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Argumentation and design deliberation: a mutual relationship

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ABSTRACT: Design deliberation refers to the process of thoughtfully weighing options, before making a design decision. This process is strongly related to argumentation, not only because of the well-known relation between argumentation and deliberation, but also due to characteristics of the design process. However, no structural model of team design deliberation exists to guide designers' practice. This paper checks the hypothesis of inter-dependence between argument structures and group decision-making structure as expressed through prescribed deliberation stages.

KEYWORDS: joint deliberation, team design, human communication, argument structure, argumentation sequence

1. INTRODUCTION

Design deliberation refers to the process of thoughtfully weighing options, before getting to a design decision. This process is strongly related to argumentation, not only because of the general relation between argumentation and deliberation (Walton 1998), but also due to characteristics specific to the design process. First of all, as a reasoning process, design is a form of practical reasoning, focusing on "that-which-is-not-yet" (Nelson & Stolterman 2003), with the aim of its realization. Maximizing this process (Simon 1996) forms the base of deliberative reasoning, as it implies a selection among possible solutions, according to criteria (Walton 1990). Secondly, the ill-structured or *wicked* nature (Rittel & Webber 1973) of most design problems renders the design solutions highly ill-defined, meaning that there is not pre-determined way that leads to the (best) solution (Darses et al. 2001). Last but not least, design is a social process (Bucciarelli 1988), meaning that design representations are negotiated. This aspect is very important, given that most of the complex design is nowadays done in teams. Deliberating together with other people, whose opinion is considered equally important for the decision to be made, implies a special type of argumentation, called joint deliberation.

Although some conceptual models aimed at guiding the individual design practice do exist for some disciplines, team design deliberation models have not yet been proposed. The reasons for this lack of team-based generic models can be various. The most important relate to the creative aspects of design practice, which make it a highly iterative process (Minneman 1991), marked by a co-evolution among the problem space and the design space (Dorst & Cross 2001), and a continuous opportunistic jumping from one topic to another (McDonnel 2009). Moreover, although normative models have been proposed for some types of dialogue, such as persuasion (Walton & Krabbe 1996), the same is not as much observed for deliberation, where the existing models are

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either limited to computer agents communication, or approached through short examples derived from everyday conversations (for an overview of these models see Walton, 2011). A well-known joint deliberation model is the one proposed by McBurney Hitchcock, & Parsons (2007). These authors explicitly state that their model is not constructed having humans in mind, and thus, we do not aim at testing its applicability in a "real" deliberation context. However, the normativity entailed in such a model is considered, in this article, as comparable to the followed group structure of decision.

The notion of *structure* is expansively studied in the field of *small group decision-making.* In this context, the "intersection of individual action and (group) structural factors" is an observed reality (Poole, Seibold, & McPhee 1996: 115). As Shotter (1983) comments, " all human action is doubly structured, for it is structured both as a product and a process, or better it is both structured and structuring" (p. 19). On one hand, individuals influence with their actions the group behavior, or as Poole et al. (1996) put it, "communication networks exist only by virtue of members' activities". This, in terms of argumentation and joint deliberation, means that group deliberation processes are influenced by individual argumentative action. On the other hand, as Meyers & Brashers (1999) have shown, individuals' argument structures are mediated by collective structures developed in group interaction, such as the joint deliberation sequences.

In this paper, we are interested in checking the hypothesis of this mutual relationship described above, in the context of eLearning design. More precisely, our focus is on argument structures emerging throughout instructional designers' interaction while working on a specific project, the design and development of an on-line course. After identifying and labelling these structures, as it will be better explained in the following sections, we are interested in situating them in their design deliberation context. To do that, we segment the interaction protocol in design rationale sequences, which subsequently form deliberation sequences or *stages* (McBurney et al. 2007). Situating argument and argumentation sequences in deliberation stages allows for observing possible inter-dependencies between them, which is the main goal of this paper. The aim of the whole research, not treated entirely here, is to mine out meaningful patterns of interaction, in order to inform team collaboration practices in similar contexts.

2. ARGUMENT AS STRUCTURE

The notion of argument as structure is very related to the Formal Logic perspective, as "in the traditional view, a good argument is a valid one, and validity is a matter of form" (Tindale, 1999: 21). However, treating the structure of arguments appearing in everyday conversation only based on validity-oriented relations between claims and premises is not an adequate option. Everyday reasoning is very different from the formal reasoning (Galotti, 1989), and this difference is often expressed through cognitive biases (Tversky & Kahneman 1974; Perkins 1989), or enthymematic arguments (Hitchcock 1985). Nonetheless, even adopting an Informal Logic perspective, structure is very important at the time of identifying and analyzing arguments. For Walton (1982), "the core of any argument is a set of propositions" (p. 32), and for Plantin (1996), any proposition can be a conclusion, if supported by grounds, which take the status of arguments with the use of an adequate inference law. In one way or another, the propositional structure of informal arguments is something to take into account.

