of the type “*How do you feel about a joint meeting?*” would not. *Assertive questions* as defined in (Budzynska et al., 2013) (see Section 3) are a perfect example of questions built to both convey an opinion and seek agreement. Some questions also serve to raise issues that the mediators think are important in order to make the discussion move forward, like George’s on turn 47:

(12)

“We have a big issue here, which is how you take over a role, can we break it down?”

This question acts like a premise to start a discussion about how Viv will take over Eric’s position in the company.

When mediators assert something, it is generally to reformulate or summarize the parties’ positions as on turn 52

(13)

“You need to prove yourself.”

Here, Mildred clarifies and stresses what Viv has just said. In online mediation, summarizing is very useful as several hours or days may have elapsed between two sessions; it allows the parties and the mediators to remember where the dispute stands (Raines, 2005).

Unexpectedly, because of their supposed neutrality, mediators may adopt standpoints. These standpoints, however, are useful in raising an important issue that is not the main one (i.e. the original issue). This is what Greco Morasso calls a *meta-issue*: “It could be hypothesized that the mediator can in general profess some standpoints if they refer to the meta-level of management of the discussion rather than to specific solutions”, (Greco Morasso, 2011, p 175). As an example, on turn 44, George says

(14)

“it might be useful at some point just to return to this whole thing of, either the job description or possibly what Mildred was just referring to, which is this notion of transition.”

This statement is a good example of a mediator claiming something that allows him not only to give his opinion on what is important but also to lead the parties toward a specific issue. It appears that when mediators state something it always allows them to focus the disputant’s attention on their

real interests. That is, what is really important to them. Throughout the discussion, and in many disputes, the parties' mutual interest turns out to be their relationship. Indeed, it can be assumed that they really value this relationship, otherwise they may have preferred a tougher alternative to resolve their conflict e.g. trial, arbitration, etc. The disputants are not always conscious of this and the mediator has to make them aware of this point. As pointed out by Teitz, since most of the online mediation sessions involve people whose relationship is limited to a mere transaction, the usefulness of mediation in these particular cases can be questioned (Teitz, 2001).

At the end of the argumentation stage, in order for the outcome of the mediation to be positive, the mediator has to make sure that all the issues that may be bound to the conflict are tackled and resolved. This, of course, is not done linearly since all the issues are interrelated. On the contrary, the resolution of one issue may automatically solve another one.

2.2 Mediation discourse and technology

This section will focus on technology linked to mediation. Some technological tools that could be used in mediation are presented. Their different features will provide insights regarding the state of the art on the one hand, and what remains to be done or improved on the other hand.

The development of computational technologies has had an impact on dispute resolution. Proof is the development of online dispute resolution services. Online mediation can take several forms, but the most common is emails exchange. This way of mediating online is the easiest one for only a computer, an Internet access and an electronic message service are necessary. More sophisticated techniques however have appeared: some ODR services primarily developed as negotiation aids were enhanced to serve mediation (e.g. SquareTrade, AllSettle, SmartSettle One etc.). Many studies have explored the efficiency of online mediation (Bichler et al., 2003; Eisen, 1998; Hammond, 2003; Nadler, 2001; Raines, 2005; Teitz, 2001; Yuan et al., 2003). In (Hammond, 2003), the author shows that the majority of mediators feel they are able to translate their skills into the online environment, and that mediators, as well as parties, appreciate the asynchronous character of ODR as it allows them to have the time to adequately and efficiently express their questions, ideas, feelings, and opinions since they have a chance to calmly think and write. ODR is also helpful in that it allows for retrieving prior conversations in detail. The participants of the study also appreciate the minor pressure and formality provided by the medium although many of them find the online setting lacks some humanity. One of the main advantages in resolving disputes online is that some emotions that may hinder the discussion (e.g. anger) are more easily left aside for the benefit of rationality. According to Raines (2005), ODR is well suited for disputes involving parties who do not expect a future relationship and only wish a financial settlement (e.g. disputes arising from online purchases). Some emotions, nevertheless, inevitably make the development of the mediation process easier (e.g. a feeling of commitment will make the parties more inclined to resolve the dispute). Moreover, as argued by Gilbert, emotions are natural and necessary to argumentation (1997).

Mediation can be seen as a negotiation involving a third neutral whose task is to unblock impasses, that is why much of the research in negotiation is also applicable to mediation, and other evidence of the link between mediation and technology is the development of software dedicated to dispute resolution. Insofar, most of them are *NSSs* –Negotiation Support Systems– (largely developed over the two last decades). These tools usually have a repository for information (i.e. a database storing

the case details) and take the form of decision-making aids; they very often are available on-line (e.g. SmartSettle One, previously known as OneAccord). It is believed that this technological use brings formality and legitimacy to the process (Hoffer, 1996). Decision analysis systems allow for suppressing, or at least minimizing, numerous barriers to settlement. By their designing a decision tree, decision analysis tools transform the conflict into a logical structure from all the issues to all the possible solutions, and the ideal solution. This mathematical and logical representation can be useful in that emotions are left aside for the benefits of reason and rationale. Indeed, decision analysis tools primarily help negotiating parties in defining their *BATNAs* (Best Alternative To Negotiated Agreement), that is, among a set of possible outcomes, which one is the best to a party. They are used by mediators in order to identify the issues and their potential settlement.

Many authors, however, have pointed out the limitations of such tools. First, participants in mediation (parties and mediators) are often reluctant to use those tools. They explain they feel uncomfortable with the concepts and theories, the mathematics (that form the basis of such systems) and, overall, mediators feel they are giving control to the machines (Hoffer, 1996). Also, decision trees (the output of such systems) are often considered little convenient in disputes where money is neither the issue nor a possible settlement. Hoffer (1996) also emphasizes that decision analysis tools can be extremely useful to mediators but that they must be used carefully because not all cases are suitable and not all mediators know how to best utilize them. Moreover, there is no way to assess whether a particular mediation will benefit from these systems or not. In (Yuan et al., 2003), the authors remark that the major limitation of those tools is that they all focus on decision support rather than process support. In other words, they only help the users in making decisions and do not allow for enhancing the mediation process. Those systems, nevertheless, offer valuable information concerning what has (not) been done, what can (not) be done, and what should (not) be taken into account. For instance, Yuan et al. (2003) try to define the best means for an efficient and effective on-line negotiation. The authors created a web-based negotiation support system, enabling parties to use text, audio and video. Three groups of students were asked to negotiate a mock case using different features: text only, text and audio, and text, audio and video. The goal of the study was to verify if audio and video features made the negotiation easier, more efficient and more effective. Unsurprisingly, it appeared that text combined with audio gave better results; but the participants reported that the video brought nothing to the process; it even made it worse. This study was conducted in 2003 and video-conferences were not common and of poor quality so, the results must be replaced in this context and cautiously interpreted. *Family Winner* (Bellucci and Zeleznikow, 2005), a decision support aid to help divorcing couples in reaching an optimal agreement, is an example of a system where the goal is not decision analysis, but it is a prescriptive decision-making support that provides advice and guidance about the case being mediated. As a comparison, normative decision-making systems only describe how people should make the best decisions, and descriptive decision-making suggests and predicts behaviors. Prescriptive decision-making systems, on the other hand, provide means to improve the decision. Finally, (Tanaka et al., 2008) proposes an interface for trainee mediators. This project is based on a data-base, where each case is compared and analyzed statistically, with the aim of evaluating the mediator's skills and the disputant's character. More specifically, the system enables the training of a student in mediation by proposing a case scenario. The interface relies in the presence of an argument agent i.e. a virtual agent who plays the role of a party. The agent is able to generate a reply to every move of the mediator or the other party. Each move of the agent is, in theory, relevant regarding the argumentation process as well as the character it has been assigned (selfish, single-minded or argumentative). Text responses are generated by retrieving the responses of a similar case in the

data-base. Even if this system proposes interesting features, the authors themselves recognize it is too superficial, particularly with respect to the argumentativeness of the agent.

3 Argument analyses

This section gathers analyses of the transcript described in Section 1 with the aim of getting a clear view of the details of the argumentation process in dispute mediation. With a better insight into the argumentative structure, it will be easier to find out whether argumentative moves specific to mediation can be easily detected and differentiated and, finally, to define the requirements for the creation of a tool for mediators. The analyses presented below therefore cover moments when argumentation in a broad sense is performed (arguing, disagreeing, agreeing etc.); moreover, we must keep in mind that all the strategies discussed in the paper always have an impact on the overall argument. The following excerpts thus take into account the moments in mediation discourse when argumentative strategies are deployed. The identification of these strategies was inspired by different research domains. For example, the notion *argumentation stage* is borrowed from pragma-dialectical theory (van Eemeren and Houtlosser, 2003); the notion *option generation* was introduced in conflict resolution theory; and the notion *impasse* comes from communication studies (Aakhus, 2003).

