

Supplementary material to:

Annotation upon Annotation: Adding Signalling Information to a Corpus of Discourse Relations

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Abstract

We present an annotation effort that involves adding a new layer of annotation to an existing corpus. We are interested in how rhetorical relations are signalled in discourse, and thus begin with a corpus already annotated for rhetorical relations, to which we add signalling information. We show that a very large number of relations carry signals that can help identify them as such. The detailed, extensive analysis of signals in the corpus will aid research in the automatic parsing of discourse relations.

1 Appendices

The following are appendices as supplementary material to the paper above, to appear in the journal *Dialogue and Discourse*. Current version: February 25, 2013.

1.1 Appendix I

List of all the other signals extracted so far from our preliminary corpus analysis.

Conventions for interpreting the examples in the table: The text within square brackets denotes a span. Each pair of square brackets is followed by either the uppercase character N, referring to the nucleus span, or the uppercase character S, referring to the satellite span. A pair of two spans (N and S) or a collection of more than two spans (for multinuclear relations containing three or more spans) is followed by the name of the relation that holds between (or among) the spans. The relation name is further followed by parentheses containing the file number (of the source document), and the span numbers (i.e., the location of the relation in the document), respectively. In addition, the file

number and the span numbers within the parentheses are separated by a colon, and each span number is separated from another span number by a forward slash. With regard to a signal mentioned, the relevant parts (referring to the relevant features) within the spans are in boldface.

Signal Type	Signal	Definition	Example
1. Entity	Different entities	The entities in respective spans are different, or they are not identical.	[Earlier this year, Tata Iron & Steel Co. 's offer of \$355 million of convertible debentures was oversubscribed.]N [Essar Gujarat Ltd. , a marine construction company, had similar success with a slightly smaller issue.]N [Larsen & Toubro started accepting applications for its giant issue earlier this month;]N – List (629: 87/88/89)
	Given entity	An entity is introduced in the first span, and it is mentioned in the second span.	[The Treasury expressed pleasure, however, with the government of Taiwan, which was cited for exchange-rate manipulation in last year's report.]N [The Treasury said Taiwan has liberalized its exchange rate system in the past year.]S – Elaboration-additional (622: 20-21/22-23)
	Given entity (PP)	An entity is introduced in the first span, and it is mentioned within a PP in second span.	[Yet some lawyers point to Eli Lilly & Co. vs. Medtronic, Inc., the patent infringement case the Supreme Court this month agreed to review, ...]N [In the Lilly case , the appeals court broadly construed a federal statute to grant Medtronic, ...]S – Elaboration-additional (601: 56-59/60-65)
	Cataphoric entity	An entity is mentioned in the first span (through some reference, or pronoun), but it is actually introduced/described in the second span.	[This maker of electronic devices said it replaced all five incumbent directors at a special meeting called by Milton B. Hollander,...]N [Removed from office were George Pratt, Robert E. Davis, Norman Gray, John Virtue, corporate secretary, and Barrett B. Weekes, chairman, president and chief executive officer.]S – Elaboration-additional (642: 1-5/6)
	Given entity (set-complement)	An entity/some entities from a set is/are introduced in the first span, and the complement member(s) is/are mentioned in the second spans.	[... This estimate doesn't include claims under workers' compensation, life, health disability and liability insurance and damage to infrastructure such as bridges, highways and public buildings...]N [Other insurance rates such as casualty insurance , which would cover liability claims, aren't likely to firm right away...]S – Elaboration-additional (648: 7-16/17-22)
	Given propositional entity	The proposition in the first span is mentioned as an entity in the second span.	[Some of the associations have recommended Dr. Alan D. Lourie, 54, a former patent agent with a doctorate in organic chemistry who now is associate general counsel with SmithKline Beckman Corp. in Philadelphia. Dr. Lourie says the Justice Department interviewed him last July.]N [Their effort has received a lukewarm response...]S – Elaboration-additional (601: 33-36/37-74)

	Given member entity	A set of entities is introduced in the first span, and a member entity from that set is mentioned in the second span.	[Grimm counted 16 transactions valued at \$1 billion or more in the latest period, twice as many as a year earlier.]N [The largest was the \$12 billion merger creating Bristol-Myers Squibb Co.]S – Elaboration-additional (645: 9-10/11)
	Mutually exclusive entities	Entities in respective spans are mutually-exclusive (i.e., the presence of one entity implies the absence of the other)	[The guilty pleas would be made solely by Gulf Power , the individuals said.]N [No employee or vendor would be involved.]S – Restatement (619: 18-19/20)
2. Genre	Newspaper heuristics (Attribution)	Genre-specific heuristics indicative of Attribution relations	[Debate on IRAs Centers on Whether Tax Break Should Be Immediate or Put Off Till Retirement"]N [-- WSJ Oct. 27, 1989]S – Attribution (605: 5/6)
	Newspaper heuristics (Contrast)	Genre-specific heuristics indicative of Contrast relations	[THE YALE POLITICAL UNION doesn't pay an honorarium to speakers.]N [In Thursday's edition, it was incorrectly indicated that the union had paid a fee to former House Speaker Jim Wright.]S – Contrast (608: 1/2-3)
	Newspaper heuristics (Elaboration)	Genre-specific heuristics indicative of Elaboration relations	[THE FINANCIAL ACCOUNTING STANDARDS BOARD'S coming rule on disclosure involving financial instruments will be effective for financial statements with fiscal years ending after June 15, 1990.]N [The date was misstated in Friday's edition.]S – Elaboration-additional (603: 1-4/5)
	Textual organization	Genre-specific heuristics (based on the organization of discourse segments in newspaper texts) indicative of a particular relation (e.g., the content of the first (or the first few paragraphs) is elaborated on in the subsequent paragraphs.)	[Sun Microsystems Inc., a computer maker, announced the effectiveness of its registration statement for \$125 million of 6 3/8% convertible subordinated debentures due Oct. 15, 1999.]N [The company said the debentures are being issued at an issue price of \$849 for each \$1,000 principal amount and are convertible at any time prior to maturity at a conversion price of \$25 a share. The debentures are available through Goldman, Sachs & Co.]S – Elaboration-additional (650: 1/2-5)
3. Graphical	Colon	The first span ends with a colon followed by the second span.	[And it isn't the only giant issue:]N [together, the top four issues will raise \$1.3 billion.]S – Example (629: 41/42)
	Comma	The first span ends with a comma followed by the second span.	[Firm Posts Quarterly Loss,]N [Plans a Stock Dividend]S – List (614: 5/6)
	Dash	The first span ends with a dash followed by the second span, or one of the spans is within dashes.	[Now only three of the 12 judges]N [-- Pauline Newman, Chief Judge Howard T. Markey, 68, and Giles Rich, 85 --]S [have patent-law backgrounds.]N – Elaboration-set-member (601: 21+23/22)
	Parallel Strings	The spans contain similar types of character strings.	[Sun Microsystems Inc. -- \$125 million of 6 3/8% convertible subordinated debentures due Oct. 15, 1999, priced at 84.90 to yield 7.51%...]N [Hertz Corp. -- \$100 million of senior notes due