Of course, structure itself is not a sufficient condition for deciding on the soundness—the informal correspondent of validity- of an everyday argument. Other criteria such as relevance and acceptability (Johnson & Blair 1994) have been proposed, accompanied by *new* ways of judging the dialectical nature of arguments (Walton 1985). Nonetheless, the present paper only focuses on the structural aspects of both argumentation and joint deliberation. A deep analysis and evaluation on basis of informal reasoning criteria exceeds our goals. Given this limitation, to be "honest" at the time of identifying arguments from other discursive constructs, the following macro-principle proposed by Freeman (1993) is mainly followed:

> If either the truth of a premise increases the likelihood that the conclusion will be true or the falsity of the premise increases the likelihood that the conclusion is false, then the premise is relevant to the conclusion. If neither of these conditions holds, then the premise is not relevant. (Freeman, 1993:199)

In addition to this general rule, the following criteria of argument definition, derived from the relevant literature, are also respected (the examples are taken from our dataset protocol described later on):

- The speaker's intention is to *support* her point of view. Sometimes, apparently deriving conclusions are just expansions of the speaker's hypothesis, as in the example below:

  A *You know so we know there are going to be problems with Compendium*
  C Yeah
  A *so the guide has a sort of page saying "If you have problems with Compendium"*

- A valid semantic inference is not a sufficient condition for argument identification. A non-argument of this case is the following:

  E *… that is a group related design problem actually isn't it?*
  A What the
  E *Because we are in the group level*
  A Yeah
  E *and we got a problem which relates or tries to relate to a group kind of activities*
  E *so group things, not just personal*

- On the contrary, the presence of a *dialectical tier* (Johnson, 2000) with some previous statement or position sometimes is sufficient for the argument identification, due to the frequent omission of premises in everyday conversation:

  D you know for example you could have a layout
  D where at the beginning of each section there's a map
  D of sort of what you have to cover in that section
  F *yeah, but be careful*
  F *because by default there is a conceptual map as a result of the Institution's delivery mechanisms*

3. TYPES OF ARGUMENTS IN JOINT DESIGN DELIBERATION

According to Walton (1998), the core of deliberative argumentation is the practical inference. In this type of inference,

> the major premise is a goal premise in which the agent states that he has a particular goal to carry out. The second premise, called the means premise, states that, according to the agent's estimate of his circumstances, such and such is a particular means of carrying out this goal in that situation. The conclusion states that the agent ought to select the particular course of action designated in the means premise as a way of proceeding. (Walton, 1998:154)

- *Goal premise*: Bringing about Sn is my goal.
- *Means Premise:* In order to bring about Sn, I need to bring about Si.
- *Conclusion:* Therefore, I need to bring about Si.

In team design situations, practical inference is usually expressed as a problem-solving inference:

- A is the problem.
- B is necessary to solve the problem.
- *Therefore*, it is required to bring about B.

This type of inference is very similar to an argument from positive consequences, also very frequent in everyday deliberation (Walton, 1998). This inference has the following form:

- If A´ is brought about, then, as a consequence, B´ will come about
- B´ is a positive state of affairs
- *Therefore*, A´ should be brought about.

In the above scheme, A´ corresponds to an action which influences positively on the team's goal. Similarly, B of the problem-solving inference, also influences positively on the design goal, as it reduces or eliminates a specific design problem. The difference among them lies in the fact that practical inference is always proposing some type of action, whereas arguments from positive or negative consequences are more near to a value judgment. Table 1 presents examples from the analyzed corpus corresponding to each one of the three argument types mentioned so far. It is worth mentioning here that, given the fact that most of these arguments are enthymematic, their classification to one category or another is only possible by knowing well the context of design and interaction, in which they took place. Still, we consider their exposition as relevant for the needs of this article.

Practical inference	Positive consequences	Negative consequences
It can be quite wordy and chatty, and I'm thinking OK, is the style going to be less chatty, more block	*Whereas if people start getting involved early on, seeing the content being developed kind of in front of their eyes, then it should work really nicely*	*Be totally behind this everyone needs to be totally behind it because this isn't cheap this is going to need a lot of money*

Table 1. Main deliberation argument schemes

Other knowledge-related schemes that can emerge in a practical reasoning context, are the *arguments from expertise or position to know*, and *arguments from alternatives and opposites* (Walton, Reed, & Macagno, 2008). Both cases seem to be very common in the field of team design: argument of authority forms part of a typical assessment sequence in co-design (Détienne et al., 2005); whereas, elaboration of alternative developments or solutions occupies the 21% of the total time spent in design review meetings (D'Astous et al., 2004). However, some clarifications regarding their use in the specific study need to be made. First of all, expertise is a very relevant term in team design, especially in the case of eLearning design, where different perspectives need to come together. Each participant is considered by herself and the others as more or less expert in one or more fields. Thus, automatically her point of view is taken more into consideration on a specific subject than another. For this reason, expertise-seeking dialogues or expertise-exposing monologues are very common in the treated dataset. However, for the needs of this paper, only the arguments where some authority other than the speaker is appealed to are identified as arguments from expertise.

In addition to this clarification, a differentiation between arguments from expertise and practical inferences needs to be made, for when a person or entity is presented as a solution to a problem, most of the times it is because of her expertise. In this case, though, the conclusion is action-oriented and not truth-oriented, as in the case of argument from expertise. Table 2 shows an example for each case.

Argument from expertise	Practical inference
But then Hilary said to me "if you can spend the money in this financial year I'll let you go over it" sort of thing Should you be buying a whole lot of them? *No we're only being allowed 1000*	*I think as you go along, I got an excellent CTA, Mary Jones. So if we do it… you know as we go along and she can do this transferring thing hopefully. She's worked in a lot of courses, she knows about you know*

Table 2. Distinction between argument from expertise and practical inference

Finally, attention should be paid to the argument from alternatives or opposites, and its two variations: the positive and the negative form. Walton et al. (2008) give the following descriptions of the two versions of this scheme:

(1) The opposite (or alternative) of subject S has the property P.
Therefore, S has the property not-P.

