

actors in Lexical Choice

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1. Introduction

The aim of this work is to show how contextual factors influence lexical choice in Text Generation (TG). First of all, progress in Natural Language Generation (NLG) is discussed, with special reference to how important it is to choose the right words to express ideas according to context. Secondly, Christian Matthiessen's model of systemic-functional lexicogrammar (1991:279) is presented. Thirdly, lexical choice is further considered from a sociocultural perspective, and Matthiessen's model is enriched with information relevant to variation in register across cultures. This does not suggest any radical changes in the theoretical model; factors already known to be important for text generation are emphasised, and issues that directly emerge from the model are made more explicit. Finally, reference is made to the KPML system, which incorporates information about register and genre.

2. Progress in NLG

The first significant work in NLG appeared during the 1970s, with Goldman's conceptual generator called BABEL (1975), and Davey's work on the generation of paragraphs describing tic-tac-toe games (1979). There was remarkable progress in the field during the 1980s with the work of McDonald (1980), Appelt (1985) and McKeown (1985). During the last fifteen years papers on generation appear at the major Natural Language Processing (NLP) conferences, but most results are presented at the European and International workshops on NLG (Dale et al. 1998:345-346).

Current progress in the field includes (a) the KPML multilingual NLG system, a descendent of the Penman system with a systemic-functional basis, which is freely available from the KOMET ftp directory; (b) Genesys, a sentence generation system developed by the Communal group (R. Fawcett, G. Tucker, etc.), and (c) WAG (Workbench for Analysis and Generation), a system that creates, maintains and processes systemic grammars.

Reiter & Dale define NLG as follows:

"Natural Language Generation is the subfield of Artificial Intelligence and Computational Linguistics that is concerned with the construction of computer systems that can produce understandable texts in... human languages from some underlying non-linguistic representation of information"

(Reiter & Dale 1997:57, quoted in Dale et al. 1998:346).

The above definition suggests that, starting from an input representation that is non-linguistic in nature, the generator has to select what to say and then has to decide how to say it, so that communication between machine and user can be achieved. The same way people have to learn how to use language according to systems of conventions within a society, the generator should know how to build a text to communicate the right information in an appropriate way. If this is not at all an easy task for a human being, then it is obvious what an arduous task it is for a machine, and also what a heavy burden it is to bring the machine to the point that it can generate text according to a specific context.

3. A systemic functional model of lexicogrammar

*Matthiessen uses the term *lexis* to refer to both "the static organisation of vocabulary and the process of lexical*

choice" (1991:252). He claims that lexis should not be studied on its own; if we consider that lexical and grammatical choices are ordered taxonomically, then it is obvious that lexical choices are more specific, i.e., more delicate than grammatical ones (1991:253).

In systemic linguistics lexis and grammar constitute a unified resource called lexicogrammar (Matthiessen 1991:253). Lexis and grammar are interdependent. Let us consider an example from Danlos (1987:97);

(1a) *The Pope was wounded yesterday in Paris. Anarchists blew up his house.*

[order RESULT-ACT] [RESULT in the passive]

(1b) *Anarchists wounded the Pope yesterday in Paris. They blew up his house.*

[order RESULT-ACT] [RESULT in the active]

(1c) *Anarchists blew up the house of the Pope who was wounded.*

[order ACT-RESULT]

Danlos claims that a terrorist crime against a famous political figure is expressed better when the result comes first in a separate sentence, and if possible in passive voice (1987:97). She generally claims that discourse structure can give rise to a correct text if it is used with simple sentences that have the necessary syntactic properties; choosing simple sentences and selecting discourse structures are interdependent operations (1987:94).

Matthiessen proceeds to present a model of systemic-functional lexicogrammar (1991: 279) which is divided into three areas, one for each metafunction of language. Lexis comprises denotation, connotation and lexical cohesion for the ideational, interpersonal and textual metafunction respectively, while grammar comprises transitivity together with process and participants for the ideational, mood for the interpersonal, and theme for the textual metafunction.

GRAMMAR textual interpersonal ideational

transitivity

theme mood process and

participants

LEXIS lexical denotation

cohesion connotation

Figure 1: Systemic-functional lexicogrammar (Matthiessen 1991:279).

3.1 Register, genre and text type

Language varies according to who we are, and according to the situation in which we find ourselves. The latter type of variation is approached through the concept of register, sometimes also known as stylistic variation (Montgomery 1996:105).