All the analyses below have been produced using *OVA+* (Janier et al., 2014), an interface for the analysis of arguments online, accessible from any web browser³. It is a tool allowing what the AIF has advocated for, i.e. the representation of arguments and the possibility to exchange, share and reuse argument maps (Chesveñar et al., 2006). The system relies on schemes using *Inference Anchoring Theory* (IAT) which allows for a representation of the argumentative structure of a text, and more interestingly, of dialogues (Budzynska et al., 2013). IAT provides a theoretically well founded counterpart to AIF, and although both *OVA+* and the simplest *OVA* tool are freely available, *OVA+* provides enhancements specifically for supporting analyses using IAT. The expression “argumentative structure” cannot be separated from IAT: it has to be understood as “the shape of the discussion”, i.e. how the discussants’ moves in a dialogue work together to form an argument. To make sure the reader correctly understands the analyses below, let’s consider the simple dialogue below:

(15)

Participant 1: *Scotland is the best country on Earth. The scenery is breath-taking.*

Participant 2: *Winters are too cold there.*

The *OVA+* analysis of Example (15) is given in Figure 1. It allows for the representation of both the dialogical and the argumentative structure of the dialogue:

- The right-hand side of the graph shows the dialogical structure with:
 - Locution nodes: the content of the utterances preceded by the speaker’s identification
 - Transition nodes: the transitions between the locutions or rules of dialogue (TA-nodes)

³<http://ova.arg-tech.org>

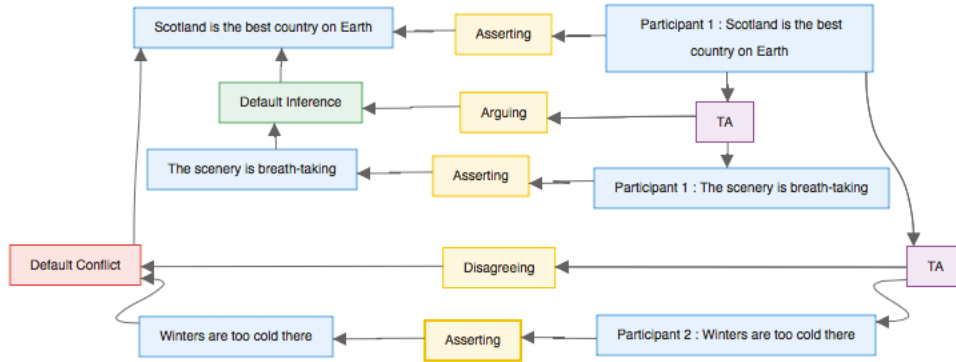


Fig. 1 Argument graph in OVA+

- The left-hand side of the graph shows the argumentative structure with:
 - Information nodes: the propositional content of each locution (in front of the corresponding locution node)
 - Relations of inference: they connect premises to conclusions
 - Relations of conflict: they connect conflicting information nodes
 - Relations of reframing (when two information nodes mean the same despite different propositional contents)
- The relation between the dialogical and the argumentative structure:
 - Illocutionary forces: the speakers' communicative intentions (connecting a locution node to the corresponding information node)
 - Indexical illocutionary forces such as arguing, explaining, disagreeing, etc. (i.e. that can only be derived from the transitions between locutions)

Figure 1 is therefore to be read as follows: Participant 1 asserts that Scotland is the best country on Earth and that the scenery is breath-taking. Despite the absence of linguistic indicators such as 'because', the reader (or hearer, or analyst) understands that the second claim is actually supporting the first one. It is in virtue of the very fact that 'The scenery is breath-taking' was uttered just after 'Scotland is the best country on Earth' (shown by the transition node between them) that we know that the latest claim acts as a premise to the first one. This is shown through the illocutionary force of *arguing* anchored in the transition node. Participant 2 in his turn, asserts that Scotland is too cold during winters. Once again, it is in virtue of the very fact that this claim was pronounced after Participant 1's argument (shown by the second transition node), that we understand that Participant 2 is disagreeing with Participant 1, even if no linguistic indicator shows this. This is indeed shown by the illocutionary force of *disagreeing* that comes from the transition node and the conflict node between the participants' claims.

IAT is designed to capture details of argumentation and is not sufficient to describe every phenomena occurring in dispute mediation. For example, non verbal communication cannot be processed. It is

Illocutionary forces	Abbreviations
pure question	PQ
assertive question	AQ
rhetorical question	RQ
assertive challenge	ACh
pure challenge	PCh
rhetorical challenge	RCh
assertion	A
popular concession	PCn

Table 1 Set of illocutionary forces in dispute mediation

a good start, however, for analyzing dialogical argumentative discourse. This framework has been proved stable when used to study argumentation in the context of debate (Budzynska et al., 2014a,b). Table 1 summarizes the illocutionary forces found in mediation discourse.

Assertions are used to communicate one’s opinion. Popular concessions (PCn) are used to communicate general knowledge (e.g. “Everybody knows that p ”). There are three types of question. Pure questions (PQ) are used to ask the hearers’ opinion; assertive questions (AQ) and rhetorical questions (RQ) both convey an assertive communicative intention, but when a speaker uses a rhetorical question, she does not expect any reply (contrary to assertive questions). The distinction between pure, assertive and rhetorical holds for challenges as well. Challenges are used to ask about the grounds for the hearer’s opinion.

For a more detailed explanation of illocutionary forces in IAT, the reader can refer to (Budzynska et al., 2013). It is however important to point out that every time we refer to the act of “arguing”, it has to be understood in the broad sense of “providing premise(s) to a conclusion”.

The analyses presented in this paper, plus many more, are available on the AIFdbCorpora webpage⁴. This interface allows gathering and sorting analyses made in OVA+ into corpora. The aim, once again, is to provide a framework where analyses can be shared and reused. The excerpts analyzed are also gathered in the Appendix in order to provide the reader with the contexts of each passage.

3.1 How mediators pave the way to the argumentation stage

⁴<http://corpora.aifdb.org>

(16)

Eric: *Although I've entered into it voluntarily, I'm not really...I'm genuinely confused about what Viv is accusing me of.*

George: *Okay. All right. So would you be happy just to carry on Viv, would you happy if Eric used that as a starting point for a couple of minutes to explain how he thinks and how he feels? And then you'd have the same opportunity.*

Viv: *Yes, that's fine by me.*

[...]

Viv: *Well. Where to start? I just feel that any suggestions I make, you're constantly questioning what I do.*

Eric: *I don't think quite fair really, because after all, it's a new job and you're just into what's a very complex organizational process that we run here and you can't expect just to be able to come in and just start off right away. If you make a mistake or something, you know what the position's like, you have to go back to square one...*

This part of the mediation can be considered as the beginning of the *argumentation stage*. Context for this discussion is given in Appendix A. For clarity in the example, only turns 14-16 and 28-29 (Example (16)) are analyzed in Figure 2. On turns 17-27, indeed, Eric only explains that he would rather Viv starts talking and Mildred asks the parties not to interrupt each other when they are talking; these moves are conversational repairs that are not relevant for the analysis at stake⁵. In Example (16), Eric says he does not know what Viv is accusing him of. The mediator then suggests the parties to give their point of view regarding the conflict and the outcome they expect. Figure 2 shows that Viv answers to the mediator's pure question and explains what she thinks, and Eric disagrees with that and provides arguments. We can see that the parties manage to argue reasonably and rationally: they are enabled to give their opinion and counterargue on the issues they are concerned about. The mediator's question "would you be happy if Eric used that as a starting point for a couple of minutes to explain how he thinks and how he feels?" has triggered the argumentation.

3.2 How mediators redirect the discussion

Figure 3 represents the analysis of the moves in Example (17) (Appendix A, 31-35).

⁵The complete analysis of the passage is however available in the AIFdb Corpora at aifdb.org/argview/2186

