

# Three perspectives on the analysis of predictions in financial news: semantics, argumentation, and activity types.

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# A research project

- *Modality in Argumentation. A semantico-argumentative study of predictions in Italian economic-financial newspapers.*
  - 3 years research project
  - Starting now (June 2008)
  - Funded by the Swiss National Science Foundation

Why?

Communication  
Context

Activity Type

Interaction  
field

Interaction  
scheme

Genre  
and system of  
genres

Speech-act level  
discourse moves

**Predictions**  
in financial news

Argumentation  
Theory

How?

Modality

Conditional  
structures

Evidentiality  
(esp. reportive)

Theory of Relative Modality

# Corpora

- Italian economic-financial daily press
  - Period: 1 month (April 2006)
  - *Il Sole 24 Ore*: 2,772,094 token words
  - *MF/Milano Finanza*: 674,103 token words
  - *Italia Oggi*: 991,086 token words

Preliminary investigation in a smaller English corpus:

- *The Wall Street Journal Europe* (online version)
  - Period: 2 weeks: 19-23 February 2007; 25-29 June 2007
  - Articles from the sections: *Corporate News* and *Money & Investing*.
  - 81,187 token words

# Three components

- The project tries to weave together three main theoretical components:
  1. An approach to argumentation considering both socio-pragmatic and logico-inferential aspects;
  2. A theory of modal meanings as *relational* and *context dependent* (Relative Modality).
  3. A view of communication context focusing on *activity types* and the *genres* that function as rhetorical templates for them;

# 1. Predictions in context

Prediction as a key speech act in the interaction field and genre system of finance.



# What is a prediction?

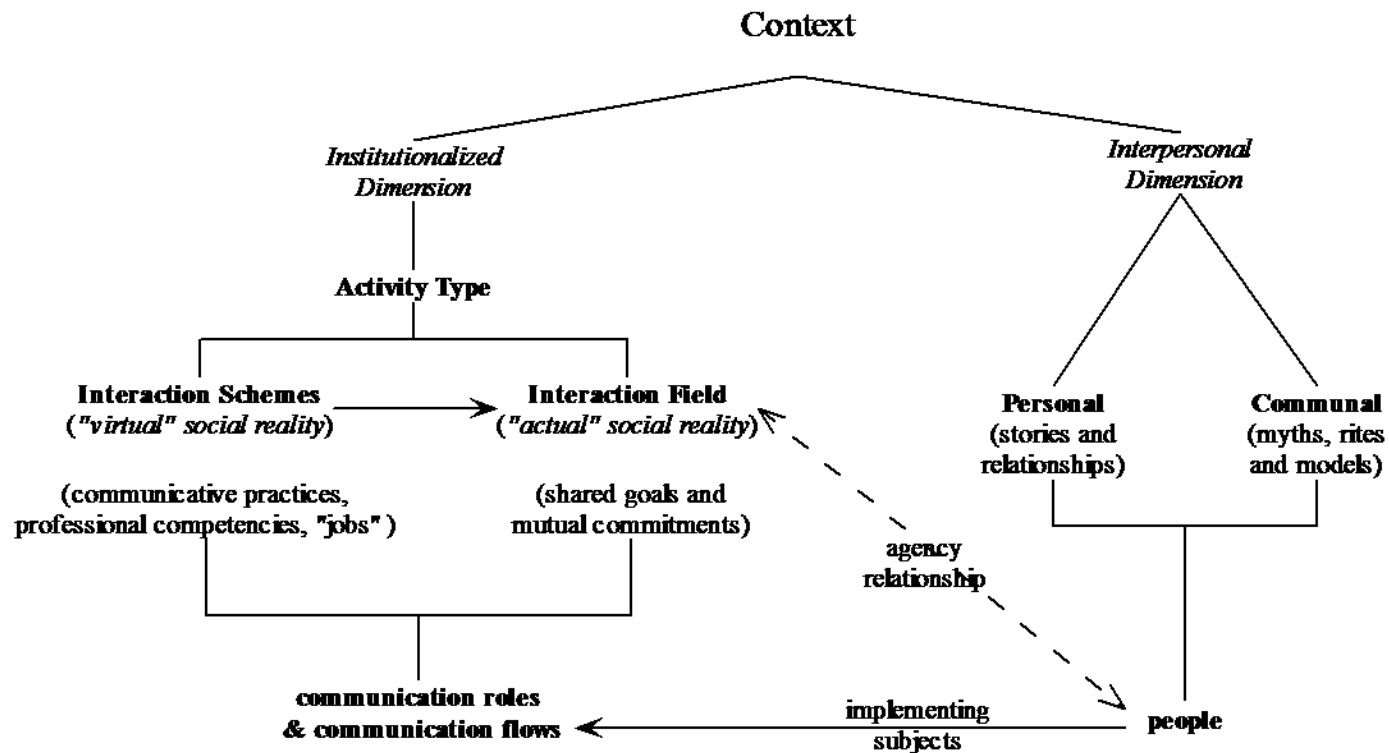
- According to Searle & Vanderveken (1985):
  - To predict is to assert with the propositional content condition that the propositional content is future with respect to the time of the utterance and the preparatory condition that the speaker has evidence in support of the proposition. Evidence is a special kind of reason.

