

## **Towards a text type taxonomy: a functional framework for text analysis and generation**

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### **Abstract**

The aim of this paper is to offer a functionally-motivated text typology framework which can serve as a basis for the description, comparison and classification of a wide variety of texts for generation purposes. For this task, we have adopted a socio-linguistic approach which links the study of the linguistic features encountered in texts with our knowledge of the components of the social situation in which the text takes place. These components (the variables of field, tenor, and mode) are proposed as the three dimensions of variation which reflect different selections from the experiential, the interpersonal and the textual components of the language code (organized at the semological, the lexicogrammatical and the phonological/graphical levels). The correlation thus established between the categories of the situation and those of the linguistic system is illustrated by careful description of selected text extracts, and represented declaratively in the form of three parallel networks, which together constitute the potential of variation along which texts can be compared and characterized. The predictive properties of the matrix show the usefulness of the method (based on the notion of register as a sort of 'interface' between the system of social activity types and the system of language) for automated text generation.

## 1. Introduction

Register variation is inherent in natural language. Every text, the discourse of every occasion makes sense in part through implicit and explicit relationships of particular kinds to other texts or to the discourse of other occasions.

In the systemic-functional approach to language, texts are differentiated according to the situational context in which they are produced which finds a reflection in the use of certain linguistic features in various types of situation. It is assumed that there is a systematic relationship between the linguistic resources deployed for particular purposes and the situational contexts in which they are produced. The notion of register is, then, conceptualized as an "interface" between the system of social activity types and the system of language, which is able to predict the linguistic features of texts produced on particular occasions, or to reconstruct the kind of occasion from the text.

As users and receivers of a language, we produce texts whose communicative function is to be interpreted in terms of the concrete situation in which they were produced. More precisely, following Gregory, (Gregory, 1988: 303) we can say that even though human communication takes place in instantial situations which are unique and non-repeatable, however, many of them have features in common with other instantial situations. And communication is possible precisely because we have internalized our knowledge of what can be called a generic situation, which is an abstraction of all those similar instantial situations. This knowledge of the meaning potential associated with a generic situation is called *register*. Therefore, the concept of register accounts for linguistic variation according to use as opposed to variation according to the user. Registers have been the subject of much research work (Ferguson, 1977, 1983; Brown and Fraser, 1979; Hyman, 1974), especially in systemic-functional linguistics (Halliday 1968, 1978; Halliday and Hassan, 1989; Ure, 1971; Gregory, 1988; Ghadessy, 1988; Bateman and Paris, 1991, etc.). In the work of Halliday et al. (1964: 87)

*The category of register is postulated to account for what people do with their language. When we observe language activity in the various contexts in which it takes place, we find differences in the type of language selected as appropriate to different types of situation.*

That is to say, registers are defined in terms of linguistic differences between several samples of language activity such as, e.g., a sports commentary and a religious sermon. Behind the notion of register lies the idea that there is a one-to-one relationship between linguistic features and their appropriateness to a certain use. This insight is particularly relevant to text generation whose main aim is to identify and specify (to further implement) those linguistic features responsible for the grammatical adequacy of texts, but also with their appropriateness to the situations in which they are used.

In order to analyse in detail the linguistic features which distinguish texts according to their use, we present in the next section the three components of the communicative situation which form the basis for register variation and which will constitute the dimensions of variation along which texts can be characterized and compared with other texts.

