Modelling context and register: the long-term project of registerial cartography

Modelando contexto e registro: o projeto de cartografia de registro a longo prazo

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Abstract: This paper presents the outlines of a long-term project concerned with the modelling of context and register along the lines originally drawn by M.A.K. Halliday and Ruqaiya Hasan in Systemic Functional Linguistics (SFL) — thus with "register" in its original sense of a functional variety of language, i.e. the meanings at risk in a given type of context. The topic of this project can be characterized as register cartography. Section 1 presents the background to work on the modelling of context and register, noting different uses in SFL of the term "register" locating the notion of register as functional variation in terms of the two semiotic dimensions of the hierarchy of stratification and the cline of instantiation. Section 2 sets out alternative models of context and register, identifying the key semiotic dimensions involved in these models. It then compares and contrasts the models. Section 3 adds to this account of work on context and register by summarizing work that has been done in computational linguistics informed by SFL — important work that has sometimes been overlooked by researchers concerned mainly with manual discourse analysis. Based on the background sketched in Sections 1 through 3, Section 4 then reports on the long-term project of registerial cartography, giving a general account with examples of findings such as differentiation of registers in terms of relative text frequency of terms in certain major systems. Section 5 focusses on one aspect of the long-term project — viz. the description of different fields of activity: eight primary fields of activity, each differentiated into more delicate subtypes — illustrated by means of variation in the deployment of pictorial resources.

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The more delicate subtypes are then used to related the field-based cartography to the genres identified and described within the "Genre Model" of the "Sydney School", in the work led by J.R. Martin. Field of activity is compared and contrasted with genre in the sense of goal-oriented social process. Building on the account of fields of activity, Section 6 adds tenor and mode consideration, illustrating how fields of activity can be intersected with tenor and mode values. Section 7, the Conclusion, summarizes the presentation, and relates it to considerations of institutions as domains of culture consisting of arrangements of situation types, and of persons as aggregates of personae operating in different relationships in different social groups — including a reference to Gu Yue-guo's work on discourse geography.

Key words: registerial cartography, context modelling, discourse analysis, field, tenor, mode

Resumo: Este artigo apresenta esboços de um projeto de longo prazo referente à modelagem de contexto e registro através das linhas originalmente traçadas por M. A. K. Halliday e Ruqaiya Hasan em Linguística Sistêmico-Funcional (LSF) – portanto com "registro" em seu sentido original de uma variedade funcional da linguagem, isto é, o sentido em questão em um dado tipo de contexto. O tema deste projeto pode ser caracterizado como cartografia de registro. A Seção 1 apresenta o pano de fundo para o trabalho com a modelagem de contexto e registro, observando-se diferentes usos em LSF do termo "registro", localizando a noção de registro como variação funcional em termos das duas dimensões semióticas da hierarquia de estratificação e do *continuum* de instanciação. A Seção 2 apresenta modelos alternativos de contexto e registro identificando as dimensões semióticas principais envolvidas nesses modelos. A seguir, comparam-se e contrastam-se os modelos. A Seção 3 contribui para a descrição do estudo acerca de contexto e registro ao resumir o trabalho que tem sido feito em linguística computacional baseada em LSF – importante tarefa às vezes negligenciada por pesquisadores que se dedicam principalmente à análise manual do discurso. Com base no esboço apresentado nas Seções 1 a 3, a Seção 4 relata um projeto de longa duração acerca da cartografia de registro, dando uma visão geral com exemplos de achados tais como diferenciação de registros em termos de sua relativa frequência em textos em listas de termos em certos sistemas importantes. A Seção 5 enfoca um aspecto do projeto a longo prazo – qual seja a descrição de diferentes campos de atividade: oito campos primários de atividade, cada um agrupado em subtipos mais específicos – ilustrados por meio de variação no emprego de recursos pictoriais. Os tipos mais específicos são a seguir usados para relacionar a cartografia baseada em campos específicos identificada e descrita segundo o "Modelo de Gênero" da "Escola de Sydney", no trabalho liderado por J. R. Martin. O campo de atividade é comparado e contrastado com o gênero no sentido de processo social orientado para objetivos. Construído na descrição de campos de atividade, a Seção 6 acrescenta considera**ões** sobre relações e modo, ilustrando como campos de atividade podem estabelecer intersecção com valores de relações e modo. A Seção 7, a Conclusão, resume a apresentação e a relaciona com

considerações acerca de domínios da cultura, consistindo em arranjos de tipos de situação e de pessoas como agregados de *personae* operando em diferentes relações em diferentes grupos sociais – incluindo uma referência ao trabalho de Gu Yue-guo sobre geografia do discurso.

Palavras-chave: cartografia de registro, modelagem de contexto, análise de discurso, campo, relações, modo

1 Introduction: the original characterization of register

In this paper, I would like to discuss issues relating to the modelling of situation type (within context) and register (in the sense of a functional variety of language) and to report on a long-term project I have been involved concerned with systematically describing functional varieties of language — i.e. of registers — based on detailed text analysis[1]. The topic of this project can be characterized as register cartography. I will say something about the background leading up to and informing this project, but let me begin by the characterization of register.

1.1 The characterization of register

In the 1960s, Halliday and other systemic-functional linguists developed the notion of **register** as **functional variation in language** — **variation according to use**, complementing the well-established account of dialect as variation according to user and growing out of Firth's "restricted languages" (e.g. HALLIDAY; McINTOSH; STREVENS, 1964; GREGORY, 1967; HASAN, 1973; HALLIDAY, 1978). In one of the early characterizations, Halliday, McIntosh and Strevens (1964, p. 87) write:

> A dialect is a variety of a language distinguished according to the user: different groups of people within the language community speak different dialects. It is also possible to recognize varieties of a language along another dimension, distinguished according to use. Language varies as its function varies; it differs in different situations. The name given to a variety of language distinguished according to use is 'register'.
>
> The category of 'register' is needed when we want to account for what people do with their language.

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1. This paper complements two other current publications, Matthiessen (2013a) on register cartography and Matthiessen (2013b) on appliable discourse analysis.

This was during the "scale-and-category" phase of the development of systemic functional linguistics (SFL). After SFL had been developed in the second half of the 1960s and the 1970s, Halliday (1978, p. 110-111) gave the following account of **register**:

> The term 'register' was used first in this sense, that of text variety, by Reid (1956); the concept was taken up and developed by Jean Ure (URE; ELLIS 1972 [1977, CMIMM]), and interpreted within Hill's (1958) 'institutional linguistic' framework by Halliday *et al.* (1964). The register is the semantic variety of which a text may be regarded as an instance. [...]

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A register can be defined as the configuration of semantic resources that the member of a culture typically associates with a situation type. It is the meaning potential that is accessible in a given social context. Both the situation and the register associated with it can be described to varying degrees of specificity; but the existence of registers is a fact of everyday experience — speakers have no difficulty in recognizing the semantic options and combinations of options that are 'at risk' under particular environmental conditions. Since these options are realized in the form of grammar and vocabulary, the register is recognizable as a particular selection of words and structures. But it is defined in terms of meanings; it is not an aggregate of conventional forms of expression superimposed on some underlying content by 'social factors' of one kind or another. It is the selection of meanings that constitutes the variety to which a text belongs.

A register is thus a functional variety of language — the part of the meaning potential of language that is associated with a situation type. The association of with a register of language with a situation type within context is represented in Figure 1. In view of uses of the term "register" in developments since the 1970s, there are two crucial aspects of Halliday's (1978, p. 111) definition to note:

- a **register** is a semantic variety of *language* ("meanings at risk"); it is a linguistic category, not a contextual one; and
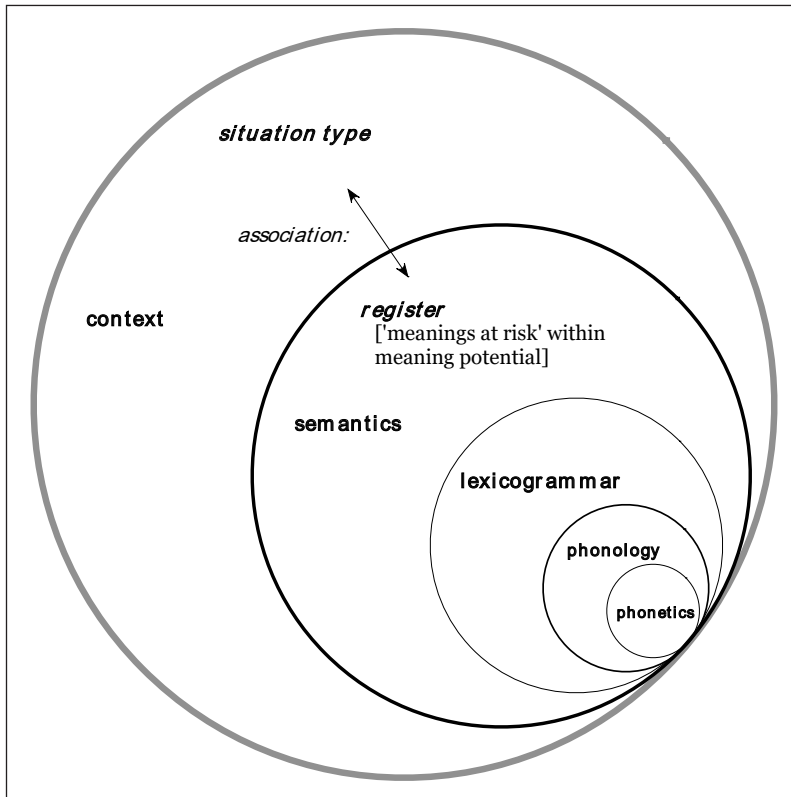- as a functional variety of languages, it is associated with a **situation type** within context.

Figure 1: "A register can be defined as the configuration of semantic resources that the member of a culture typically associates with a situation type"

Registers are thus **adaptations** of language to different situation types; every situation type has an associated register (cf. HALLIDAY, 1973, p. 101; HASAN, 2009b, p. 172-173): Figure 2. As new situation types emerge so do associated registers; and as situation types fade away so do their registers. Cultures and languages persist over long periods of time, but the composition of the situation types and registers that they are made up of changes in the course of cultural and linguistic evolution, as in the evolution situation types and registers of science in the last 500 years or so — see Halliday (1988).
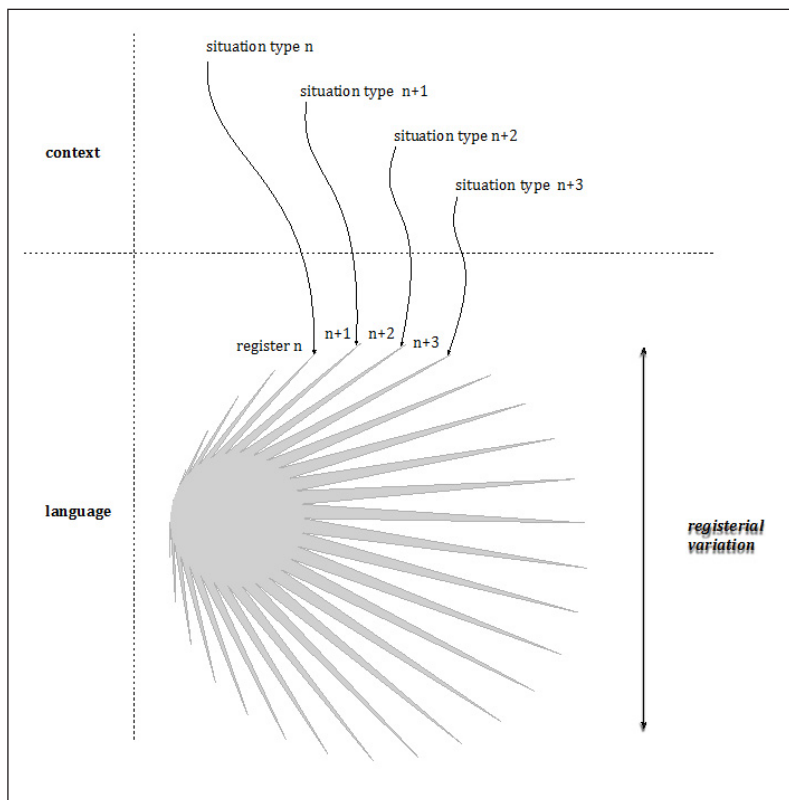
Figure 2: Registerial variation — situation types with associated registers

There are thus two associated abstractions, a linguistic one — **register**, and a contextual one — **situation type**. It is also important to note that Halliday (1978, p. 110) that a text is "an instance" of a register; a text instantiates a register. This relationship of instantiation was already established in systemic functional linguistics, discussed in terms of instantiation or actualization; it was an important aspect of Halliday's (1973) critique of the dichotomy of "competence" and "performance" in Chomsky's work.

1.1 Register and instantiation

Instantiation was later discussed in more detail, e.g. in Halliday (1991) in reference to education and in Halliday (2002) in reference to computation. Thus just as a text instantiates a register and a situation instantiates a situation type, a register instantiates the meaning potential of language and a situation type instantiates the cultural potential of context, the "context of culture". These are locations along the **cline of instantiation**, which is represented as the horizontal dimension in Figure 3. A situation type and the register associated with it are thus located mid-region along the cline of instantiation, between the potential pole (meaning potential in context of culture) and the instance pole (text in context of situation).