			Nov. 1, 2009, priced at par to yield 9%...]N – List (612: 3-11/12-21)
	Parentheses	One of the spans is within parentheses.	[A few months ago, Dentsu acquired 69% of Australian agency Fortune Communication Holdings Ltd. for 5.9 million Australian dollars]N [(US\$4.6 million)]S – Restatement (634: 3/4)
	Semi-colon	The first span ends with a semi-colon followed by the second span.	[Larsen & Toubro started accepting applications for its giant issue earlier this month;]N [bankers and analysts expect it to be oversubscribed.]S – Elaboration-additional (629: 89/90)
4. Lexical	Alternative expression	A short tensed clause indicative of a relation	[The estimated earthquake losses are low compared with the \$4 billion in claims that insurers face from Hurricane Hugo...]N [That's because only about 30% of California homes and businesses had earthquake insurance to cover the losses.]S – Explanation-argumentative (648: 9-12/13-14)
	Indicative phrase	A phrase indicative of a relation	[Nelson Holdings International Ltd. shareholders approved a 1-for-10 consolidation of the company's common stock at a special meeting.]N [At the same time, shareholders approved the adoption of a rights plan and a super-majority voting approval requirement...]S – Temporal-same-time (651: 1/2-3)
	Indicative word	A word indicative of a relation	["If we don't do something . . . we won't be able to catch up with demand," says a Dentsu spokesman.]N ["Our president said acquisition is an effective method."]S – Evaluation (634: 15-17/18-19)
5. Morphological	Change of tense	The use of different tense in respective spans	[Insurers typically retain a small percentage of the risks they underwrite and pass on the rest of the losses...]S [After Hugo hit, many insurers exhausted their reinsurance coverage and had to tap reinsurers to replace that coverage...]N – Background (648: 27-37/38-45)
6. Numerical	Same count	The (cardinal) number of entities mentioned in one span is equal to the numerical count of entities in the other span.	[This maker of electronic devices said it replaced all five incumbent directors at a special meeting ...]N [Elected as directors were Mr. Hollander, Frederick Ezekiel, Frederick Ross, Arthur B. Crozier and Rose Pothier.]S - Elaboration-general-specific (642: 1-4/5)
7. Semantic	Antonyms	Two words in respective spans are antonyms of each other.	[Under current rules, investors in Taiwan can buy overseas stocks only through the purchase of mutual funds issued by local and foreign investment trusts.]N [The new rules will allow investors to buy foreign stocks directly.]S – Comparison (639: 8-9/10)
	Antonyms (phrases)	Two phrases in respective spans are in antonymy relationship.	[Last year , Dentsu started HDM, a joint network with U.S. ad agency Young & Rubicam and Eurocom of France. A few months ago , Dentsu acquired 69% of Australian agency Fortune Communication Holdings Ltd...]N

			[Now , the giant marketing company, which holds 25% of Japan's 4.4 trillion yen (\$30.96 billion) advertising industry, is considering the acquisition of an advertising network in the U.S. or Europe...]N – List (634: 2-6/7-11)
Lexical chain	Words in respective spans are semantically related.		[In an age of specialization , the federal judiciary is one of the last bastions of the generalist ... But even on the federal bench, specialization is creeping in...]N [...Previously, patent cases moved through the court system to one of the 12 circuit appeals courts. There, judges who saw few such cases and had no experience in the field grappled with some of the most technical and complex disputes imaginable.]S – Elaboration-additional (601: 1-5/6-74)
Phrasal chain	Phrases in respective spans are semantically related.		[His message is getting a chilly reception in Detroit...]N [Ford Motor Co. and Chrysler Corp. representatives criticized Mr. Tonkin's plan as unworkable...]S – Elaboration-additional (618: 22-26/27-33)
Synonyms	Words in respective spans are synonyms of each other.		[Finnair, Finland's state-owned airline, joined the wave of global airline alliances and signed a wide-ranging cooperation agreement with archrival Scandinavian Airlines System. Under the accord , Finnair agreed to coordinate flights, marketing and other functions with SAS, the 50%-state-owned airline of Denmark, Norway and Sweden.]N [The pact also calls for coordination between Finnair and Switzerland's national carrier, ...]S – Elaboration-additional (631: 1-3/4-5)
Indicative phrasal pair	A pair of phrases, each phrase is in respective spans; the pair is indicative of a relation		[Once the money is raised, it isn't always certain how it is used ...]N ["Someone must monitor where the funds are deployed ," says Mr. Dave...]S – Problem-Solution (629: 152-160/161-167)
Indicative word pair	A pair of words, each one is in respective spans; the pair is indicative of a relation		[Earlier this year, Tata Iron & Steel Co.'s offer of \$355 million of convertible debentures was oversubscribed...]N [Still to come are big issues by Bindal Agro Chem Ltd., a petrochemical and agrochemical company, and Usha Rectifier Corp. (India), a semiconductor maker.]S – List (629: 87-90/91-93)
Lexical overlap	Identical words in respective span		[In an age of specialization, the federal judiciary is one of the last bastions of the generalist. A judge must jump from murder to antitrust cases , from arson to securities fraud, without missing a beat.

			<p>But even on the federal bench, specialization is creeping in, and it has become a subject of sharp controversy on the newest federal appeals court.]N</p> <p>[The Court of Appeals for the Federal Circuit was created in 1982 to serve, among other things, as the court of last resort for most patent disputes. Previously, patent cases moved through the court system to one of the 12 circuit appeals courts. There, judges who saw few such cases and had no experience in the field grappled with some of the most technical and complex disputes imaginable.]S – Elaboration-additional (601: 1-5/6-74)</p>
	Phrasal overlap	Identical phrases in respective spans	<p>[\$100 million of senior notes due Nov. 1, 2009, priced at par to yield 9%.]N</p> <p>[The issue, which is puttable back to the company in 1999, was priced at a spread of 110 basis points above the Treasury's 10-year note.]S – Elaboration-additional (612: 13-15/16-18)</p>
	Similar collocations (subject NP)	The subject NPs in respective spans contain similar types of collocations.	<p>[September orders ... down 28% from \$266.5 million a year earlier...]N</p> <p>[Orders last month ... surged to \$110.1 million, a 78% rise from \$61.7 million a year earlier...]N</p> <p>[Machine tool shipments last month were \$281.2 million...]N – List (628: 51-55/56-61/62-71)</p>
8. Syntactic	Coordinated clauses	The respective spans are coordinated clauses.	<p>[that could send shock waves through the president's entire relationship with Democrats and Republicans alike in Congress,] N</p> <p>[fundamentally enhance the power of the presidency]N – List (609: 18/19)</p>
	Infinitival clause	One span is an infinitival clause embedded in the other span (matrix clause).	<p>[The Court of Appeals for the Federal Circuit was created in 1982] N [to serve, among other things, as the court of last resort for most patent disputes.]S – Purpose (601: 6/7)</p>
	Interrogative syntactic constructions (series)	The spans constitute a series of interrogative syntactic constructions.	<p>["Do you really need this much money to put up these investments?"]N</p> <p>[Have you told investors what is happening in your sector?"]N</p> <p>[What about your track record? -- "]N – List (629: 130-131/132-133/134)</p>
	Interrupted matrix clause	One span is interrupted by the insertion of the other span. (In the example, the parts denoting the interrupted span are marked by the same index value).	<p>[The second factor]N_i [spurring mega-issues]S [is political.]N_i – Same-unit (629: 72/74)</p>
	Modal verb	The use of a modal verb in a span	<p>[On Friday, Datuk Daim added spice to an otherwise unremarkable address on Malaysia's proposed budget for 1990 by ordering the Kuala Lumpur Stock Exchange "to take appropriate action immediately" to cut its links with the Stock Exchange of Singapore.]N</p>