OR

(2) The opposite (or alternative) of subject S has the property not-P.
Therefore, S has the property P

Again, a differentiation among this type of argument and the argument from consequences needs to be made. To do that, the following criterion seems adequate for the context of design: argument from alternatives corresponds to a specific proposal made as a reply to another proposal, whereas argument from consequences is one-sided, more general, and not derived from the comparison of two proposals. Therefore, it can be said that argument from alternatives is more related to the design task than argument from consequences, as it contributes with a concrete alternative solution. Table 3 shows two clarifying examples.

Argument from alternatives	Negative consequences
You know, you've got this developing, it's open to everybody, rather than this kind of frustrating …, you know we'll develop it, then we'll give it to TLS with all these comments, which might be fine comments, but bloody hell, you're meant to be moving on to the next thing now, you don't want to have to go back and redo all this	*that's a decision we need to make as a course team, and then we can work to that, otherwise we'll be producing different styles*

Table 3. Distinction between argument from alternatives and argument from consequences

Apart from these deliberative reasoning related schemes, other everyday informal arguments can occur. As such, the following are distinguished due to their relevance to the particular context: *judgments from personal opinion*, when an evaluative proposition is justified with another evaluative proposition; *judgments from rule*, when an existing or known domain strategy or procedure is the main premise exposed; and *users-based judgment*, when the justification of one's viewpoint is based on users' hypothetical behaviour. Table 4 presents some examples.

Personal opinion	Rule-based	Users-based
It's quite nice to have that separation, someone's reading it through and picking up errors, it's just another loop in the process	*That's a big problem.* *About 80% of our work is done on Macs.*	*Getting them into the technology (…) because I don't know who's been appointed, but if we end up with you know maybe half the people are kind of old lags, you know they'll be old lags who are willing, but they might not be terribly technically competent some of them*

Table 4. Common inference schemes.

In-between practical arguments and other judgments, another form of argument is very close to the design process: argument from analogy. Because of its relation to creativity, which always refers to a "building-on" rather than a "from zero" creation, design process is frequently based on analogical reasoning. In fact, the role of analogies in creative design has been extensively shown regarding the construction of new artefacts, reconstructing existing ones (e.g. Cross, 1997; Bonnardel, 1999). The cognitive mechanism behind this type of reasoning has been defined as "reuse of past design" (Détienne, 2003), and it applies to both individual and collective design situations. In this sense, argument from analogy is a very explicit case where a designer communicates his past or relevant experience with other artefacts, which can serve as a model or example for the design-at-hand. Arguments from analogy have been defined with this general argument scheme (van Eemeren, Grootendorst, & Henkemans, 2002):

- Y is true of Z
- Because: Y is true for X,
- And: X is comparable to Z

Using the amplifications proposed by Henkemans (2002) for the term "comparable", we identify this type of argument as any moment in the designers' discourse where some kind of analogy, resemblance, equivalence, or parallelism to another design product or experience takes place, with the interest to influence the design decision-making process. Two relevant examples are given on Table 5.

Argument from analogy (product)	**Argument from analogy (experience)**
T189 course website, there's lots of stuff up there, there's reams of texts Yeah *and that's sort of a similar sort of thing to this* Yeah yeah	*So I was thinking maybe we want to keep the Design Thinking blog going … cause that's quite a good way and then link to that from the VLE*

Table 5. Two types of argument from analogy

4. ARGUMENTATION AS A DISCURSIVE SEQUENCE

The argument types-schemes mentioned in the previous section generally refer to arguments emerging as part of an argumentation process, where there is a need to persuade a silent –but present- Other about the truth or superiority of one's thesis. Thus, they refer to dialogically contextualized individual arguments. When at least two argument structures relate to each other in a more or less dialectical way, the result is what can be called as an *argumentation sequence*. An argumentation sequence is a type of argumentation dialogue emerging during natural communication that has an identifiable argumentative goal or func-

tion per se (Patterson, 2011). Hereby, we provide some main types of argumentation dialogues or sequences that are possible or expected to emerge during team design deliberation.

4.1 Exploratory argumentation

Exploratory argumentation refers to a "basic" version of what Mercer (1996) called as *exploratory talk* or what Walton (2011) defined as *discovery dialogue*. As "basic", we mean that participants stay at the argument or viewpoint-exchange level, without proceeding into counter-arguments and replies. It is a type of sequence in which relevant viewpoints are being exchanged on the same topic, but without clear objection or consensus. It can be said that it is a kind of "argument-storm", meaning a brainstorming composed of arguments produced by different participants. The dialectical tier between these arguments is not clear, which is why Goldman (1994) considers this type of argumentation as a *noncore case*, to differentiate it from "real" argumentation. In the co-design context, an elementary form of exploratory argumentation sequence is one where a constraint is expressed by one speaker, and a possible solution responding to this constraint is subsequently presented by another speaker. Together, they form a type of dialogical practical argumentation. An example of this sequence is shown on Figure 1 (in italics the constraint and the solution expressed).