Register is a semantic concept, which Halliday defines as "a configuration of meanings that are typically associated with a particular situational configuration of field, mode and tenor" (Halliday & Hasan 1990:38-39). Being a configuration of meanings, a register should also include the expressions, the phonological and lexicogrammatical features which accompany or realise these meanings. Registers have indices in the form of specific words or phonological signals which indicate to the participants that a piece of discourse belongs to a particular register, for example, *Can I have a couple of tomatoes, please?* is heard at the grocer's, and not, say, at a conference.

Many attempts have been made for a definition of genre, with some degree of overlap between register and genre and some major differences in the usage of the concepts and terminology (Leckie-Tarry 1995:7). Hymes (1974, in Leckie-Tarry 1995:8) perceives genres as categories of the type tale, poem, myth, etc., which limits genre to purely formal categories. For some theorists genre is the interface between the socio-cultural world and textual form (Kress & Threadgold 1988:216). According to Fairclough, genre is "a socially ratified way of using language in connection with a particular type of social activity (e.g. interview, narrative, exposition)" (1995:14). For Halliday (1978:145) the notion of genre is included in the notion of register. Genre denotes the organisational structure of the text, one of the three factors (namely generic structure, textual structure and cohesion) that distinguish real text from non-text.

Text types are the configurations of genres, and subsequently of discourses, voices, styles, modes and activity types, that have become conventionalised for specific categories of activity in specific instances of social situation (Fairclough 1995:14). In other words, genre is more abstract than text type.

Register involves field, tenor and mode. The three are defined below according to Halliday (1990), who founded systemic-functional linguistics, and Leckie-Tarry (1995), who defined a functional linguistic theory of register.

The **field** of discourse corresponds to what a text is about. It constitutes the experiential component in the linguistic system, the meanings that reveal our experience of the world (Halliday & Hasan 1990:31).

It involves, first of all, the types of processes talked about in the text, for example, existence (i.e., being), possession (i.e., having), movement (i.e., going), location (i.e., putting). Secondly, it involves the grammatical structures associated with the above process types, which determine the participants involved in them. Thirdly, it involves the names of objects, such as car and house that can be found in texts, plus the features that accompany them, such as red, nice, etc. Also field is related to the evaluation of objects or personal estimations, such as it will go well, where the evaluation is indicated by the future tense (will go) and by the adverb (well) (Halliday & Hasan 1990:30-31).

According to Leckie-Tarry (1995:36-39) the basic elements of field are a) the arena, or a setting for action whose nature is dynamic, and the activities taking place there. These are the most important elements of context, and the degree of formal institutionalisation of the arena is the most crucial factor in the specification of register. b) The participants, and in particular their inherent features, that is to say, their physical attributes (race, gender, etc.), their mental attributes (intelligence, cognitive level, educational level, etc.), and their background knowledge (for example, cultural knowledge, situational knowledge, textual knowledge). c) The semantic domain, that is the general subject matter of the particular language event, which is considerably predetermined by the variables of arena and participants.

The **tenor** of discourse refers to the kind of social relationship enacted in the text. Tenor includes degrees of formality, the statuses of the participants, and politeness – especially the use of modal auxiliary verbs in utterances that request action are often related to politeness (Montgomery 1996:109-110). Tenor also involves

polarity (i.e., positive or negative) (Halliday & Hasan 1990:31-33).

The basic elements of tenor according to Leckie-Tarry (1995:39-44) are; a) The level of formality associated with the arena, meaning that if settings are highly institutionalised then the level of formality will also be higher, and if the institution involved is more like social practice then the level of formality will be lower. Joos (1962) presents the following levels of formality: frozen, formal, consultative, casual, intimate. b) The socially assigned roles played by the participants. c) The degree of focus placed on the interpersonal metafunction, or the interpersonal involvement among the participants, and on the ideational metafunction, or the information content of the message.

*The **mode** of discourse refers to the part language is playing (Halliday & Hasan 1990:12). It is the actual medium (i.e., written, spoken, interchange between monologue and dialogue, etc.) through which messages are communicated, and it is reflected in grammar. Mode is pragmatic and task-oriented; according to Halliday, theme structure is of main interest here, for example if there is a person theme (i.e., I want to get some sleep) or an object theme (i.e., the train is coming). Mode is also concerned with the way the relationships among items, such as repetitions and collocations, create cohesion throughout the text. Textual cohesion is concerned with anaphoric reference, where objects are involved, and with conjunction in general, where processes are involved. What is also important is the information structure, that is to say, how information is distributed in text units and how information is distributed into given and new (Halliday & Hasan 1990:34-36).*

According to Leckie-Tarry, mode (1995:44-47) has to do with a) the planning involved in the communication of meaning. Planning is influenced by the arena and the level of formality of the event, and also by the semantic domain, the participants, their roles, and the focus as described above. b) Feedback refers to the interpersonal distance, or the distance between the participants involved in the specific language event. c) Contextualisation refers to the degree to which a text is embedded in the activities that immediately surround it. d) Medium refers to the channel through which language is produced, and is affected by all the other contextual elements, and by both field and tenor.