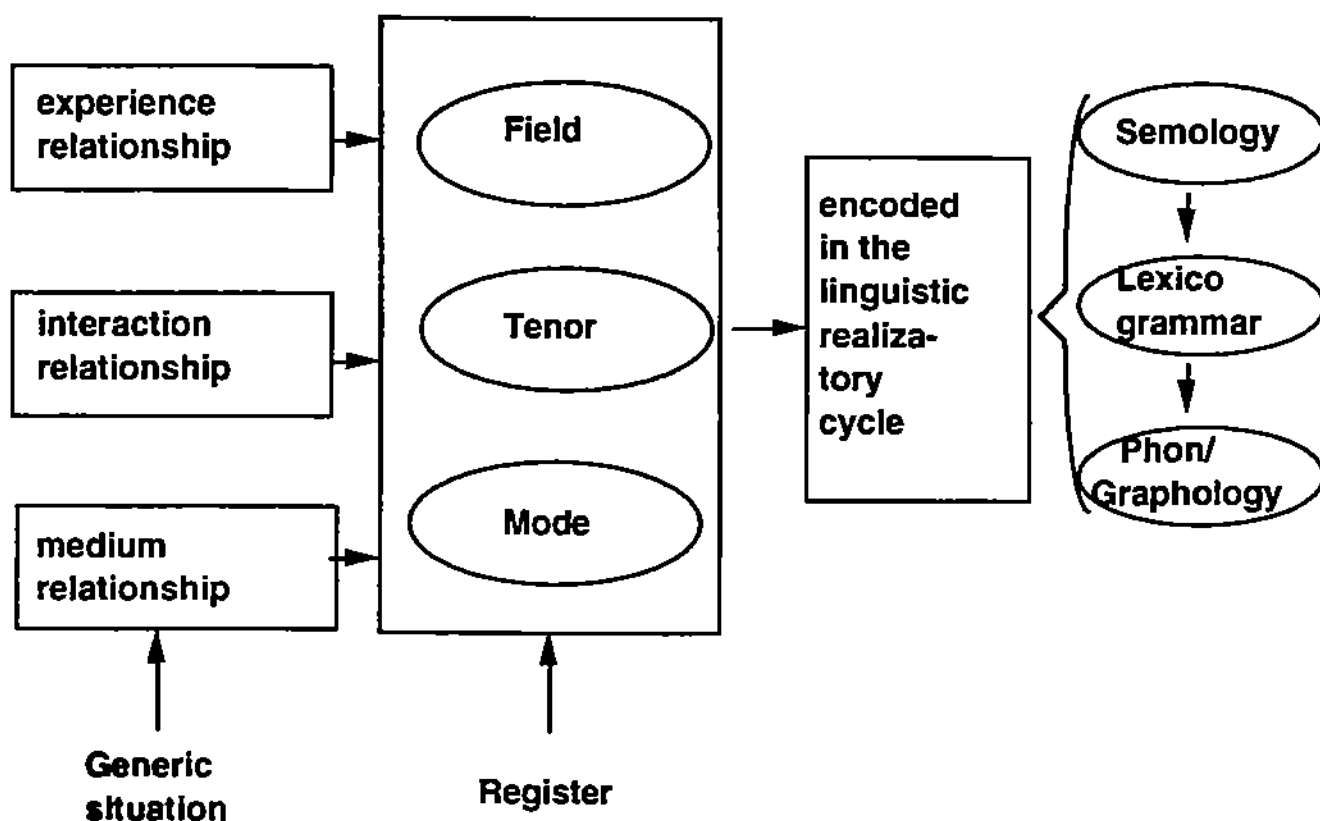
## 2. The components of the communicative situation

According to Halliday, language performs three main types of functions: the *ideational function* (to understand the environment), the *interpersonal function* (to act on the others in it); and the *textual function* which "breathes relevance into the other two (Halliday, 1985: xxxiii). These three functional components belong to the semantic system of the language: in a given instantial communicative situation the speaker performs a series of linguistic choices from the three metafunctions of language: in technical terms, he selects features from system networks assigned to the three different functions. For example, systems like *transitivity*, *tense*, and *aspect*, among others, together constitute the range of options available in the ideational component of

language code; systems like *mood* or *modality* are options available in the interpersonal component, and systems like *conjunction* and *ellipsis*, among others, are available in the textual component of the language.

The communicative situation is, therefore, a configuration of meanings selected from these three functional components of language. Besides, there is a correlation between the categories of the situation and those of the semantic system, such that each actual selection of meanings reflects a configurational parameter of the situation. For example, the experiential meanings of the text reflect the *field*, the interpersonal meanings reflect the *tenor*, and the textual meanings reflect the *mode* of discourse. We could also express this by saying that *field*, *tenor* and *mode* are the actual selections (from the ideational, the interpersonal and the textual components of the language code) taken in a particular language event. We will treat each of these parameters successively, starting with the field of discourse. Figure 1 illustrates these ideas by showing diagrammatically the way in which each of the components of the communicative situation reflect experiential, interpersonal and textual meanings, respectively. Furthermore, each of these components is encoded in the linguistic system at the semological, lexicogrammatical, and phonological/graphological levels.

Figure 1. The components of the communicative situation and their relationship with the linguistic code