B	but I also think it's it's quite easy for students to come,
B	you know they are working on their own,
B	they come into this and they go in there *and sort of start getting lost*,
C	Yeah
B	kind of don't know what they've done and what they haven't
F	I was going to get lost anyways
F	because the tendency is to follow that linear way
F	the way it's presented there
F	*and I wonder whether on the 6th February or the 13th February we need another item which says Week Two signpost or Week Two Help*
F	and it's Peter or Peter's voice saying "This week contains a number of elements, you don't have to do them in any particular order, but it's important that you do the two Core Readings, this and this, try the assignment or look at it first but don't forget to go back to this element called this"
F	and it just helps put the student at ease,
F	that week you do it that way, in Week Three Help I say "it's important you do begin with the Two Readings this week"
F	and it's just, you feel like you have your hand held
F	you could ease it away towards the end,
F	but there is something of a need for a weekly signpost,
F	bit of text, bit of video ideally
E	That would be great, yeah
F	Yeah but somehow something which helps the students navigate
F	in the WAY in which you use that resource

Fig.1 Exploratory argumentation

4.2 Co-constructive argumentation

Argumentation seen as a type of co-constructive interaction is very common in collaborative learning environments. Design deliberation is a context where collaboration, in the sense of sharing and grounding knowledge and beliefs, is a desired process, if not a prerequisite. When the goal of argumentation is to learn mutually, argumentative behavior is characterized by putting forward knowledge-based arguments, and viewpoints from different, but complementary perspectives. Thus, two main cases of co-constructive argumentation emerge: *negotiation of meanings*, when participants share different knowledge or views about a concept; and *negotiation of solutions*, when participants propose different, and not mutually exclusive solutions for the same issue-problem, or approach different epistemic statuses of the same solution (Baker 1995). It is worth noting here that negotiation when speaking of cognitive task-oriented interaction does not have conflict of interests as a condition. Moreover, as the final goal-object needs to be common or commonly shared, individual intentions matter less than the joint goal. However, difference in expertise or the so-called "cognitive asymmetry" can result in the two types of negotiation as co-construction mentioned above. An example is shown on Figure 2.

A	What I thought is the contribute site that I've set up is just a way of quickly getting all the stuff online
A	so everyone can see it,
A	roughly in the form that students are kind of going to go through it
A	and then you,
A	you as LTS or someone else,
A	would transfer it from the contribute site to the structured content
B	That's what I sort of envisioned.
B	But in my view the problem is that if you are talking about a lot of, if you're talking about big documents, it might make the process a bit tricky.
B	So that's why I would like to have a browse through
A	So () if you've set up this page "What is Design Thinking?" [indicates with mouse],
A	ehm, which is pretty much the same as this page, you know, "What is design" [indicates with mouse], something like that,
A	so it's basically a question of taking the text out
B	Copying it out of that…

Fig. 2 Co-constructive argumentation

4.3 Alternative viewpoint elaboration

As we already mentioned, alternative viewpoint elaboration is an important activity in team design. The more solutions or perspectives on the same object that are proposed, the more approximated the "best" choice is. However, although alternatives are frequently expressed in design meetings (D'Astous et al. 2004), what really makes them valuable for the deliberation process is their elaboration and evaluation by other participants and/or through different perspectives. In the example presented in Figure 3, the alternative of

having "different voices" in the course's material, proposed by F, is viewed as something positive by B, A, C, and F, but for different reasons (all of them following the "argument from positive sequences" scheme). The initial proposal and the arguments supporting it are put in italics.

F	*The alternative way is we start off by saying "ok, here's the course team",*
F	*well we introduce the course team different people, different personalities*
F	*and then we keep those identities throughout*
F	so in Nicole's work it can have a different identity
F	you know the voice, it goes down one track,
F	Steve's is a different way
C	Ehm, I think that is quite nice
B	Yeah I think that is a nice way
B	() *might like one person's material*
A	But also you get the kind of the kind of idea of getting different voices
A	and being told, you know, being told the same thing in slight different ways
A	and yeah, I quite like that multiple…
A	and also *there's a lot of people involved in teaching you*
A	rather than just kind of
C	And *that relates to the OU learning styles* thing doesn't it? In a way
A	Yeah
F	*It would make it easier for us to deliver*
F	because we have a bit more control over what we want to do individually within shells that you provide

Fig. 3 Alternative viewpoint elaboration

4.4 Constraints weighing

Constraints weighing is a sequence frequently observed in design meetings (Détienne, Martin, & Lavigne 2005). A large part of joint design deliberation is dedicated to assessing the strengths and weaknesses of the viewpoints proposed, without proposing an alternative or contrary solution. As constraints are highly discipline-dependent, a conflict or disagreement among disciplines is possible to occur regarding the (degree of) consideration of a specific constraint. An elementary version of such a sequence concerns the proposal of a solution or an issue consideration from one side and its direct "annulation" by the other side, because of a relevant constraint. In the example presented in Figure 4, the issue concerned by both sides is the same—writing the manual of how to use one of the tools proposed by the designed course—, but its approach differs: G refers to the need to do screenshots, and B—who is part of the responsible team for the technological solutions- comes up with a constraint: first, they have to do the visuals.

G	I think a concern could be about the fact that we maybe can't write …how to use ODS until we got the complete working… model
G	because it makes it () write it to some extent
G	but you know you need to be able to do screenshots
G	and show people how to do stuff and I think ()
B	Screen screenshots will have to … wait
C	Yeah
B	Because… the visuals won't be done
B	but the functionality will be there
B	I mean I mean in in fairness on on our side a lot of the functionality has been held up
B	by …specifying exactly what ()
G	Sure

Fig. 4 Constraints weighing.