			[The delisting of Malaysian-based companies from the Singapore exchange may not be a smooth process, analysts say...]S – Evaluation (613: 4-6/7-10)
	Negation	The proposition in the first span is negated in the second span.	[The guilty pleas would be made solely by Gulf Power , the individuals said.]N [No employee or vendor would be involved.]S – Restatement (619: 18-19/20)
	Parallel phrasal constructions	The spans contain phrases which are parallel to each other in syntactic construction.	[In the first nine months, 1,977 transactions were announced, up 15% from 1,716 in the year-earlier period.]N [Transactions in which prices were disclosed totaled \$188.1 billion, up 15% from \$163.2 billion a year earlier.]S – Elaboration-additional (645: 13/14-16)
	Parallel phrasal constructions (subject NP)	The subject NPs of the sentences which both of the spans start with are parallel to each other in syntactic construction.	[Sales of information-processing products and electric parts increased a strong 22% to 236.23 billion yen from 194.24 billion yen and accounted for 46% of total sales.]N [In audio equipment, sales rose 13% to 44.3 billion yen from 39.19 billion yen.]N [Sales of electric appliances were flat...]N – List (649: 9-10/11/12)
	Parallel PP constructions	Each of the spans contains a PP; the PPs are parallel to each other in syntactic construction.	[Under the rights plan , holders will have one right for each common share held, with each right entitling the purchase of one common share for 100 Canadian dollars...]N [Under the super-majority amendment , certain mergers and other transactions would require approval of holders of 80% of the company's common shares outstanding.]N – List (651: 9-13/14)
	reported speech constructions (series – same speaker)	The spans constitute a series of reported speech constructions (reporting speech + reported speech) made by the same speaker	[A spokesman for Southern Co. would say only that discussions are continuing between Gulf Power and federal prosecutors.]N [“ We have no further developments to report, ” he said.]S – Elaboration-additional (619: 21-22/23-25)
	Parallel syntactic constructions	The spans (representing full clauses or sentences) are parallel to each other in syntactic construction.	[A grand jury has been investigating whether officials at Southern Co. conspired to cover up their accounting for spare parts to evade federal income taxes.]N [The grand jury has also been investigating whether Gulf Power executives violated the federal Utility Holding Company Act...]N – List (619: 5-7/8-10)
	Parallel syntactic constructions (RS)	The spans contain reported speeches which are parallel to each other in syntactic construction.	[“ Overall demand still is very respectable, ” says Christopher C. Cole, group vice president at Cincinnati Milacron Inc., the nation's largest machine tool producer.]N [“ The outlook is positive for the intermediate to long term. ”]N – List (628: 14-15/16)
	Parallel syntactic constructions	The spans are in two adjacent sentences; the reported speech (RS) in	[The company said the debentures are being issued at an issue price of \$849 for each \$1,000 principal amount and are convertible at any time prior to

	(RS/SS)	the first span is syntactically parallel to the second span or SS (or parts of second span).	maturity at a conversion price of \$25 a share.]N [The debentures are available through Goldman, Sachs & Co.]N – List (650: 2-4/5)
	Participial clause	One span is a participial clause embedded in the other span (matrix clause).	[The debentures are convertible into common stock at \$25 a share,]N [representing a 24% conversion premium over Thursday's closing price.] – Elaboration-additional (612: 7/8)
	Reduced relative clause	One span is a reduced relative clause embedded in the other span (matrix clause).	[These are the raw materials]N [used in making plastics.]S – Elaboration-object-attribute (606: 19/20)
	Relative clause	One span is a relative clause embedded in the other span (matrix clause).	[Some of the associations have recommended Dr. Alan D. Lourie, 54, a former patent agent with a doctorate in organic chemistry]N [who now is associate general counsel with SmithKline Beckman Corp. in Philadelphia.]S – Elaboration-additional (601: 33/34)
	Reported speech constructions (series – different speaker)	The spans constitute a series of reported speech constructions (reporting speech + reported speech) made by different speakers	["I don't think it will lead to any chaos in the secondary market," says Mr. Patel,]N ["only a sagging tendency." Says M.J. Pherwani, chairman of the Unit Trust of India: The "markets are headed for growth unheard of and unseen before."]N – List (629: 97-100/101-102)
	Reported speech pattern	The spans constitute a reported speech pattern in which one span is the reporting speech and another is the reported speech.	[Mr. Lee, president of Luzon Petrochemical Corp., said]S [the contract was signed Wednesday in Tokyo with USI Far East officials.]N – Attribution (606: 10/11)
	Subject NP	Subject NP of the sentence which the second span starts with (usually an entity introduced in the first span).	[Spencer J. Volk, president and chief operating officer of this consumer and industrial products company, was elected a director.]N [Mr. Volk, 55 years old, succeeds Duncan Dwight, who retired in September.]S – Elaboration-additional (600: 1/2)
	Subject NP (MC)	This feature refers to the subject NP of the main clause of the sentence (which comprises a main clause and a dependent clause) which the second span starts with.	[It's the line-item veto, a procedure that would allow the president to kill individual items in a big spending bill passed by Congress without vetoing the entire bill.]N [Whatever one thinks of the idea, it's far more than the budgetary gimmick it may seem at first glance...]S – Elaboration-additional (609: 10-13/14-21)
	Subject NP (RS)	This feature refers to the subject NP of the reported speech (RS) of the sentence (which consists of a reporting speech and a reported speech) which the second span starts with.	[A new specialty court was sought by patent experts, who believed that the generalists had botched too many important, multimillion-dollar cases.]N [Some patent lawyers had hoped that such a specialty court would be filled with experts in the field...]S – Elaboration-additional (601: 13-15/16-74)
	Subject NP (RS/SS)	The subject NPs of the reported speech (RS) within the first span is	[The company said the debentures are being issued at an issue price of \$849 for each \$1,000 principal amount and are convertible at any time prior to

		identical to the subject NP of the sentence the second span (SS) starts with.	maturity at a conversion price of \$25 a share.]N [The debentures are available through Goldman, Sachs & Co.]N – List (650: 2-4/5)
	Wh-clause	Wh-clause in a span	[In what could prove a major addition to the Philippines' foreign-investment portfolio.]S [a Taiwanese company signed a \$180 million construction contract to build the centerpiece of a planned petrochemical complex.]N – Hypothetical (606: 1/2)

Table 1: List of the single other signals extracted from our preliminary corpus study

1.2 Appendix II

List of the combined other signals extracted so far from our preliminary corpus analysis.

Conventions for interpreting the examples in the tables: The text within square brackets denotes a span. Each pair of square brackets is followed by either the uppercase character N, referring to the nucleus span, or the uppercase character S, referring to the satellite span. A pair of two spans (N and S) or a collection of more than two spans (for multinuclear relations containing three or more spans) is followed by the name of the relation that holds between (or among) the spans. The relation name is further followed by parentheses containing the file number (of the source document), and the span numbers (i.e., the location of the relation in the document), respectively. In addition, the file number and the span numbers within the parentheses are separated by a colon, and each span number is separated from another span number by a forward slash. With regard to a combined signal mentioned, the relevant parts (referring to the relevant combined features) within the spans are in both boldface and italics.