This mid-region can be viewed from the vantage point of either of the two poles, as Halliday (e.g. 1991, 2002) has shown; we can view it either from the vantage point of the potential as **sub-potential**, or from the vantage point of the instance as **instance type**. And here it is helpful to have distinct terms for these different ways of approaching the mid-region. Halliday (1991, 2002) uses the terms "cultural domain" or "institution" for the view of the mid-region as sub-potential of the context of culture, "situation type" for the view of it as instance type (type of [context of] situation); "register" for the view of the mid-region as sub-potential of the meaning potential of language, and "text type" for the view of it as instance type (type of text). These are represented as locations in the **stratification-instantiation matrix** he introduced in Halliday (2002), reproduced here as Figure 4. In a more detailed version of this matrix, Halliday (2002/ 2005, p. 255) characterizes register as "networks of topological regions of semantic space" at the stratum of semantics and as "networks of typological regions of lexicogrammatical space" at the stratum of lexicogrammar.
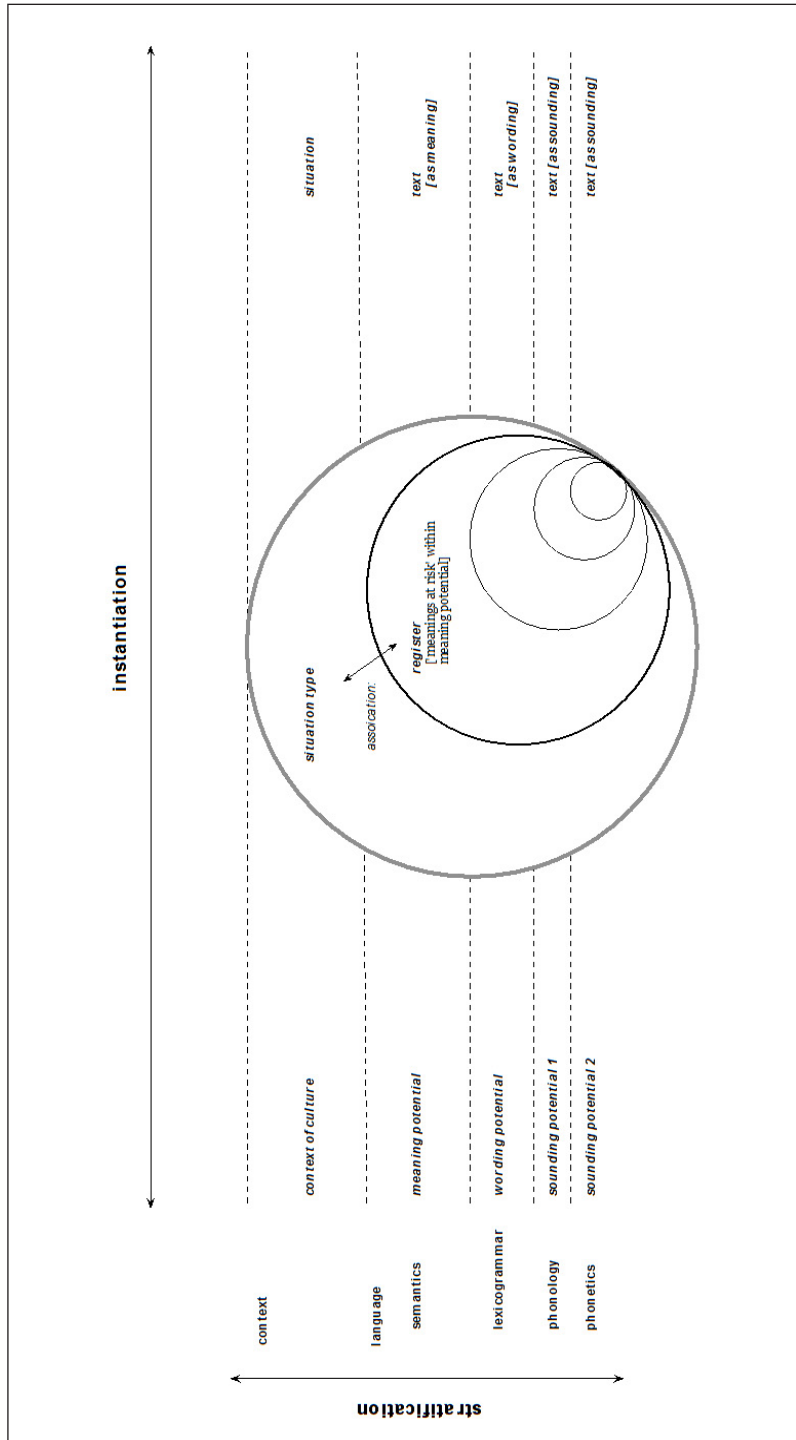
Figure 3: Register as "meanings at risk", a variety of language", associated with a situation type

The view of language in context represented in the stratifica-tion-instantiation matrix in Figure 4 is important in that it makes explicit that register is defined in the overall theory of language in context in terms of the intersection of two semiotic dimensions (cf. MATTHIESSEN, 2007), the cline of instantiation and the hie-rarchy of stratification. In terms of the cline of instantiation, it is located mid-region between the potential pole and the instance pole, representing the view from the potential pole as a subsystem; and in terms of the hierarchy of stratification, it is located within language rather than within context — being a subsystem of the semantic system in the first instance, a subpotential of the mea-ning potential of language — the "meanings at risk" in a particular institutional setting.
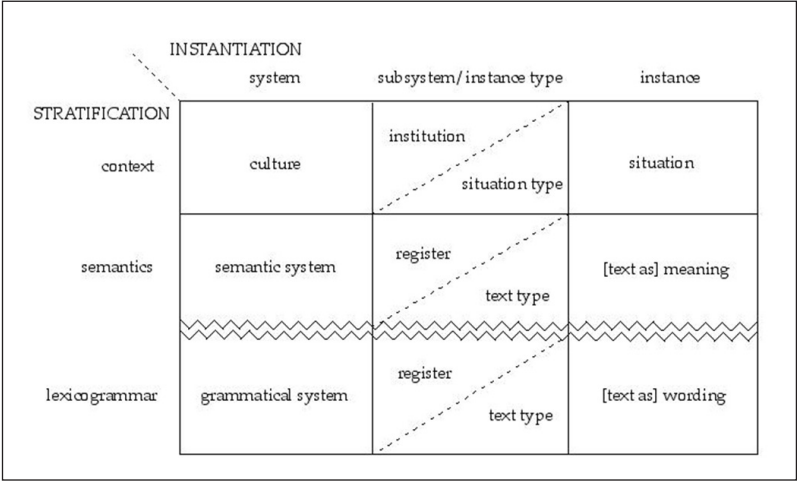
Figure 4: Halliday's (2002) stratification-instantiation matrix, with register as subsystem of the semantic system (sub-potential of the meaning potential of language)

While the concept of register was introduced in proto-SFL and developed further in SFL, the term "register" has now become part of general linguistic terminology in the broad sense of a functional variety of language used in some particular type of context; in the Wikipedia entry, it is characterized as follows: "In linguistics, a register is a varie-ty of a language used for a particular purpose or in a particular social setting".

In an influential overview of register[2], Biber (1994, p. 32) characterizes "register" as follows:

> I use the term register in this paper, as it is used in this book, as a general cover term for all language varieties associated with different situations and purposes. The framework developed here recognizes a continuum of varieties and describes the extent to which any particular register is specified.

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This use of the term "register" falls within the tradition established by systemic functional linguists (e.g. HALLIDAY; McINTOSH; STREVENS, 1964; GREGORY, 1967; HASAN, 1973) and other linguists in the 1960s. One definitional detail is that in Halliday's account, register is given a ***fully explicit location in the overall theory***, and it is very clear how it relates to text type, and also to varieties of other kinds, in particular dialectal varieties and codal varieties (see HASAN, 1973; HALLIDAY, 1978, 1994). Within the broad categorization of "register" as a functional variety of language, there has been considerable variation in the deployment of the term; and scholars have used it together with other terms, "genre", "text type" and "style", in different ways[3]. In an Appendix to his paper, Biber (1994, p. 51-53) provides a helpful survey of uses of these terms.

1.2 Terminology

Within SFL, "register" began to be used in a new way in the 1980s alongside the established sense of register as a functional variety of language. This was part of the theory of context developed by J.R. Martin and his

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2. In 1993/1994, two important edited volumes dealing with register appeared, Ghadessy (1993) and Biber and Finnegan (1994). Ghadessy's volume represents the development of the systemic-functional work on register, complementing Ghadessy (1988), also with contributions by scholars from other traditions. Biber and Finnegan (1994) shift the focus to contributions mostly by scholars based in North America.

3. As we will see below, Halliday (e.g. 1991, 2002) has used the term "text type" to refer to characterizations of functional varieties that are based on generalizations about texts. He avoided the term "genre" for two related reasons: (1) at the time when the theory of register was first being developed, "genre" tended to be associated with literature — this was before Bakhtin's (1981) notion of "speech genre" had become widely known outside the Soviet Union; and (2) the traditional genres were often "functionally complex". Halliday (1978, p. 145) writes: "The various genres of discourse, including literary genres, are the specific semiotic functions of text that have social value in the culture." and he continues: "labels for generic categories are often functionally complex: a concept such as 'ballad' implies not only a certain text structure with typical patterns of cohesion but also a certain range of content expressed through highly favoured options in transitivity and other experiential systems — the types of process and classes of person and subject that are expected to figure in association with the situational role of a ballad text."

team in the course of educational linguistic research and practice — a move summarized by Martin (1992, p. 501-502) as follows:

> ... it is important to note that *English Text* extends the use of the term register as defined by Halliday. Halliday uses the term simply to refer to language as context's expression plane — the linguistic meanings (entailing their expressions) at risk in a given situation type. *English Text* extends the notion to cover in addition part of context's content plane; **register** is used in other words to refer to the semiotic system constituted in the contextual variables field, tenor and mode. As outlined above, in the model of context developed here, register is the name of the metafunctionally organised connotative semiotic between language and context.

In other words, with respect to terminology, Martin (1992) moves the term "register" in the systemic functional model from language to context, thus replacing the term "situation type" with "register", as shown diagrammatically in Figure 5. Moving the term "register" from language leaves a terminological gap, of course; but Martin did not propose a term to fill this gap. This reflects an important point that is clear from Martin's (1992) account: the difference is not only terminological but also theoretical, and I will now discuss the alternative models of context and functional variation that researchers worked on in the 1980s.
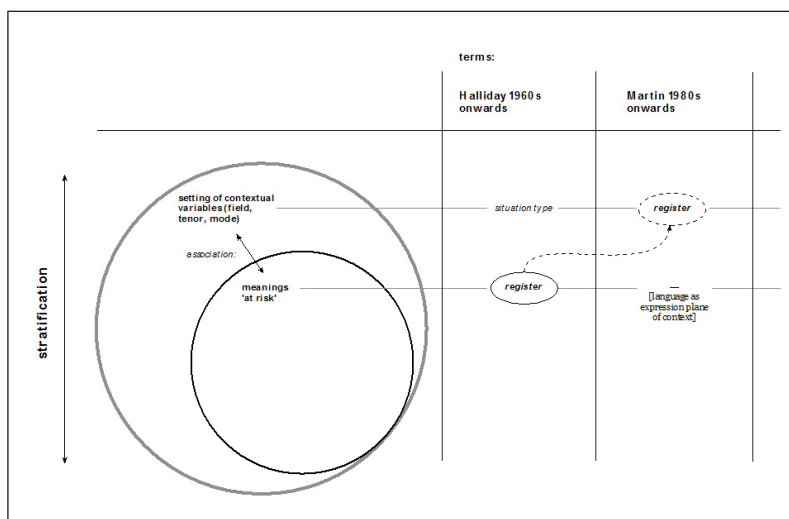
Figure 5: Two different uses of the term "register" in systemic functional linguistics, the original sense of 'functional variety' and Martin's (1992) sense

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2. Alternative models — dimensions of modelling

In the 1980s, systemic functional researchers in different fields worked on situation type and register. By far the most widely known line of research was that undertaken within educational linguistics by J.R. Martin, Fran Christie, Joan Rothery and other researchers based in Australia; this came to be known as the **Genre Model**, the theoretical foundation for genre-based pedagogy (cf. MARTIN; ROSE, 2012). However, there was also relevant work in computational linguistics — which I will return to below.