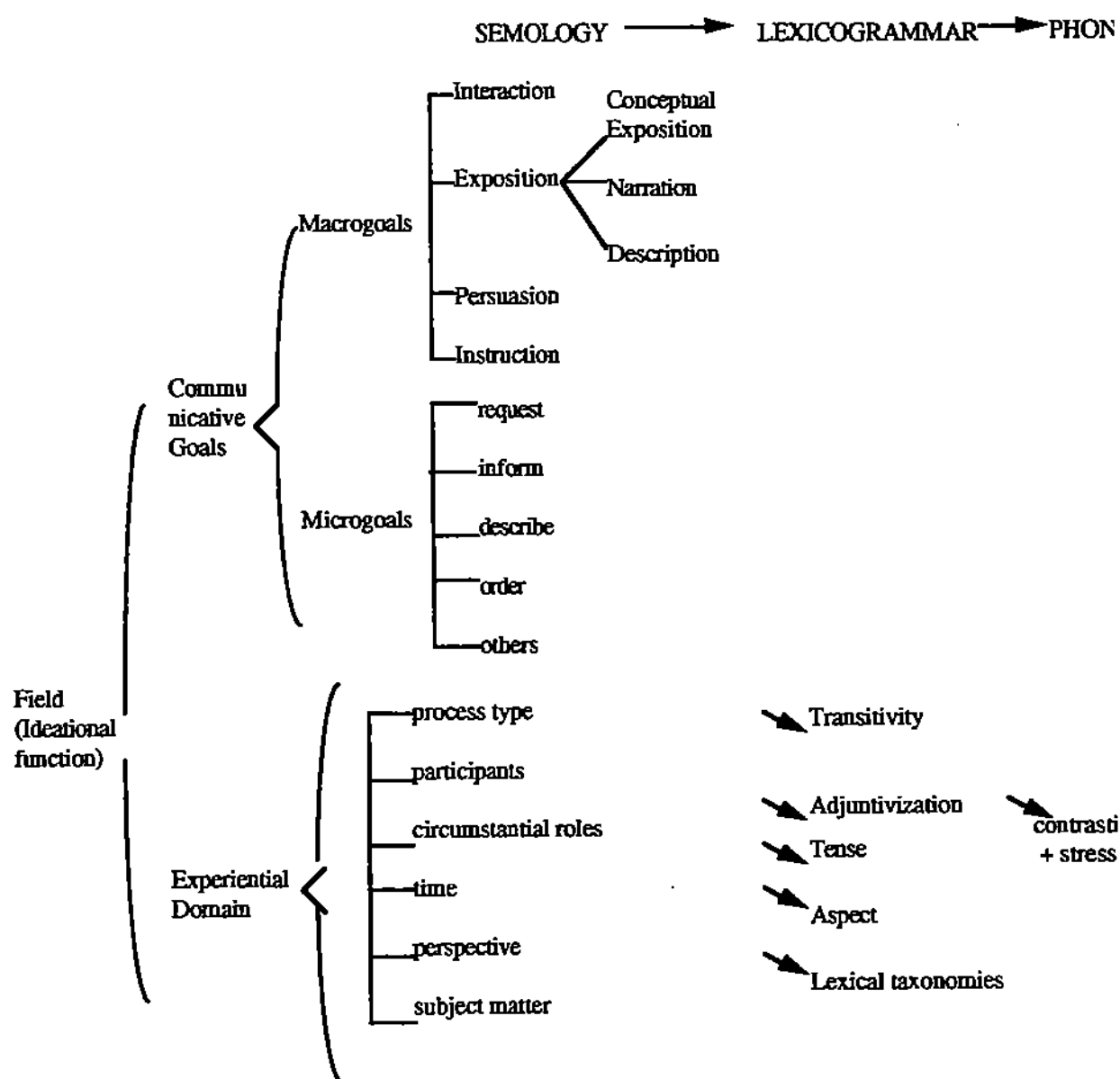
(Adapted from Gregory, 1988, p. 301)

## 2.1. The field of discourse

According to Halliday, field of discourse refers to "what is happening, to the nature of the social action that is taking place: what is it that the participants are engaged in, in which the

language figures as an essential component" (Halliday and Hasan, 1989: 12). Social act understood as that which is 'going on', is typically structured as a configuration of ordered a which includes the communicative goals of the text, as well as its subject-matter. The field discourse, therefore, includes two interrelated aspects: the purposive role or social function of text, e.g. the text's communicative goals, and the experiential domain which configures the te ideational or propositional content. The network in Figure 2 below illustrates these aspects, wh we now turn to:

Figure 2: The field of discourse



1.- The purposive role, or the social function of the text (e.g. personal interchange, persuasion, argumentation, exposition, etc.) is the main communicative goal, (or 'macrogoal') that any given text can serve. This is similar to Crystal and Davy's (Crystal and Davy, 1969) 'province', which additionally emphasises the occupational, professional and specialised character of fields. We include here the following purposes or 'macrogoals' that may 'dominate' in any given text:

*interchange, exposition, persuasion or argumentation and instruction.* This categorization is far from being a strict one: texts are units which are variable in nature and text purposes may only be viewed in terms of 'dominances' of a given purpose or contextual focus (Werlich, 1983: 19). Besides, texts are hybrid in nature; in many texts we will find a mixture of several communicative purposes. So, when we say that a text's communicative macrogoal is expository, it means that exposition is the text's perceptible dominant focus while the other purposes remain subsidiary. The main macrogoals that are proposed here reflect different contextual foci.

In *expository* texts, the contextual focus is either on the decomposition (analysis) into constituent elements of given concepts, or their composition (synthesis) from constituent elements (Werlich, 1976: 256). We can distinguish two important variants of exposition: *descriptive* and *narrative* texts. In place of 'concepts', description handles 'objects' 'individuals' or 'situations'; it presents what some particular things are like. *Descriptive* texts focus on factual phenomena (i.e. persons, objects, relations) in a spatial context. *Narrative* texts arrange 'actions' and 'events' in a particular order. They focus on factual phenomena in a temporal context. Examples from these two subtypes are presented below:

#### Example 1: DESCRIPTION

*She looked at the room. There was a wooden settle in front of the hearth, stretching its back to the room. There was a little table under a square, recessed window, on whose sloping ledge were newspapers, scattered letters, nails and hammers. On the table were dried beans and two maize cobs. (D.H. Lawrence, The Lost Girl)*

In this text, the contextual focus is on describing the room, so the references to spatial factors and the use of existential processes predominate. In the text below, however, the emphasis is on the presentation of a series of successive punctual actions performed by the old woman. The processes are mainly material and their aspectual character is punctual.