# A way of looking at financial news

- I chose to look at news texts in economic-financial newspapers (mainly) in the context of the financial markets and the communicative flows that support interactions in this field.
- Therefore I chose to start by focusing on relatively overt functions of financial news connected with conscious intentions of the participants relative to transactional goals that tend to be *in focus*.
  - This contrasts with other approaches that choose to look at deep seated ideological assumptions, emerging for instance from presuppositions in texts and on the largely non-conscious participation to a *discours*. In the latter perspective peripheral, out-of-focus aspect of the content and form of discourse are often more revealing.



# The model of communication context



# Interaction field

- The interaction field is the **piece of social (institutional) reality** where the interaction takes place.
  - Interaction fields are characterized by
    - Commitments to shared goals beyond the individual goals of the inter-agents
    - Rights and obligations
  - Interaction fields define social roles
    - **Social roles:** bundles of pre-existing commitments that constrain the possibilities of interaction
- The *financial markets* are a good example of a highly institutionalized and regulated interaction field.
  - The metaphor of market economy as “natural” or as the “jungle” belies the fundamentally institutional nature of the markets.

# Interaction scheme

- *Interaction schemes* are culturally shared “recipes” for interaction congruent with more or less broad classes of joint goals and involving *scheme-roles* presupposing generic requirements.
  - They are virtual possibilities, not actual pieces of social reality.
- They may correspond to specific *jobs* or be broader still.
  - Broad interaction schemes are the following: *deliberation, negotiation, advisory/consulting, problem-solving, adjudication, mediation...*
- The same interaction scheme can be applied to very different interaction fields.
  - E.g. Deliberation in the board of directors of a private company vs. deliberation in a city council.

# Genres

- The basic notions of genre analysis fit nicely with the model of context:
- *Genres* are standard rhetorical templates to achieve the goals of an activity type.
  - Genres can be basically defined at the level of the *interaction scheme*;
  - But they may also incorporate features that are specific of a certain *interaction field*.
- In fact *field* and *scheme* offer two useful abstract coordinates for positioning genres:
  - One can consider classes of similar generic templates (e.g. a *report*) corresponding to the same scheme in different contexts;
  - Or genres differing in scheme but tied to the same interaction field.

# Communication and information demand in the financial markets

- Financial communication(Barone Adesi 2002) is seen as driven by the demand of information from investors who need to reduce the *uncertainty* surrounding investment opportunities.
- Uncertainty is due to
  - - “intrinsic” incompleteness of information concerning the occurrence of *future* events
  - - *Information asymmetry: private*, undisclosed, information available only to “insiders”.

# Information, future events and price

- Theory of market efficiency: according to which “prices of securities fully reflect all available information” (Fama, 1970).
- This notably includes information about future events:

*On 12 March 2007 Swisscom announced the acquisition of the Italian Fastweb which was actually realized last 15 May 2007.*

*The same day of the announcement Fastweb stock price rose of 15%*

- Not surprisingly, the interaction field of financial markets is (increasingly) *heavily regulated* as regards the release of *price-sensitive* information, which can be compulsory and regulated in its timing and textual form.
  - E.g. *Price sensitive* press releases, for instance, are a normatively defined kind of text in various financial markets. Issuing this kind of press releases can be compulsory.

# Information and belief

- But what is *information*?
- In fact, prices reflect *what the market believes* to be true or probable or possible...

- Such concerns have helped limit the dollar's losses against the euro, despite the Fed's recent moves— which once **might** have produced a dramatic fall in the dollar. The euro is "still essentially where we were at the start of December," *says* Simon Derrick, the London-based chief currency strategist for the Bank of New York Mellon. "That **I find** absolutely remarkable."