Signal Type	Signal	Definition	Example
1. (entity + positional)	(given entity (PP) + beginning)	An entity is introduced in the first span; the entity is within a PP which is in the beginning of the second span.	[Yet some lawyers point to <i>Eli Lilly & Co. vs. Medtronic, Inc., the patent infringement case</i> the Supreme Court this month agreed to review, as an example of poor legal reasoning by judges who lack patent litigation experience.] N [<i>In the Lilly case</i> , the appeals court broadly construed a federal statute to grant Medtronic, a medical device manufacturer, an exemption to infringe a patent under certain circumstances.]S – Elaboration-additional (601: 56-59/60-65)
2. (entity + syntactic + lexical)	(given entity + subject NP + indicative phrase)	A given entity as the subject NP (of the sentence the second span starts with) is followed by an indicative phrase.	[<i>Insurers</i> buy this insurance protection for themselves by giving up a portion of the premiums they collect on a policy to another firm...]N [<i>Insurers, such as</i> Cigna Corp., Transamerica Corp, and Aetna Life & Casualty Co., buy reinsurance from other U.S.-based companies and Lloyd's of London for one catastrophe at a time.]S – Example (648: 30-36/37)
3. (entity + syntactic)	(given entity (set-complement) + subject NP)	Some entities within a set are introduced in the first span; the other entities which complement the former	[...However, insurance brokers and executives say that the combination of the Bay area earthquake, Hugo and last week's explosion at the Phillips Petroleum Co. 's refinery in

	entities (in the first span) in the set constitute the subject NP of the sentence the second span starts with.	Pasadena, Texas, will cause <i>property insurance and reinsurance rates</i> to jump.]N [<i>Other insurance rates such as casualty insurance</i> , which would cover liability claims, aren't likely to firm right away, says Alice Cornish, an industry analyst with Northington Research in Avon, Conn...]S – Elaboration-additional (648: 7-16/17-22)
(given entity + subject NP (MC))	An entity is introduced in the first span; the entity is the subject NP of the main clause of the sentence second span starts with.	[<i>It's</i> the line-item veto, a procedure that would allow the president to kill individual items in a big spending bill passed by Congress without vetoing the entire bill.]N [Whatever one thinks of the idea, <i>it's</i> far more than the budgetary gimmick it may seem at first glance...]S – Elaboration-additional (609: 10-13/14-21)
(given entity + subject NP (RS))	An entity is introduced in the first span; the entity is the subject NP of a reported speech construction which is within the second span (a sentence).	[However, there's a continuing dispute between machine tool makers and <i>the Defense Department</i> over whether sophisticated U.S. machine tools would increase the Soviet Union's military might.]N [“The Commerce Department says go, and <i>the Defense Department</i> says stop,” complains one machine tool producer.]S – Elaboration-general-specific (628: 42/43-47)
(given entity + subject NP)	An entity is introduced in the first span; the entity is the subject NP of the sentence the second span starts with.	[The property claims service division of the American Insurance Services Group estimated <i>insured losses from the earthquake at \$960 million</i> ...]N [<i>The estimated earthquake losses</i> are low compared with the \$4 billion in claims that insurers face from Hurricane Hugo, which ripped through the Caribbean and the Carolinas last month...]S – Elaboration-additional (648: 7-8/9-14)
(mutually exclusive entities + subject NP)	The entities in respective spans are mutually exclusive (i.e., the presence of one entity implies the absence of the other); one such entity (or entities) is the subject NP of the sentence the second span starts with.	[The guilty pleas would be made solely by <i>Gulf Power</i> , the individuals said.]N [No <i>employee or vendor</i> would be involved.]S – Restatement (619: 18-19/20)
(given entity + parallel syntactic constructions)	The spans (or parts of spans) are syntactically parallel to each other; and the subject NPs of the sentences the spans start with represent the same entity.	[<i>under which the company would plead guilty</i> to two felony charges and pay fines totaling between \$500,000 and \$1.5 million.]N [<i>Under one count, Gulf Power would plead guilty</i> to conspiring to violate the Utility Holding Company Act. <i>Under the second count, the company would plead guilty</i> to conspiring to evade taxes.]S – Elaboration-set-member (619: 13-15/16-17)

	(given entity + subject NP (RS/SS))	The subject NPs of the reported speech within the first span and of the sentence the second span starts with refer to the same entity.	[The company said <i>the debentures</i> are being issued at an issue price of \$849 for each \$1,000 principal amount and are convertible at any time prior to maturity at a conversion price of \$25 a share].N [<i>The debentures</i> are available through Goldman, Sachs & Co.].N – List (650: 2-4/5)
	(given entity + subject NP (within))	An entity is introduced in the first span. The entity is mentioned within the subject NP of the sentence the second span starts with.	[Mr. Lee, president of Luzon Petrochemical Corp., said <i>the contract</i> was signed Wednesday in Tokyo with USI Far East officials.].N [<i>Contract details</i> , however, haven't been made public.].S – Elaboration-additional (606: 10-11/12)
4. (graphical + syntactic)	(comma + coordinated clauses)	The respective spans are coordinated sentences; the first span ends in a comma followed by the second span.	[<i>that could send shock waves through the president's entire relationship with Democrats and Republicans alike in Congress,</i>] N [<i>fundamentally enhance the power of the presidency</i>].N – List (609: 18/19)
	(parentheses + subject NP)	An element within parentheses functions as the subject NP of a sentence.	[“(<i>The judgment</i>)”].N [confirms our concern that the absence of patent lawyers on the court could prove troublesome.”].N – Same-unit (601: 73/74-75)
5. (lexical + positional)	(PP cue + beginning)	A particular prepositional phrase in the beginning of a span is indicative of a relation.	[such a specialty court would be filled with experts in the field. But the Reagan administration thought otherwise, and so may the Bush administration.].N [<i>Since 1984</i> , the president has filled four vacancies in the Federal Circuit court with non-patent lawyers...].S – Background (601: 16-19/20-74)
6. (lexical + syntactic + positional)	(PP cue + participial clause + beginning)	The first span comprises a particular preposition (e.g., <i>in</i>) and a participial clause; the first span is in the beginning of a sentence in which the second span is the main clause.	[<i>In announcing the plant delay,</i>].S [Kellogg Chairman William E. LaMothe said, "Cereal volume growth in the U.S. has not met our expectations for 1989." He said construction wouldn't resume until market conditions warrant it.].N – Circumstance (610: 46/47)
7. (lexical + syntactic)	(indicative word + participial clause)	The second span which is a participial clause begins with an indicative word (e.g., <i>by</i>).	[On Friday, Datuk Daim added spice to an otherwise unremarkable address on Malaysia's proposed budget for 1990].N [<i>by ordering the Kuala Lumpur Stock Exchange "to take appropriate action immediately" to cut its links with the Stock Exchange of Singapore.</i>].S – Means (613: 4/5)
	(PP cue + participial clause)	The second span is a participial clause which begins with a particular preposition (e.g., <i>for, of, etc.</i>)	[it would be a great tool].N [<i>for curbing the budget deficit and slicing the lard out of government programs.</i>].S – Elaboration-object-attribute (609: 2/3-4)
	(PP cue + Wh-clause + modal verb)	One span begins with a particular preposition (e.g., <i>in</i>) followed by a Wh-clause	[<i>In what could prove a major addition to the Philippines' foreign-investment portfolio,</i>].S [a Taiwanese company signed a \$180 million