#### Example 2: NARRATION

*An old woman was baking one day, and she made some gingerbread. She had some dough left over, so she made the shape of a little man. She made eyes for him, a nose and a smiling mouth of all currants, and placed more currants down his front to look like buttons. Then she laid him on a baking tray and put him in the oven to bake.*

In *argumentative* or *persuasive* texts the focus is on the evaluation of relations between concepts. The writer interprets the world rather than observes it, and uses the text "to promote the acceptance or evaluation of certain beliefs or ideas as true vs. false, or positive vs. negative." (de Beaugrande and Dressler, 1981: 184). Hence the predominance of conceptual relations such as reason, significance, volition, value and opposition. One special type of persuasive text is what Martin calls *hortatory exposition* (Martin, 1989: 17). In this type of persuasive text, the writer does not simply analyse the world as it is and defends one or another interpretation. Rather he challenges the world as he sees it, and makes a suggestion as to how it should be changed. Example 3 illustrates this type:

#### Example 3: HORTATORY EXPOSITION

*I am writing because of my concern over the fatalities caused through the misuse of firearms. I feel all governments should pass firmer laws on the control of firearms. Small firearms should only be used under a license to responsible people such as policemen and security guards. (Martin, 1989: 16)*

In *instructive* or *procedural* texts, the contextual focus is on how things happen, on how some is done, and on the formation of future behaviour (Hatim and Mason, 1990: 156). Example recipe for apricot sauce) illustrates this type:

#### Example 4: INSTRUCTIVE

*Remove fruit and 2tbs of juice from the can, then discard the rest. Put all ingredients into a saucepan and slowly bring to the boil. When hot, pour into a food processor and process to a smooth sauce. For extra texture reserve 1-2 pieces of fruit, mash, then add this to the finished sauce.*

As we can see from the examples above, the communicative goal of a text (which belongs to semiotic level) activates different semantic resources in the text's experiential domain, as well as the other components of the contextual configuration, e.g., in the tenor and the mode of discourse. That is, if the text's macrogoal is descriptive (what something is like) the semantic resources activated will be different from the ones activated if the macrogoal is narrative. In the first case, processes involved will be mainly relational or existential to encode phenomenon-registering sentences; in the second, the processes will be mainly material and punctual to encode action-recording sentences. In the case of procedural texts, since the purpose is mainly directive-instructive (telling others what to do), the communicative goal will have a direct reflection on the tenor of the text, e.g., the speech functions used will be mainly directive as in example 4 above.

2.- The experiential domain of the text refers to those aspects of the experience relationship that enter, as users of the language code, and which predict the range of options in the ideational component of the language code: what *process types* are at risk, the nature of the *participants*, *circumstances* of time, place, and manner of the event, the *time* reference system in which processes appear in the text; the *perspective* we have on the experience as something durative, habitual, inceptive, completive, and so on. It also refers to the *subject matter* of the text, e.g., the concepts that, realized in lexical chains, capture the semantic or propositional content of the text.

All these options are realized in the morphosyntax of the language by different selection of the systems of *transitivity*, the *tense* and *aspect* systems of the verbal group, the systems of *nominal group*, etc; and the actual selections made in a particular language event, as Gregory (1988: 307) says, constitute the *field* of that particular discourse (Gregory, 1988: 307).

This dimension of variation accounts for differences between, e.g., a typical face-to-face conversation (which has a very low focus on informational content) and a public speech. It helps to differentiate between a recipe, for example, and a scientific research paper. Let us compare and contrast two short portions of these two texts: the first is the extract of Example 4 above. The second is from a physics research paper:

#### Example 5:

*In the last few years there have been large advances in the technology used to collect x-ray diffraction data from suitable protein crystals. One such advance is the increased beam intensities achieved with synchrotron radiation over that previously obtained using standard Cu K x-ray radiation. This, together with the development of improved detector systems, allows data collection to proceed more rapidly than in the past but also more importantly with fewer and smaller crystals.*

In the recipe text we note the predominance of material: action processes (*remove, put, pour, add*); the participants associated with those processes play the role of Goal in the actions describing those processes and are mostly inanimate and concrete (*fruit, sauce,*

*juice*). There are no mental or relational processes. The verbal groups are tenseless and lack aspectual distinctions. In the scientific paper, however, we note the incidence of relational processes (*there have been, is*); the participant realizations are abstract (*advances, intensities, radiation, development, data collection*) and are expressed as nominalizations. With the exception of "*there have been*", the verbal groups are in the present tense.

