in contrast – A Complex Discourse Connective

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Discourse Connectives

Definition

A discourse connective links parts of a discourse and indicates what semantic relationship exists between these parts.

Examples:

before, after, while, because, although, but, in contrast, ...
Comparing Complexities

<table>
<thead>
<tr>
<th>SYNTACTIC STRUCTURE</th>
<th>DISCOURSE STRUCTURE</th>
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<tbody>
<tr>
<td>predicates with varying arity: intransitive, transitive,</td>
<td>discourse connectives with fixed arity (2)</td>
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<td>ditransitive verbs</td>
<td></td>
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<td>complex dependencies, including highly nested and crossing</td>
<td>simple, tree-like dependencies</td>
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<td>dependencies</td>
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</table>

(see Lee, Prasad, Joshi, Dinesh and Webber 2006)
Crossing Dependencies

Crossing Intrasentential Dependency

[In contrast] [arg1 to his predecessors who worked at all hours of the day] [arg2 Macmillan tended to keep office hours].

Crossing Intersentential Dependency

It’s a shame, then, that [arg1 its gearchange is coarse and sloppy]. [In contrast], [arg2 the Calibra’s is light and quick], although the clutch action could be more progressive].
Possible Hypotheses

1. The discourse connective *in contrast* provides a counterexample to Lee et al. (2006). The complexity of discourse relations needs to be re-thought.

2. The crossing dependencies of *in contrast* are an instance of a more general phenomenon of discourse anaphora in the sense of Webber, Joshi, Stone and Knott (2003).
### Syntactic Properties

#### Sentential Modifier

(1) But both are acceptably direct, although the Corrado’s steering has pinpoint accuracy. It’s a shame, then, that its gearchange is coarse and sloppy. **In contrast**, the Calibra’s is light and quick, although the clutch action could be more progressive. *A6W(0763)*

#### PP Modifier

(2) Yet this is the first serious attempt to write about the revolution since the heyday of the early 1970s. **In contrast to the books written then**, The Road to Jaramillo is full of insight into the interactions, communications, thoughts and impressions that make scientific problem solving enlightening. *B72(1514)*
(8) Sue grabbed one phone, as Tom darted to the other phone. (Webber, Joshi, Stone and Knott 2003, p. 555)

(9) He retired to Hampshire and died in 1832 at the age of 76. The MCC continue to care for his grave. In contrast, on the other side of the same cemetery is the grave of the Burgess family, where the ashes of the spy Guy Burgess, who died in Russia, were placed. BM4(0772)
It's a shame, then, that its gearchange is coarse and sloppy. In contrast, the Calibra’s is light and quick, although the clutch action could be more progressive. 

_A6W(0763)_
(11) Few countries have satisfactory legislation on pesticides or the trained manpower to enforce it. In contrast, extensive use of pesticides in Europe, North America and Japan is backed by government legislation or voluntary schemes that provide farmers with detailed advice. $B7G(0726)$
(12) a. Stack five blocks on top of one another. Now close your eyes and try knocking \{the tower, this tower\} over with your nose.
(Webber et al. (2003), p. 552)

b. Do you want an apple? **Otherwise** you can have a pear.
(Webber et al. (2003), p. 552)
Jack’s heart lurched as he saw the ambulances and the busy, functional building and he immediately forgot everything they had been saying. “I’ll ask where he is,” said Jamie Shepherd as they walked towards the reception desk. In contrast to the outside, the area was softly carpeted, softly lit, as if illness and death had to be cushioned away, made to look as if they didn’t exist. 

*PD(0200)*
not just of interest from a theoretical perspective

highly relevant for information extraction and text summarization

typical case of argumentative zoning (Teufel and Moens (2002) and Siddharthan and Teufel (2007))
Semantics of *in contrast* – first approximation

(17) a. in-contrast(e1,e2)

b. According to the buyers’ guide produced by estate agents Savills, who specialize in such properties, \([e_1\text{ the price of prime properties in Yorkshire has risen by more than 130 per cent over the last three years.}]\) **In contrast**, \([e_2\text{ the price of average properties, those on which the Halifax has lent mortgages, has risen by only about 85 per cent.}]\) A5T(167)
Semantics of *in contrast* – final version

(20) a. \( \text{in-contrast}((\text{focus-item}_1, \text{prop}_1), (\text{focus-item}_2, \text{prop}_2)) \)

b. **In contrast to his predecessors** who worked at all hours of the day Macmillan tended to keep office hours. *B0H(0476)*

c. \( \text{in-contrast}((\text{Macmillan’s-predecessors}, \lambda x [x \text{ worked-at-all-hours-of-the-day}]), (\text{Macmillan}, \lambda x [x \text{ tended-to-keep-office-hours}])) \)
Conclusions and Future Work

Conclusions

- The evidence in this paper provides additional evidence in support of the anaphoric nature of discourse connectives.
- The crossing dependencies of *in contrast* can be subsumed under the more general notion of discourse anaphora (Webber et al. (2003))

Future Research

In order to further elucidate the semantics and pragmatics of *in contrast* the interaction of discourse structure and information structure (particularly focus) needs to be explored.
Thank you for your attention.
References