It is obvious from the above that field, mode and tenor are interdependent and overlap. For example, it has already been mentioned that planning (mode) is influenced by the arena (field), the participants (field), and the focus (tenor), while the level of formality (tenor) is monitored by the arena (field). The description of field, mode and tenor as presented above suggests that the setting, the activities taking place there and the participants are the most prominent features of the three factors that determine register, and that they play a crucial role in choosing the appropriate language for a specific context. In other words, arena and participants affect the choice of linguistic devices such as speech acts, theme and information structure, mood and politeness techniques used for effective communication and for the monitoring of social roles.

Finally, the fact that field determines ideational meanings, mode textual ones and tenor interpersonal ones suggests that the three metafunctions of language are also interdependent and overlap.

3.2 A cline of register

Leckie-Tarry (1995:64) suggests a cline of register in order to encapsulate the various relationships between the registers of language, and between register and medium. Towards one pole of the cline belong registers that emerge early in the developmental process, while registers that belong to the other pole emerge late in the developmental processes. In the middle regions of the cline the predominance of focus on the Interpersonal or Ideational is marginal, meaning that the two are evenly balanced.

What is important in this cline for register is the fact that below the interpersonal and the ideational metafunctions are listed the properties that characterise these metafunctions;

Register

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Oral Literate

_ _ Interpersonal Ideational

_ _ Concrete Abstract

Meaning as process Meaning as product

Verbal style Nominal style

Informal spoken Formal written

Implicit structures Explicit structures

Unstable Stable

Propositional Lexical

Situation-dependent Situation-independent

_ _ Low hierarchization High hierarchization

Context of situation context of culture

Co-text

Figure 2: Cline of register (Leckie-Tarry 1995:64).

According to Halliday, spoken language is essentially verbal and written language is essentially nominal (1985: 49). Written language is more complex than spoken language. Leckie-Tarry proposes that the complexity that characterises written registers is a semantic complexity realised linguistically by the processes of hierarchization and lexicalisation; hierarchization of clauses involves their reduction and this leads to lexicalisation. When this occurs, these processes must involve a great degree of lexical density (1995:129).

3.3 How register affects lexical choice: politeness

Let us consider the example Grice (1975:51) used in order to show that a speaker may mean something different from what s/he actually says:

(2a) *I am out of petrol.*

(2b) *There is a garage round the corner.*

The first sentence is a declarative that plays the role of an indirect request. I am out of petrol actually means that my car is out of petrol. The fact that I is the theme suggests that I'm in trouble and that I'm asking for help. In this case I is the grammatical subject and also the psychological subject (Leckie-Tarry 1995:138), but, literally, the subject is the car. The answer implies that the garage will be open and selling petrol, and that round the corner is not far away (Brown & Yule 1996:32).

Now let us consider three sentences that express the same idea through different words:

(3a) *The "Twelfth Night" is now overdue.*

(3b) *Can you bring the book back, please?*

(3c) *Bring the damn book back!*

The first sentence is what students would receive by post from the library. It is a declarative sentence that functions both as an indirect request and as a warning. Here the "Twelfth Night" is given information since it is recoverable anaphorically or situationally (Halliday 1967:211), and the fact that the book is overdue is new information, since, according to Halliday's definition of new information, it cannot be recoverable from previous discourse (Halliday 1967:204). The first sentence is more formal than the second sentence, which is frequently used in English. The third sentence is a rather impolite imperative that could be used under very special circumstances, probably among friends. However, as it will be discussed later, there exist languages in which the imperative is not at all impolite, but rather the norm.

Politeness seems to be expressed in various ways across cultures. The English seem to place a higher value on privacy and individuality, i.e., the negative aspect of face, while the Greeks emphasise involvement and in-group relations, i.e., the positive aspect of face (Sifianou 1992:41).

The Japanese, the Hindi and the Chinese develop their topics in a spiral way instead of using the linear direction of development that characterises many Westerners. The Chinese operate on the basis of extreme indirectness, which is interpreted as a manifestation of negative politeness. They use the topic-comment structure, exemplified as old-new information which makes them a topic-prominent culture, while English is a subject-prominent culture. The English and the French seem to follow a more linear pattern to develop their argumentation, the Germans, Italians, Russians and Greeks follow a more spiral pattern of argumentation (Sifianou 1992:50-51).