So these two texts are different experientially; they have from the systems of transitivity, tense and aspect, and from the nominal group system. The ideational potential of the two registers reflects different 'on-going social activities' (Halliday, 1978: 221-227): our experience of cooking involves actions affecting concrete entities whereas our experience of scientific writing involves abstraction and nominalization.

## 2.2. The tenor of discourse

If the field of discourse predicts the range of meaning potentials in the experiential component of the language code, the *tenor* of discourse predicts the selection of options in the interpersonal component. According to Halliday and Hasan, "the tenor of discourse refers to who is taking part, to the nature of the participants, their statuses and roles: what kinds of role relationships obtain among the participants ..., both the types of *speech role* that they are taking on in the dialogue and the whole cluster of socially significant relationships in which they are involved." (Halliday and Hasan, 1989: 27) Therefore, the tenor of discourse involves the selection of a number of options in the different subsystems which configure the participants' speech roles.

Among these speech roles we will distinguish two main types. One set of systems is concerned with the *negotiation of speech roles*, the other is concerned with the *speech modalities*. Figure 3 represents these options in a systemic network. For example, among the system of role negotiation we include the following choices:

- 1.- The system of *Speech Functions* realized in English by the syntactic system of Mood -with options between Indicative and Imperative- and by the choice of phonological 'tune' or intonation contour.
- 2.- The system of the *Speaker's turn*, with options between Initiating or Responding or Continuing, which is related in the syntax to choices between Major or Minor, Full or Elliptical clauses.
- 3.- The system of *Social Distance* between the interlocutors, with options between neutral or marked, and within marked between minimal and maximal distance.
- 4.- The system of *Social role* concerned with the balance of power between the participants, with options between hierarchic and non-hierarchic social roles.

Another set of systems accounts for the speaker's assessment of and attitude towards the events and relations he is verbalizing. This set includes two subsystems:

- 1.- The system concerned with the *interlocutor's assessment* of his receiver's stance, reflected in syntactic tags such as *right?, eh?, isn't it?*, etc.
- 2.- The system of *Mediation* which allows the user to mediate the event he is realizing verbally in terms of degrees of likelihood, capacity, necessity, and other modal meanings. There are different ways to realize the options selected within this system in English: among them we can mention the use of modal auxiliaries like *must, should, can*, etc.; the use of adverbs like *maybe, perhaps, probably, fortunately*, or sentence rank final attitudinal clauses like: *which is a pity, which I regret*, etc.

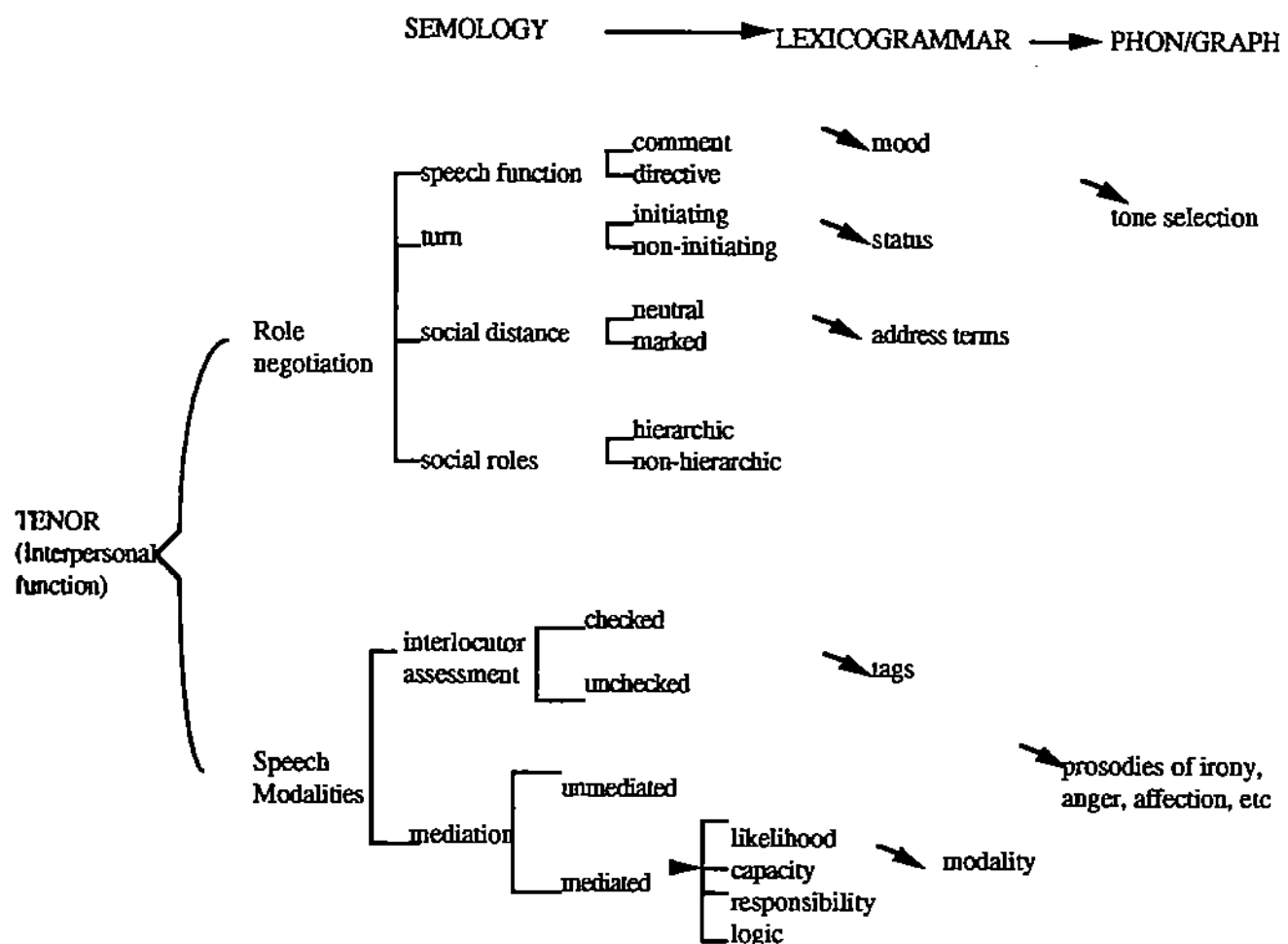
For an illustration of how actual registers select for particular options within the interpersonal component of the language code, which together constitute the *tenor* of that particular discourse, let us consider the actual choices selected in the texts above. The recipe extract, for example, exhibits