2.1 The Genre Model

In the educational linguistic context of research and application, the primary dimension used in modelling situation type and register was the **hierarchy of stratification**, building on Halliday's (1978) interpretation of context as a higher-stratal semiotic construct. Thus Martin (1992) presents a model of context stratified into **ideology, genre** and **register**[4]: see Figure 6. He did this in two steps. He first stratified context into genre and register (i.e. situation type),

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4. For a summary of the model some two decades later, see Martin (2010). Here he deploys both the hierarchy of stratification and the cline of instantiation; for the locations of "genre" and "registers", see esp. pp. 17-18.

and he then added ideology as a contextual plane above genre (see e.g. MARTIN, 1986). Each contextual plane was introduced to handle a particular task in the overall account of context. He describes the model as follows (MARTIN, 1992, p. 494-496):

> The sociosemiotic organisation of context has to be considered from a number of different angles if it is to give a comprehensive account of the ways in which meanings configure as text. Seen from the perspective of language, context can be interpreted as reflecting metafunctional diversity. Projecting experiential meaning onto context giving **field** [endnote left out, CMIMM], interpersonal meaning giving **tenor** and textual meaning giving **mode**. [...]
>
> Seen from the perspective of culture on the other hand, context can be alternatively interpreted as a system of social processes. This for example is the perspective that underlies much of Bakhtin's writing on genre. While acknowledging metafunctional diversity in terms strikingly similar to those developed by Halliday, Bakhtin places emphasis as well on the integration of these meanings as speech genres which evolve and differentiate themselves in different spheres of human activity. [...]
>
> Tensions between these two perspectives will be resolved in this chapter by including in the interpretation of context two communication planes, genre (context of culture) and register (context of situation), with register functioning as the expression form of genre, at the same time as language functions as the expression form of register. Register can then itself be organised with respect to field, tenor and mode, reflecting metafunctional diversity in its expression form, leaving genre to concentrate on the integration of meanings engendered by field, tenor and mode as systemically related processes. [...]
>
> Any configuration of this kind then needs to be qualified with respect to cultural diversity (cf. dialogism and heteroglossia in BAKHTIN, 1981). Clearly, meaning potential is not evenly distributed across a culture (any more than material resources are). Access to genre, register and language as semiotic resources is mediated through discourses of ethnicity, class, gender and generation, which discourses are in a continual process of negotiation with each other (CRANNY-FRANCIS, 1990; KRESS

1985/1989). Not only is this process of negotiation manifest in all text, but it functions as well as the source of semogenesis, both contextual and linguistic. It is for this reason that a fourth communicative plane, ideology, will be articulated here, with genre, and hence register and language as its expression form.
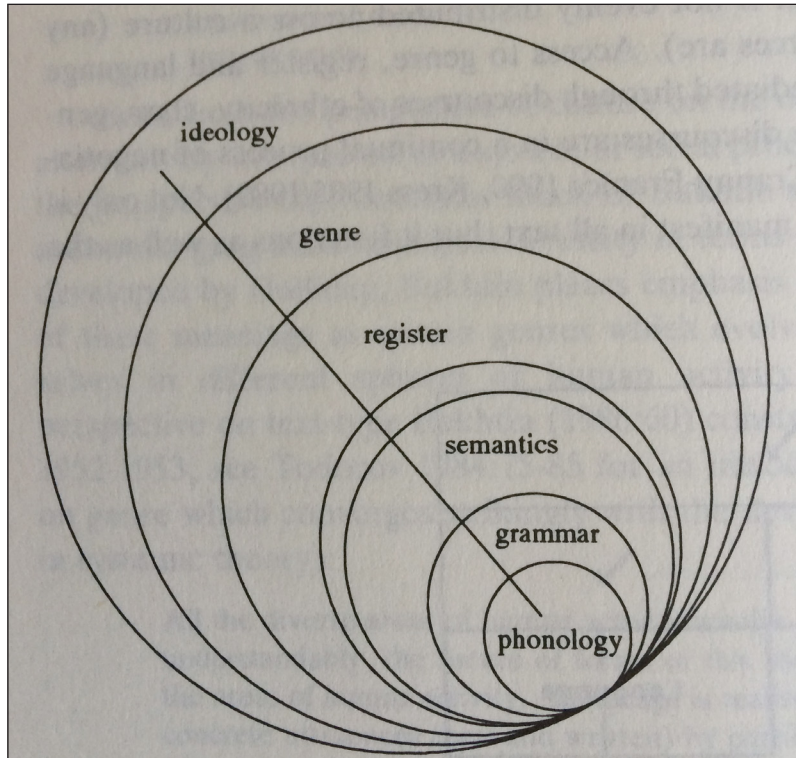
Figure 6: Martin's (1992, p. 496) stratified model of context

In Martin's (1992) account of context, ideology, genre and register are thus modelled as contextual planes that are related to one another in terms of the hierarchy of stratification. This way of modelling them has certain implications, e.g.

- each plane is also organized axially, by means of system networks or another form of representation of organization along the paradigmatic axis and by means of realization statements that are associated with systemic options and which specify fragments of structure — of patterns along the syntagmatic axis;

- patterns on each plane are realized by patterns on the plane immediately below, i.e. ideological patterns are realized by genre patterns, genre patterns are realized by registerial patterns, and registerial patterns are realized by linguistic patterns.

It remains to be seen how and whether these implications can be dealt with. The emphasis has tended to be on the development of informal descriptions of a wide range of genres focussed on the "schematic structures" of the genres with information about concomitant lexicogrammatical patterns supplemented by some observations about systems that are interpreted as operating as part of "discourse semantics", with a great deal of attention being given to APPRAISAL.

2.2 The continued articulation of Halliday's model

However, around the same time that Martin (1992) presented the consolidated overview of the stratificational modelling of context, there was an alternative that modelled context in terms of not only the **hierarchy of stratification** but also the **cline of instantiation**. This was the account that I began to sketch earlier, in Section 1.2, based on Halliday (1991) and further specified in subsequent publications, Halliday (2002) being important partly because he presented the stratification-instantiation matrix reproduced above in Figure 4.

Halliday (1991) intersected the hierarchy of stratification with the cline of instantiation in a diagram that has appeared since then in many publications, sometimes with some variation (for a recent overview, see HASAN, 2009b, p. 168-170); it is reproduced here as Figure 7. He characterizes the "horizontal dimensions", the cline of instantiation, as follows:

> I have suggested that the context for the meaning potential — for language as system — is the context of culture. [...] The context for the particular instances — for language as processes of text — is the context of situation. And just as a piece of text is an instance of language, so a situation is an instance of culture. So there is a proportion here. The context for an instance of language (text) is an instance of culture (situation). And the con-

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text for the system that lies behind each text (language) is the system which lies behind each situation — namely, the culture. See Figure 1 overleaf [reproduced here as Figure 7, CMIMM]. However, there is a hidden trap to watch out for at this point. We have these pairs of terms, like culture and situation, or language as system and language as text; we need them in order to talk about what we do. But the implication is that these are two different things: that the "system" is one thing, and the "text" is something else, something different. Let me return to this concept of a "potential". The system is mot some independent object; it is simply the potential that lies behind all the various instances. Although the actual texts that you process and produce will always be limited, the potential (for processing and producing texts) has to reach the stage where it is unlimited, so that you can take in new texts, that you haven't heard or read before, and also interact with them — interrogate them, so to speak, argue with them, and learn from them. (That, of course, is a high standard to attain). And we can apply the same thinking to the situation and the culture. These also are not two different things; they are the same seen from different points of view. A situation, as we are envisaging it, is simply an instance of culture; to, to put it the other way round, a culture is the potential behind all the different types of situation that occur. We can perhaps use an analogy from the physical world: the difference between "culture" and "situation" is rather like that between the "climate" and the "weather". Climate and weather are not two different things; they are the same thing, which we call *weather* when we are looking at it close up, and *climate*, when we are looking at it from a distance. The weather goes on around us all the time; it is the actual **instances** of temperature and precipitation and air movement that you can see and hear and feel. The climate is the **potential** that lies behind all these things; it is the weather seen from a distance, by an observer standing some way off in time. So of course there is a continuum from one to the other; there is no way of deciding when a "long-term weather pattern" becomes a "temporary condition of the climate", or when "climatic variation" becomes merely "changes in the weather". And likewise with "culture" and "situation": a school, for example, is clearly a cultural institution, a matrix of social practices governed by cultural norms and values. But we can also look at it as an assembly of situations: it consists of regular

events called "lessons" in which people in certain role relationships (teachers and pupils) take part in certain forms of interaction in which certain kinds of meanings are exchanged. We can look at it as system (this is what we mean by education: the school considered systemically), or as text, repetitive instances of the processes of teaching and learning. We may choose to look at this phenomenon from either end; but it is still a single phenomenon, not two.

Here it is thus very clear that Halliday provided an alternative to the dichotomous thinking that had dominated European structuralism, in the form of Saussure's dichotomy — *langue* and *parole*, and U.S. American generative linguistics, in the form of Chomsky's dichotomy — *competence* and *performance*.

Figure 7: Halliday's (1991, p. 8) diagram showing the extension of the stratal relationship between language and context along the cline of instantiation.

Around the same time, I was also trying to work with Halliday's location of register midway along the cline of instantiation in relation to the hierarchy of stratification; in Matthiessen (1993, p. 272), I represented these two dimensions in the diagram reproduced here as Figure 8. For some reason, I labelled the cline from the vantage point of the instance, calling it "potentiality" rather than "instantiation"; but what was important was the notion of the cline. The need for this kind of two-dimensional modelling of language and context had gra-

dually become clear in the systemic functional computational linguistic work on text generation in the 1980s (more about which below).
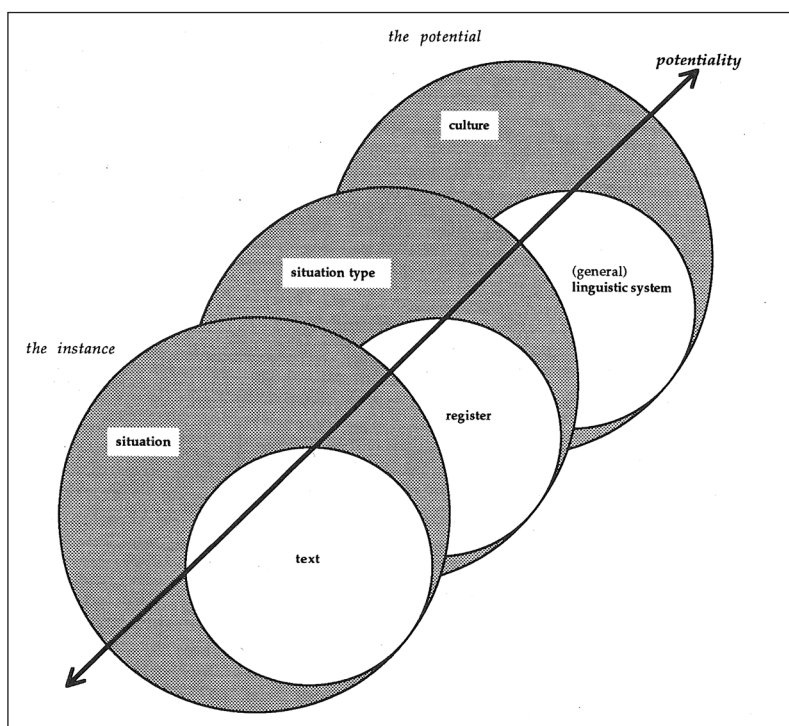
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Figure 8: Language in context (stratification) extended along the cline of "potentiality" (Matthiessen, 1993)

2.3 Comparison of the models

In exploring contextual and linguistic patterns in systemic functional linguistics, we try to interpret them in terms of **dimensions** — the dimensions that define the organization of semiotic systems[5]. Some dimensions are likely to be unique to semiotic systems, like the hierarchy of stratification since it is this form of organization of the system into (minimally) content and expression that makes meaning possible. Other dimensions are likely to be involved in the organization of systems of different kinds, like the cline of instantiation, as Halliday's analogy with climate and weather shows. In exploring patterns such as those that have become known as

5. This dimensional way of modelling phenomena contrasts with modular or componential modelling (cf. Matthiessen, 2007) — the kind of modelling that has been prominent in generative linguistics, computational linguistics, AI and cognitive psychology. Dimensional modelling is relational: phenomena are characterized in terms of the relations they enter into along different dimensions.

situation type and register, we thus ask which dimensions are relevant in the modelling of them. It is clear that stratification is needed in the model, but is this the only dimension: is the model one-dimensional or two-dimesional. In Figure 9, I have contrasted those modelling attempts that have focussed on the hierarchy of stratification, placing the patterns under focus stratally, with those modelling attempts that have operated with both the hierarchy of stratification and the cline of instantiation, placing the patterns in the two-dimensional space of stratification-instantiation.
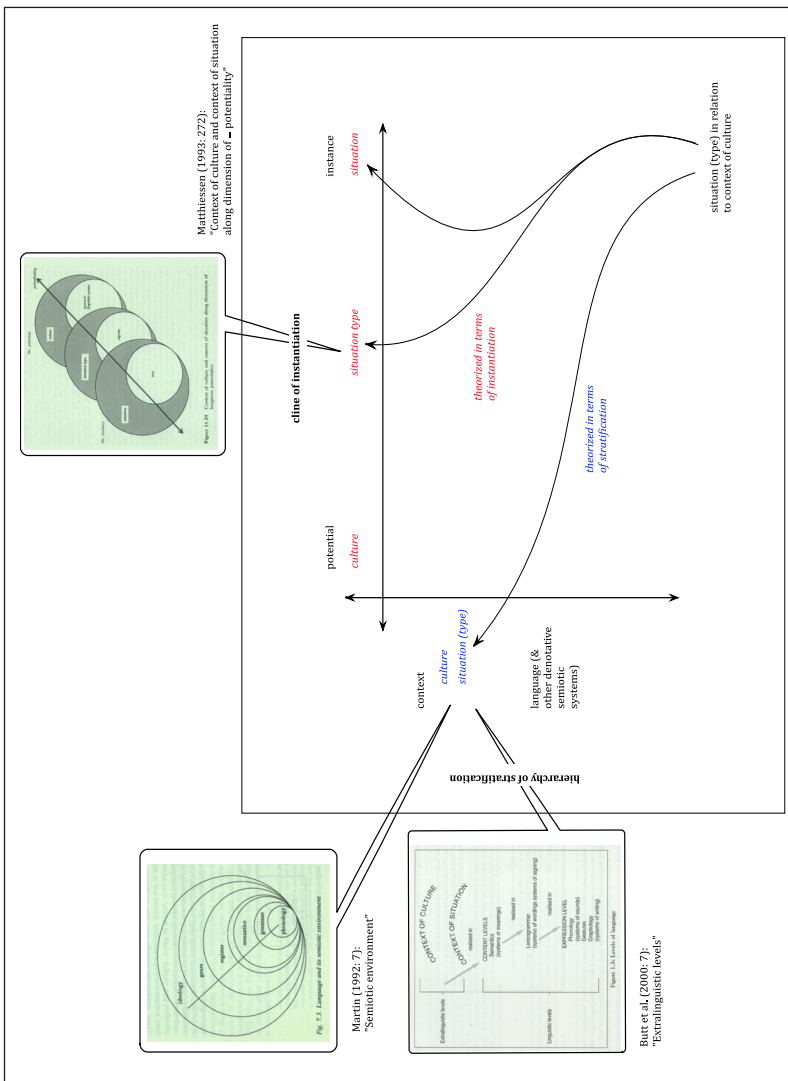
Figure 9: Alternative accounts of situation type in relation to the hierarchy of stratification and the cline of instantiation

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I have represented the comparison of modelling approaches in Figure 9 with reference to situation type. In Martin (1992), it is placed stratally — now relabelled "register" — as the lowest plane within context, immediately below context of culture — now called "genre"; and in Butt et al. (2000) it is also represented diagrammatically as being located below context of culture, the two forming "extralinguistic levels" in their diagram (p. 3)[6]. In contrast, in Halliday (1991), situation type has the same location as context of culture (and context of situation) in terms of the hierarchy of stratification, but they are instead differentiated in terms of the cline of instantiation: context of culture is located at the potential pole, context of situation at the instance pole, and situation type somewhere in between these two poles (also allowing for institution / cultural domain: see Figure 4 and Figure 7 above).

