

Analyzing ballet mime at the semantics/pragmatics interface

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1. Intro: While classical ballet doesn't involve talking, there are clearly communicative acts between the dancers. In ballet mime, dancers use particular body motions (mime) as an artistic medium for communication. In turn, the audience appeals to commonsense reasoning with non-linguistic information to infer what is being communicated. The goal of this talk is to argue that we can analyze these communicative acts through an application of discourse coherence theory (Hobbs 1985, Kehler 2002, Asher & Lascarides 2003). We focus on two key aspects: (a) how sequential mimes are composed to make up a discourse unit (DU) and (b) how these DUs are related to form a narrative. We propose that the linguistic analog of (a) is composition of sub-sentential expressions, while the analog of (b) is composition of sentential expressions with propositional content. Our analysis contributes to the growing body of research which uses linguistic tools to analyze dance (e.g. Charnavel 2016, Patel-Grosz et al. 2018). Unique to our analysis is that we employ tools in formal semantics/pragmatics.

2. Data: In this talk, we analyze a part of Odette's mime from Swan Lake, based on our own adaptation of an online translation.¹ In particular, we derive the discourse units below from a sequence of mimes, which we then relate to derive the narrative structure of Odette's mime.

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| (1) π_a : <i>Why are you here?</i> | π_b : <i>I'm the queen of the swans.</i> | |
| π_c : <i>You're a queen? I bow to you.</i> | π_d : <i>Thank you.</i> | |
| π_e : <i>I'll show you—</i> | π_f : <i>over there is a lake of my mother's tears.</i> | |
| π_g : <i>But wait!</i> | π_h : <i>Over there is a bad person who turned me into a swan.</i> | |
| π_i : <i>But wait!</i> | π_j : <i>If someone loves me,</i> | |
| π_k : <i>marries me,</i> | π_l : <i>and vows to remain true,</i> | π_m : <i>I will be a swan no more.</i> |

3. Analysis: Our analysis begins with the hypothesis that there are two kinds of *coherence relations* (CRs): *event relations* (ERs) and *propositional relations* (PRs). ERs are linguistically relevant for, e.g. lexical decomposition (Dowty 1979), thematic structure (Parsons 1990) and extraction from adjuncts (Truswell 2007). PRs are linguistically relevant for, e.g. anaphora resolution (Hobbs 1985), discourse particles (Jasinskaja & Karagjosova, in press) and gesture (Lascarides & Stone 2009). An example of a CR is Result. As an ER, it demands that two events stand in a causal relation. As a PR, it demands that what is asserted by the 1st DU is normally understood to cause what is asserted by the 2nd DU.

We derive the DUs in (1) by relating a sequence of mimes via ERs. Here, we discuss one DU in particular, namely π_a . We propose that it is composed of three signs, which signify *you*, *here*, and *why*. The physical relationships between them lead the audience to infer the question *Why are you here?* In particular, each sign flows into the one after it, and the changes require the dancer to move between different poses. To capture how the various movements are related, we have separated the movement of the hands and arms from the movement of the face and body. The first row in Fig. 1 below represents how Siegfried's arms and hands move as he gestures to Odette. The second row shows how he moves the rest of his body. These hand and arm movements are events presented against the state (such as standing, moving en pointe, etc.) of the body, motivating the subordinating Background relation (Asher & Lascarides 2003). In addition, we capture the fact that the dancer begins in a neutral position before stepping forward and extending his arm to sign *you*. This neutral position is represented by π_i (his hands by his sides) and π_{ii} (his feet together, turned out slightly). For the other DUs, the starting position may be something more elaborate, such as the ending position of the previous DU.

Any time a dancer changes from one sign or body position to another, this change constitutes the coordinating relation, Occasion; the final state of the first sign is the initial state for the next sign (Kehler 2002). Thus, the top row of units almost always is connected in a chain of Occasion relations, unless the dancer repeats a sign, in which case the events are related via the coordinating relation, Parallel. In π_a , after the initial shift from a neutral body position to a more open one, there are no

¹ <https://www.youtube.com/watch?v=WaZnAyXsX4k&t>

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more changes; Siegfried stands in the same way throughout all three signs. We have analyzed the consistency in body position via Parallel. Note that technically, the dancer does move his body a little; ballet instructors often teach their students that their dancing should be a continuous movement, with few or no pauses. However, we argue that the small changes are not semantically relevant.