a characteristic tenor realized by a specific selection of options within the subsystems of Speech function and Mediation. If we consider the Speech functions selected throughout the recipe, we find that the eight clauses that compose the Method part of the text have selected *Directive Command* realized by the congruent syntactic mood selection of Imperative. We can say that this pattern is maintained in most recipes, reflecting a particular interactive relationship -of *instruction*- in the generic situation which predicts the tenor of the register.

The scientific text, by contrast, shows a different selection of linguistic features from interpersonal resources of the language. These selections configure an altogether different tenor from the one exhibited by the recipe. All of the Speech Functions are *Statements* realized by *Indicative Declarative* (*there have been large advances ... One such advance is ...*) Given the lack of a joint speech situation, and the local and temporal distance between text production and reception, the distance between writer and reader is *maximal*, producing a kind of text which readers experience as clearly impersonal. The aim of this text is to inform readers about a set of facts, not to motivate them to do something (hortatory discourse) or to instruct them.



Figure 3: The tenor of discourse



### 2.3 . The mode of discourse

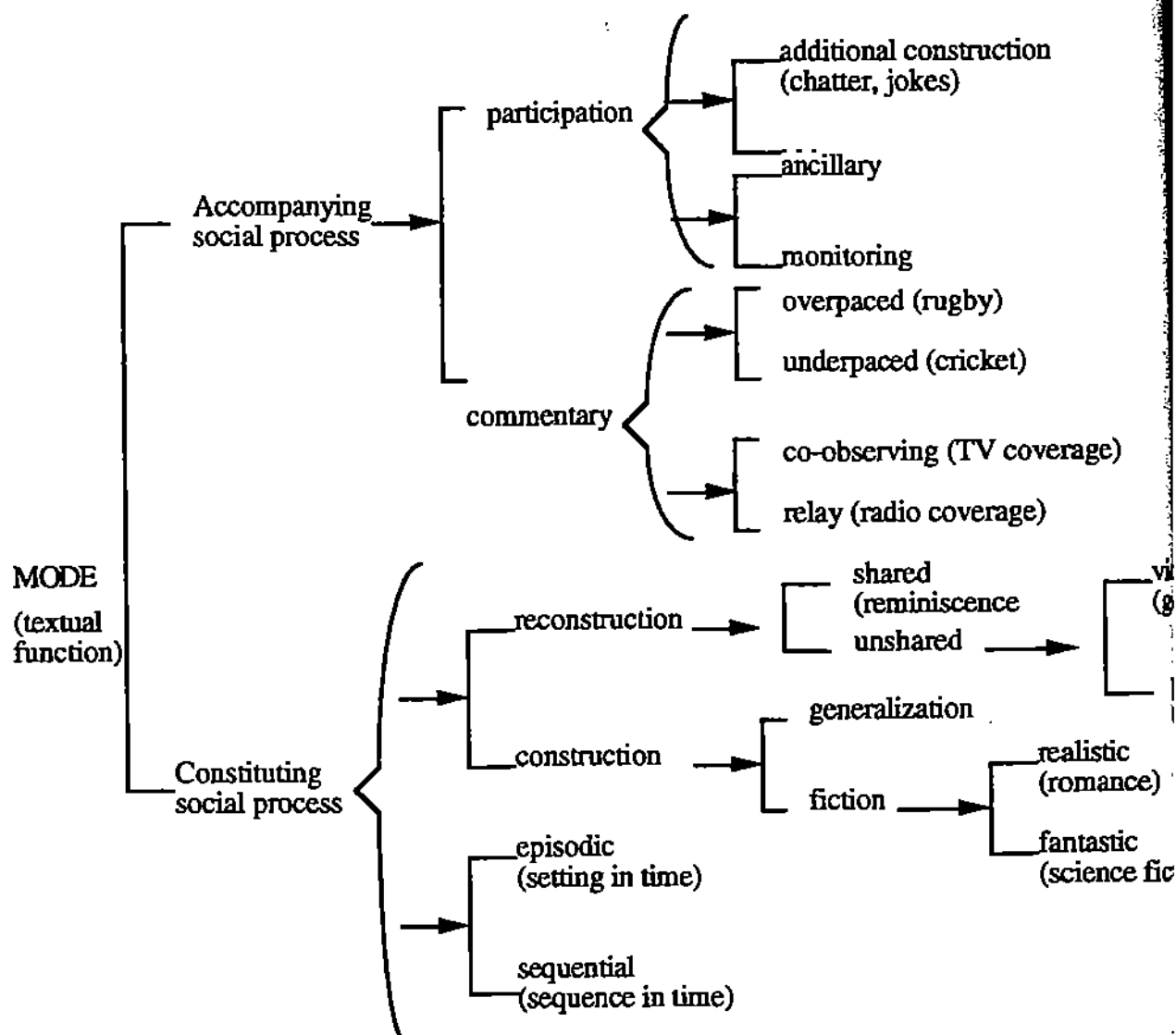
The *mode* of discourse is the result of a particular selection of options from three simultaneous parameters: the language role, the medium, and the channel of discourse. The language role is a continuum with the two ends of the scale being whether the language in the act of communication is constitutive or ancillary. The role of language in a face-to-face service encounter as the one in Example 7 below is ancillary since it accompanies an activity and is not the sole meaningful activity. In Example 5 above the language role is constitutive, since the text creates the entire exchange.