Martin (1992, p. 502) also takes instantiation into account, but treats it as a dichotomy between potential and actual rather than as a cline, writing (after the passage quoted above):

> As outlined above, in the model of context developed here, register is the name of the metafunctionally organised connotative semiotic between language and genre. This means that instead of characterising context of situation as potential and register as (context's) actual, *English Text* treats register as a semiotic system in its own right, involving both of system and process[7].
>
> | | POTENTIAL (system) | ACTUAL (process) |
> | --- | --- | --- |
> | Halliday (1978) | context of situation: | register:: |
> | English Text | register: | language |

In endnote 7, Martin (1992, p. 589) provides a clarification of his use of terms:

> [endnote 7:] This was originally simply a misunderstanding on Martin's part of Halliday's model (cf. THIBAULT 1987, p. 610): since it has now appeared in so many publications, it seemed more appropriate to extend Halliday's notion than undo the misinterpretation here.

---

6. They characterize the context of culture as "the outer context around a text" and the context of situation as the "inner context" (p. 3): "Within the context of culture, speakers and writers use language in many more specific contexts or situations." They introduce field, tenor and mode as "aspects, or parameters, of the context of situation" (p. 4).

There is still an important difference here between Martin and Halliday in terms of the interpretation of the location of context of situation and register (in Halliday's terms) in relation to the distinction between potential and instance (actual). As is clear from Figure 7 above, context of situation is located at the instance pole of the cline of instantiation whereas register is located between the potential and instance poles; this is probably related to the misunderstanding articulated by Martin and quoted immediately above. Halliday (1973, p. 49) had interpreted context of culture and context of situation in terms of instantiation as follows:

> It was Malinowski from whom Firth derived his notions of 'context of culture' and 'context of situation' (Malinowski, 1923); and Malinowski's ideas about what we might call cultural and situational semantics provide an interesting starting point for the study of language and social man, since they encourage us to look at language as a form of behaviour potential. In this definition, both the 'behaviour' and the 'potential' need to be emphasized. Language, from this point of view, is a range of possibilities, an open-ended set of options in behaviour that are available to the individual in his existence as social man. The context of culture is the environment for the total set of these options, while the context of situation is the environment of any particular selection that is made from within them.
>
> Malinowski's two types of context thus embody the distinction between the potential and the actual. The context of culture defines the potential, the range of possibilities that are open. The actual choice among these possibilities takes place within a given context of situation.

The account of genre presented by Martin (1992) has, as noted above, become known as the **Genre Model**, and it has provided the bases for a rich *descriptive* tradition since the 1980s: a considerable range of genres have been described in terms of their schematic structures and in terms of characteristic lexicogrammatical features, originally with a focus on the institution of education, but then extended to other institutions such as those of the work place and of the law (see e.g. FEEZ, 1995; MARTIN; ROSE, 2008).

3. Computational linguistic contributions

In the 1980s, computational linguistic researchers drawing on systemic functional linguistics were also concerned with the modelling of context and of register, adapting the model developed by Halliday to work on text generation systems. There were at least two separate efforts (see MATTHIESSEN, 1993), one by Terry Patten in his PhD research at Edinburgh University and one by members of the "Penman project" at the Information Sciences Institute of the University of Southern California (see e.g. MATTHIESSEN; BATEMAN, 1991) — the team that I was part of from 1980 to mid 1988; this was where I learned about explicit modelling and the value of undertaken such modelling. Both efforts are quite relevant to the engagement with register as functional variation in systemic functional linguistics in general — including educational linguistic activities; but unfortunately they have not been picked up and tend to be overlooked in overviews of work on register in systemic functional linguistics: while they are mentioned in Matthiessen (1993), they are not in e.g. Martin (1992) and Lukin et al. (2008).

3.1 Registerial semantic systems

Drawing centrally on Halliday's (1973) discussion of registerial semantic systems — i.e. semantic systems "tailored" to particular situation types, Patten (1988) developed a generation system incorporating such systems. He revealed a deep similarity between the systemic functional framework and AI problem solving, writing (1988, p. 54):

> Noting the fact that AI problem solving and systemic grammar are both organized around alternatives is only the first step. Next it must be noted that in knowledge-based AI problem solving, the alternatives represent the problem — knowledge about the alternatives is then required to guide the problem solver to a solution. Systemic grammar is knowledge about linguistic alternatives; the entry condition and realization rules specify the conditions and effects of a particular alternative — exactly the information required by an AI problem solver. Thus the *primum mobile* of this work becomes apparent: a systemic grammar can be interpreted as linguistic problem-solving knowledge and used by an AI

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problem solver to find — selectively and efficiently — the solution to linguistic problems in exactly the same way as knowledge from other domains is used to solve problems in those domains.

A particularly important consequence of the fundamental relationship between AI problem solving and systemic grammar is that the central representations found in each of the two fields are equivalent. This means that a systemic grammar can be directly interpreted as both linguistic description and problem-solving knowledge simultaneously — i.e. the two interpretations can be conflated. [...]

AI problem solvers avoid having to solve the same difficult problem repeatedly by "compiling" the results. [...] The nature of the compiled plans or deductions is that they associate grammatical features with situations; their organization is by register. Thus the semantic stratum can be conflated with the high-level compiled knowledge found in AI problem solvers.

One key theoretical insight Patten (1988) has contributed to SFL is thus to show how register can be understood and illuminated in terms of human problem solving: registers evolve in response to recurrent contextual problems as **compiled meanings** — Halliday's "meanings at risk". Patten goes on to show how Halliday's formulation of a register as a semantic system representing the meaning potential needed for the situation type in which it operates is an explicit representation of such compiled knowledge, or compiled meanings.

Patten's contribution highlights an interesting tension in the modelling and description of meaning — the tension between the general case and typical cases. We can state this in terms of the cline of instantiation: where do we move in along the cline of instantiation to describe meaning, at the potential pole or somewhere mid-region along the cline? I have represented these two alternatives in Figure 10[7].

7. These are heuristic alternatives. As Caffarel's (1992) account of tense in French shows, it is possible to work with semantic descriptions of different registers and to bring out patterns the are shared across registers in the realization of these semantic systems in a single grammatical system. It is also possible to work with registerial partitions within a general semantic system network along the lines suggested in Matthiessen (1993).
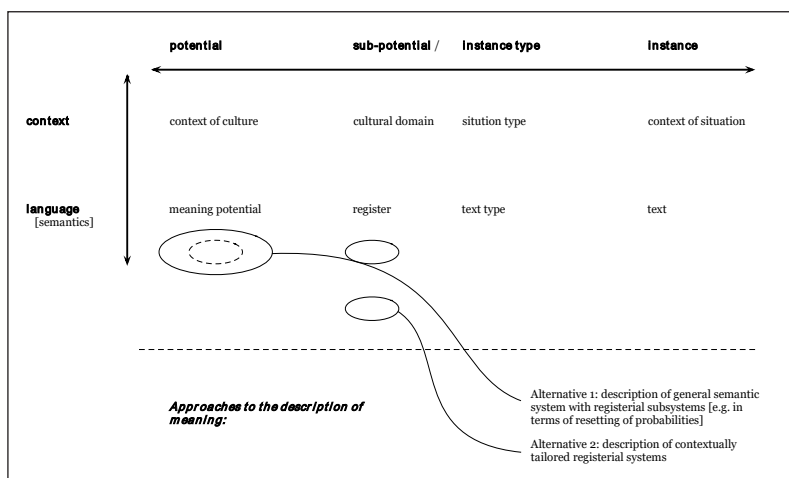
	potential	sub-potential /	Instance type	Instance
context	context of culture	cultural domain	situation type	context of situation
language [semantics]	meaning potential	register	text type	text

Approaches to the description of meaning:

Alternative 1: description of general semantic system with registerial subsystems [e.g. in terms of resetting of probabilities]

Alternative 2: description of contextually tailored registerial systems

Figure 10: Approaches to the description of meaning

According to the first alternative, we describe meaning in the same way as we describe wording (lexicogrammar) and sounding (phonology) — at the potential pole of the cline of instantiation: we describe the semantic system, at the potential pole of the cline, and then we "derive" descriptions of registerial subsystems from it, representing these as resettings of the systemic probabilities of the semantic system. Examples of contributions starting on this descriptive project include the work on "discourse semantics" in e.g. Martin (1992) and Martin and White (2005), Hasan's "message semantics" (e.g. HASAN, 1996: Ch. 5, 2009a; HASAN et al., 2007), and the work on the "ideation base" in Halliday and Matthiessen (2006). While these descriptions cover a good deal of the semantic space, they are still only fragments — certainly in comparison with descriptions of lexicogrammar and of phonology. So far nobody has produced a "reference semantics" comparable to the "reference grammars" that have been developed for a range of languages. One key reason is simply that the semantic system of any language is vast; it is so extensive that covering it descriptively is a greater challenge than covering the lexicogrammatical or phonological systems. In view of this challenge, the second alternative makes good practical sense.

According to the second alternative, we shunt along the cline of instantiation from the potential pole to the mid region, and focus our descriptive effort on a registerial subsystem — compiled knowledge, or meanings, from the point of view of AI planning as explained

by Patten (1988). Early examples were provided by Halliday (1973), and also Geoffrey Turner (cf. TURNER, 1987); other, later examples are Slade's (1996) description of the semantics of pejorative evaluation in gossip and Caffarel's (1992) description of the semantic tense systems of different registers in French. In such accounts, the linguist starts with a situation type, and then investigates what the appropriate semantic strategies are; let me illustrate the approach by quoting from Halliday (1973, p. 73):

> Let us take as an example the use of language by a mother for the purpose of controlling the behaviour of her child. This example is invented, but it is based on actual investigations of social learning — including, among a number of different contexts, that of the regulation of children's behaviour by the mother — carried out in London under the direction of Professor Basil Bernstein. [...]
> The small boy has been playing with the neighbourhood children on a building site, and has come home grasping some object which he has acquired in the process. His mother disapproves, and wishes both to express her disapproval and to prevent him doing the same thing again. She has a range of alternatives open to her, some of which are non-linguistic: she can smack him. But supposing she elects to adopt linguistic measures, the sort of thing she might say would be:
> 1) that's very naughty of you
> 2) I'll smack you if you do that again
> 3) I don't like you doing that
> 4) that thing doesn't belong to you
> 5) Daddy would be very cross
> These represent different means of control, which might be characterized as (1) categorization of behaviour in terms of disapproval or approval on moral grounds; (2) threat of punishment linked to repetition of behaviour; (3) emotional appeal; (4) categorization of objects in terms of social institution of ownership; (5) warning of disapproval by other parent. And we could add others, e.g. (6) *you're making Mummy very unhappy by disobeying* (control through emotional blackmail), (7) *that's now allowed* (control through categorization of behaviour in terms of operation of rule), etc.