Mr. Derrick **believes** investors **may** be focused more on the risks to growth than on those posed by inflation. They "**may well believe** that the ECB is not being reactive enough and the euro is too highly valued," he *says* (*Rate-policy shift could sap euro*, WSJ Europe February 1, 2008)

# Firms coping with investors' information demand

- For firms the stakes of the disclosure of information to investors are extremely high:
  - early disclosure could destroy the competitive advantage of innovative products and services;
  - while withholding information could lead to under investment and “exposes the firm to a higher cost of capital and to charges of insiders’ manipulation” (Barone Adesi 2002: 65).
- Interestingly, a specific topos of financial argumentation is the allegation of being *a black box* (Palmieri 2008), an opaque company and therefore a risky investment.
  - *“Enron is a big black box,” gripes another analyst. [...] Enron vehemently disagrees with any characterization of its business as black box-like.”* (B. McLean “Is Enron Overpriced?”, *Fortune*, March 2001 )
- In this perspective financial newspapers can be seen as one of several mediators and “multipliers” of this communication flow between firms and investors (Drill 1995).



# Future orientation and information asymmetry.

- A preliminary examination of the interaction field shows that
  - Financial activity is oriented towards the forecasting of future events.
  - Moreover, it deals with two kinds of “uncertainty”:
    - The *ontological* uncertainty connected with the unsettledness of future events.
    - The *epistemic* uncertainty due to incomplete information (cf. information asymmetry).
- To what extent are these dimension reflected in the discourse of financial news articles?

# Financial news within the genre system of financial communication

- Economic-financial news relate intertextually to – and are shaped by – a variety of genres at the intersection of
  - *news discourse*
  - *business discourse*:
    - *corporate communications discourse*
      - The firm-investor communication flow (e.g. from earning announcements and other kinds of press releases to annual reports)
    - *marketing discourse*
      - the bank-client communication flow (e.g. *financial information letters* in private banking)
  - *discourse of economics*
    - *institutional* (e.g. forecasting reports by central banks)
    - *corporate* (e.g. reports by financial analysts and rating agencies)
    - *academic (indirectly)*

# Source genres

- Financial newspaper articles interact, in particular, with a number of *source* genres, including
  - Institutional forecasting reports (Bloor & Pindi 1990)
  - Annual reports of listed companies (Malavasi 2005 and 2006, Grove Ditlevsen 2006)
  - Earnings announcements and other “price sensitive” press releases (Jacobs 2003)
  - Earnings and mergers’ conference calls (Crawford-Camiciottoli 2006)
  - Letters to investors (Cf. Del Lungo- Camiciotti 1998)

# The role of predictions in economic-financial discourse/1

- *Predictions* or *forecasts* emerge as a key speech act in a variety of genres of the broader economic-financial genre system .
- Merlini (1983) addresses predictions in *economics papers* from the viewpoints of Searlean speech act theory and text linguistics.
  - Role of predictions in argumentation: predictions are either the standpoint of the argumentation or an argument supporting a policy *proposal* functioning as a main standpoint.
  - Predictions are typically conditional
    - BUT Mc Closkey (1985) : “conditional predictions are cheap”
    - What kind of commitment on the antecedent?
  - Predictions are typically modalized

# The role of predictions in the superstructure different economic-financial genres

- Bloor & Pindi (1990) on the structure of *financial reports*: a preparatory *reporting episode* followed by a dominating *predicting episode*.
- Skulstad (1996) on introductions of annual reports: “*Projecting the Future* plays a central part in chairmen’s statements [...] even though one would expect an annual report to be primarily a review of past events”.
- Walsh (2004) on the prominence of prediction moves in a corpus of articles from the *Economist*.



# *Forward looking statements in financial metadiscourse*

This press release contains statements that constitute forward-looking statements [...]

Words such as "believes," "anticipates," "expects," "intends" and "plans" and similar expressions are intended to identify forward-looking statements but are not the exclusive means of identifying such statements. [...]

By their very nature, forward-looking statements involve inherent risks and uncertainties, both general and specific, and risks exist that predictions, forecasts, projections and other outcomes described or implied in forward-looking statements will not be achieved. [...]

From the Cautionary statement regarding forward-looking information which accompanies a *Credit Suisse* press release.

## ***Lies, damned lies and forward looking statements***

(Title of a blog on finance on the Internet. Sadly, now closed.)