The *medium* of discourse deals with the process of text creation, with the degree of sharing the process of text creation between the interlocutors. The channel of discourse is the modality through which the language is received, including typically the options of graphic vs. phonic. Early work on register (e.g., (Gregory and Carroll, 1978) glossed medium as often being congruent with the option between speaking and writing, but we can now go further and adopt more abstract characterizations as suggested by (Martin, 1992). This is also necessary given the range of substantial empirical work (e.g. Redeker, 1984; Biber, 1988, 1989, and others) that has shown that the spoken/written distinction per se is not a simple parameter. We can ground the more

abstract characterization by relating mode to field and tenor: that this is necessary follows from the inherently second-order nature of the textual metafunction.

Firstly, mode mediates the semiotic space between action and reflection, which gets back to the original notion of language role. This relationship to the ideational metafunction is further classified in Figure 4.

Figure 4: Language role: an initial classification drawn from Martin (1992)



Secondly, the degree of sharing of the process of text creation corresponds to the mediation of the semiotic space between monologue and dialogue (an interpersonal area of meaning generally termed *negotiation*). We can see from the following table (taken from Martin, 1992) the possibilities supported by current technology allow a far greater range of situations of language use than that when writing was invented.

	VISUAL CONTACT		
	none	one-way	two-way
AURAL CONTACT			
none	writing	silent movie home movie Big Brother (1984)	sign language, mime?
one-way	radio, audio tape, record	television, movie video prayer	lip-reading sermon, theatre
two-way	telephone, intercom, short-wave radio	video -intercom, blind/seeing dyad	face-to-face conversation

All media of communication have their own organizing resources which structure the message in a particular way. These resources include the ones studied under the name of cohesion: *reference, ellipsis, substitution, conjunction* (Halliday & Hasan, 1976, 1989); *lexical cohesive relations, information structuring* and the *Theme-Rheme structure of the clause*. They also include at the discourse semantic stratum the components of: *continuity, negotiation, speech function, identification, ideation, method of development*, and *grammatical metaphor* (Martin, 1992). In order to illustrate the differences between registers in terms of their mode of discourse, let us analyse two examples:

The first piece of text comes from one of Newton's writings, and is cited in Halliday (Ghadessy, 1988: 169) as an example of the type of organization that scientific discourse imposes on the linguistic resources of the lexicogrammar:

#### Example 6:

*The explosion of gunpowder arises therefore from the violent action whereby all the Mixture. . . is converted into Fume and Vapour.*

The two processes explicit in this clause have been nominalized: one of them (*the explosion of gunpowder*) has been backgrounded as the Theme of the message; the other (*the violent action whereby...*) has been foregrounded as the Rheme. The relation between these two nominalized processes is set up as a process, by being represented as a verb (*arises from*) which expresses a relationship of cause between them. The author has packaged a complex phenomenon consisting of two processes linked by a relationship of cause into a single semiotic entity expressed as a single clause. The pattern is, therefore:

process1 (NP) + relation (verbal group) + process2 (NP/ PrepP)