The move in from context — from a given situation type — invites a description of meaning that is strategic in nature; what I would call **strategic semantics** in order to distinguish it from more taxonomic descriptions of meaning. A strategic semantic system shows how we can "relate language to non-language" (HALLIDAY, 1973, p. 72). Halliday's (1973) example of the semantics of maternal control — the strategies available to a mother for controlling a young son's behaviour — is set out in Figure 11.
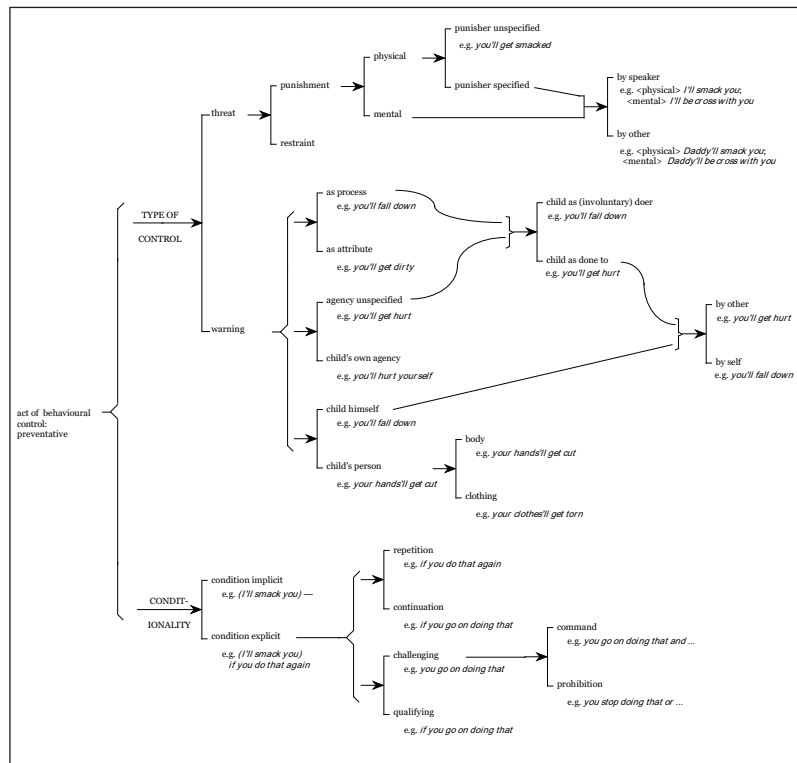
Figure 11: Strategic semantics — options open to a mother in controlling a young son's behaviour (adapted from HALLIDAY, 1973, p. 89)

Another manifestation of register-specific semantic descriptions was our work on **domain models** as part of the Penman project directed by Bill Mann at the Information Sciences Institute of the University of Southern California. Domain models are register-specific models of ideational meaning; they are part of what we called the **ideation base** within the overall **meaning base** of a text generation system — see Halliday and Matthiessen (2006). In our account of the ideation base of

English (with references to Chinese), Halliday and I selected two registers to develop domain models for, viz. weather forecasts and recipes (HALLIDAY; MATTHIESSEN, 2006, Ch. 8).

In another computational linguistic project directed by Marilyn Cross at DSTO in Canberra, we worked on a multimodal text generation system at Macquarie University (cf. MATTHIESSEN et al., 1998). One of my contributions was to develop a domain model of the reporting of outbreaks of communicable diseases (cf. MATTHIESSEN, 2006a, on the multimodal nature of the domain model). I used a corpus of the WHO's Weekly Epidemiological Report (WER), analysed it ideationally, and constructed the domain model shown diagrammatically in Figure 12. This domain model is stated in terms of the general ideational semantic types proposed in Halliday and Matthiessen (2006), but it shows the register-specific patterns and constraints of WHO's WER. A central aspect of such domain patterns is "who can do what to whom". Among other things, the domain model in Figure 12 shows that institutions such as the WHO and national / local health authorities are the most potent participants; they have the greatest experiential control.
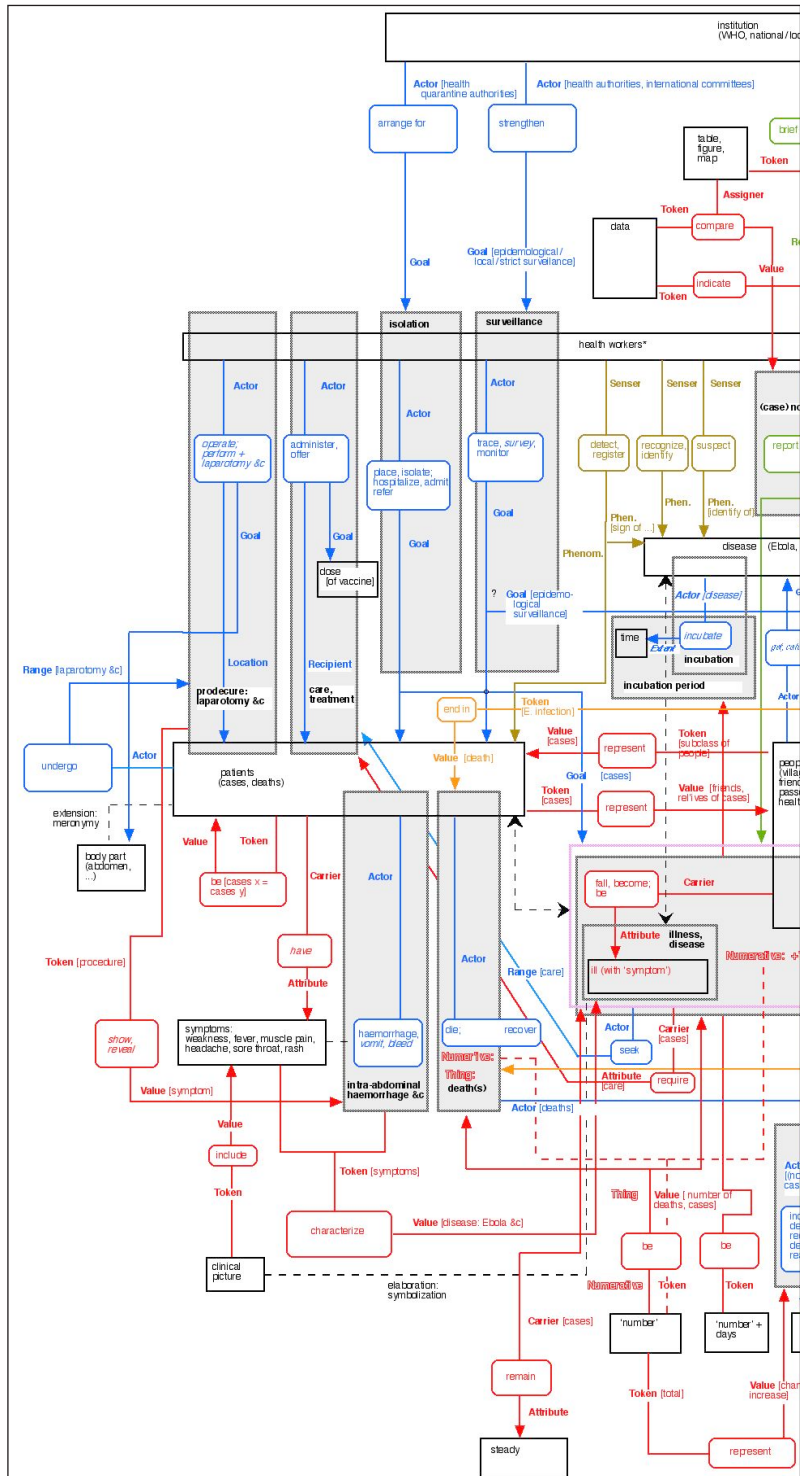
Figure 12: Domain model of the reporting of outbreaks of communicable diseases in WER
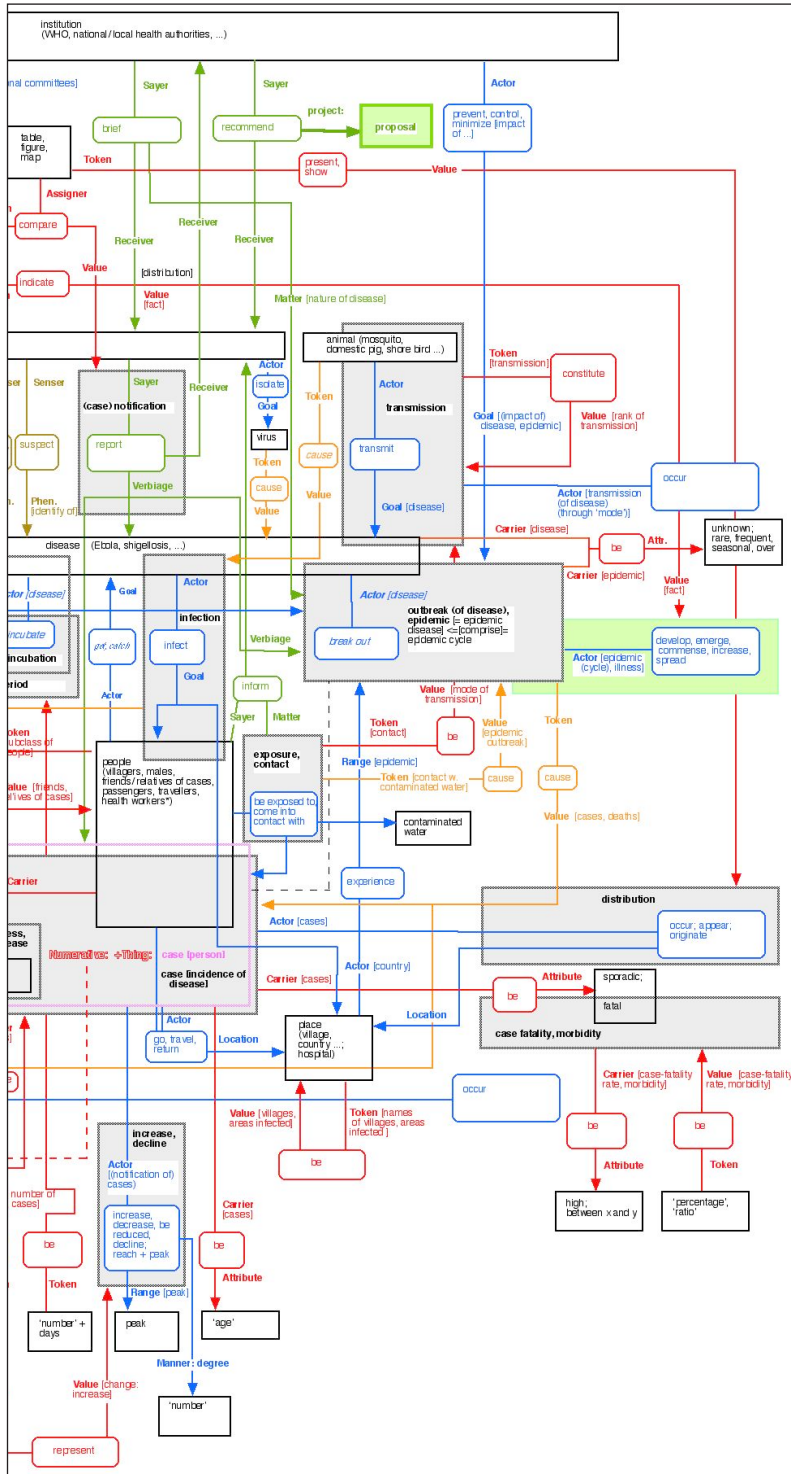
Figure 12: (continuation)

3.2 Registerial settings of the general system

Complementing the line of research undertaken by Patten (1988), Bateman and Paris (1991) developed a computational model of the generation of variant texts in different situation types through registerial selections from the general system. They characterize register theory as follows (BATEMAN; PARIS, 1991, p. 83-84):

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> Register theory refers to a body of linguistic work that claims to deal precisely with the interrelationship between linguistic variation and types of audience and situations. It is specifically concerned with making explicit the essential contact of language and the situation in which language is used, indicating the linguistic consequences of employing language in particular situations, for (and by) particular hearers/ readers. The possibility of being able to bind together more tightly the situation in which language occurs and the features of that language is, of course, equally suggestive for attempts to model language use computationally. Register theory, with its theoretical inclusion of all situational factors which systematically influence linguistic variation, e.g., communicative setting, type of audience, speaker-hearer social relationship, etc., makes immediate contact with many issues in computational linguistics concerned with both user modelling and pragmatic effects. [...]
>
> Applying this to natural language generation, then, register theory suggests a framework that (i) provides more structure to the statement of rhetorical goals and dimensions of user models than the independent dimensions of variation that have been prevalent formerly, and (ii) clarifies the types of constraints that situations can impose on linguistic expression.
>
> However, even thought in systemic-functional linguistics register is an important notion which has undergone considerable development and theoretical refinement [...] since its inception (Reid 1956), much work on register still does not take us far beyond an intuitive linking of situation and language.

I have quoted Bateman and Paris at some length because their call for detailed and explicit accounts is one of the reasons for undertaking registerial cartography. In their own exploratory work within the "Explainable Expert System project", they focussed on "tailoring" explanations for three groups of users (p. 90):

> Group 1: System developers who want to make sure that the knowledge base is correctly represented and that the system is working properly,
>
> Group 2: End-users who want to follow the system's reasoning, but who do not know much about computer science,
>
> Group 3: Very naïve users trying to get acquainted with the domain, or learn about digital circuits and digital circuit diagnosis. Each of these user groups demands rather different language to be employed in their interactions with the system.

Bateman and Paris (1991, p. 91-95) describe in some detail the framework they have developed for generating texts for these three different groups of users by means of the Penman system. They provide examples of texts generated for each group in response to the question *What is a faulty system?*:

> [For Group 1:]
> The system is faulty, if there exists a O in the set of the output terminals of the system such that the expected value of the signal part of O does not equal the actual value of the signal part of O and for all I in the set of the input terminals of the system, the expected value of the signal part of I equals the actual value of the signal part of I.
> [For Group 2:]
> The system is faulty, if all of the expected values of its input terminals equal their actual values and the expected value of one of its output terminals does not equal its actual value.
> [For Group 3:]
> The system is faulty, if its inputs are fine and its output is wrong.