Furthermore, the descriptions of speech acts currently available undoubtedly carry socio-cultural information. Hudson (1980:111) claims that concepts used in classifying speech acts will be typical of cultural concepts, and consequently we might expect them to vary from one society to another, which is what we actually find. This justifies what has already been said in literature that speech act categorisations are largely based on English, and as such cannot be applied universally.

As far as forms of address are concerned, Levinson claims that nominal predicates agree with number and person, finite verbs with the morphological person and number encoded in the polite form of the pronoun, with language-specific decisions on predicates of intermediate kind (1983:92). This facility, though structurally rather simple, is very important socially because it enables speakers to make distinctions and indicate formality

rather simple, is very important socially because it enables speakers to make distinctions and indicate formality that would otherwise require a different, perhaps more elaborate system to express. There exist languages that have a distinction analogous to the tu/vous distinction in French, where tu is the singular you and vous is the plural form, but vous is also used with individuals on specific circumstances. Such languages are (Wardough 1998:255):

Latin	Tu/vos
Russian	Ty/vy
Italian	Tu/lei
German	Du/sie
Swedish	Du/ni
Greek	Esi/esis

Table 1: Tu/vous distinctions among languages (Wardough 1998:255).

English also used to have a distinction between thou and you, which is now obsolete. In many western societies symmetric pronominal use is an example of positive politeness, and assymetric tu/vous use reflects negative politeness. However, this approach does not work in languages such as Javanese and Japanese, which seem to have very complex systems of politeness (Wardough 1998:272).

The selection of tu/vous forms is an important difference between Greek and English, which partly explains the need for elaboration and indirectness in English to express formality, politeness, and social distance. Even the simplest grammatical construction, the imperative, which in English would be condemned as impolite in most cases, exhibits in Greek a gradation of more or less acceptability partly due to the availability of the singular/plural distinction. Consequently, as far as social deixis is concerned, we can observe the different choices open to a speaker according to the status of and degree of familiarity with the addressee. These same parameters determine choices among the various forms of address (Sifianou 1992:63).

Greek includes a T/V pronominal system and the Title First Name (TFN) possibility that existed in older English. This appears to bridge the gap between the very intimate First Name (FN) and the very formal Title Last Name (TLN). This TFN is the most common construction in everyday Greek interactions. This TFN possibility can be followed by either singular or plural number choice (Sifianou 1992:64).

In Greek some of the occupational titles are preceded by kirie (Mr), but not by kiria (Mrs) or despinis (Miss); for example, kirie kathigita/Mr professor, but not kirie giatre/Mr doctor, while dimarche/mayor can be used with or without kirie/Mr. The first of the two titles are always omitted when the name of the person follows and this is more frequently used indirectly rather than directly as a form of address. The only cases in English where a positional title is preceded by Mr is Mr President and only in the United States. This construction is more frequent in Greek perhaps because it is believed that occupational titles do not necessarily imply gentlemanliness. Another explanation could be that the use of two titles in Greek is an attempt to distance the interlocutors (Sifianou 1992:65-66). Women in general tend to receive more intimate, first name, and singular forms, even in situations where that would not be the case for a male. As for women professionals, they tend to be addressed by their marital status title plus their last name on formal occasions (Sifianou 1992:68).

Formality and politeness, although related, are not equivalent. Formality represents a divergence from the everyday norm when the addressee is considered to be socially superior or the situation demands it whereas

everyday morning, when the addressee is considered to be socially superior or the situation demands it, whereas politeness usually is the norm. Formality requires effort and is subject to more conscious monitoring, whereas politeness is to a greater extent habitual. Formality does not always indicate politeness and should not always be equated with it. Also, formality can be associated with most manifestations of negative politeness, but not necessarily with manifestations of positive politeness (Sifianou 1992:80).

If we consider the way requests are formed across cultures, we will notice that they can be expressed, first of all, through imperatives; imperatives include a verb and an object, if the verb is transitive, and if intransitive, some other complement. In English direct imperatives are not appropriate, or even unacceptable for making requests (Sifianou 1992:125). But polite usage in Russian permits many more direct imperatives than English (Thomas 1983:102). Let us consider the following example:

(4a) English: *Bring the wine, please.*

(4b) Greek: ? *Bring the wine.*

An imperative in English would be followed by *please*, but in Greek such imperatives are the norm among friends and relatives.