The nominal elements in the clause gradually take over the whole of the semantic content, leaving the verb to express the relationship between the nominalized processes. This configuration is an

immensely powerful resource for the construction of this type of discourse. This type organization is altogether different from the following service encounter:

A: *Can I have ten apples and a kilo of oranges, please?*

B: *Yes, anything else?*

A: *No, thanks.*

B: *That'll be 475 pesetas.*

A: *500 pesetas*

B: *100..., 500 pesetas. Thank you.*

We can recognize the following ellipses:

1. *Yes, you can have ten apples and a kilo of oranges* from *Yes*
2. *Do you want anything else?* from *anything else?*
3. *No, I don't want anything else* from *No, thanks.*
4. *Here you have 100 pesetas* from *100 pesetas.*
5. *Your change is 25. That makes 100 pesetas.* from *25..., 500 pesetas.*

Instances 1 and 3 are endophorically retrievable (i.e. from within the text). Ellipses 2, 4 and 5 exophorically by way of the instantial situation and the participants' knowledge of it. The ellipses, together with the selection of particular starting points for the different independent clauses are predictable from the mode of this medium (face-to-face service encounter), and are therefore, differently realized from what would be predictable in other modes.

### 3. Towards a multidimensional analysis of texts

The implications of this socio-cognitive perspective approach to language for automatic text generation are enormous. The study of the communicative function of any given text as a complex interrelationship of experience, interaction and medium allows the linguist to predict a lot about any text which he might encounter. As Halliday puts it (Halliday, 1974):

*there is not a great deal one can predict about the language that will be used if one only knows the field... or only the mode or the tenor. But if we know all three we can predict quite a lot.*

I suggest that if we can predict the linguistic features that characterise any given text in terms of this three dimensional analysis of field, tenor and mode, then we are in a privileged position to generate an important variety of texts. The multidimensional analysis of texts presented here allows us to provide a complete characterization of many texts and to establish valid comparisons with other texts in terms of the three dimensions. According to this, any given text will be similar or different to any other text according to the patterns of comparison along the three dimensions: field, tenor, and mode. For example, we may find two texts which share similar features along the field dimension, but which differ along the tenor dimension (e.g. a technical manual for experts versus a simplified manual for naive users). Therefore, these two texts will belong to different types. As J. Lemke puts it:

*The separation of texts which do not share the same field, tenor, and mode assigns them to what the community may regard as completely different and unrelated activities, a kind of disjunction of domains of human social practice which we know can well support the kinds of unnoticed contradictions that help stabilize a social order. (Lemke, 1985: 278)*

Given that the linguistic variation among texts comprises several dimensions, the relations among texts must be established along a multidimensional space: texts will be similar or different with respect to field, tenor, and mode.

#### 4. Conclusion

The examples discussed are fairly simplistic and intended to be illustrative only. It is not the aim of this paper to provide yet another text type taxonomy. It is our purpose, however, to provide a socio-linguistic framework under which we can characterize an important variety of texts to be used for analysis and generation. Following this tri-dimensional matrix will allow reserachers to make valid predictions with respect to actual discourse phenomena. As we have seen, the theme-rheme structure varies in realization from a scientific research paper to a face-to-face conversation, and the same will happen with global structures, which are sensitive to register differences.

The method presented here for text characterization is clearly abductive. While most existing text characterizations have used the deductive<sup>1</sup> or the inductive method, we propose to adopt an intermediate one. Instead of departing from already established text classifications which are later tested on real texts (deductive method), or from the simple inductive generalization from the study of the linguistic features encountered in texts, we adopt here a mixed method: the study of the linguistic features that characterize texts, combined with our knowledge of the components of the social situation in which the text takes place in order to establish in a probabilistic way a functional parallism between linguistic features and social practices. This method is based on a notion of register as a sort of 'interface' between the system of social activity types and the system of language which enables to predict the linguistic features of texts produced on particular occasions, but also to reconstruct the kind of occasion from the text. The method is, therefore, bidirectional, and implies a dynamic, dialectical relationship between code and behaviour, behaviour and code. We hope that the proposed framework -if still incipient, and applied to English- will help to illustrate how a socio-cognitive approach to the linguistic code is a valid and a useful method to describe and generate intra-lingual variety.

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<sup>1</sup> Traditional text typologies like the ones proposed by rhetorical theory have used a deductive methodology, departing from functional distinctions and then attempting to identify the linguistic features associated with that difference (see, eg.: Longacre, 1976, Chafe, 1982, Grabe, 1984). By contrast, the typology proposed by Biber (Biber, 1989) is clearly inductive, starting from sets of syntactic and lexical features that cooccur frequently in texts, and then correlating these linguistic features with important functional differences in English.

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