In the talk, we illustrate how the other DUs in (1) are derived in a similar fashion to π_a . Subsequently, we derive the narrative structure of Odette and Siegfried’s mimed conversation by relating the DUs in (1) via PRs. As illustrated in Fig. 2 below, we propose that the narrative structure results from eight coordinating relations and four subordinating relations, including a complex DU, π_1 . We propose that π_a is related to π_b via Question/Answer. Although *I’m the queen of the swans* does not necessarily answer *Why are you here?*, we argue that establishing Question/Answer leads to the proper interpretation. This involves deducing that: (i) the lake is where the swans live and (ii) their queen is there. In addition to being related to π_b , π_a is related to π_c via Occasion and Parallel because: (i) π_c constitutes Siegfried’s subsequent speech act and (ii) both speech acts are questions. π_d is related to π_c via Result since Siegfried’s bow causes Odette to acknowledge it. We argue that π_e , π_g , and π_i are all related via Parallel; this is obvious with π_g and π_i , as they both signify the exclamative: *But wait!* As for π_e (*I’ll show you*), we argue that its semantic import is analogous; these DUs all indicate that there is more information coming, and that the said information will be elaborated upon, which is why they are all related via Elaboration to π_f , π_h , and π_l , respectively. The latter is a CDU, consisting of π_j , π_k , and π_l , which stand in parallel and all cause π_m (hence Result at the right frontier of the graph).

4. Conclusion: Our analysis of ballet mime sheds light on the shared properties of different cognitive domains (language and dance). In particular, our analysis reveals an analog between: (a) composition of sub-sentential expressions/mimes and (b) composition of sentential expressions/sequence of mimes to form a narrative. Our analysis also contributes to the growing body of recent research which uses linguistic tools to analyze dance. We show that tools in formal semantics/pragmatics are both adequate and viable.

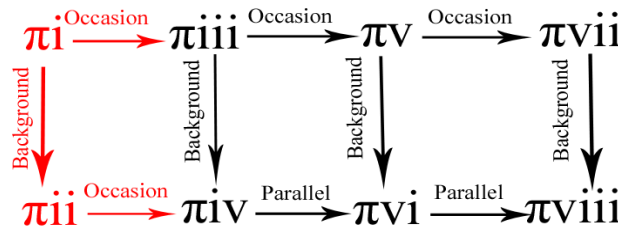


Fig. 1: “Sub-sentential composition” of π_a

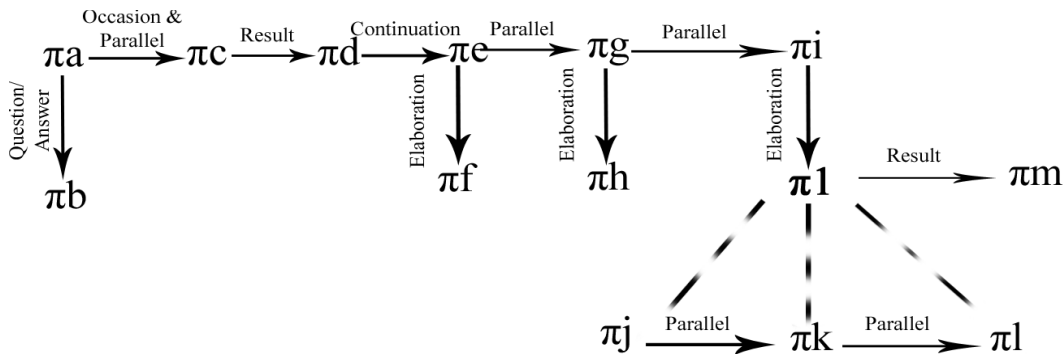


Fig. 2: “Cross-sentential composition” of π_a - π_m

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