		which contains a modal verb.	construction contract to build the centerpiece of a planned petrochemical complex.]N – Hypothetical (606: 1/2)
8. (syntactic + semantic)	(parallel syntactic constructions + lexical overlap)	The spans (or parts of the spans) are parallel to each other in syntactic construction. The syntactic parallelism is also aided by lexical overlap.	[<i>A total of 672 transactions were announced during the latest quarter, up 13% from the year-earlier period's 597, Grimm said. Transactions in which prices were disclosed totaled \$71.9 billion, up 36% from \$52.9 billion a year earlier</i> , the company added...]N [<i>In the first nine months, 1,977 transactions were announced, up 15% from 1,716 in the year-earlier period. Transactions in which prices were disclosed totaled \$188.1 billion, up 15% from \$163.2 billion a year earlier.</i>]S – Elaboration-additional (645: 3-12/13-16)
9. (syntactic + positional)	(parallel PP constructions + beginning)	The spans contain PPs which are parallel to each other in syntactic construction; the PPs are in the beginning of both the spans.	[<i>Under the rights plan</i> , holders will have one right for each common share held, with each right entitling the purchase of one common share for 100 Canadian dollars...]N [<i>Under the super-majority amendment</i> , certain mergers and other transactions would require approval of holders of 80% of the company's common shares outstanding.]N – List (651: 9-13/14)
	(reduced relative clause + beginning)	A reduced relative clause is the first span and is in the beginning of a sentence, and second span is the main clause.	[<i>Led by its oat-based Cheerios line</i> ,]S [General Mills has gained an estimated 2% share so far this year, mostly at the expense of Kellogg.]N – Circumstance (610: 16/17)
	(participial clause + beginning)	A participial clause is the first span and is in the beginning of a sentence, and the second span is the main clause.	[<i>Citing current stock market conditions and the trend away from highly leveraged transactions</i> ,]S [Grimm said it wasn't certain that the total value of transactions for the year will exceed the record \$247 billion in 1988.]N – Circumstance (645: 17/18)
10. (semantic + syntactic)	(synonyms + subject NP)	Two words in respective spans are synonyms of each other; one of them is the subject NP of the sentence the second span starts with.	[As expected, Kellogg reported lower third-quarter <i>earnings</i> .]N [<i>Net</i> fell 16% to \$123.1 million, or \$1.02 a share, from \$145.7 million, or \$1.18 a share.]S – Elaboration-additional (610: 96-97/98)
	(lexical overlap + subject NP)	A words/phrase from the first span occurs within the subject NP of the sentence the second span starts with.	[September orders for <i>machine tools</i> rebounded from the summer doldrums, but remained 7.7% below year-earlier levels, according to figures from NMTBA...]N [Domestic <i>machine tool</i> plants received \$303 million of orders last month, up 33% from August's \$227.1 million...]S – Elaboration-general-specific (628: 4-7/8-9)

Table 2: List of the combined signals extracted from our preliminary corpus study

1.3 Appendix III

Distribution of discourse markers with respect to the relations signalled by them.

No	Relation Group	Relation	Discourse Markers Used for Signalling
1.	Attribution (0)	Attribution (0)	-
		Attribution-negative (0)	-
2.	Background (23)	Background (2)	but (1), previously (1)
		Circumstance (21)	when (5), as (4), with (3), if (2), once (2), without (2), but (1), now (1), before (1)
3.	Cause (19)	Cause (2)	largely because (1), when (1)
		Result (3)	and (1), as a result (1), as a result of (1)
		Consequence (14)	and (6), because (2), because of (2), as (1), since (1), after (1), however (1)
4.	Comparison (5)	Comparison (5)	while (3), meanwhile (1), however (1)
		Preference (0)	-
		Analogy (0)	-
		Proportion (0)	-
5.	Condition (16)	Condition (15)	if (11), until (2), unless (1), when (1)
		Hypothetical (1)	in case (1)
		Contingency (0)	-
		Otherwise (0)	-
6.	Contrast (57)	Contrast (19)	but (11), however (3), although (1), and (1), still (1), while (1), yet (1)
		Concession (13)	while (3), but (3), though (2), although (1), even though (1), rather (1), still (1), thus (1)
		Antithesis (25)	but (11), although (3), however (3), despite (2), but now (1), even when (1), except when (1), instead (1), though (1), until recently (1)
7.	Elaboration (31)	Elaboration-additional (23)	and (8), but (6), as (2), so far (2), however (1), more provocatively (1), recently (1), since... now (1), with (1)
		Elaboration-general-specific (1)	rather (1)
		Elaboration-part-whole (0)	-
		Elaboration-process-step (0)	-
		Elaboration-object-attribute (4)	further (1), where (1), whereby (1), whether (1)
		Elaboration-set-member (0)	-
		Example (3)	for example (2), even before (1)
8.	Enablement (0)	Purpose(0)	-
		Enablement (0)	-
9.	Evaluation (2)	Evaluation (1)	and (1)
		Interpretation (1)	so (1)
		Conclusion (0)	-
		Comment (0)	-
10.	Explanation (18)	Evidence (0)	-
		Explanation-argumentative (6)	because (2), because of (1), simply because (1), indeed (1), since (1)
		Reason (12)	and (4), because (4), because of (3), so... that (1)
11.	Joint (53)	List (50)	and (44), in addition (2), moreover (2), in addition to (1), but (1)
		Disjunction (3)	or (3)

12.	Manner-Means (4)	Manner (3)	without (3)
		Means (1)	without (1)
13.	Topic-Comment (3)	Problem-solution (2)	but (1), so (1)
		Question-answer (0)	-
		Statement-response (0)	-
		Topic-comment (1)	when (1)
		Comment-topic (0)	-
14.	Summary (0)	Rhetorical-question (0)	-
		Summary (0)	-
15.	Temporal (18)	Restatement (0)	-
		Temporal-before (3)	before (3)
		Temporal-after (7)	since (3), after (2), and after (1), when (1)
		Temporal-same-time (3)	when (1), while (1), as (1)
		Sequence (5)	and (4), thereafter (1)
16.	Topic-Change (0)	Inverted-sequence (0)	-
		Topic-shift (0)	-
17.	Same-Unit (2)	Topic-drift (0)	-
		Same-unit (2)	and (1), as well as (1)
18.	Span (0)	Span (0)	-
19.	Textual Organization (0)	Textual organization (0)	-

Table 3: Distribution of relations with respect to the discourse markers used to signal them

1.4 Appendix IV

Distribution of the relations with respect to the discourse markers used to signal them.