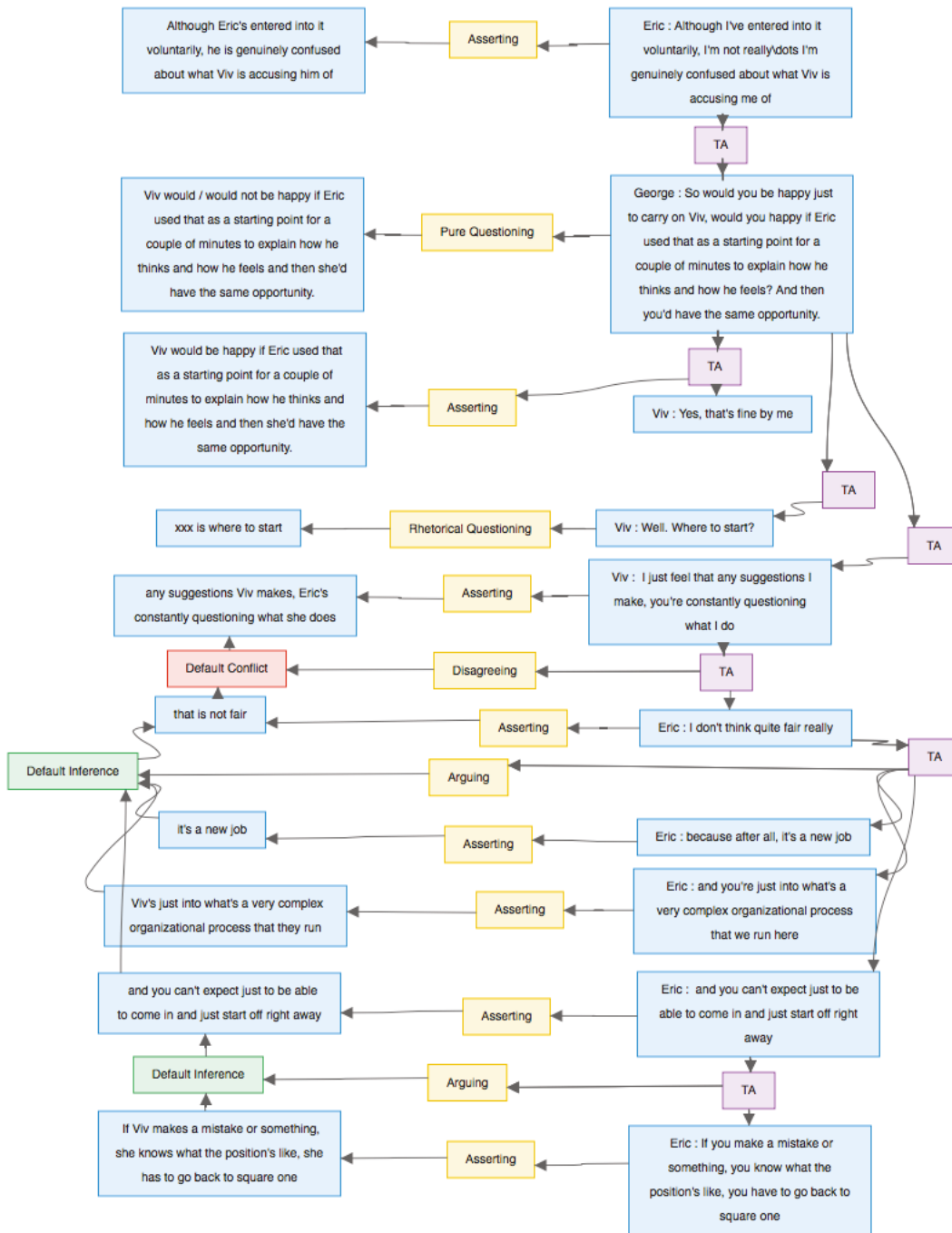


Fig. 2 Beginning of the argumentation stage

(17)

Eric: [...] *it's just making my life a misery, actually and that's the way things are at the moment.*

Viv: *I'm sorry.*

Eric: *I'm sorry if that's the way it comes over, but you want me to be honest, so that's the view and that's kind of the way it is.*

Mildred: *What would you like out of today?*

Eric: *Well, I would like Viv to become part, a productive member of the team. Because we are a team and, you know, Viv was appointed to be my equal. [...]*

This argument map shows how the mediator *redirects* the discussion (see Section 2.1). In this excerpt, Viv shows she does not agree with Eric by saying, ironically, “*I’m sorry*”, but she does not bring arguments: the parties are just talking angrily and the discussion does not move forward. The mediator’s question, however, unblocks the situation since Eric gives his opinion and provides arguments. Note the absence of transition node between the mediator’s question and the locutions above; this explicitly shows that there is no link between them: the mediator changes the topic and brings in an all new issue. Once again, a simple question has allowed the mediator to initiate a rational discussion. The following of the discussion is analyzed in Figure 4.

3.3 How mediators pave the way to the option generation

As seen in section 2.1, this is the moment when the mediator asks the parties what they expect from the mediation. In Example (18) (turns 34-35), Eric gives his opinion (“*I would like Viv to become part, a productive member of the team.*”) and provides arguments to support his claim. Indeed, the mediator has managed to set up an argumentative space and does not have to ask the parties to specify their grounds. This statement is actually the first *option*, i.e. the first available possibility to solve the conflict.

(18)

Mildred: *What would you like out of today?*

Eric: *Well, I would like Viv to become part, a productive member of the team. Because we are a team and, you know, Viv was appointed to be my equal..*

Figure 3 and Figure 4 show that the same question has allowed the mediator both to redirect the discussion (the absence of transition node shows there is no relation with the content of the prior moves) and to trigger the option generation stage (Eric says what he is expecting and provides arguments).

3.4 Sources of impasses

Figure 5 and Figure 6 are analyses of sources of impasse faced during the mediation: namely *negative collateral implications* (Example (19)) and *unwillingness to be reasonable* (Example (20)) (see (turns 53-58)).

(19)

Eric: *I'm just a bit reluctant to hand over to Viv at this early stage, because of the complexity and if you make a mistake, you waste such a lot of time. But I don't know whether Viv thinks that she's up to it or whether you think you could handle that project.*

Mildred: *What about if we perhaps separate it, had a bit of time and we spoke with each of you to look at the finance project and just see our different expectations and what you would see dealing with that project and then perhaps when we had a picture from both of you, if both of you came back to discuss your different pictures. Do you think that would work?*

In Example (19) Eric says that he does not want to hand over one of the projects to Viv because the task is very complicated. The first sentence highlights the complexity of the task and the cost of mistakes that could result from handing the project over to Viv too soon. The second sentence pushes the choice away from Eric to Viv, as though he is not the one to take the responsibility for the decision. Both sentences though seem to carry the implication that Viv is either not qualified or not yet ready or both. The mediator then opens a conversation that avoids this direct conversation and instead shifts the topic of the discussion from whether Viv is qualified and whether Viv or Mildred should decide whether Viv is qualified toward discussing the task itself and the expectations around it. Thus Viv's competence is taken out of the discussion.

The use of IAT to analyze this extract allows for the detection of the different moves corresponding to the source of impasse and to the mediator's moves to deal with it. Here, Eric casts doubts about Viv's capacities and provides an argument for this (see the illocutionary force of *arguing* between his two first locutions). However, it does not make the discussion move forward since the other party, Viv does not answer to those critiques: this is the impasse. Jacobs and Jackson (1992) describe this frequent situation in dispute mediation i.e. when the parties make claims that have potential argumentative strength but their relevance is lost by the fact that they appear in a moment when they do not serve the argumentative process. Here, Eric's argument is irrelevant considering the current discussion. The mediator is supposed to detect this and to restore the argumentative relevance (van Eemeren et al., 1993). This is what Mildred does in this extract: her question to shift the topic is redirecting around a highly probable source of impasse while at the same time giving her the possibility to propose a new way to broach the issue. This move is not surprising given it is acknowledged that most of the mediators' moves consist in asking questions. What is interesting is that the question appears as a very procedural comment (or meta-comment) on how to proceed with the discussion. It is very directive: we feel that the mediator not only wants to know what the parties think about what she proposes (reflected by the question), but she somehow claims that this is how the discussion should unfold (reflected by the assertiveness of the question). The mediator has actually *redirected* the discussion: the question creates a space for a new conversation that directs the discussion towards a new way of tackling the issue. Note the absence of transition node between her question and the previous locutions: this means that this

question has no relation with what was said before. The third locution of Eric could be interpreted in two different ways. We decided here to analyze it as a way for Eric to say that he will not take responsibility if Viv fails with the project. With this interpretation, there is obviously a link between Eric's first two locutions and the third one. It brings however no argumentative intention (hence the transition node without illocutionary force attached). This locution could nonetheless be seen as a second support (premise) to Eric's reluctance: he is reluctant (first locution) because the task is complicated (second locution) and because he does not know if Viv feels she has the ability to handle it (third locution). Both interpretations are possible and correct, and they do not change the following of the analysis.

(20)

Eric: *I don't know whether Viv could handle that she has the ability.*

Viv: *Well come on, you employed me, surely you thought I had the ability to, you know. But...*

Eric: *Well I did, so there is a way forward then. But I can also check on how she's doing the project and if she's succeeding with it and that will give me a milestone, an indicator of her.*

Viv: *I would quite like to just maybe take time out to look at what my job description was, actually, and from that, given what we've been talking about, it might signal up to me the key points that I want to clarify with you and see what your opinion is.*

George: *It's quite possible and again, it's our experience in this sort of situation, it's all about expectations and where your expectations and Viv's expectations match, you have happiness and a smooth life and everything works well. Where they don't, there is conflict, there is uncertainty, there is confusion and those are the sorts of things that contribute to having this sort of discussion. If what we can do today is to help you to get a degree of clarity about the expectations, then if you feel that would be useful...*

Eric: *Well, anything that, as I said at the start, anything that will give me more time back.*

This discussion between Eric, Viv and George happens some time after the one in Example (19). Here, Eric again casts doubts about Viv's ability to handle the project. However, this time, Viv answers to the critique and claims that if he employed her it is because he knew she was able to deal with it. Eric agrees with her but he does not take it into account claims that time has passed since then and he needs to check if she actually can handle the project. Viv does not directly answer to this; rather, she proposes to have a look at her job description to check whether she understood what Eric expected from her. The mediator intervenes only then, by saying that Viv's proposal is a good idea, and Eric eventually agrees as well. The IAT analysis of this excerpt is presented in Figure 6. For clarity and space purposes, only the most relevant moves of this dialogue are analyzed.

The analysis in Figure 6 shows that Viv disagrees with Eric's first claim and gives an argument. Eric agrees with Viv however he does not take this argument into account (note the *contradicting* node). This is the impasse: Eric is unwilling to be reasonable since he agrees with his opponent but then refuses to take it into account. Viv then makes a proposal and provides an argument for this proposal and George and Eric both agree with this proposal. Viv is therefore the one who reacted to the impasse: making a proposal that concerns a particular issue (here, their expectations

concerning Viv’s abilities) and not the dispute itself. This is called *temporizing* Aakhus (2003). What is interesting in this case is that it is a disputant who reacted when the source of impasse appeared, while we would expect mediation strategies to be set up by the mediators. In (Greatbatch and Dingwall, 1997), the authors nevertheless show that disputants very often manage to exit arguments without the intervention of the third-party. This is precisely what happens in Example (20).