# ~~MAYBE~~

## WE SHOULD FORGET ABOUT MAYBE.

Every single day, you think of one word more than a hundred times. And it's not "sex". What is that word? It's "Maybe". Maybe I should do this? Maybe I shouldn't? Maybe, maybe, maybe! Only one small word, but it has the power to stop everything. It embodies all the doubts that come with making a decision. We are taking a stand against this word now! Let's declare war on "Maybe" and start tackling the future. Together, we really can! Optimism and confidence are the best drivers to make our ideas come true. And this is what we encourage you to do, in our 9,000 branches in 23 European countries. Don't you think it's time to start thinking this way, too? Then we're the right bank for you. Not maybe. But definitely. Let's be free of maybe: [www.unicreditgroup.eu](http://www.unicreditgroup.eu)

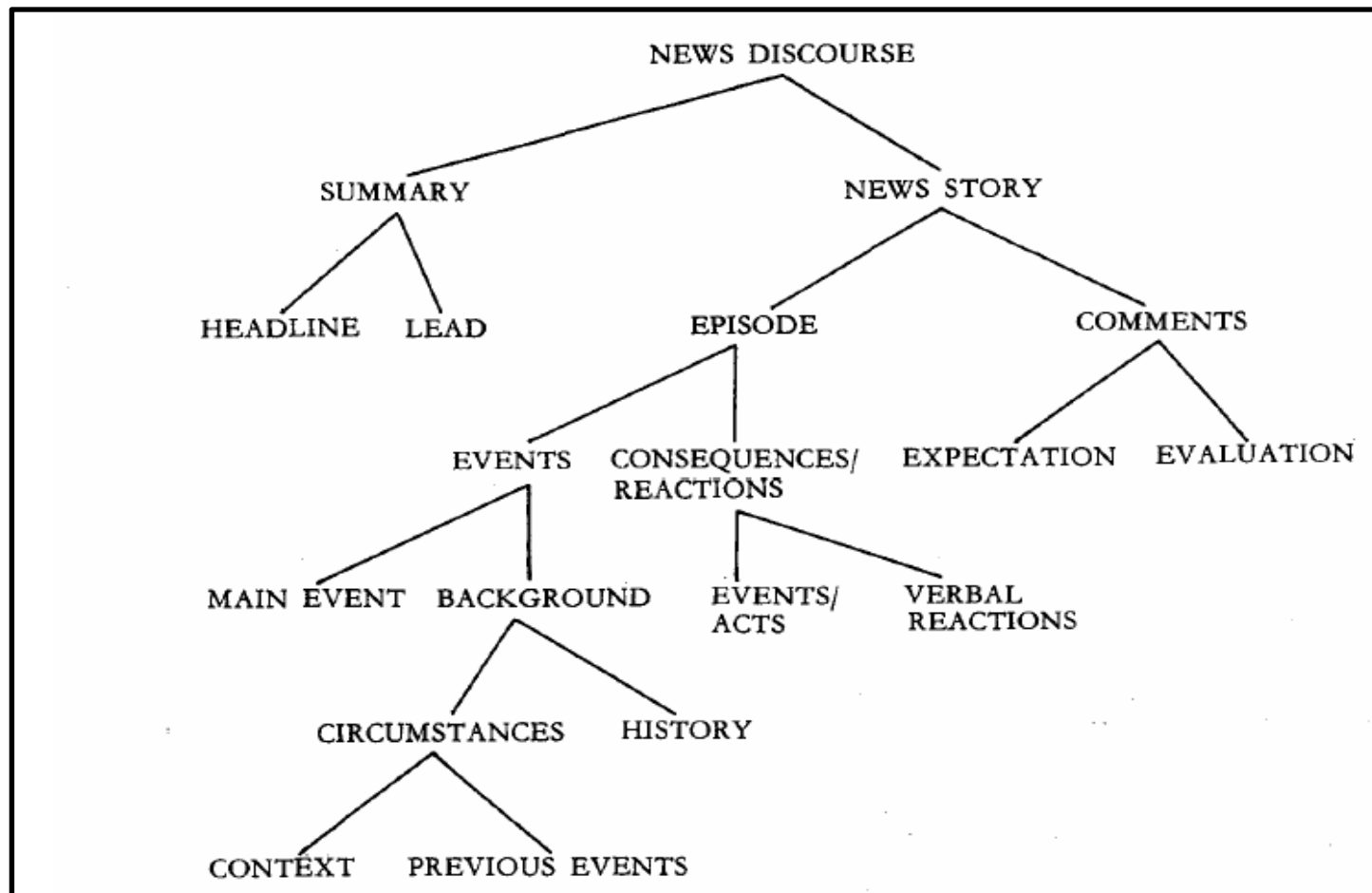
Let's start.  **UniCredit Group**

# Reporting and prediction in financial news articles: an empirical study

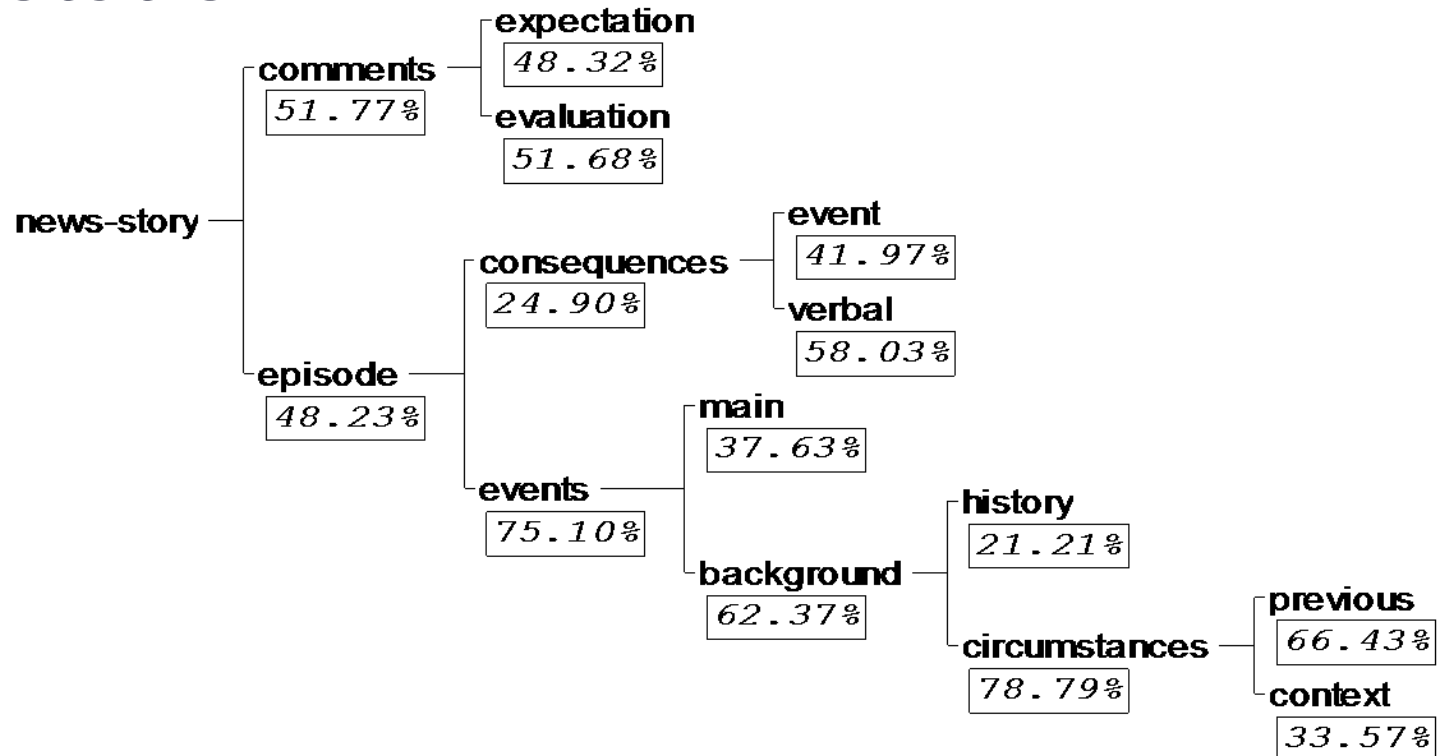
- In Rocci & Palmieri (2007) small scale study to assess the prominence of prediction in financial news as opposed to the reporting of past events.
- Classic analysis of the genre based schematic structure of news stories (van Dijk 1985, Bell 1998) used as a working hypothesis.
- Corpus: *The Wall Street Journal Europe* (online version)
  - Period: 2 weeks
  - Articles from two sections: *Corporate News* and *Money & Investing*.
  - 81,187 token words
- Using a software for corpus annotation we tagged the text of each article using Van Dijk's *news schema* as an annotation scheme.



# The genre based “news schema” according to Van Dijk (1985)



# Results of the discourse structure annotation



The figure specifies for each category within the discourse structure schema, the relative frequency of its subcategories (computed in terms of the number of paragraphs). For instance, “Expectation 48.32% means that 48.32% of the paragraphs belonging to the category “Comments” belongs to the sub-category “Expectation”.