No.	Discourse Marker	Relation Group	Relation
1.	After (3)	Cause (1)	Consequence (1)
		Temporal (2)	Temporal-after (2)
2.	Although (5)	Contrast (5)	Antithesis (3), Concession (1), Contrast (1)
3.	And (70)	Cause (7)	Consequence (6), Result (1)
		Contrast (1)	Contrast (1)
		Elaboration (8)	Elaboration-additional (8)
		Evaluation (1)	Evaluation (8)
		Joint (44)	List (44)
		Explanation (4)	Reason (4)
		Same-unit (1)	Same-unit (1)
		Temporal (4)	Sequence (4)
4.	And after (1)	Temporal (1)	Temporal-after (1)
5.	As (8)	Background (4)	Circumstance (4)
		Cause (1)	Consequence (1)
		Elaboration (2)	Elaboration-additional (2)
		Temporal (1)	Temporal-same-time (1)
6.	As a result (1)	Cause (1)	Result (1)
7.	As a result of (1)	Cause (1)	Result (1)
8.	As well as (1)	Same-unit (1)	Same-unit (1)

9.	Because (8)	Cause (2)	Consequence (2)
		Explanation (6)	Explanation-argumentative (2), Reason (4)
10.	(largely) because (1)	Cause (1)	Cause (1)
11.	(simply) because (1)	Explanation (1)	Explanation-argumentative (1)
12.	Because of (6)	Cause (2)	Consequence (2)
		Explanation (4)	Explanation-argumentative (1), Reason (3)
13.	Before (4)	Background (1)	Circumstance (1)
		Temporal (3)	Temporal-before (3)
14.	But (35)	Contrast (25)	Antithesis (11), Concession (3), Contrast (11)
		Background (2)	Background (1), Circumstance (1)
		Elaboration (6)	Elaboration-additional (6)
		Joint (1)	List (1)
		Problem-solution (1)	Problem-solution (1)
15.	But now (1)	Contrast (1)	Antithesis (1)
16.	Despite (2)	Contrast (2)	Antithesis (2)
17.	Even before (1)	Elaboration (1)	Example (1)
18.	Even though (1)	Contrast (1)	Concession (1)
19.	Even when (1)	Contrast (1)	Antithesis (1)
20.	Except when (1)	Contrast (1)	Antithesis (1)
21.	For example (2)	Elaboration (2)	Example (2)
22.	Further (1)	Elaboration (1)	Elaboration-object-attribute (1)
23.	However (9)	Contrast (6)	Antithesis (3), Contrast (3)
		Comparison (1)	Comparison (1)
		Cause (1)	Consequence (1)
		Elaboration (1)	Elaboration-additional (1)
24.	If (13)	Background (2)	Circumstance (2)
		Condition (11)	Condition (11)
25.	In addition (2)	Joint (2)	List (2)
26.	In addition to (1)	Joint (1)	List (1)
27.	In case (1)	Condition (1)	Hypothetical (1)
28.	Indeed (1)	Explanation (1)	Explanation-argumentative (1)
29.	Instead (1)	Contrast (1)	Antithesis (1)
30.	Meanwhile (1)	Comparison (1)	Comparison (1)
31.	Moreover (2)	Joint (2)	List (2)
32.	Now (1)	Background (1)	Circumstance (1)
33.	Once (2)	Background (2)	Circumstance (2)
34.	Or (3)	Joint (3)	Disjunction (3)
35.	Previously (1)	Background (1)	Background (1)
36.	(more) provocatively (1)	Elaboration (1)	Elaboration-additional (1)
37.	Rather (2)	Contrast (1)	Concession (1)
		Elaboration (1)	Elaboration-general-specific (1)
38.	Recently (1)	Elaboration (1)	Elaboration-additional (1)
39.	Since (5)	Cause (1)	Consequence (1)
		Explanation (1)	Explanation-argumentative (1)
		Temporal (3)	Temporal-after (1)
40.	Since... now (1)	Elaboration (1)	Elaboration-additional (1)
41.	So (2)	Elaboration (1)	Interpretation (1)
		Problem-solution (1)	Problem-solution (1)
42.	So far (2)	Elaboration (2)	Elaboration-additional (2)
43.	So... that (1)	Explanation (1)	Reason (1)
44.	Still (2)	Contrast (2)	Concession (1), Contrast (1)
45.	Thereafter (1)	Temporal (1)	Sequence (1)
46.	Though (3)	Contrast (3)	Antithesis (1), Concession (2)

47.	Thus (1)	Contrast (1)	Concession (1)
48.	Unless (1)	Condition (1)	Condition (1)
49.	Until (2)	Condition (2)	Condition (2)
50.	Until recently (1)	Contrast (1)	Antithesis (1)
51.	When (10)	Cause (1)	Cause-result (1)
		Background (5)	Circumstance (5)
		Condition (1)	Condition (1)
		Temporal (2)	Temporal-after (1), Temporal-same-time (1)
		Topic-comment (1)	Topic-comment (1)
52.	Where (1)	Elaboration (1)	Elaboration-object-attribute (1)
53.	Whereby (1)	Elaboration (1)	Elaboration-object-attribute (1)
54.	Whether (1)	Elaboration (1)	Elaboration-object-attribute (1)
55.	While (8)	Comparison (3)	Comparison (3)
		Contrast (4)	Concession (3), Contrast (1)
		Temporal (1)	Temporal-same-time (1)
56.	With (4)	Background (3)	Circumstance (3)
		Elaboration (1)	Elaboration-additional (1)
57.	Without (6)	Background (2)	Circumstance (2)
		Manner-means (4)	Manner (3), means (1)
58.	Yet (1)	Contrast (1)	Contrast (1)

Table 4: Distribution of relations with respect to discourse markers

1.5 Appendix V

Distribution of other signals with respect to the relations indicated by them.

No	Relation Group	Relation	Signal Type	Specific Signal
1.	Attribution (228)	Attribution (228)	Syntactic (220)	Reported speech pattern (220)
			Genre (4)	Newspaper heuristics (4)
			Lexical (4)	Indicative phrase (4)
		Attribution-negative (0)	-	-
2.	Background (17)	Background (8)	Lexical (5)	indicative phrase (5)
			Semantic (2)	Indicative word pair (1), indicative phrasal pair (1)
			Morphological (2)	Change of tense (2)
			(lexical + positional) (1)	(PP cue + beginning) (1)
		Circumstance (9)	(syntactic + positional) (4)	(reduced relative clause + beginning) (3), (participial clause + beginning) (1)
			Lexical (5)	indicative phrase (5)
			Syntactic (1)	Participial clause (1)
		(syntactic + lexical) (1)	((participial clause + indicative word) (1)	
3.	Cause (2)	Cause (1)	Lexical (1)	Indicative phrase (1)
		Result (0)	-	-
		Consequence (1)	Lexical (1)	Indicative phrase (1)
4.	Comparison (9)	Comparison (9)	Lexical (8)	Indicative phrase (7), indicative word (1)
			Semantic (1)	Antonyms (1)

		Preference (0)	-	-
		Analogy (0)	-	-
		Proportion (0)	-	-
5.	Condition (2)	Condition (1)	Lexical (1)	Indicative phrase (1)
		Hypothetical (1)	(lexical + syntactic) (1)	(PP cue + Wh-clause + modal verb) (1)
		Contingency (0)	-	-
		Otherwise (0)	-	-
6.	Contrast (3)	Contrast (2)	Syntactic (1)	Parallel syntactic constructions (1)
			Semantic (1)	Antonyms (phrases) (1)
			Genre (1)	Newspaper heuristics (1)
		Concession (0)	-	-
		Antithesis (1)	Semantic (1)	Antonyms (1)
7.	Elaboration (477)	Elaboration-additional (238)	(entity + positional) (1)	(given entity (PP) + beginning) (1)
			(entity + syntactic) (84)	(given entity (set-complement) + subject NP) (1), (given propositional entity + subject NP) (2), (given entity + subject NP (MC)) (1), (given entity + subject NP (RS)) (6), (given entity + subject NP) (72), (given entity + subject NP (within)) (2)
			Entity (79)	Given entity (77), given member entity (1), cataphoric entity (1)
			Lexical (13)	Indicative phrase (4), indicative word (4)
			Semantic (133)	Lexical overlap (61), lexical chain (60), phrasal chain (7), synonyms (4), phrasal overlap (1)
			(semantic + syntactic) (4)	(lexical overlap + subject NP) (3), (synonyms + subject NP) (1)
			(syntactic + semantic) (1)	(parallel syntactic constructions + lexical overlap) (1)
			Genre (38)	Textual organization (32), Newspaper heuristics (6)
			Graphical (16)	Colon (1), dashes (4), parentheses (10), semi-colon (1)
			Syntactic (51)	Parallel syntactic constructions (2), infinitival clause (3), participial clause (7), reduced relative clause (10), relative clause (26), reported speech pattern (series – same speaker) (2), parallel phrasal constructions (1)
		Elaboration-general-specific (16)	Semantic (11)	Lexical chain (5), lexical overlap (5), phrasal chain (1)
			Entity (5)	Given entity (5)
			Graphical (5)	Dashes (4), colon (1)
			(entity + syntactic) (5)	(given entity + subject NP) (3), (given entity + subject NP (RS)) (1), (given member entity + subject NP) (1)
			Genre (2)	Textual organization (2)
			Syntactic (1)	Participial clause (1)
			Numerical (1)	Same count (1)
			(semantic + syntactic) (1)	(lexical overlap + subject NP) (1)
		Elaboration-part-whole (0)	-	-
		Elaboration-	-	-