3.5 How mediators clarify misunderstandings

Figure 7 represents the analysis of Example (21) where the mediator deals with and seeks to *clarify* the misunderstanding between the parties ((turns 44-46).

(21)

George: *You’ve both mentioned the idea that you’re not going to be here forever, what’s the point of this Number Two, so perhaps what might help is a look at how that transition might work, what you would like it to achieve. What Viv would like it to achieve and see how the two can be married together. Would that be a fair?*

Viv: *Yes, I think it’s vital, actually.*

Eric: *I think it’s all based on the job description, that the idea was that Viv would come in and learn the job in terms of, it is a complex job, as I said, the business, fill in these forms, again, there’s forms you have to fill in and if you don’t do it correctly then we have to start again.*

Here, the mediator first summarizes the parties’ discussion (“*You’ve both mentioned the idea that you’re not going to be here forever, what’s the point of this Number Two*”) in order to elicit their discrepancies; then he makes a proposition to tackle this issue. Note the way he formulates this proposition: “*so perhaps what might help is a look at how that transition might work*”. He does not ask the parties to do or to answer anything: he subtly leads them to think about this specific issue. He cannot be said to have led the discussion, since the concrete proposition is actually made by Eric: “*I think it’s all based on the job description*”. Indeed, later in the discussion, the two parties will take time to have a look at this job description (on turn 58, Viv says: “*I would quite like to just maybe take time out to look at what my job description was, actually, and from that, given what we’ve been talking about, it might signal up to me the key points that I want to clarify with you and see what your opinion is. Whether I’ve read it, whether it’s been hieroglyphics to me, or whether I’ve got it right.*”)

3.6 How mediators suggest arguments

Figure 8 is an example of the mediator suggesting an argument (i.e. subtly claiming a standpoint) by means of a question (Example (22)) (see turns 39-40):

(22)

George: *There are obviously discussions that need to happen around the team. Would that be a fair statement?*

Viv: *Yes.*

Here, George states something: “*There are obviously discussions that need to happen around the team.*”, but the question that follows is useful both to let the utterance seem more like a proposition than a proper claim, as well as to trigger Viv’s agreement.

Figure 8 manifests very well the mediators’ role: they subtly make suggestions on the issues to be broached and even more subtly draw conclusions which can act as premises for the continuation of the parties’ discussion.

4 Mediation tactics and strategies

The application of IAT to mediation discourse has allowed for the analysis of the structure of mediation discourse. The analyses present the argumentative elements of mediation discourse in a graphical manner; the detection of these elements is necessary for associating a sequence of utterances (or tactic) to a particular strategy. In other words, starting from a fine-grained analysis of the discourse structure we are able to define larger scale dialogue structures that can be composed as strategies and can be implemented in software. It is then possible to associate a sequence of argumentative moves to a mediation discourse specificity. What we are looking is which sequences of moves represent a particular mediation feature and how they work together in this particular context, e.g. which moves represent a source of impasse, and which moves correspond to the strategy? We want to show what the tactics are to set up particular strategy; in other words, what does the mediator do (i.e. what is the tactic?) when she redirects the discussion (i.e. the strategy)?

Table 2 to Table 8 summarize tactics for the five mediators’ strategies described in Section 3, namely *opening of the argumentative stage*, *redirection*, *option generation*, *clarification of misunderstandings*, *dealing with negative collateral implications*, *dealing with unwillingness to be reasonable* and *suggesting arguments*. Those tables are a first step towards representing formally what the analyses in Section 3 depict. Every feature highlighted by the graphs is reported in the tables below. This formal representation, inspired by Mackenzie, Walton and Krabbe, and Prakken’s major works on persuasion dialogue systems (Mackenzie, 1979; Prakken, 2005, 2006; Walton and Krabbe, 1995), can be processed by a computer (contrary to IAT analyses as such) to ultimately derive a dialogue-game protocol proper to mediation. This is a necessary step for further studies or applications such as the development of software to support the mediation activity.

The first columns of the tables allow for the delimitation of the strategies from the remaining of the discourse. As an example, in Table 2 the strategy of opening the argumentation stage happens at Loc_2 and the following moves are the argumentation stage. The second columns represent the locutions and transitions in order of appearance in the analyses (e.g. $Loc_1;Loc_3$ means there is a transition node from the first to the third locution). In the third columns, $party_1$ and $party_2$ stand for Eric and Viv respectively; *mediator* is used without distinguishing Mildred and George. The illocutionary forces corresponding to the locutions and the ones anchored in the transitions appear

in the fourth columns; \emptyset is used when no illocutionary force is anchored in a transition node or when there is no propositional content. The letters in the fifth columns symbolize the propositional contents of each locution (a different letter for each different propositional content); note however that every table is independent from the other: e.g. if the letter a appears in one single table, it symbolizes the exact same propositional content; this does not hold if a appears in e.g. Table 1 and in Table 2. The notation *default conflict* (a,b) means that there is a conflict from a to b ; similarly, *default inference* $([a,b] ; c)$ means that a and b both support c .

4.1 Paving the way to the argumentation stage (Figure 2)

	LOCUTION OR TRANSITION	PARTICIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
	Loc_1	$party_1$	A	a
	$Loc_1; Loc_2$		\emptyset	\emptyset
opening the argumentation space	Loc_2	mediator	PQ	b
beginning of the argumentation stage	$Loc_2; Loc_3$		A	c
	Loc_3	$party_2$	\emptyset	\emptyset
	$Loc_2 ; Loc_4$		\emptyset	\emptyset
	Loc_4	$party_2$	RQ	d
	$Loc_2; Loc_5$		\emptyset	\emptyset
	Loc_5	$party_2$	A	e
	$Loc_5; Loc_6$		disagreeing	default conflict (f;e)
	Loc_6	$party_1$	A	f
	$Loc_6; [Loc_7, Loc_8, Loc_9]$		arguing	default inference ([i, h, g];f)
	Loc_7	$party_1$	A	g
	Loc_8	$party_1$	A	h
	Loc_9	$party_1$	A	i
	$Loc_9; Loc_{10}$		arguing	default inference (j;i)
Loc_{10}	$party_1$	A	j	

Table 2 Tactics for paving the way to the argumentation stage

In the third column of Table 2, we see that $party_2$'s locutions (Loc_3 , Loc_4 and Loc_5) are all related to the mediator's (Loc_2). This suggests that the mediator's pure question has been answered. In the fourth and fifth columns we also see that $party_1$ disagrees with $party_2$ and support is given to this disagreement. A rational discussion has been set up since the parties not only answered the pure question but also disagree and argue: the mediator's pure question has opened the argumentative stage.

4.2 Redirection (Figure 3) and Option generation (Figure 4)

For in the transcript the redirection leads to the option generation, those two strategies are here studied in the same section.

	LOCUTION OR TRANSITION	PARTICIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
failure to argue	Loc_1	$party_1$	A	a
	$Loc_1; Loc_2$		restating	paraphrase (b;a)
	Loc_2	$party_1$	A	b
	$Loc_2; Loc_3$		disagreeing	default conflict (c;b)
	Loc_3	$party_2$	A	c
	$Loc_3; Loc_4$		\emptyset	\emptyset
	Loc_4	$party_1$	A	d
	$Loc_4; Loc_5$		\emptyset	\emptyset
	Loc_5	$party_1$	A	e
	$Loc_5; Loc_6$		arguing	default inference (e;f)
redirection	Loc_6	$party_1$	A	f
	$Loc_6; Loc_7$		restating	paraphrase (g;f)
	Loc_7	$party_1$	A	g
	Loc_8	mediator	PQ	h
	$Loc_8; Loc_9$		\emptyset	\emptyset
	Loc_9	$party_1$	A	i
	$Loc_9; Loc_{10}$		arguing	default inference (j;i)
	Loc_{10}	$party_1$	A	j
	$Loc_9; Loc_{11}$		arguing	default inference (k;i)

Table 3 Tactics for the strategy of redirection

Table 3 shows the tactics for *redirection* (see Section 3.2). The table highlights two major features of this strategy: (i) there is no relation between d and c (fifth column): the parties assert two different propositional contents and the absence of inference or conflict between the two, despite a transition, shows that the participants are not arguing together; $party_1$ is the only one performing argumentation and the discussion leads nowhere; and (ii) the mediator poses a pure question with no relation to the previous discussion (no transition between Loc_8 and the previous locutions). We can thus draw the following conclusion: when the parties do not argue with each other, the mediator redirects the discussion with a pure question that has no relation to the prior topic. We have seen in Section 3 that this pure question allows the mediator not only to redirect the discussion (see Section 3.2 and Table 3) but also to trigger the option generation (Section 3.3). This pure question appears then in the first row of Table 4. The first assertion of $party_1$ (i.e. b) is his proposition (i.e. the option he would like to set up to unblock the situation); he then provides support to this standpoint (shown in this Table by the transition $Loc_2; [Loc_3, Loc_4]$). Thus, the mediator's pure question allowed $party_1$ for providing his opinion and argue. Here the option generation was therefore initiated by the mediator asking a pure question, to which a party answers by providing arguments.