## Prominence of comments (expectations and evaluations)

- In the corpus analyzed, “Comments” are not an optional category as all the texts in the corpus include at least one “Comment” paragraph.
- “Comments” make up 51.77% of all the paragraph in the body of the text of the article (excluding “Summary”).
- In terms of number of word tokens, “Comments” make up 53.41% of the text (40455 out of 75742 word tokens)

# Corporate News Vs. Money & Investing

			CN		
	news story	episode	comments	evaluation	expectations
words	33444	17272	16172	8932	7240
as % of news story		51.645%	48.355%	26.707%	21.648%

			M&I		
	news story	episode	comments	evaluation	expectations
words	42298	18015	24283	11642	12641
as % of news story		42.591%	57.409%	27.524%	29.886%

Distribution of “Episode” and “Comments” in terms of number of token words within the Corporate News and Money & Investing sections

## Differences in discourse structure between Corporate News and Money & Investing

- The two sections differ markedly with respect to the prominence of “Comments”, with M&I containing a higher percentage of comments both in terms of paragraphs and in term of word tokens.
- Subtler differences can be detected looking at distribution of subcategories of “Comments”, with “Expectation” being more prominent in M&I.

## 2. Modality

And the role of semantics for understanding the functioning of predictions in the financial news genre.

# Modality and predictions in financial news: a first reconnaissance

- **Firm's fortunes may rise as commodity prices fall**  
(Headline)
- Major airlines around the globe continue to see strong passenger demand, so profit **could** climb if they are able to raise prices while their own costs drop as fuel prices fall. (From the body text)
  - *Wall Street Journal Europe* (WSJE) on September 14, 2006
- *A reduction of that percentage to 30% **would likely** lead Standard & Poor's to raise the company's corporate credit rating to "stable" from "negative," **according to** primary credit analyst Mary Ellen Olson.*
  - (WSJE, February 13, 2007)

# He believes that investors may well believe ...

- Christoph Weil, an economist with Commerzbank in Frankfurt, *contends* that the financial-market turmoil makes a serious euro-zone slowdown "all the more **likely**," and *contends* that the ECB **will** begin trimming its key interest rate in the second quarter. He **expects** that policy makers **could** begin publicly shifting their concern from inflation to growth in March, when new forecasts from the central bank's staff are released.
- (Rate-policy shift could sap euro, WSJ Europe February 1, 2008)
- Such concerns have helped limit the dollar's losses against the euro, despite the Fed's recent moves— which once **might** have produced a dramatic fall in the dollar. The euro is "still essentially where we were at the start of December," *says* Simon Derrick, the London-based chief currency strategist for the Bank of New York Mellon. "That **I find** absolutely remarkable."  
Mr. Derrick **believes** investors **may** be focused more on the risks to growth than on those posed by inflation. They "**may well believe** that the ECB is not being reactive enough and the euro is too highly valued," he *says*



# Why the recourse to a semantic characterization appears promising

- Predictions appearing in financial news typically take the form of **modalized** utterances referring to future events.
- They typically appear as conclusions/standpoints in **arguments**.
- They are often **conditional**: relativized to plausible or merely possible scenarios.
- They are typically (but not consistently always) **attributed** to sources other than the journalist, be they named (financial analysts, rating agencies, etc.) or unnamed (e.g. marked by a simple evidential like, in Italian, the quotative conditional)

# Modals as argumentative indicators

- Hypothesis:
  - Modals offer important indications for the analytical reconstruction of the argumentative structure of financial news discourse.
- But
  - We need to describe modal in richer terms than, say, *strong* or *weak*;
  - We need to rely them to discourse structure
  - We need to address their interaction with evidentiality and conditional structures.

# Discourse semantics done in the wild

- Insights from theoretically oriented semantics can refine discourse analysis.
- Here I would like to focus on one kind of contribution from an area of “formal” semantics:
  - ***Discourse semantics***, proposing a dynamic view of meaning as context dependent and context changing and by tackling issues beyond the sentence (anaphora, “rhetorical” relations, embedding of discourse worlds) offers potentially powerful tools for discourse analysis.
    - Rarely applied to extended samples of authentic discourse;
    - Often the heavy formalism make it unwieldy and practically unusable for purposes of discourse analysis.
  - Modality is an area where this contribution can be relevant, in particular thanks to the theory of *Relative Modality* introduced by Kratzer (1981).



# The relative modality approach to the semantics of the modals

- Modal meanings in RM are treated as two-place relations of the form  $R(B, p)$ 
  - $p$ : the proposition falling in the scope of the modal
  - $B$ , *conversational background*: a set of propositions to be saturated in the context of utterance.

# Possibility

- **Possibility:**
- $p$  is *possible with respect to B*, means that  $p$  is logically compatible with  $B$ 
  - or, equivalently that  $p$  is true in some of the worlds where all the propositions in  $B$  are true.