4.5 Oppositional argumentation

Sometimes *dissensus* is an end itself in argumentative practice (Willard, 1989). This is very rarely the case in institutional contexts, especially if the goal is clearly collaborative. However, there are some cases where difference in perspective is so strong, that brings to the explicit expression of a counter-position towards another party (e.g. the team leader or the "expert"). Again, as in co-constructive negotiation, such argumentation is not as much based on individual interests, but rather on cognitive or disciplinary aspects considered to be conflictive because of epistemic differences. Such confrontation of opposite viewpoints is generally considered as positive, because it serves to bringing to light non-considered aspects of the problem or solution discussed. Therefore, this sequence, in the specific context of co-design, is very similar to the alternative viewpoint elaboration. The main difference is that some kind of disagreement, doubt, or critisicism towards a person's position needs to be explicitly expressed, with the aim of persuading the other(s) on the better quality of the contrary solution proposed, or of the greater accuracy of an evaluation made. An example is shown on Figure 5.

B	Now… it's a shame
B	and sounds like a duplication of work,
B	it would be nice if you could do… you know if you could while you were writing this stuff just write it (up) in structured content,
B	but it is a bit fiddly and it is ()
C	Yeah
A	Well I don't know, I don't know if it is duplicated
C	Yeah
A	It's quite nice to have that
C	Separation
A	That separation,
A	someone's reading it through and picking up errors,
A	it's just another loop in the process
A	It picks up stuff that needs doing

Fig. 5 Oppositional argumentation

4.6 Oppositional with reply

If opposition is difficult to express, in the context of institutional co-design, *reply* in response to such opposition is even more rare and difficult. In a purely dialectical situation, with clear disagreement involved, refutation is a common strategy and also very welcome and accepted. Again, when the common goal is the co-construction of a highly complex object, opposition and reply have sense, only when they really contribute to the expansion and exploration of a dialogical space (Nonnon 1996). Taking this contextualization into account, the most expected form of reply is that of *integrative reply* (Leitao 2000), as in the example presented in Figure 6.

E	It's a bit short maybe
F	It's OK to be challenged a bit though
F	they should try and put it together
A	You can always kind of
E	Kind of in the end yeah
A	If you're online kind of rewind it
J	But but I think that you can't,
J	you can nearly but not quite follow it
J	Because you're interested in what's happening
J	means that the message actually has more impact
J	than if you're building it up and holding it in your head
E	Yeah true so you can kind of yeah yeah

Fig. 6 Integrative reply

At this point, it is worth noting that all of the sequences mentioned above are potential discursive contexts of an argument-as-product. At least, in this paper, they are treated as such. However, we should bear in mind that a sequence can be dialectical without any identifiable argumentative structure forming part of it. It is only necessary that once in the specific topic-based macro-sequence, some difference of opinion has been implicitly or explicitly stated. Or as Willard (1989) puts it, "once we have an argument, anything used to communicate within it is germane to an analysis of how the argument proceeds and how it affects the arguers" (Willard 1989: 92).

5. METHOD

5.1 Research focus

This paper is based on the assumption that argument structures and sequences are strongly related to the "moment" of deliberation in which they appear, and, additionally, in a mutual relationship. This means that, on one hand, the deliberation phase will influence on the type of arguments and argumentation sequences that will appear during the phase. As no similar work has been done before, to our knowledge, we cannot proceed to specific hypotheses. Nonetheless, in general terms, it is expected that in-middle deliberation stages will be the more argumentative and the more relevant to the deliberation process than the beginning and ending stages, following on that the pragma-dialectical

approach of Critical Discussion (van Eemeren & Grootendorst 1992) in which Argumentation stage is also in the middle between Confrontation-Opening and Closing. On the other hand, following Meyers & Brashers (1999), we also expect that at some moments individual arguments will be the object of interpersonal argumentation and, subsequently, lead to one or more of the argumentation sequences previously identified, changing somehow the deliberation flow of the design episode. More precisely, we are interested in the identification of the following relations:

- Influence of the deliberation stage on the type of argumentation structures
- Influence of the argumentation structures on the joint deliberation flow

5.2 Data collection

The dataset protocol used for this study consists of 9,5 hours (5 meetings) of team design transcribed interaction. More precisely, an instructional design team of a well-established Distance Education Institution was observed during one year, and their design project meetings were video-recorded in an especially equipped meeting room where cameras were not visible. Consent was given by each participant. The object of the meetings was the creation of a totally on-line, first-appearing, 60-credit course on Design Thinking. The focus of the decisions the team members needed to take was not as much on the content of the course (this was being authored mostly in a distributed way), but on functional, structural, and usability aspects, as well as on the team's own co-ordination. Thus, the main character of the meetings was deliberative, with a great need for opinions to be heard, as inter-disciplinarity is a desideratum in eLearning design and development. The number of participants varied from 6 to 10 per meeting. Their institutional roles were clear, and also their assigned general responsibility in relation to the course.

5.3 Data analysis

Segmentation. Once the interaction was fully transcribed by fluent native transcribers, the protocol was segmented into design sequences. Each design sequence is initiated with one of the main Design Space Analysis elements, namely: questions, identifying key design issues; options, providing possible answers to the questions; and criteria, for assessing and comparing the options (McLean et al. 1991). In deliberative design, these elements can be translated into issues, proposals, and assessment, correspondingly. Each design sequence is composed of at least one discursive sequence "containing" an issue, a proposal, or an assessment. Most of the times, as the context is highly dialogical, a continuation of the primary sequence with another one is very possible, thus macro-structures of Issue-Proposal, Proposal-Assessment, and Issue-Assessment are very frequent. For more than two discursive sequences to form part of the same design sequence, which is also frequent as we treat team interaction, it is necessary that: they relate to each other in a semantic and pragmatic way; they do not introduce a *new* or *loosely related* semantic or pragmatic reality, either through an issue or a proposal.