	LOCUTION OR TRANSITION	PARTICIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
	Loc_1	mediator	PQ	a
option generation	$Loc_1;Loc_2$		\emptyset	\emptyset
	Loc_2	$party_1$	A	b
	$Loc_2;[Loc_3,Loc_4]$		arguing	default inference ($[c,d];b$)
	Loc_3	$party_1$	A	c
	Loc_4	$party_1$	A	d

Table 4 Tactics for option generation

4.3 Negative collateral implications (Figure 5) and Unwillingness to be reasonable (Figure 6)

Given that in the transcript those two sources of impasse happen one after the other, the strategies are here studied in the same section.

	LOCUTION OR TRANSITION	PARTICIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
negative collateral implications	Loc_1	$party_1$	A	a
	$Loc_1;Loc_2$		arguing	default inference($[b,c];a$)
	Loc_2	$party_1$	A	b
	$Loc_2;Loc_3$		\emptyset	\emptyset
	Loc_3	$party_1$	A	c
redirection	Loc_4	mediator	AQ	d

Table 5 Tactics for dealing with negative collateral implications

With Table 5 we see that $party_1$ argues (see the ‘arguing’ move in the fifth column) but $party_2$ does not answer i.e. she does not take part in this discussion. This moves represent thus the impasse since only one party is actually arguing. Moreover, we see that the mediator uses an assertive question (bottom of the fifth column) which is not connected at all to any of the precedent moves: Loc_4 does not appear in the *transition* column. This represents the strategy of redirecting: the fact that there is no relation between her question and the previous moves (e.g. no sequence such as $Loc_3;Loc_4$) shows that she shifted the discussion to another topic. In other words, there is no link between Loc_4 and another locution because the mediator has redirected the discussion.

In this particular case, we cannot claim from Table 5 alone that the source of impasse presented in this table *is* negative collateral implications: a pragmatic, linguistic and semantical analysis is necessary to see that $party_1$ is challenging his opponent’s character. The fact that $party_2$ is not taking part in the dialogue at this point however is a strong indicator of impasse in the dialogue.

Table 6 shows that $party_2$ disagrees with $party_1$ and that she provides an argument (see Loc_2 , Loc_3 , and the fourth and fifth columns); $party_1$ agrees with it but discards it: this is the *unwillingness to be reasonable*. Note indeed the illocutionary force of *contradicting* that follows the one of *agreeing*. The sequence Loc_6 to Loc_7 and the two symbols \emptyset associated (last two columns) that follow show that even if the topic is the same, the assertion of $Party_2$ (Loc_7) does not serve to argue or disagree

	LOCUTION OR TRANSITION	PARTICIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
	Loc_1	$party_1$	A	a
	$Loc_1;Loc_3$		disagreeing	default conflict (c;a)
	Loc_2	$party_2$	A	b
	$Loc_2; Loc_3$		arguing	default inference (b;c)
	Loc_3	$party_2$	A	c
unwillingness to be reasonable	$Loc_3;Loc_4$		agreeing	c
	Loc_4	$party_1$	\emptyset	c
	$Loc_4;[Loc_5,Loc_6]$		contradicting	default conflict ([d,e];c)
	Loc_5	$party_1$	A	d
	Loc_6	$party_1$	A	e
temporizing	$Loc_6; Loc_7$		\emptyset	\emptyset
	Loc_7	$party_2$	A	f
	$Loc_7;Loc_8$		arguing	default inference (g;f)
	Loc_8	$party_2$	A	g
	$Loc_8;Loc_9$		agreeing	default inference (h;g)
	Loc_9	mediator	A	h
	$Loc_7;Loc_{10}$		agreeing	default inference (i;f)
	Loc_{10}	$party_1$	A	i

Table 6 Unwillingness to be reasonable

or agree with anything. She argues later on, to support this assertion (transition $Loc_7;Loc_8$), this is the strategy of temporizing. The Table also shows that the mediator agrees with her argument ($Loc_7;Loc_8$), and that $party_1$ agrees with the proposal ($Loc_6;Loc_9$).

4.4 Clarification of misunderstandings (Figure 7)

Table 7 shows the tactics for *clarification of misunderstandings* (cf. Section 3.5). In this passage, the mediator reports the parties' speech ("You've both mentioned the idea that you're not going to be here forever"). To capture nested locutions (i.e. reported speech), we introduce a Loc_0 referring to the locution which is reported. Therefore, Loc_1 has Loc_0 as propositional content. Here the mediator uses an assertion and an assertive question with the same propositional content (b) to which the parties agree. They both provide arguments. When the mediator wants to clarify misunderstandings, she first reports the parties' speech and then seeks their agreement via an assertive question. Reporting the parties' claims in this situation is not surprising given that the goal here is to show them that they may have the same opinion even if they expressed it in different ways.

4.5 Suggesting arguments (Figure 8)

Table 8 summarizes the strategy depicted by Figure 8 in Section 3.6. We clearly see what the mediator's tactic is: she asserts something but her following assertive question encourages the

	LOCUTION OR TRANSITION	PARTICIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
clarification	Loc_0	$party_1$ and $party_2$	A	a
	Loc_1	mediator	A	Loc_0
	$Loc_1;Loc_2$		arguing	default inference (a;b)
	Loc_2	mediator	A	b
	$Loc_2;Loc_3$		AQ	b
	Loc_3	mediator	\emptyset	
	$Loc_3;Loc_4$		agreeing	b
	Loc_4	$party_2$	\emptyset	\emptyset
	$Loc_4;Loc_5$		arguing	default inference (c;b)
	Loc_5	$party_2$	A	c
	$Loc_3;Loc_6$		agreeing	default inference (d;b)
	Loc_6	$party_1$	A	d
	$Loc_6;Loc_7$		arguing	default inference (e;d)
	Loc_7	$party_1$	A	e
	$Loc_7;Loc_8$		arguing	default inference (f;e)
	Loc_8	$party_1$	A	f

Table 7 Tactics for the clarification of misunderstandings

party to agree with the first claim. As mentioned in Section 2, the assertive questions are necessary for the mediator to appear distant from the claims and to trigger the parties’s agreement. With the Table, the strategy is made even clearer since in the last row of the last column we can see that $party_2$ ’s propositional content is the same as the mediator’s.

5 Conclusions and future work

Mediation discourse has not been subject to a lot of attention, even less its argumentative facet. Fine-grained analyses of the argumentative structure however prove necessary to highlight how and why the argumentation in dispute mediation progresses. This close analysis differs from the types of analyses carried out until now by e.g. Aakhus or Greco Morasso. We not only looked and explained the discourse in mediation but we also derived something from it (i.e. the argumentative structure). For example we have shown how and for what reason mediators redirect the discussion.

The analyses presented in Section 3 make it possible to represent the complex structure of the mediation discourse, particularly from the mediator’s point of view. By comparing analyses of the same type of situation (e.g. *redirection*) but from different cases, it will be possible to verify whether some argumentative strategies and tactics can be generalized to every mediation sessions. As an example, we could check if all the analyses of *redirection* present the same feature, namely that the

	LOCUTION OR TRANSITION	PARTI- CIPANT	ILLOCUTIONARY FORCE	PROPOSITIONAL CONTENT
suggesting arguments	Loc_1	mediator	A	a
	$Loc_1;Loc_2$		\emptyset	\emptyset
	Loc_2	mediator	AQ	a
	$Loc_2;Loc_3$		agreeing	a
	Loc_3	$party_2$	\emptyset	a

Table 8 Tactics for the strategy of suggesting arguments

mediator interrupts the discussion via a question which has no link with the topic addressed just before (cf. Sections 3.2, 4.2 and 4.3).

The tables in Section 4 are useful in understanding which sequence of moves corresponds to which strategy (as presented in Section 3). Given that this approach allows us to connect for the first time high level descriptions of mediators' strategies (such as those explored in (Aakhus, 2003; Greco Morasso, 2011)) with the detailed tactical maneuvering that they carry out, this type of analysis can be extended to most of the mediation discourse in order to come up with a clear image of the argumentative process.

The development of technologies arising from research in argumentation gives the possibility to offer tools for mediators in order to make their job easier and more effective. This would make dispute mediation sessions more efficient, less expensive (both in time and money) which would ultimately attract more people. For instance, we could imagine a what-if tool that would allow mediators to find the best ways to resolve a dispute. For example, the tool could recommend a particular tactic when the mediator has to face an impasse. We have just seen for instance that asking questions that have no relation with what has just been said is helpful in dealing with negative collateral implications. Existing studies provide us with indications about important features that have to be taken into account. Seen from the training perspective, the work in (Tanaka et al., 2008) (cf. Section 2.2) presents several characteristics that the authors considered when they designed a system for training mediators. For example, the system presented relies on a data-base which is useful to retrieve past mediations. Tanaka *et al.* also insist on the importance of the character of the party during the development of the argument. But they only take three traits of character into account, and these may not be necessarily independent or the only ones of importance. Furthermore, their agent turns out to lack argumentativeness i.e. the other parties' future replies are not considered and some of its moves are totally irrelevant (it is even sometimes unable to generate any reply).