As the examples above illustrate, the task of computational domain modelling demands great detail and explicitness; for example, domain models have to support domain reasoning in addition to the support of text generation, text understanding and also translation. And it has to be absolutely clear how domain models relate to one another within the general ideational part of the meaning based of a computational system.

Having characterized register and differentiated different senses of the term "register" in systemic functional linguistics, I can now turn to the long-term project that I would like to report on in this paper.

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4 The long-term project of registerial cartography

If we realize that a language is an assembly or assemblage of registers — of the functional varieties that have evolved in different cultural domains in response to different pressures, then it follows that describing a language also means describing the registers that constitute it. As always, we can of course choose different vantage points; we can view a language as system, or as assemblage of subsystems, as illustrated in relation to the description of semantic in Figure 10 above. Describing it as a assemblage of subsystems can be characterized as a cartographic process — the activity of drawing a map where we can locate the registers that make up a language, and determine how they relate to one another.

To draw maps, we need to decide on the dimensions to be displayed and on the projection system. The dimensions needed in registerial cartography can be derived directly from the multi-dimensional model of language in context in systemic functional linguistics. Using Halliday's stratification-instantiation matrix (see Figure 4 above), we can delineate the semiotic territory to be mapped out in Figure 13.
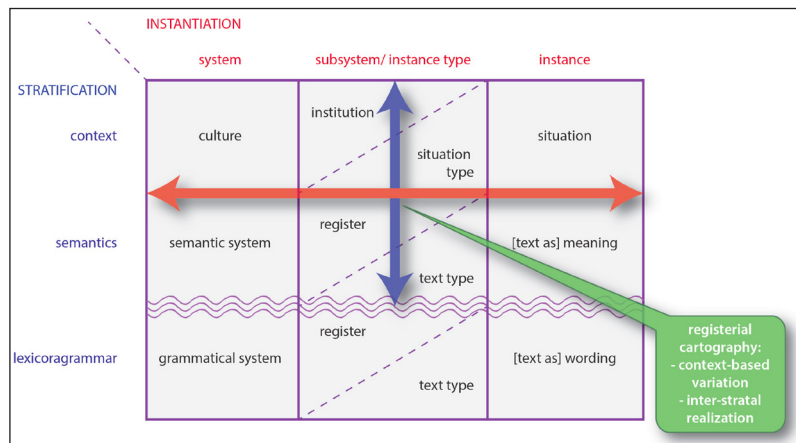
Figure 13: Registerial cartography — filling in gaps (i) along the cline of instantiation (context-based variation) and (ii) along the hierarchy of stratification (context [semantics lexicogrammar]). The stratification-instantiation matrix is taken from Halliday (2002)

4.1 Mapping in terms of the cline of instantiation

Registerial maps need to cover (part of) the mid-region of the cline of instantiation, between system (potential) and text (instance). We can vary the location and the approach, trying to identify very extensive registerial regions associated with whole institutions or cultural domains or

trying to build up the map from the other end by way of inductive generalizations from text instances: see Figure 14. Research concerned with automatic document classification would adopt the second approach.
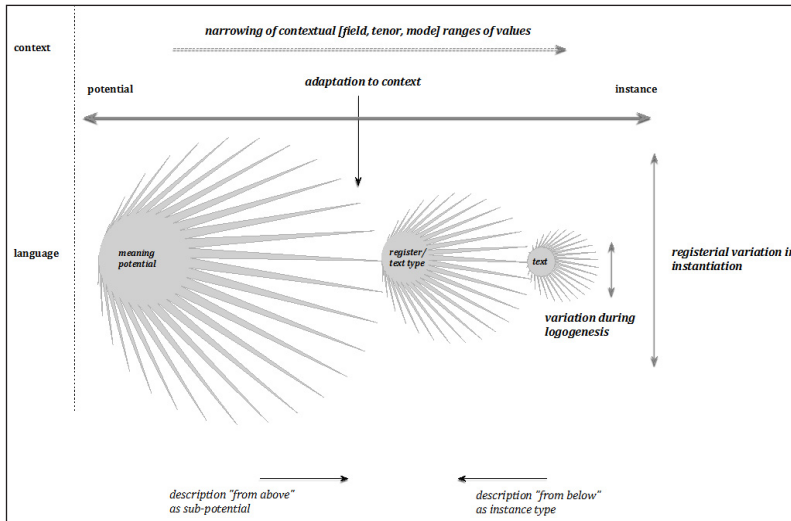
Figure 14: Register variation in relation to the cline of instantiation

Figure 14 represents **registerial variation** as a phenomenon inherent in instantiation: as soon as patterns at some location along the cline of instantiation are instantiated as patterns further down the cline towards the instance pole, the possibility of variation in instantiation arises. Such variation reflects adaptation to different contextual values. In the figure, each spike emanating from the meaning potential "star" represents a subsystem, i.e. a registerial differentiation along the cline of instantiation. Each subsystem is in turn further differentiated into subsystem, and so on. The successive registerial differentiation into subsystems along the cline of instantiation is shown only for one of the spikes emanating from a subsystem.

As illustrated above (Figure 11 and Figure 12), registerial variants can be described in *qualitative* terms as subsystems adapted to particular contextual settings. But they can also be described in *quantitative* terms. If we approach them from the potential pole of the cline, we can describe them in terms of **resettings of systemic probabilities** (see e.g. HALLIDAY, 1992/ 2002, p. 359); and if we approach them from the instance pole of the cline, we can describe them in terms of **averages of relative frequencies** in the texts that make up a text type: see Figure 15.
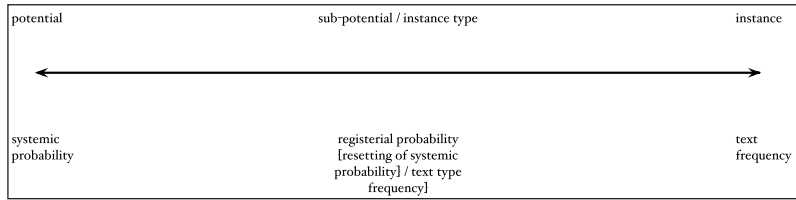
potential	sub-potential / instance type	instance
systemic probability	registerial probability [resetting of systemic probability] / text type frequency]	text frequency

Figure 15: Description of registers in terms of probability

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To illustrate the quantitative profiling of registers very briefly, let me use the system of PROCESS TYPE from the experiential clause grammar of English. Based on relative frequencies a registerially mixed sample of texts of around 8,700 (ranking) clauses, we can arrive at a very provisional probabilistic profile of the system, as shown in Figure 16. This profile is very provisional because the sample is quite small even though it was time-consuming work analysing all the clauses manually!
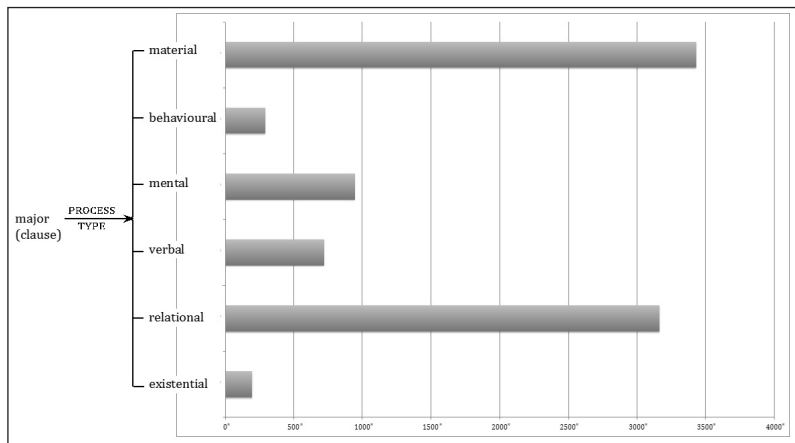
Figure 16: Relative frequencies of systemic terms in texts from a registerially varied sample

From Figure 16, it is very clear that 'material' and 'relational' are the most favoured selections in PROCESS TYPE across registers, 'material' being somewhat more common. Next come 'mental' and 'verbal', 'mental' being somewhat more common. The other two terms within the system of PROCESS TYPE, 'behavioural' and 'existential', are minor ones in terms of frequency in the text sample. Against the background of this provisional probabilistic profile of the system of PROCESS TYPE, we can now examine profiles in different registers. Using only five different registers, differentiated contextually according to field of activit y (see Section 5 below), let me illustrate how this works: see Figure 17. To make it easier to see what is going on, I have used two different chart types.

*Modelling
context and
register: the
long-term
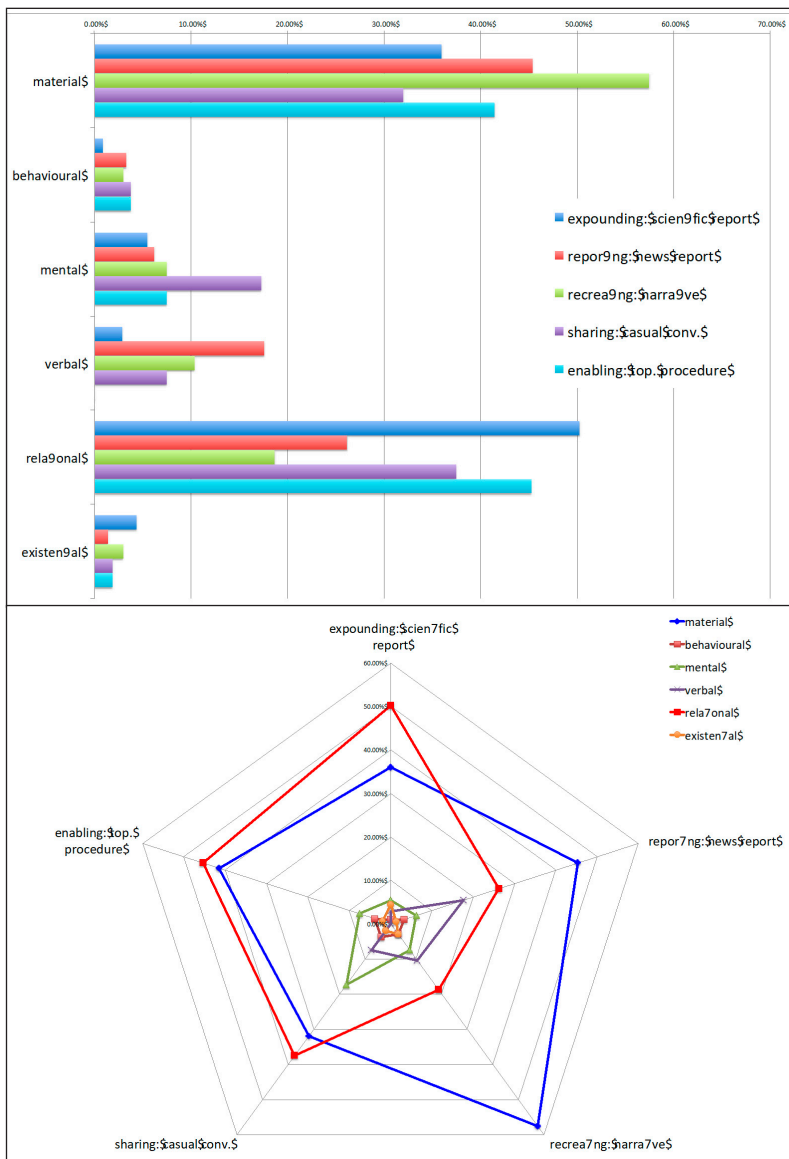project of
registerial
cartography*

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Figure 17: Registers grouped according to the field of activity (expounding, reporting, recreating, sharing, enabling) attracting different process types, displayed as (a) bar chart, (b) radar chart

From Figure 17, we can see that different registers have different profiles. For example, scientific reports favour 'relational' over 'material' while narratives favour 'material' over 'relational' — as can be expected given the "meanings at risk" in these registers. The event line of narratives is construed to a large extent through 'material' clauses.

Looking at the other process types, we can see that 'mental' clauses are the most common in casual conversation and 'verbal' clauses in news reports — again results that are consistent with the general sense of what meanings are at risk in these registers.

When we characterize registers "from above" in contextual terms by specifying field, tenor and mode values, we can of course vary the delicacy of these specifications, starting with very indelicate, general distinctions and moving towards more delicate ones. As we increase the delicacy in the specification of field, tenor and mode values, we can begin to discern the syntagmatic organization of situation types that has been described under the headings of "generic structure" or "schematic structure". At the same time, we also zoom in on the "meanings at risk" at the level of semantics.

In the work on registerial cartography, it makes sense to cover the range along the cline of instantiation from very general distinctions to more delicate ones where we can begin differentiate situation types syntagmatically in terms of their generic structures. Once it is possible to describe the structure of a situation type, we can also examine variation within the register, or text type, associated with the situation type (cf. Figure 1 above) according to the structure of the situation type, for example focussing on particular stages as in Hasan's (1984) work on the semantic realization of Placement in situations of traditional story telling. So this takes us to the hierarchy of stratification.