		process-step (0)			
		Elaboration-object-attribute (179)	Syntactic (167)	Relative clause (85), reduced relative clause (45), infinitival clause (NP) (27), participial clause (10)	
			(lexical + syntactic) (8)	(PP cue + participial clause) (7), (PP cue + Wh-clause) (1)	
			Graphical (2)	Dashes (1), parentheses (1)	
			Lexical (2)	Indicative phrase (2)	
		Elaboration-set-member (6)	Lexical (2)	Indicative phrase (2)	
			Semantic (3)	Lexical chain (2), lexical overlap (1)	
			Graphical (2)	Dashes (1), colon (1)	
			Entity (1)	Given entity (1)	
			Genre (1)	Textual organization (1)	
			(entity + syntactic) (1)	(given entity + parallel syntactic constructions) (1)	
		Example (6)	Lexical (3)	Indicative phrase (3),	
			Semantic (1)	lexical overlap (1)	
			Graphical (1)	Colon (1)	
			(entity + syntactic + lexical) (1)	(given entity + subject NP + indicative phrase) (1)	
		Definition (2)	Syntactic (1)	Relative clause (1)	
			Graphical (1)	Dash (1)	
8.	Enablement (39)	Purpose (39)	Syntactic (38)	Infinitival clause (37), participial clause (1)	
				Lexical (1)	Indicative phrase (1)
		Enablement (0)	-	-	
9.	Evaluation (3)	Evaluation (3)	Lexical (2)	Indicative word (2)	
				Syntactic (2)	Modal verb (1), reported speech pattern (1)
			Interpretation (0)	-	-
			Conclusion (0)	-	-
			Comment (0)	-	-
10.	Explanation (5)	Evidence (3)	Semantic (4)	Lexical chain (2), phrasal chain (1), synonyms (1), lexical overlap (1)	
				Lexical (1)	Indicative word (1)
			Explanation-argumentative (1)	Lexical (1)	Alternative expression (1)
		Reason (1)	Syntactic (1)	Infinitival clause (1)	
11.	Joint (27)	List (27)	Syntactic (14)	Parallel syntactic constructions (9), Parallel syntactic constructions (RS/SS) (1), Parallel phrasal constructions (1), Parallel syntactic constructions (RS) (1), reported speech constructions (series – different speaker) (1), interrogative syntactic constructions (series) (1)	
				Lexical (3)	Indicative word (2), indicative phrase (1),
				Semantic (7)	Lexical chain (3), phrasal chain (1), lexical overlap (1), similar collocations (subject NP) (1), indicative word pair (1)
				(entity + syntactic) (3)	(given entity + subject NP) (1), (given entity + subject NP (RS/SS)) (1), (given entity + parallel syntactic constructions) (1)

			Entity (2)	Given entity (1), different entities (1)
			Graphical (2)	Parallel strings (2)
			(graphical + syntactic) (2)	(comma + coordinated clauses) (2)
			(syntactic + positional) (2)	(parallel PP constructions + beginning) (2)
			(syntactic + semantic) (1)	(parallel syntactic constructions + lexical overlap) (1)
		Disjunction (0)	-	-
12.	Manner-Means (4)	Manner (0)	-	-
		Means (4)	(lexical + syntactic) (4)	(indicative word + participial clause) (4)
13.	Topic-Comment (4)	Problem-solution (2)	semantic (2)	Indicative word pair (1), indicative phrasal pair (1)
		Question-answer (0)	-	-
		Statement-response (2)	Lexical (2)	Indicative words (1), indicative phrase (1)
			Syntactic (1)	Reported speech pattern (1)
		Topic-comment (0)	-	-
		Comment-topic (0)	-	-
		Rhetorical-question (0)	-	-
14.	Summary (9)	Summary (0)	-	-
		Restatement (9)	Graphical (8)	Parentheses (7), dash (1)
			(entity + syntactic) (1)	(mutually exclusive entities + negation) (1)
15.	Temporal (2)	Temporal-before (0)	-	-
		Temporal-after (1)	Lexical (1)	Indicative phrase (1)
		Temporal-same-time (1)	Lexical (1)	Indicative phrase (1)
		Sequence (0)	-	-
		Inverted-sequence (0)	-	-
16.	Topic-Change (0)	Topic-shift (0)	-	-
		Topic-drift (0)	-	-
17.	Same-Unit (76)	Same-unit (76)	Syntactic (75)	Interrupted matrix clause (75)
			(graphical + syntactic) (1)	(parentheses + subject NP) (1)
18.	Span (0)	Span (0)	-	-
19.	Textual Organization (1)	Textual organization (1)	Genre (1)	Newspaper heuristics (textual organization) (1)

Table 5: Distribution of relations with respect to the other signals used to indicate them

1.6 Appendix VI

Distribution of relations with respect to the other signals used to indicate them.

No.	Signal Type	Specific Signal	Relation Group	Relation	
1.	(entity + positional) (1)	(given entity (PP) + beginning) (1)	Elaboration (1)	Elaboration-additional (1)	
2.	(entity + syntactic + lexical) (1)	(given entity + subject NP + indicative phrase) (1)	Elaboration (1)	Example (1)	
3.	(entity + syntactic) (92)	(given entity (set-complement) + subject NP) (1)	Elaboration (1)	Elaboration-additional (1)	
		(given entity + subject NP (MC)) (1)	Elaboration (1)	Elaboration-additional (1)	
		(given propositional entity + subject NP) (2)	Elaboration (2)	Elaboration-additional (2)	
		(given entity + subject NP (RS)) (6)	Elaboration (6)	Elaboration-additional (6)	
		(given entity + subject NP) (76)	Elaboration (75)	Elaboration-additional (72), Elaboration-general-specific (3)	
			Joint (1)	List (1)	
		(given member entity + subject NP) (1)	Elaboration (1)	Elaboration-general-specific (1)	
		(mutually exclusive entities + negation) (1)	Summary (1)	Restatement (1)	
		(given entity + parallel syntactic constructions) (2)	Joint (1)	List (1)	
			Elaboration (1)	Elaboration-set-member (1)	
		(given entity + subject NP (RS/SS)) (1)	Joint (1)	List (1)	
		(given entity + subject NP (within)) (2)	Elaboration (2)	Elaboration-additional (2)	
4.	Entity (87)	Given entity (84)	Elaboration (83)	Elaboration-additional (77), Elaboration-general-specific (5), Elaboration-set-member (1)	
			Joint (1)	List (1)	
		Given member entity (1)	Elaboration (1)	Elaboration-additional (1)	
		Different entities (1)	Joint (1)	List (1)	
		Cataphoric entity (1)	Elaboration (1)	Elaboration-additional (1)	
5.	Lexical (51)	Indicative phrase (40)	Attribution (4)	Attribution (4)	
			Background (9)	Background (5), Circumstance (4)	
			Comparison (7)	Comparison (7)	
			Condition (1)	Condition (1)	
			Cause (2)	Consequence (1), Cause-result (1)	
			Elaboration (11)	Elaboration-additional (4), Elaboration-set-member (2), Elaboration-object-attribute (2), Example (3)	
				Joint (2)	List (2)
				Topic-Comment (1)	Statement-response (1)
			Enablement (1)	Purpose (1)	
			Temporal (2)	Temporal-after (1), Temporal-same-time (1)	
		Alternative expression (1)	Explanation (1)	Explanation-argumentative (1)	
		Indicative word (10)	Comparison (1)	Comparison (1)	