This paper presents the very first steps towards the creation of a tool for mediation practice. Although we are not able to present a piece of software yet, some ideas are nevertheless under consideration. As an example, we could take inspiration from the Dialogue Game Execution Platform (Bex et al., 2014) which allows for processing and executing any dialogue game.⁶ It would be possible to apply it to mediation. Figure 9 symbolizes how this kind of system works. Imagine we develop a tool for training mediators. The training mediator would then be a human participant and the role of parties would be taken by virtual agents (top of the figure). For the dialogue between humans and agents to proceed, a dialogue specification for mediation has to be implemented. The

⁶see also <http://www.arg.dundee.ac.uk/?p=492> for a demonstration of Arvina, a tool where human players can take part in debates with virtual agents.

dialogue protocol defines what moves are allowed and when (left-hand side). First steps towards this goal are presented in this paper (e.g. detection of strategies, tactics etc.). In particular, Section 4 which presents a formal representation of the argumentative activity will be useful for the implementation of a dialogue system. Finally, agents' responses to the training mediator's moves would be created by retrieving a knowledge base (right-hand side of the Figure).

Although Inference Anchoring Theory limits itself to dialectical analyses, the analyses nevertheless support some generalizations regarding the mediators' strategies. The work presented here is a preliminary step toward a dialogue protocol for mediation discourse. It relies on observations and analyses of real data that makes it relevant for the ongoing research.

More dispute mediation specificities must be explored to make sure that all the characteristics of its argumentative process are taken into account. Studying what Krabbe (2003) calls *metadialogues* (i.e. dialogues about the dialogue) or what Greco Morasso (2011) refers to as meta-issues (cf. Section 2.1) will provide a better understanding of how mediators manage the discussion. For instance it is essential to know how they deal with incorrect moves from the participants (e.g. moves that violate the rules of dialogue). Also, conversational repairs used to summarize or clarify, for example, must be precisely defined. In addition, our current corpus does not contain any of the argumentation schemes detailed in (Walton, 1996) and argumentation is studied here regardless of the schemes that would govern the arguments (i.e. argumentation schemes as in (Walton et al., 2008) or loci as in (Greco Morasso, 2011)). This will be part of the future work: their identification in mediation discourse will allow us to evaluate if a given argumentation scheme is proper to a specific moment in mediation. For instance we can imagine that *arguments from waste* (Walton et al., 2008) may be common in mediation, for example mediators may convince parties to continue a mediation session if they spent a lot of time and effort in it.

All these issues have been little studied, particularly in a mediation context. Exploring this intermediate point between discourse strategy and discourse tactics has been shown to be crucial in building practical software tools in various conversational domains, and is particularly challenging for the emotionally-charged and sophisticated discourse found in mediation in particular. The work reported here takes initial steps to open up a route to novel computational models that have the potential to make a significant impact on this rapidly growing area of professional argumentation.

A Excerpts taken from the corpus

1 George: Viv, Eric, I'd just like to start by thanking both of you for agreeing to come to the mediation in the first place. We thought it might be useful if we just ran through a couple of the things that we've already talked about in the pre-mediation meetings, but just so that everybody is comfortable with it. Could I just check first of all, I've actually used Eric and Viv, is it all right if we use Christian names, first names?

2 Eric: Yes, that's fine with me. Absolutely

3 Viv: Yes, that's fine.

4 George: Excellent. I think the first point we'd like to make is that we are not here to judge either of you. It is not our role to make decisions on your part. It is not our role to decide whether you're right or wrong. We are here to help you to arrive at a solution that you both can agree with and in

our experience those are the ones that tend to work, whereas if we impose from the outside, they tend not to work. Does that make any degree of ...?

[...]

5 George: So we're not limited to today, as we said before. But it's very much up to you two to just tell us whether you think this is being useful, positive. If it is and you want to carry on, then we'll spend the time.

6 Viv: Okay.

7 Eric: Okay.

8 Viv: We'll give it a shot.

9 Eric: I'll give it a go.

10 George: Okay, great, thank you. When we met, we talked about the possibility of each of you taking perhaps five or six or seven minutes, just to give your view of how you think this whole thing started. What you might hope to get out of this mediation process, and just to do that for each other, you may feel that the other person is absolutely what this is about. But you may actually find that you have different perspectives and that's fine. That, we find, is quite a useful way of just starting the ball rolling and then you'll have the opportunity to pick up on what's been said and talk backwards and forwards. Wouldn't that be an idea?

11 Viv: Yes, okay.

12 Eric: Certainly on my part, because I'm confused about what all this about anyway and I've been told to get involved in this process.

13 George: Okay.

14 Eric: Although I've entered into it voluntarily, I'm not really...I'm genuinely confused about what Viv is accusing me of.

15 George: Okay. All right. So would you be happy just to carry on Viv, would you happy if Eric used that as a starting point for a couple of minutes to explain how he thinks and how he feels? And then you'd have the same opportunity.

16 Viv: Yes, that's fine by me.

17 George: Are you sure?

18 Viv: Yes, yes.

19 Mildred: It might be worth adding, George, just at this moment, when you are speaking, if we could ask the other party just to listen and listen without interrupting and then, of course, you get the opportunity to do the same. I would ask you, Eric, when Viv's speaking to do the same. Is that all right with you?

20 Eric: Well, to be honest, you know, as I said, I'm confused about what the problem is in terms of where I've gone wrong or whatever in terms of management style and whatever and so I would rather that Viv told me what she thought the problems were and then I can try and understand what it's all about, basically.

21 George: Okay.

22 Viv: So you're saying you want me to start?

23 Eric: Yes.

24 Viv: Okay.

25 George: Would that be all right with you?

26 Viv: Yes, that's fine.

27 George: All right, thank you.

28 Viv: Well. Where to start? I just feel that any suggestions I make, you're constantly questioning what I do.

29 Eric: I don't think quite fair really, because after all, it's a new job and you're just into what's a very complex organizational process that we run here and you can't expect just to be able to come in and just start off right away. If you make a mistake or something, you know what the position's like, you have to go back to square one

[...]

30 Mildred: Okay. Thank you for that. Eric do you want to say a bit about why you're here today and what you would want to achieve?

31 Eric: Well, I think Viv's being unfair, because, as I said earlier on, that Viv's just new into the job, it's a complex job. If errors are made early on, then we lose time and that puts everybody back. I think in the team meetings that we've had, Viv is new and instead of listening, she just tends to just, bull in a china shop kind of approach, and this kind of destroyed the team that I built over years. The whole kind of way the group's working is just completely gone haywire since she arrived because she's just too aggressive. I think she's just too forceful and the rest of the team are just, I think, anyway, are just not reacting well and it's making my job more difficult because I'm busy enough. Viv was supposed to come in and help me and take some of the load and as far as I can see at the moment I'm having to mentor her, while having to do my day job, while I'm having to solve all the problems that's she's creating within the team and it's just making my life a misery, actually and that's the way things are at the moment.

32 Viv: I'm sorry.

33 Eric: I'm sorry if that's the way it comes over, but you want me to be honest, so that's the view and that's kind of the way it is.

34 Mildred: What would you like out of today?

35 Eric: Well, I would like Viv to become part, a productive member of the team. Because we are a team and, you know, Viv was appointed to be my equal. I've no problem with that, but the thing is and my time is coming to a close, so to speak and we do need continuity in succession and things like that. But the bottom line is, instead of helping me, it's hindering me, it's making my life more difficult in terms of my workload and that's contrary to what the whole business was about.

[...]

36 Eric: It's my team.

37 George: It's your team, exactly.

38 Mildred: Maybe.

39 George: There are obviously discussions that need to happen around the team. Would that be a fair statement?

40 Viv: Yes.

41 Eric: Oh, I want Viv to be a productive member, but it's not for me to actually...

[...]

42 George: Yes. The other thought that occurred to me is, it strikes me you may have slightly different views about the role of, let's call it, Team Leader and Number Two.

43 Viv: Yes.

44 George: In gaining our experience when job descriptions are written down, they don't necessarily translate into what's written on the paper. What perhaps you intended and what perhaps, you believed. The other thought that occurs to me is that it might be useful at some point just to return to this whole thing of, either the job description or possibly what Mildred was just referring to, which is this notion of transition.

You've both mentioned the idea that you're not going to be here forever, what's the point of this Number Two, so perhaps what might help is a look at how that transition might work, what you would like it to achieve. What Viv would like it to achieve and see how the two can be married together. Would that be a fair...

45 Viv: Yes, I think it's vital, actually.

46 Eric: I think it's all based on the job description, that the idea was that Viv would come in and learn the job in terms of, it is a complex job, as I said, the business, fill in these forms, again, there's forms you have to fill in and if you don't do it correctly then we have to start again.

[...]

47 George: [...] Therefore, if one could look at this, you may actually find that there are very natural stepping-stones. We have a big issue here, which is how you take over a role, can we break it down?

48 Eric: My view is that Viv is trying to take on everything at once, and that as I said is the basis for what I'm thinking.

49 George: So, a plan, that broke it down to give you some feeling of timing, some feeling of...

50 Viv: And trust. Some feeling of trust that I can do the job.

[...]

51 Viv: I mean, I do have a string of qualifications, you know, I have done other jobs, and I need to be able to, to be allowed to prove myself. That's it I suppose.

52 Mildred: You need to prove yourself.

[...]

53 Eric: Well, I can see that is a way forward and certainly that, as I said, that finance project is the one that takes up the most of my time as it's the most complex. But I'm just a bit reluctant to hand over to Viv at this early stage, because of the complexity and if you make a mistake, you waste such a lot of time. But I don't know whether Viv thinks that she's up to it or whether you

think you could handle that project.