Secondly, requests can be expressed through interrogatives. The main formal difference between Greek and English common, everyday interrogative requests is that in English more elaborate constructions with modals are preferred, while in Greek they are very frequently formed with present indicative or past subjunctive constructions (Sifianou 1992:137-138);

(5a) English: *Could you tell me the time?*

(5b) Greek: ? *Do you tell me the time?*

(6a) English: *Can I make a phone call?*

(6b) Greek: ? *Can I make a phone call?*

Furthermore, there exist requests as negative constructions; in Korean and Japanese a question is more polite when phrased negatively (Applegate 1975:275).

Declaratives fall into two main groups: hints and need statements (Sifianou 1992:149). Indicative forms in English are usually expressed with subjunctive in Greek:

(7a) English: *Look after her.*

(7b) Greek: ? *That you look after her.*

Ellipsis appears to be related to repetition and is more frequently employed in Greek (Sifianou 1992:153-155). It is a positive politeness strategy for Brown and Levinson (1978:111). Shared pragmatic and cultural knowledge plays a significant role in the decoding of elliptical utterances and in the understanding of the problems that such utterances pose to non-native speakers (Kato 1986:418). An elliptical example which is the same in English and Greek the following:

(8a) English: *Help!*

(8b) Greek: ? *Help!*

The above discussion on politeness shows that what is in question is not politeness as such but an understanding

of what is considered to be socially appropriate in the culture (Wierzbicka 1985:154). To be able to make correct judgements and reach valid conclusions one has to know the social structure in which the forms of utterance occur and the cultural values which inform that structure (Hymes 1986:80).

3.4 An enriched model of systemic-functional lexicogrammar

Matthiessen's model of systemic-functional lexicogrammar is very much related to how variation in register affects lexical choice. Arena, medium, and the statuses of the participants determine politeness, which is then expressed through speech acts, formality, deixis (person and social), and polarity. Since the three metafunctions of language are interdependent, the position of the elements in the model is not strict. It has already been mentioned above that the most prominent elements that affect all three metafunctions of language are the arena and the participants. The fact that the interpersonal metafunction is directly involved with the statuses of the participants has led to the repetition of participants in the interpersonal column. Once again it should be mentioned that the following figure does not suggest a change in theory, but just to put emphasis on issues that directly emerge from the model.

GRAMMAR textual interpersonal ideational

_ _transitivity

MEDIUM FORMALITY ARENA

PARTICIPANTS

POLITENESS

theme mood process and

participants

SPEECH ACTS

_ _DEIXIS

LEXIS lexical denotation

cohesion connotation

Figure 3: Enriched model of systemic-functional lexicogrammar.

4. Towards an implementation of the model of systemic functional lexicogrammar

At this point where this work is still incomplete and at an early stage it is not possible to present a detailed implementation of the factors that were discussed above and that affect lexical choice. Matthiessen's comments on the implementation of the model will be considered, and then reference will be made to the KPML system, which includes information about register and genre.

Matthiessen's model of systemic-functional lexicogrammar

Matthiessen claims that his model of lexicogrammar could be implemented in various ways. He seems to be in favour of the thesaurus principle for the organisation of lexis. He says that the thesaurus is the kind of model that suggests what systemic ideational lexis is like. He mentions that it has not been used as a model in TG with the exception of Goldman's approach to lexical selection, which gives priority to lexis (Matthiessen 1991:275, 277).

The KPML (KOMET-Penman multilingual) environment is a system that aims at the development and maintenance of large-scale sets of systemic-functional descriptions at a multilingual level (1997:1). The advantages of this system are that it is easy to access since it is available free on the web, it is based on the systemic functional approach, it is written in Lisp, it has a multilingual basis, and it allows for developing and refining resources for specific needs. The most important of all is that it already includes information about register and genre, as mentioned in the relevant documentation. This means that it will not be necessary to start from scratch and design a system that will include information about register; it will be observed what is already there in the system, and existing information will be expanded according to the system's needs. This agrees with the idea of reusing the work of others, so that research productivity can be increased.

5. Conclusion

Throughout this work it has been shown how variation in register can affect lexical choice, with special reference to politeness phenomena across cultures. This is not a new issue in TG, but it is very important and very much related to Matthiessen's model of systemic-functional lexicogrammar.

Finally, it should be emphasised how important it is for a generator to take under consideration contextual factors for lexical choice, not only for English, but also for other languages. The performance of systems such as the KPML system is very promising, and proves that progress in the field can be achieved.

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