			Elaboration (4)	Elaboration-additional (4)
			Evaluation (2)	Evaluation (2)
			Statement-response (1)	Statement-response (1)
			Explanation (1)	Evidence (1)
			Joint (1)	List (1)
6.	Semantic (163)	Lexical chain (72)	Elaboration (66)	Elaboration-additional (60), Elaboration-general-specific (5), Elaboration-set-member (1)
			Joint (3)	List (3)
			Explanation (3)	Evidence (3)
		Phrasal chain (9)	Elaboration (8)	Elaboration-additional (7), Elaboration-general-specific (1)
			Explanation (1)	Evidence (1)
		Synonyms (4)	Elaboration (4)	Elaboration-additional (4)
		Indicative phrasal pair (2)	Topic-comment (1)	Problem-solution (1)
			Background (1)	Background (1)
		Indicative word pair (3)	Joint (1)	List (1)
			Topic-comment (1)	Problem-solution (1)
			Background (1)	Background (1)
		Lexical overlap (67)	Elaboration (66)	Elaboration-additional (61), Elaboration-general-specific (4), Example (1)
			Explanation (1)	Evidence (1)
		Phrasal overlap (1)	Elaboration (1)	Elaboration-additional (1)
		Similar collocations (subject NP) (1)	Joint (1)	List (1)
		Antonyms (2)	Contrast (1)	Antithesis (1)
			Comparison (1)	Comparison (1)
Antonyms (phrases) (1)	Contrast (1)	Contrast (1)		
7.	Syntactic (573)	Modal verb (1)	Evaluation (1)	Evaluation (1)
		Parallel syntactic constructions (12)	joint (9)	List (9)
			Contrast (1)	Contrast (1)
			Elaboration (2)	Elaboration-additional (2)
		Parallel phrasal constructions (subject NP) (1)	Joint (1)	List (1)
		Infinitival clause (41)	Elaboration (3)	Elaboration-additional (3)
			Enablement (37)	Purpose (37)
			Explanation (1)	Reason (1)
		Infinitival clause (NP) (27)	Elaboration (27)	Elaboration-object-attribute (27)
		Interrogative syntactic constructions (series) (1)	Joint (1)	List (1)
		Interrupted matrix clause (75)	Same-unit (75)	Same-unit (75)
		Parallel syntactic constructions (RS) (1)	Joint (1)	List (1)
		Participial clause (19)	Elaboration (18)	Elaboration-additional (7), Elaboration-object-attribute (10), Elaboration-general-specific (1)
			Enablement (1)	Purpose (1)
		Reduced relative clause (55)	Elaboration (55)	Elaboration-additional (10), Elaboration-object-attribute (45)
		Relative clause (112)	Elaboration (112)	Elaboration-additional (26),

				Elaboration-object-attribute (85), Definition (1)
		Reported speech constructions (series - different speakers) (2)	Joint (2)	List (2)
		Reported speech pattern (223)	Attribution (220)	Attribution (220)
			Evaluation (2)	Evaluation (2)
			Statement-response (1)	Statement-response (1)
		Reported speech constructions (series – same speaker) (2)	Elaboration (2)	Elaboration-additional (2)
		Parallel phrasal constructions (1)	Elaboration (1)	Elaboration-additional (1)
8.	Graphical (37)	Colon (4)	Elaboration (4)	Elaboration-additional (1), Example (1), Elaboration-general-specific (1), Elaboration-set-member (1)
		Dashes (12)	Elaboration (11)	Definition (1), Elaboration-additional (4), Elaboration-object-attribute (4), Elaboration-general-specific (1), Elaboration-set-member (1)
			Summary (1)	Restatement (1)
		Parallel strings (2)	Joint (2)	List (2)
		Parentheses (18)	Elaboration (11)	Elaboration-additional (10), Elaboration-object-attribute (1)
			Summary (7)	Restatement (7)
	Semi-colon (1)	Elaboration (1)	Elaboration-additional (1)	
9.	Genre (47)	Newspaper heuristics (attribution) (4)	Attribution (4)	Attribution (4)
		Newspaper heuristics (elaboration) (6)	Elaboration (6)	Elaboration-additional (6)
		Textual organization (36)	Textual organization (1)	Textual organization (1)
			Elaboration (35)	Elaboration-additional (32), Elaboration-general-specific (2), Elaboration-set-member (1)
	Newspaper heuristics (contrast) (1)	Contrast (1)	Contrast (1)	
10.	Morphological (2)	Change of tense (2)	Background (2)	Background (2)
11.	Numerical (1)	Same count (1)	Elaboration (1)	Elaboration-general-specific (1)
12.	(graphical + syntactic) (3)	(comma + coordinated clause) (2)	Joint (2)	List (2)
		(parentheses + subject NP)	Attribution (1)	Attribution (1)
13.	(lexical + positional) (1)	(PP cue + beginning) (1)	Background (1)	Background (1)
14.	(lexical + syntactic + positional) (1)	(PP cue + participial clause + beginning) (1)	Background (1)	Circumstance (1)
15.	(lexical + syntactic) (13)	(indicative word + participial clause) (5)	Manner-means (4)	Means (4)
		(PP cue + participial clause) (7)	Elaboration (7)	Elaboration-object-attribute (7)
		(PP cue + Wh-clause) (1)	Elaboration (1)	Elaboration-object-attribute (1)

		(PP cue + participial clause + modal verb) (1)	Condition (1)	Hypothetical (1)
16.	(semantic + syntactic) (7)	(synonyms + subject NP) (2)	Elaboration (2)	Elaboration-additional (2)
		(lexical overlap + subject NP) (5)	Elaboration (5)	Elaboration-additional (4), Elaboration-general-specific (1)
17.	(syntactic + semantic) (2)	(parallel syntactic constructions + lexical overlap) (2)	Elaboration (1)	Elaboration-additional (1)
			Joint (1)	List (1)
18.	(syntactic + positional) (6)	(parallel PP constructions + beginning) (2)	Joint (2)	List (2)
		(reduced relative clause + beginning) (3)	Background (3)	Circumstance (3)
		(participial clause + beginning) (1)	Background (1)	Circumstance (1)

Table 6: Distribution of relations with respect to the other signals used to indicate them