54 Mildred: What about if we perhaps separate it, had a bit of time and we spoke with each of you to look at the finance project and just see our different expectations and what you would see dealing with that project and then perhaps when we had a picture from both of you, if both of you came back to discuss your different pictures. Do you think that would work?

55 Eric: Well anything to make it simpler. Which I've never had time to look at, actually looking at how we do the fundamental, then that would obviously save time. But again, I don't know whether Viv could handle that she has the ability.

56 Viv: Well come on, you employed me, surely you thought I had the ability to, you know. But...

57 Eric: Well I did, so there is a way forward then. But I can also check on how she's doing the project and if she's succeeding with it and that will give me a milestone, an indicator of her.

58 Viv: I would quite like to just maybe take time out to look at what my job description was, actually, and from that, given what we've been talking about, it might signal up to me the key points that I want to clarify with you and see what your opinion is. Whether I've read it, whether it's been hieroglyphics to me, or whether I've got it right.

59 George: It's quite possible and again, it's our experience in this sort of situation, it's all about expectations and where your expectations and Viv's expectations match, you have happiness and a smooth life and everything works well. Where they don't, there is conflict, there is uncertainty, there is confusion and those are the sorts of things that contribute to having this sort of discussion.

[...]

60 Viv: Yes, I mean there's no point in me just doing this, because to Eric, that would just be my wish list. I need to be thinking about; we need to meet in the middle, somewhere.

61 Mildred: You think a joint meeting might be a good idea? Again, once you've got your wish list?

62 Viv: Yes. After we've got my stuff down, if you can get Eric to put his stuff down and then we've got something concrete to look at and if there's huge gaps, well, we may have a major problem, we may not be able to resolve this.

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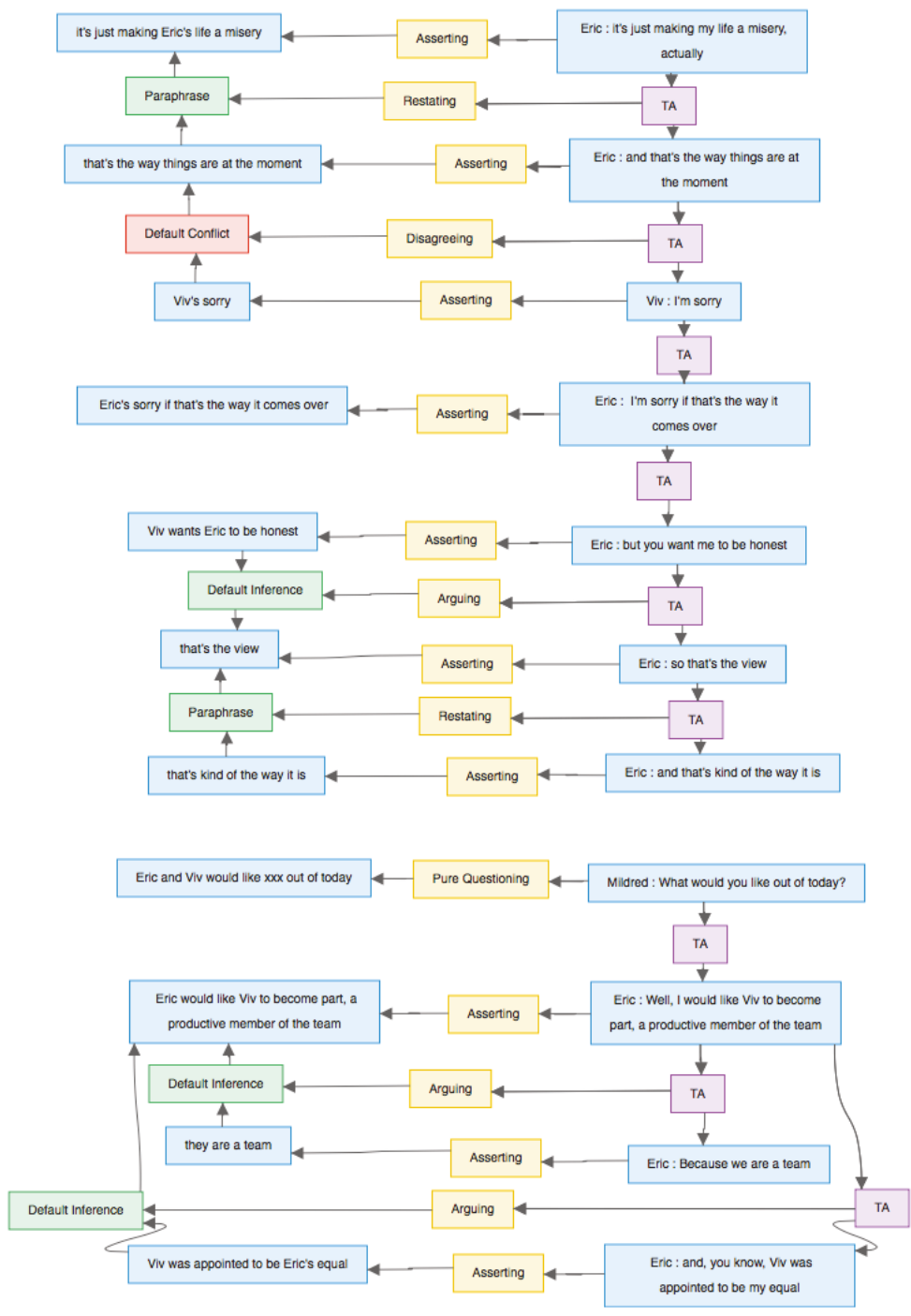