# Relative Necessity

- **Necessity** modals indicate that the proposition  $p$  is *necessarily entailed* by (that is *logically follows* from) a the *conversational background* ( $B$ ),
  - or equivalently that  $p$  is true in all the worlds where all the propositions in  $B$  are true.

# Examples of different conversational backgrounds for necessity and possibility

- **Ontological modality:**

- *A possible state of affairs p is entailed by or compatible with facts of kind B.*
- Tom cannot attend the meeting. He's stuck in a traffic jam.

- **Deontic modality**

- *An action  $\alpha$  is entailed by or compatible with norms or ideals of kind B.*
- Andrea must leave the country. The new immigration law was voted by the parliament.

- **Epistemic modality**

- *A hypothesis p is entailed by or compatible with a relevant set of beliefs B held by the speaker at the moment of utterance.*
- I don't see John's car in the parking lot. He must have already left the University.

# Extensions of relative modality theory

- Unified treatment of modality and conditional structures.
  - E.g. *Would*-conditionals can be interpreted as particular necessity modals whose B is partially specified by the antecedent. *Might*-conditionals may be treated simply as their possibility equivalents.
  - This applies naturally to discourse spanning conditional structures, as the one shown in example (8).
- Evidentiality
  - At least certain evidential markers can be treated as modals that restrict their B to propositions deriving from a particular knowledge source: testimonial, perceptual, etc.
  - See for instance example (7).



# Relative modality and conditional structures

- Representatives of the Russian and Italian governments Saturday signed a memorandum of understanding to cooperate on a 900-kilometer, or 558-mile, pipeline. The pipeline could carry as much as 30 billion cubic meters, or 1.05 trillion cubic feet, of gas annually from Russia into Europe through the Black Sea. Construction would begin as early as next year if the project, [...], overcomes regulatory hurdles. (*The Wall Street Journal Europe*, June 25, 2007; Page A11)

**dw<sub>0</sub>** :

dw<sub>1</sub> : There is a 900-kilometer pipeline.

dw<sub>2</sub> : The pipeline carries 30 billion cubic meters of gas annually.



dw<sub>3</sub> : the project overcomes regulatory hurdles.

dw<sub>4</sub> : Construction begins next year.



# The relationship of different modalities to argument

- Only the *epistemic* uses of the modals relate constitutively to the structure or “form” of the argument that is to *inferential relations*.
  - These modals function as *direct indicators* of argumentatively relevant speech acts.
- The various shades of *ontological* and *deontic* modality express relations between the modalized proposition and sets of facts, values or norms that are part of the *content level* of the argumentation and may or may not be exploited inferentially through specific argumentation schemes.

# Epistemic implications of a deontic modal

- NEW YORK - Europa (e mondo) attenti, a Citigroup sono state tolte le redini.
  - La principale banca americana è stata perdonata dalla Federal Reserve e, per crescere, **potrà** tornare a fagocitare prede sui mercati globali: dopo un anno di forzata moratoria sulle grandi acquisizioni, imposta davanti alla scoperta di scandali e inadeguati controlli interni, la Fed ha concluso che il colosso dei servizi finanziari ha “compiuto significativi progressi” nella governance e nella gestione del rischio, sufficienti a togliere i freni a piani di conquista.
  - (Il Sole-24 Ore, April 5, 2006)
- **Explicit premise:**  
*Citigroup **can** take over other financial companies.*
  - **Implicit premise** (partially developed from presuppositions):  
‘Citigroup had the habit to (try to) take over other financial companies’
  - **Implicit Conclusion** (inferred from the above premises and from topical maxims):  
Citigroup **will probably** try to take-over other financial companies in the future.

# An example of relative modality analysis: predictive *dovrebbe*

- *Dovrebbe* is the hypothetical/conditional version of an ontological or deontic modality.
- As such it is characterized by a double conversational background:
  - A primary conversational background which is identified either with a **set of facts in the world** (*ontological*) or with a **set of norms** (deontic).
  - The basic ontological or deontic background is further restricted by a non-factual set of propositions (assumptions) to be saturated in the discourse context.