4.2 Mapping in terms of the hierarchy of stratification

In terms of the hierarchy of stratification, the registerial maps to be presented here provide contextual views of regions of **semantic space** in the first instance since registers are semantic varieties in the first instance — meanings at risk. However, registerial maps could in principle be drawn based on categories from lexicogrammar, semantics or context. All three strata have in fact been used in research on register differentiation or text typology: see Figure 18. Thus Biber (e.g. 1988) has used grammatical features to explore variation in a large volume of text, Longacre (e.g. 1974, 1996) has differentiated "discourse genres" in terms of parameters having to do with semantic categories such as time and person, and Snell-Hornby (1995) has used contextual considerations in translation studies (for further discussion and more references, see MATTHIESSEN, 2013b).

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Given the nature of register variation as variation in language according to use, it makes sense to adopt a "context-based projection" in the drawing of register maps and to use it to identify regions of semantic space — the meanings at risk. At the same time, this does not restrict us to one view: a central part of systemic methodology is **shunting** — moving along a semiotic dimension to view whatever phenomenon we are concerned with **trinocularly**, i.e. "from above", "from roundabout" and "from below" (see HALLIDAY, 1978, 1996; HALLIDAY; MATTHIESSEN, 2013). These three views should ultimately be aligned in registerial cartography; the accounts of registers need to be exhaustive.
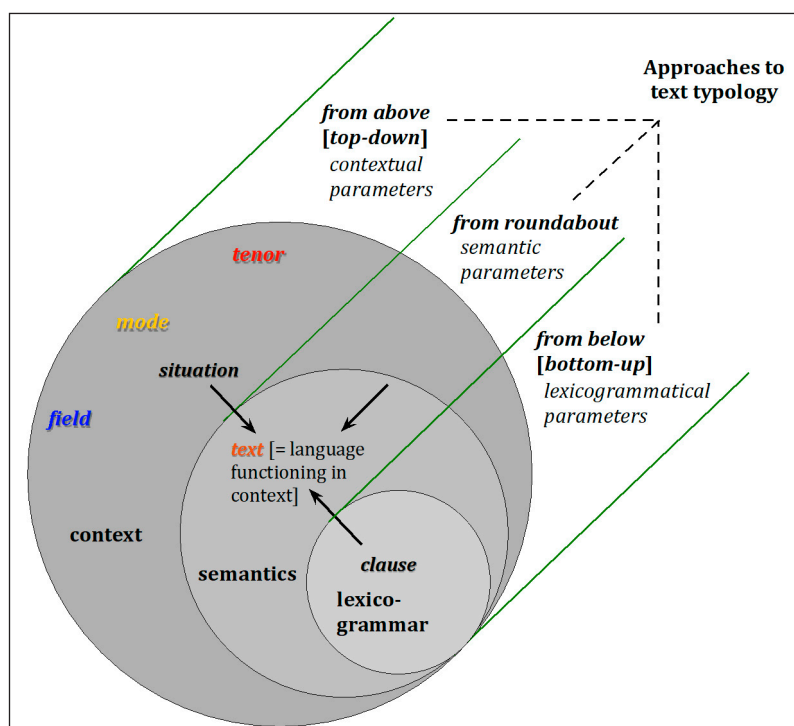
Figure 18: Possible angles of approach in the creation of registerial maps representing register variation

As Figure 18 shows, when we base our maps of registers on context — i.e. approaching register "from above", we have to choose what combination of **contextual variable**s to base the map projection on: the map can be based on **field**, on **tenor**, and/ or on **mode**. In many classifications of texts used in traditional corpus design, mode catego-

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ries figure prominently (cf. MATTHIESSEN, 2013b): spoken vs. written, monologic vs. dialogic, face-to-face vs. telephonic vs. print and so on. But all three contextual variables are relevant. For example, in order to locate the register-specific semantic network set out in Figure 11 above, we need all to specify field, tenor and mode values, as shown in Figure 19 below. It is easy to imagine registerial variants. For example, in terms of tenor, maternal control of a young daughter would quite likely involve somewhat different strategies (cf. BATEMAN; PARIS, 1991, on user modelling, referred to above) — Hasan (e.g. 1986, 1989) has shown significant differences between mother-son and mother-daughter interactions; and similarly maternal control of an adolescent son would again involve different strategies, probably significantly different ones (e.g. the threat of physical punishment is likely to be excluded: *if you do that again I'll smack you*; and options based on emotional blackmail may have been added), although it is likely that both threats and warnings would be part of the system.

Ideally, all three variables should be incorporated into our registerial maps, but in practice it can be quite helpful to start with one of them, and then add other contextual factors according to the need. Here I will use field, more specifically **field of activity**, adding tenor and mode values when they are needed: see Section 5. This is of course a way of managing the complexity of the map.
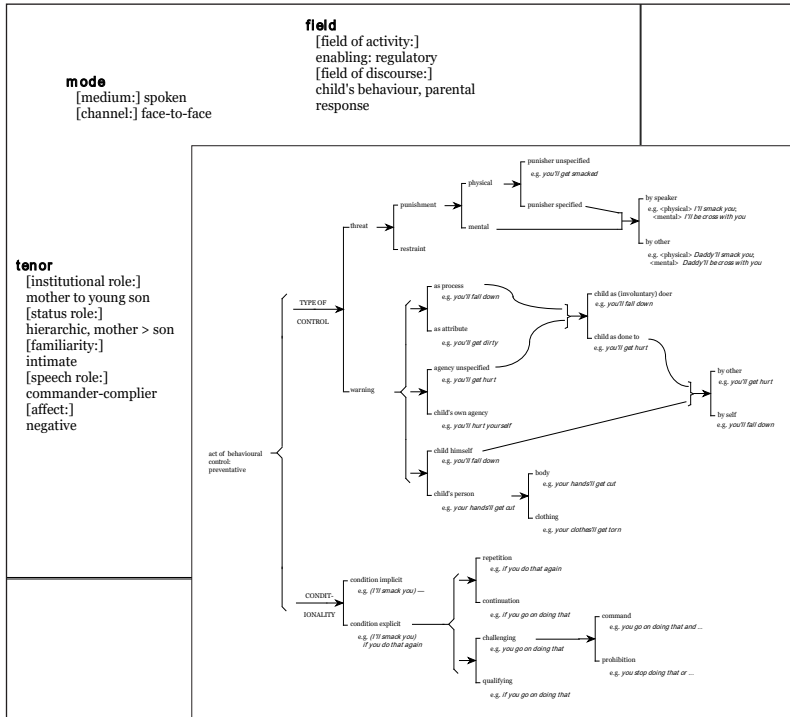
Figure 19: Contextual setting of field, tenor and mode for the semantics of maternal control of a young son

So I will now turn to field of activity as the first contextual window on register variation.

5 Fields of activity

Field of activity is "what's going on" in context. Halliday (1978, p. 143-144) characterizes it as follows:

> The selection of options in experiential systems — that is, in transitivity, in the classes of things (objects, persons, events etc.), in quality, quantity, time, place and so on — tends to be determined by the nature of the activity: what socially recognized action the participants are engaged in, in which the exchange of verbal meanings has a part. This includes everything from, at one end, types of action defined without reference to language, in which language has an entirely subordinate role, various forms of collaborative work and play such as unskilled manipulation of objects or simple physical

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games; through intermediate types in which language has some necessary but still ancillary function, operations requiring some verbal instruction and report, games with components of scoring, bidding, planning, and the like; to types of interaction defined solely in linguistic terms, like gossip, seminars, religious discourse and most of what is recognized under the heading of literature. At the latter end of the continuum the concept of 'subject-matter' intervenes; what we understand as subject-matter can be interpreted as one element in the structure of the 'field' in those contexts where the social action is inherently of a symbolic, verbal nature. In a game of football, the social action is the game itself, and any instructions or other verbal interaction among the players as *part of* this social action. In a discussion about a game of football, the social action is the discussion and the verbal interaction among the participants is *the whole of* this social action. Here the game constitutes a second order 'field', one that is brought into being by that of the first order, the discussion, owing to its special nature as a type of social action that is itself defined by language. *It is to this second-order field of discourse that we give the name 'subject-matter'.*

5.1 Fields of activity: primary and secondary distinctions in delicacy

There have been a number of proposals setting forth descriptions of field of activity, including Martin (1992, 536ff), Hasan (1999) and unpublished descriptions by David Butt. It would be interesting to compare these different proposals, but here I will focus on one we have worked on for a number of years based on eight primary types of activity used by Jean Ure as labels in an anthology of texts that was part of a book manuscript on discourse analysis she gave me in 1989 (before I had seen the descriptions of field of activity just referred to). Sadly, this book has never been published, as far as I know. In working with these eight types, we have tried to develop interpretations and characterizations of them, and we have proposed more delicate subtypes.

The eight primary fields of activity are 'expounding', 'reporting', 'recreating', 'sharing', 'doing', 'enabling', 'recommending', and 'exploring', each of which can be further extending in delicacy: see

the typological/ topological representation in Figure 20[8]. Reflecting the kind of continuum Halliday (1978) mentions in the passage quoted immediately above, these eight fields of activity can be grouped into three superordinate categories depending on whether the field of activity is primarily a process of meaning (semiotic), a process of behaving (or 'doing'; social) or a transition between the two[9] — i.e. semiotic processes, semiotic processes potentially leading to social processes and social processes:

- **semiotic processes** (i.e. 'meaning' processes — semiotic processes constitutive of context, constitute as semiotic processes and manifested through social processes):
- **expounding** knowledge about general classes of phenomena (rather than particular instances of phenomena), theorizing our experience of the world in terms of a commonsense (folk) or uncommonsense (scientific) model by explaining why general classes of events take place or by categorizing general classes of entities (in terms of taxonomies, hyponymic and/ or meronymic, and/ or characterization);
- **reporting** on particular instances of phenomena (rather than general classes of phenomena) creating "episodic" knowledge (rather than theoretical knowledge), the type of reporting being dependent on the nature of the phenomena: chronicling (the flow of) particular events, inventorying particular entities, or surveying particular places;
- **recreating** various aspects of life — involving any of the eight different types of context according to field of activity, typically imagined (fictional) rather than experienced (factual: experienced personally or vicariously), as verbal art with a "theme" (in the sense of HASAN, 1985), through narration and/ or dramatization;
- **sharing** personal experiences and values (opinions, attitudes, feelings) as part of establishing, maintaining and calibrating,

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8. Here the focus is on situation types. Within an institution, situation types are combined in the pursuit of the various goals of the institution; for example, in the emergency department of a hospital, a patient journey through such a department can be characterized as a sequence of situation types (see MATTHIESSEN, 2013c).

9. For the fundamentally important distinction between semiotic and social in the characterization of institutions, situations and other related abstractions, see Matthiessen (2013b).

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(in short, negotiating) interpersonal relationships — in terms of the tenor of the relationship among interactants, ranging from (and potentially transforming) strangerhood to intimacy, but sustained over longer periods of time involving fairly intimate relationships in different institutions such as kinship and friendship; in terms of mode, traditionally and prototypically in private face-to-face interaction, but increasingly enabled by new technologies opening up new channels of sharing (epistolary, telegraphic, telephonic — and now with an explosion of mobile and Internet based possibilities, with a tendency to blur the distinction between private and public spheres);

- **exploring** public values (opinions, stances) and positions (ideas, hypotheses) by reviewing commodities (assigning them values on a scale from very positive to very negative) or by arguing about positions, debating or discussing them — in terms of tenor, typically between one person (a professional or a member of the general public) and some segment of the general public, so between strangers; in terms of mode, typically using media channels, either "old" media channels (print, radio, TV) or "new" media channels (mobile and/ or Internet-based);

- **semiotic processes** potentially leading to **social processes** (i.e. 'meaning' leading to 'doing'):

- **recommending** some course of action (typically some kind of social process — exhortation in the strong form), either for the sake of the addressees by advising them to undertake it for their own good or for the sake of the speaker by promoting some type of goods-and-services;

- **enabling** some course of action (typically some kind of social process), either literally enabling (empowering) them by instructing them in some type of procedure or constraining them by regulating their behaviour;

- **social processes** (i.e. 'doing' processes — social processes constitutive of context, semiotic processes facilitating [i.e. 'meaning' facilitating 'doing']):

- **doing** — performing some form of social behaviour, on one's own or as part of a team, with semiotic processes ('meaning') coming in to facilitate this social behaviour through direction or collaboration.