Fig. 3 Redirection

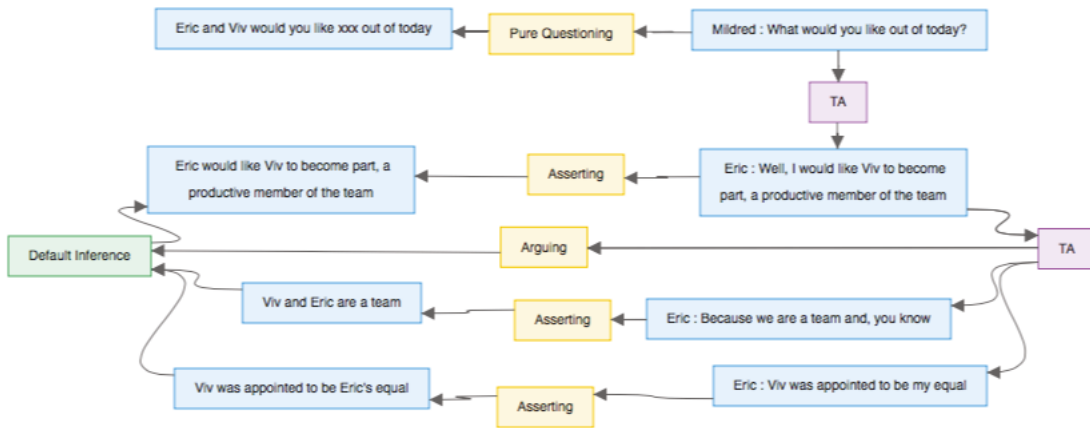


Fig. 4 Option generation

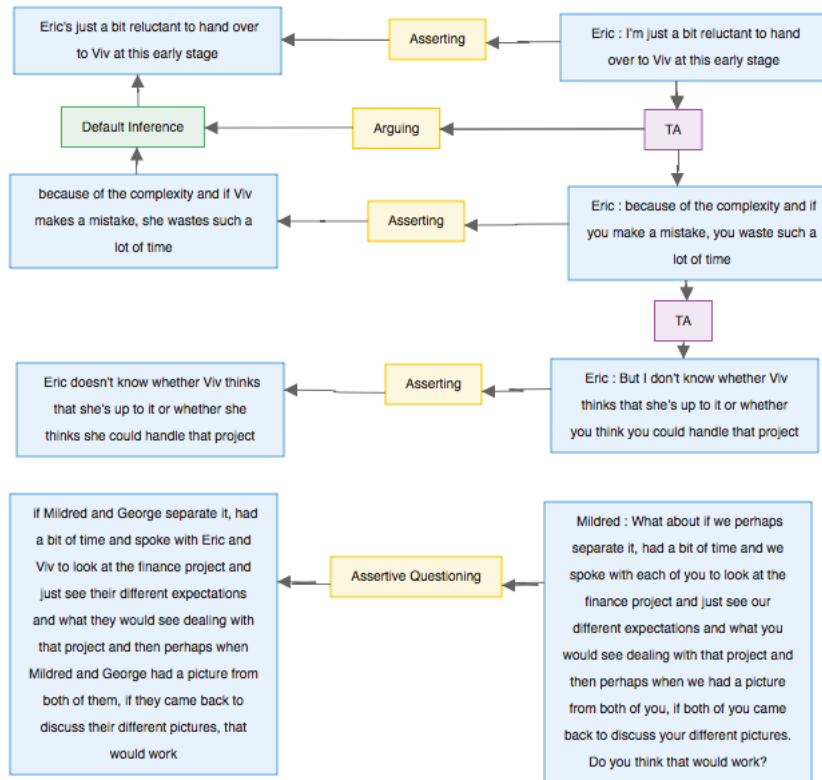


Fig. 5 Negative collateral implications

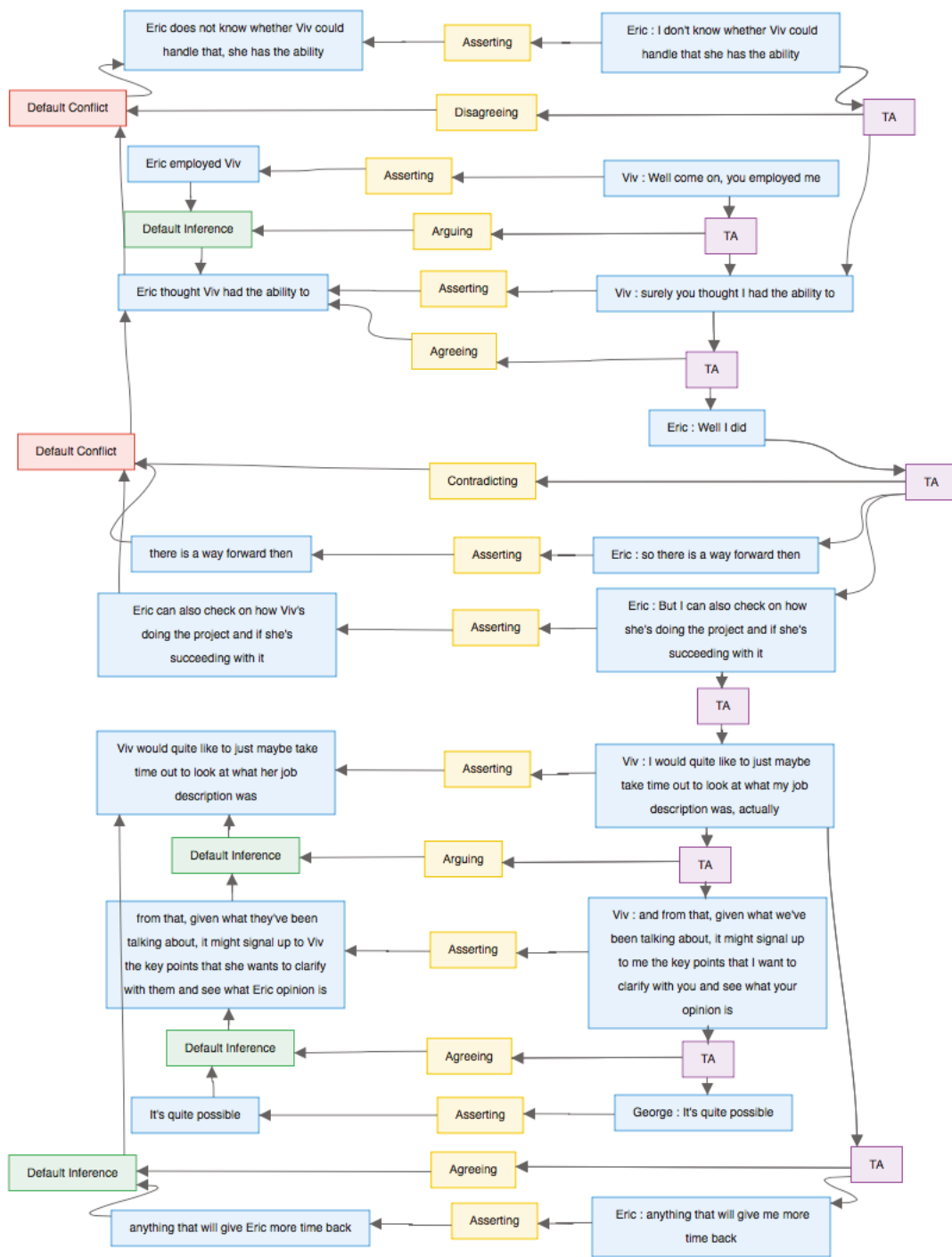


Fig. 6 Unwillingness to be reasonable

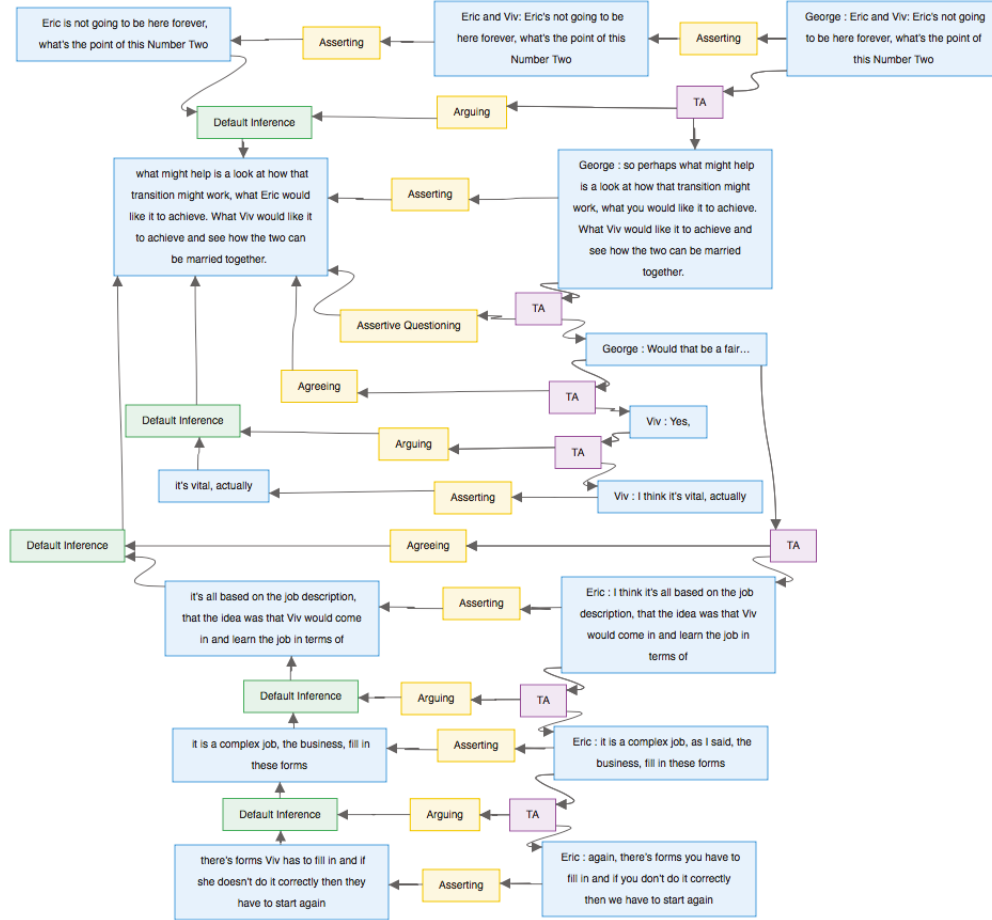


Fig. 7 Clarification

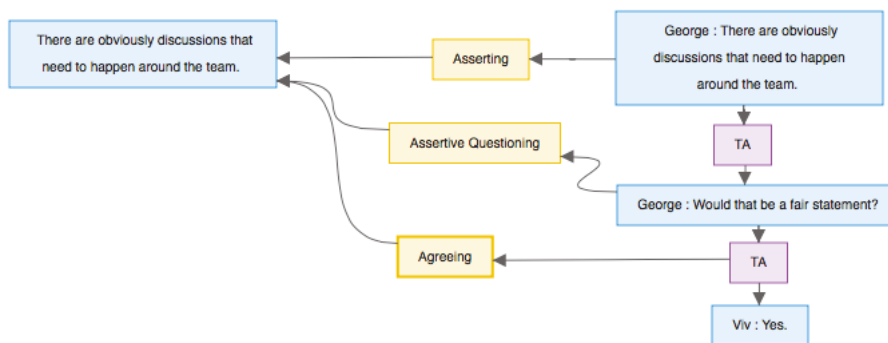


Fig. 8 Suggesting an argument

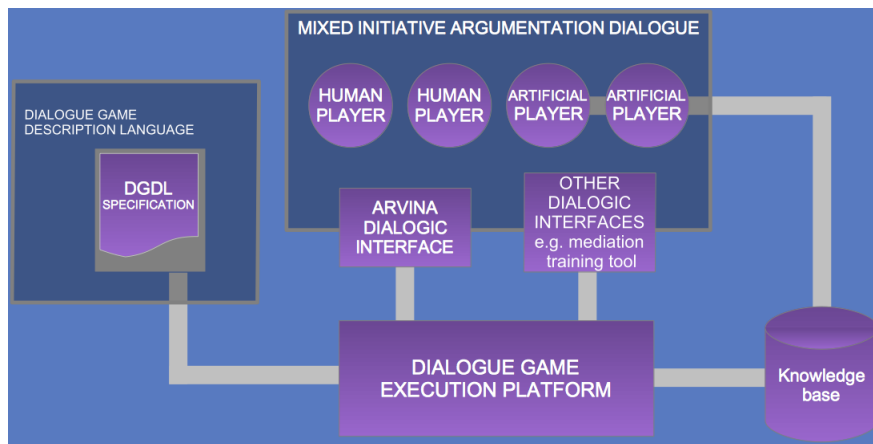


Fig. 9 Dialogue Game Execution Engine