## Discourse relation conveyed by *dovrebbe*

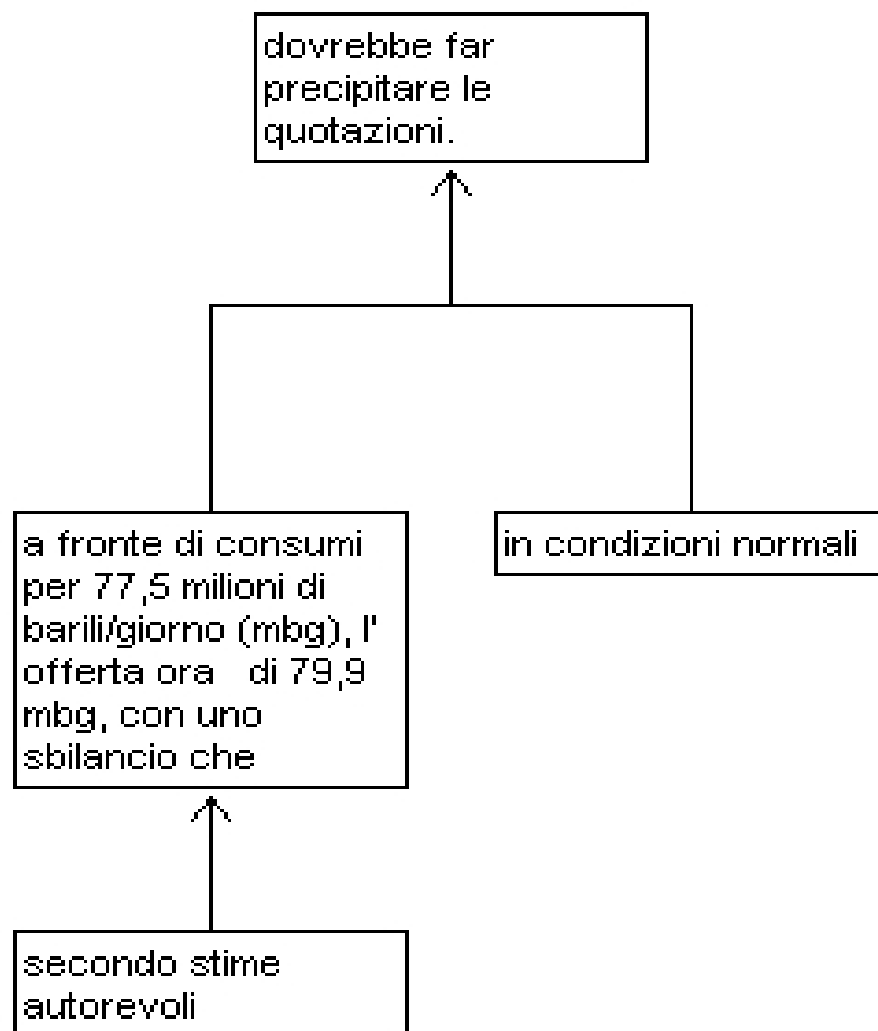
- *Dovrebbe* primarily conveys a causal relationship of a *natural* or *deontic* kind (where the commitment creates the expectation of the action).
- As a further implicature, the assertion of this relationship may be taken as manifesting the major premise of an argument based on causality or compliance to norms.

# An example

- *[...] secondo stime autorevoli, a fronte di consumi per 77,5 milioni di barili/giorno (mbg), l' offerta ora è di 79,9 mbg, con uno sbilancio che, **in condizioni normali, dovrebbe** far precipitare le quotazioni. (IL SOLE 24 ORE 05/12/2002)*
- 'According to authoritative estimates, with a consumption of 77.5 million barrel per day (MBD), the offer is now of 79.9 MBD with an unbalance that, under normal conditions. ought/would/should make the price fall'

# Analysis of the example

- **Economic causality** is treated much like physical causality (the human agency involved is not 'visible').
  - In accordance with the ontology assumed by classical models of market economy: “market forces are like physical forces”
- The existence of the causal relation can be taken as an argument for the modalized proposition, to the extent that **normal conditions** do indeed apply in the actual world.
- Obviously, '**Normal conditions**' apply to most of the worlds most of the times, hence the frequent probability reading of *dovrebbe*.
  - This is an implicature and can be cancelled.
- Interestingly, the preceding text in the example hints that in the specific situation 'normal conditions' may well not apply in the actual world.





# The larger co-text of the example

- In fact, in the preceding text, the article, written shortly before the US invasion of Irak, mentions
  - The work of UN weapons inspectors in Irak
  - Strikes in Venezuela
- Then the author introduces the discussion of oil surplus with
  - Se però dimentichiamo i rischi “politici”...
  - 'However, if we forget about political *risks*...‘
- So, the necessity applies in a 'normal scenario' where we ignore political risks and we reason from a purely economical viewpoint.
- **But *risks* are not facts.** Interestingly, the noun *risk* itself hides a modal component... so, in the end, the simplified scenario might still apply...