Coding. Three levels of coding of the segmented design sequences are performed as part of our method. First of all, a macro-level coding consists of the "matching" of each one of the design sequences with a pre-defined deliberation phase. To do

that, all the sequences belonging to the same topic deliberative episode are put together and contrasted with the eight-stage model of deliberation proposed by McBurney et al. (2008). Thus, each sequence is labeled with one of the following: *Open, Inform, Propose, Consider, Revise, Recommend, Confirm, Close.* The decision on one label or another depends on the team activity performed at each stage. A second-level coding concerns the meso-level of interaction, namely the argumentation sequences, already presented in Section 4. The following codes-abbreviations are used: EXP, CCO, AVE, WEI, OPP, REP. Finally, coding is completed with the micro-level of argument types identified in the sequences. These were presented in Section 3. The following codes-abbreviations are used: *pract, posit, negat, expert, alter, person, rule, users,* and *analogy.* Figure 7 presents an excerpt of the coded protocol using these codes.

Sp	**Transcription**	**Delib-Stage**	**Design Sequence**	**Argu-ment**
C	would you prefer it if we were writing into this? [addresses B, B sighs]	Pro-pose	issue	**CCO**
A	I think you would [C laughs]			
B	Ideally			negati
B	but you're Mac based and stuff like that			
A	Yeah that's the thing with structured content,			
A	it's more fiddly			
A	it's a bit more like kind of laying out a webpage with code			
D	So this is not Mac friendly?			
A, B	No			
D	Well that buggers us a bit then [everyone laughs]			
E	That's a big problem.			rule
E	About 80% of our work is done on Macs.			
B	Well there are problems with structured content anyway,		assessment	
B	it IS fiddly,			
B	you've got, you don't see it in here [points at Screen]			
B	but in the Word document it's like an *HTML* sort of type set up			
B	and you have *tags* that rap around stuff			
B	and you see those as big tags all over the place			
B	and if you miss one out			
B	you'll get a () sign			
B	saying you've made a mistake,			
B	but it's very easy to kind of *mess the document up*,			negati
B	especially if you're using things like *track changes* in there to work out what you've done um…			

Fig.7 Excerpt from the coded protocol.

Analysis. For the coded data analysis, qualitative descriptive statistic methods are used, to treat the data in ways supporting the research hypotheses presented in section 5.1. Apart from common correlations regarding the inter-relation of frequencies, a clusters-based method is also used. More precisely, each design sequence, namely Issue, Pro-

posal, or Assessment, as we previously described, is considered as a case, giving a total of 254 entrances of design sequences. Each case is then matched with the type(s) of co-occurring deliberation stage(s) and the type of the emerging argument(s) for each design deliberation sequence. At a second level of analysis, we identify the argumentation sequences that contextualize the arguments-as-products emerged. Each identified sequence is then matched with type and number of design sequences "contained" in it, and also with the number of co-occurring deliberation sequences. The main results of our analysis are presented below.

6. RESULTS

In total, 24 deliberation episodes were identified in 5 design meetings of 2 hours average each, i.e. an average of 4,8 decisions per meeting. To begin with, a fair relation among design, deliberation, and argumentation was confirmed, as shown in Figure 8. More precisely, "design sequence" seems to be in a coherent and clearly separated cluster relation with "deliberation sequence" and "argument structure" variables.

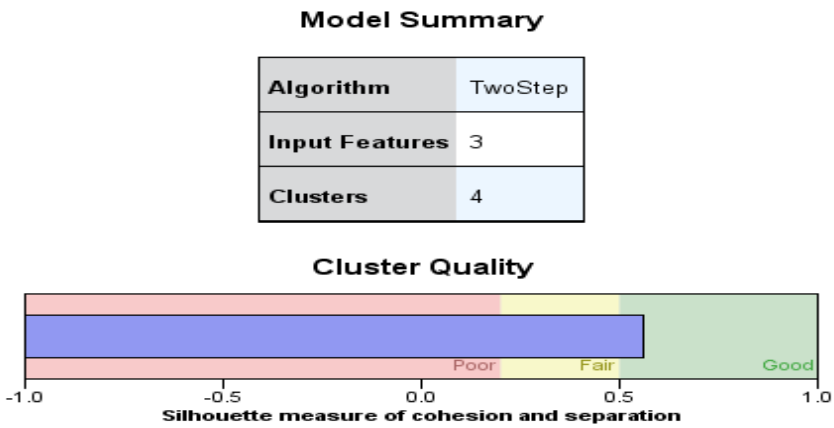

Fig. 8 Two-cluster analysis of Design sequence, as independent variable, and Deliberation sequence and Argumentation, as dependent

Secondly, the type of deliberation stage appear to be significantly related to the type of arguments, as it is shown on Table 6.

Correlations

			DelibPhase	ArguType1
Spearman's rho	DelibPhase	Correlation Coefficient	1.000	.105*
		Sig. (1-tailed)	.	.048
		N	254	254
	ArguType1	Correlation Coefficient	.105*	1.000
		Sig. (1-tailed)	.048	.
		N	254	254

*. Correlation is significant at the 0.05 level (1-tailed).

Table 6. Correlation between Deliberation phase and Argument type

These correlations focus only on the first appearing argument-as-product in each deliberation stage. A deeper exploration into the relation between argument type and deliberation stage, seems to support our first hypothesis of more arguments in the middle stages of deliberation. As Table 7 shows, "consider" and "revise" stages gather more arguments than the other stages. Moreover, a predominance of arguments from positive consequences and users-based judgments is clearly observed.

ArguType1 * DelibPhase Crosstabulation

Count

		DelibPhase								**Total**
		open	*inform*	*propose*	*consider*	*revise*	*recommend*	*confirm*	*close*	
ArguType1	pract	0	1	0	2	2	0	0	0	5
	posit	0	1	3	2	4	2	0	0	**12**
	negat	0	0	2	5	1	1	0	0	9
	expert	0	0	0	1	0	0	0	0	1
	alter	0	0	0	1	1	0	0	0	2
	person	0	0	0	3	0	1	0	0	4
	rule	0	0	1	1	0	0	0	0	2
	users	0	2	1	5	7	1	0	0	**16**
	analogy	0	0	1	0	0	0	0	0	1
	alt+negat	0	0	0	3	0	0	0	0	3
	alt+posit	0	0	0	0	2	0	0	0	2
	Total	0	4	8	**23**	**16**	5	0	0	56

Table 7. Relation among Deliberation Phase and Argument type

Considering, now, argumentation sequences as the main focus of analysis, no concrete pattern among deliberation stage and type of argumentation sequence emerges. Begin-

ning and final stages of deliberation are equally considered as being potentially argumentative as the middle-stages of proposing or considering. This makes us think that other discursive characteristics, specific to the issues, proposals, or assessments discussed, are more crucial for the argumentativeness of a sequence, than its position in the interaction flow. Table 8 shows all the argumentation sequences and their characteristics in terms of co-occurring design sequences and deliberation stages.

Sequence	Issue	Proposal	Assessment	Deliberation stage
EXP	1	1	0	*inform*
CCO	1	3	3	*propose, consider, recommend*
WEI	0	1	1	*propose, consider*
EXP	1	0	0	*revise*
CCO	0	0	1	*inform*
CCO	0	0	1	*recommend*
CCO	1	1	0	*revise*
WEI	0	1	0	*revise*
WEI	0	0	1	*propose*
EXP	0	0	1	*consider*
EXP	1	1	0	*inform*

Table 8. Argumentation sequences in relation to design sequences and deliberation stages

7. CONCLUSIONS

Interpreting the results presented above, the following main conclusions are drawn:

- Deliberation stage influences on the number of the emerging arguments, confirming the hypothesis that in-middle deliberation stages (e.g. consider and revise) are more argument-incentive than others
- On the other hand, argumentation sequences can appear at any deliberation stage, thus supporting the hypothesis that specific design and communication moves can stimulate argumentative discussion, independently of the group decision-making structure

In other words, the “deliberation-argument influence” hypothesis seems to be supported at the individual level. On the other hand, the “argument-deliberation influence” hypothesis is also supported, at the inter-personal, dialectical level. Nevertheless, the data ana-

lyzed for the aims of this paper were too few in order to lead to significant generalizations. The study presented is exploratory, in the sense that it opens paths for future research in the subject of team design deliberation as an emergent and not prescribed process. The use of a normative model to do that can facilitate comparison between how decisions are supposed to be taken and how they are actually taken by human agents working and thinking together. A structural approach of such analysis, as the one proposed, is a potential way of accomplishing this goal, once new coding rules are constructed on the basis of human reality. Our future research is oriented towards it.

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Commentary on "ARGUMENTATION AND DESIGN DELIBERATION: A MUTUAL RELATIONSHIP" by Chrysi Rapanta

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Before raising what I hope will be useful issues and questions to the author, I would like to make some preliminary general observations about my reading of Ms. Rapanta's paper. First, it is only a part of what appears to be a laudably ambitious (and potentially very valuable) project, especially for a doctoral dissertation, that links deliberation in the context of team design to structures and modalities of argumentation. This portion of the project, by itself, is complex, as she attempts to link argumentative type to stages of deliberation. Second, I confess that the paper's topic and methods lie well outside my small spheres of expertise—principally in rhetoric and poststructuralist theory, with a strong interest in materialism as theorized in both. The consequence of that is surely that I will raise some issues that may originate in concerns that seem irrelevant to the design of Ms. Rapanta's goals. I hope that I can locate them, though, in such a way as to render them relevant, at least as tertiary concerns, but possibly even limitations of this portion of the study that might be important to acknowledge. Although I do see some issues here, I hasten to add, third, that I learned a great deal from reading his paper. And for that I am very grateful.

I will organize my response around issues of context, power, and presumption—the latter addressing a fascinating finding of this study that should be underscored for it seems to hold a potentially normative value for design deliberation.

Context. I raise the troublesome issue of context, not simply because it is a central concern of theories of rhetoric, materialism, argument, and poststructuralist theory, but because the deliberative discussion data in this essay raise such a profound challenge. Ms. Rapanta acknowledges this precisely, in observing that, "given the fact that most of these arguments are enthymematic, their classification to one category or another is only possible by knowing well the context of design and interaction, in which they took place. Still, we consider their exposition as relevant for the need of this paper, even though a direct correspondence to the inference templates previously exposed is not always evident." Indeed, the correspondence is often not at all evident, and that presents a potential problem for the argument of the research project itself. I don't doubt that there *is* a correspondence in each case; the issue is rather how difficult it is for a reader who lacks the context of the interaction and/or a familiarity with co-design processes to see those connections. It is doubtless an issue that troubles attempts to study any discussion-based argumentative sequence. It is especially a challenge with an on-going institutionalized group, where individual discussants are familiar with working together and thus offer highly truncated comments that may seem clear to their co-workers and/or even to researchers familiar with the context, but do not allow the outsider (i.e., the reader) any

Zenker, F. (ed.). *Argumentation: Cognition and Community. Proceedings of the 9th International Conference of the Ontario Society for the Study of Argumentation* (OSSA), May 18-21, 2011. Windsor, ON (CD ROM), pp. 1-4.

access for understanding them; this challenge forestalls the ability of a reader to affirm the reasonableness of the paper's claimed correspondences.

Please note that I am not objecting to the claims, simply that there is no clear way to evaluate many of them, for the deliberative fragments that serve as exemplars sometimes do not even seem to the outsider-reader (or at least to me) to be arguments, even enthymematic ones. It seems quite possible that this issue might be more readily, even easily, addressed in a longer, and more detailed treatment of the discussions that serve as the base data. Quite a divide separates researcher from reader here. That may be complicated the more by the fact that the co-design team in this study was working on an online course that had design as its *content*, creating a recursivity to the study that also influences the legibility of the exemplary argument types and sequences for a reader.

Power. This issue, or at least a suggestion of it in the paper, is isolated to a sub-section on argument types—under "oppositional argumentation," which addresses the issue of dissensus, as raised by a number of researchers as perhaps an end in itself (also see, e.g., Rancière, 2010). Ms. Rapanta (2011) addresses this directly, in her claim that dissensus as a valued end "is very rarely the case in institutional contexts, especially if the goals is clearly collaborative" (2011: 11). She continues by acknowledging that

> there are some cases where difference in perspective is so strong, that . . . the expression of a counter-position [is made explicit] towards another party (e.g., the team leader or the "expert"). Again, as in co-constructive negotiation, such argumentation is not as much based on individual interests, but rather on cognitive or disciplinary aspects considered to be conflictive because of epistemic differences. (ibid.)

Granted that this *may* be the case, but it seems at least equally plausible that counter-positions may be expressed for a host of less seemingly impartial reasons than "epistemic" ones; it seems plausible also that even said epistemic differences may be articulated tightly with other, far less dispassionate positions, having to do, for example, with status or authority differentials in institutional or even informal institutional hierarchies, relative valuing of designer- versus user- knowledge, affective residue from prior team projects, or other issues of an individual's motivational matrix and her/his perception of what a positive outcome might be. This too, in a sense, is a "context" issue, but it is potentially such an important one that it deserves separate mention. Surely, power is always at stake in any decision making process in a group or institution, but that is not a reason to bypass it here, because it might impinge in quite interesting ways on the specific focus of the research questions. If, for example, there are salient within the group issues of authority or status, one reason for the development and sequencing of argument types throughout the course of decision making might be the perceived "success" of particular types of arguments in convincing a member of superior status. This issue may seem to be ameliorated by one of the paper's concluding remarks, specifically that: "The use of a normative model … can facilitate comparison between how decisions are supposed to be taken and how they are actually taken by human agents working and thinking together" (ibid.: 17). But then the question arises: How *should* decisions in this kind of context be made? It seems clear, as Ms. Rapanta points out, that "team design deliberation [is] an emergent and not prescribed process," but that still does not quite get at the problem. If the principal goal of the co-designers is to produce the product, would it not follow that argument types favored by those with more decision-making authority *should* be preferred? The issue is raised at least, if not fully resolved, in Erin Friess's (2010) essay on rhetorical

appeals in design decision making (2010: 435). And its possible significance is raised by Willihnganz, Hart, and Willard (2001), in their position that deliberation in which arguers

> approach disagreement with an eye toward predetermined organizationally-accepted solutions, guided by organizational norms, rules, and recipes, rooted in organizational culture ... provides the stability that organizational members need—serving to sustain the culture and ensure a slow process of change. (2010: 147)

However, they note as well a different approach that does not work within such taken-for granted assumptions "that may create novel, unique, or unprecedented solutions" (p. 147). They seem to have a strong preference for the latter; it is unclear whether such outcomes would be highly valued in the context Ms. Rapanta's paper takes up. But it is an interesting, potentially crucial, question.

Finally, presumption. I have already addressed issues of presumption indirectly in discussing power, particularly impinging on a presumption of trust in expertise, a consideration that Shawn Batt (2007) has taken up in important ways. But there is more to it even than that. Early in the paper, and at a more general level than particular presumptions, Ms. Rapanta suggests the following:

> As the goal of this paper is not to evaluate argumentation sequences but just to identify them, we will not enter into … [among others] questions regarding the burden of proof … . Our analysis will be limited to what types of argument sequences are possible or expected to emerge during a design deliberation episode. (2011: 8)

At the outset, I would suggest that issues regarding burden of proof and presumption *do* suggest possibilities and expectations for argument sequences. And it seems fair to suggest that that should be acknowledged in this study.

Indeed, there is a strong presumption at work, according to the results of this study, and this is, to my mind, one of its most important contributions to an understanding of how design deliberation does work, and very likely how it should work argumentatively. By far, the two most frequently used argument types that emerged here were arguments from positive consequence and inferences from user-based judgments (p. 16). Although it is not completely clear to me how to separate these two categories cleanly, since positive consequence would seem to imply positive outcomes for users, there still seems a clear and important message here: that the positive experience of the end user of the product is the principal presumption, which I would regard as a descriptive finding that might also a strongly normative expectation, at least in the case of this group of co-designers, but also perhaps beyond this group.

Thank you again for the opportunity to read this paper. My sincere compliments on an ambitious and important study.

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