Figure 20: The eight primary fields of activity and their subtypes

5.2 Examples; locating situation type-specific semantic systems

Within the space of a chapter, it is impossible to give examples of texts operating in the different contexts characterized by the eight primary fields of activity and their subtypes (Figure 20). However, let me try to give a sense of the range of variation by means of pictorial "texts" (i.e. instances of pictorial systems) or multimodal texts involving both language and pictures: see Figure 21. Such texts involve the 'graphic' channel of the mode variable; and if language is present, the medium is 'written'. Pictorial systems tend to be registerially "tailored" to different fields of activity. As a supplement to Figure 21, I have listed examples in Table 1.
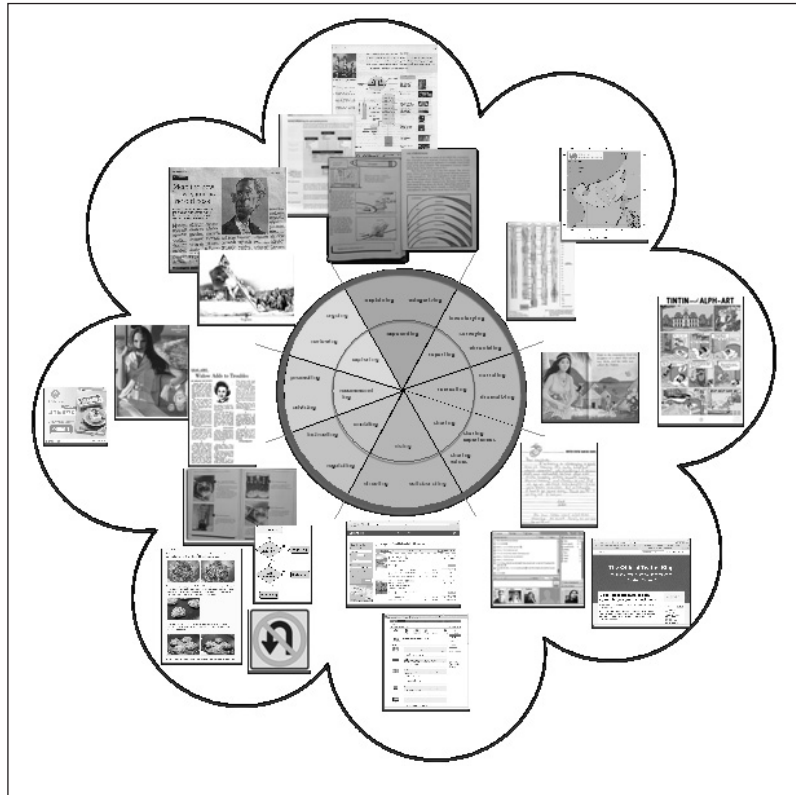
Figure 21: Pictorial and multimodal texts in contexts characterized by different fields of activity

Table 1: Pictorial and multimodal texts in contexts characterized by different fields of activity

Field of activity		Pictorial examples
primary delicacy	**secondary delicacy**	
expounding	explaining	schematic drawings of sequences
	categorizing	taxonomic drawings, showing classification or composition
reporting	chronicling	time lines, historical maps; press photographs
	surveying	maps
recreating	narrating	illustrations in stories, comic strips
sharing		(video accompanying written chat)
doing		photographs of commodities in (online) transactions
enabling	instructing	flowcharts, pictures of outcomes of steps in procedures; route maps; guide signs
	regulating	regulatory traffic signs
recommending	advising	warning traffic signs
	promoting	promotional photographs of commodities in advertisements; logos
exploring		political cartoons

The registerial map in Figure 20 offers a view of **the organization of semantic space into registerial regions** "from above", from the vantage point of field of activity within context. The regions of the map are situation types, and it is by projecting these situation types downward into semantics that we can identify registers, as suggested in Figure 2 at the beginning of this paper. For example, we can now return to the semantics of maternal control shown in Figure 11 above, and locate it on the registerial map in Figure 20: see Figure 22.
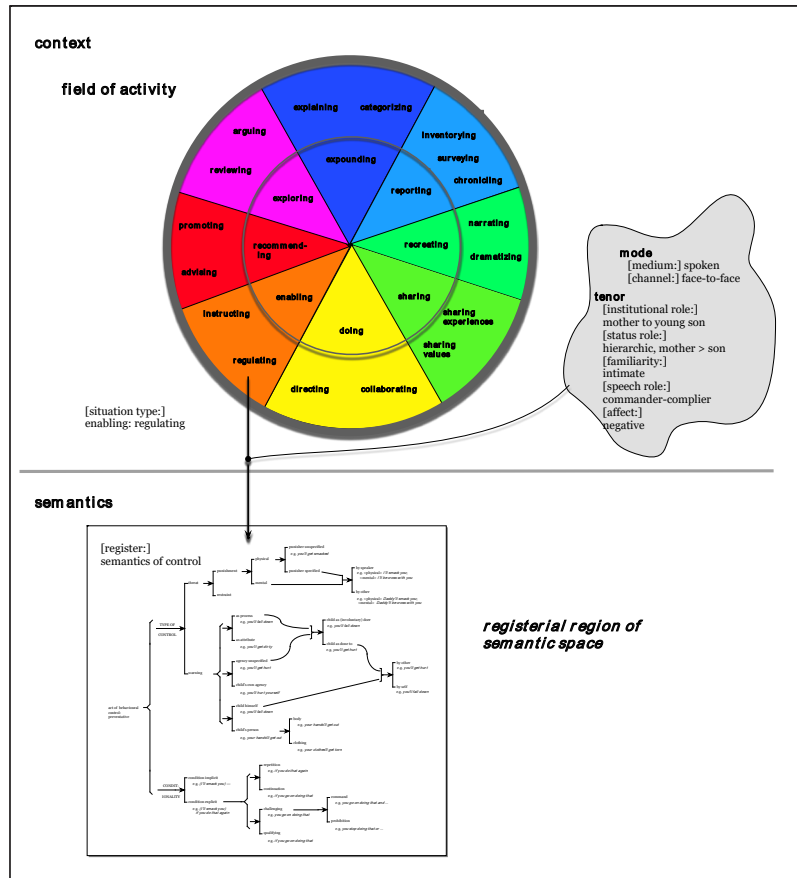
Figure 22: Locating the semantics of control (Figure 11) by mean of the registerial map based on field of activity (Figure 20)

As the figure shows, in terms of field of activity, the maternal semantics of control is located in the 'regulating' region within the 'enabling' region. Here the semantic space of maternal control is described in a custom-tailored way, by means of a system network that shows the systems and options specific to the situation type, also taking tenor and mode into consideration. In other words, this mode of description does not bring out the relationship between the semantics of maternal control and the overall meaning potential of English; but when we compare and contrast it with other semantic systems "tailored" to particular situation types, we can begin to see how registerial meaning potentials vary as we move around the map. Thus we can add the semantics of negative judgement, or "pejorative evaluation" (see SLADE, 1996), deployed in 'sharing' contexts where friends or workmates confirm the

values of their in-group and condemn outsiders that they judge have transgressed in terms of the shared values (e.g. *she's atrocious*; *Richard not very nice anyway*; *she's made an absolute fool of herself*; *she's the laughing stock of the hospital*): see Figure 23. Now we can see how significantly different the semantic systems of maternal control and negative judgement are in their local meaning potentials — i.e. in terms of the meanings at risk in each system.
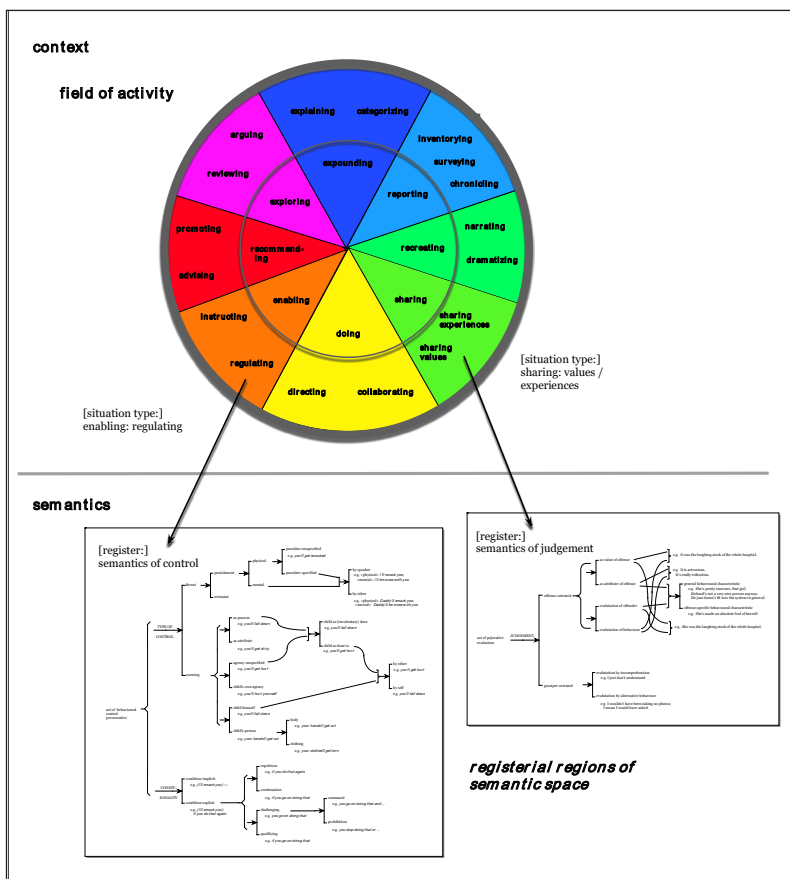
Figure 23: Locating the semantics of control (Figure 11) and the semantics of negative judgement (pejorative evaluation) by mean of the registerial map based on field of activity (Figure 20)

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5.3 Further delicacy; classification of genres

The scale of the registerial map in Figure 20 is like geographic maps on the order of 1 : 1,000,000 — only the most visible outlines show up on the map. But we can zoom in by increasing the delicacy, taking steps in delicacy beyond the two steps shown in Figure 20. For example, we can begin to differentiate different ways of chronicling the flow of events — recounting past events, tracking present events as they unfold or forecasting future events; and we can explore other distinctions having to do with time scale (e.g. epochs, episodes), linearity (e.g. linear, cyclical).

By taking one to two more steps in delicacy, we can begin to make contact with sets of agnate genres as they have been described systematically and meticulously in terms of the framework of the Genre Model since the 1980s: see Table 2. In this table, I have listed examples of spoken and written "genres" in the leftmost column under "examples". In the next column, I have listed all the written genres documented and discussed by Martin and Rose (2008) and in the next column, I have listed the spoken genres documented and discussed by Eggins and Slade (2005), with one or two other sources. These two books provide helpful overviews, and also references to the literature. There are of course many types that have been identified and described that are not represented in the table, but a more exhaustive inventory would take up considerably more space.

Table 2: Terms in the system of socio-semiotic process (field) and "genres" described in Martin and Rose (2008) and Eggins and Slade (1997)

FIELD OF ACTIVITY		examples	mode: written Martin and Rose (2008): "Genre model"	mode: spoken Eggins and Slade (2005)
expoun-ding	**explaining**	explanations (in text books, journal articles ...)	(Chapter 4 Reports and Explanations) expla-nations	
	categorizing	reports (in text books, journal articles, entries ...)	(Chapter 4 Reports and Explanations) reports	
repor-ting	**chronicling**	historical recounts, biographies; logs, blogs; procedural recounts; running commentaries; forecasts; news articles; (media) interviews	(Chapter 3 Histories) recounts, biographies (Chapter 5 Procedu-res and procedural recounts) procedural recounts	
	surveying	topographic reports, scene descriptions		
	inven-torying	inventories, menus, pro-duct lists		
recrea-ting	[narrating, dramatizing]	traditional stories (folk stories, legends, myths); short stories; novels; plays, screen plays, teleplays	(Chapter 2 Stories) stories: narratives	
sharing	[experiences, values]	casual conversation (see rightmost column); per-sonal letters; email; text messages; chat sessions; diaries, personal blogs	(Chapter 2 Stories) stories: anecdotes, exempla	chat; opinion, teasing, gossip
doing	[directing, coordinating]	team work; games; service encounters; administrati-ve directives; (real-time) directions		service encou-nters (Ventola, 1987)
recom-mending	**promoting**	commercials; advertise-ments; promotional letters		
	advising	(professional) consulta-tions; advice columns; public warnings		
enabling	**instructing**	demonstrations; proce-dures	(Chapter 5 Procedures and procedural recou-nts:) procedures	
	regulating	regulatory traffic signs; laws; agreements; decla-rations	(Chapter 5 Procedu-res and procedural recounts) protocols <or: embedded in procedures>	
explo-ring	**arguing**	expositions; discussions; debates (also included in disciplinary texts) [10]	(Chapter 3 Histories) expositions, discus-sions	
	reviewing	reviews; opinions		
	rallying	speeches, sermons; editorials		

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10. The term "disciplinary text" was introduced by Parodi (2010) to refer to the kind of texts used in social sciences and the humanities; he contrasts them with the "text books" of more material sciences.

Many of the generic categories in Table 2 are *sets* of genres, and can be further differentiated into particular genres. When particular genres are identified, we have reached the point in delicacy where it is possible to describe their structures — their contextual structures (known as "schematic structures" or "generic structures", or in more specific terms as "narrative structures", "argument structures", and so on). For example, while it is not possible to posit a contextual structure for explanation contexts in general, it becomes possible once different types of explanation have been differentiated, as shown by Veel (1997).

5.4 Fields of activity, genre and genre agnation

In the extensive work on the genre model, researchers have, of course, paid considerable attention to the grouping of genres — the work on **genre agnation**. Genre agnation has been approached both typologically and topologically (cf. MARTIN; MATTHIESSEN, 1991), an early typological description being Martin's (1985) taxonomy of "factual genres". The agnation of genres deployed in the construction of history has been represented both typologically and topologically: see e.g. Martin (2003, p. 45), Martin and Rose (2008, p. 130-133). To give a sense of the complementary generalizations embodied in descriptions of genre agnation and in our account of fields of activity, I have mapped the typology of history genres in Martin and Rose (2008) onto the topological representation of the fields of activity in Figure 20: see Figure 24. Such comparisons underline the important principle that typologies and topologies of the same domain are likely to reveal and foreground different patterns of agnation (which is seen even more clearly in Figure 28 below).
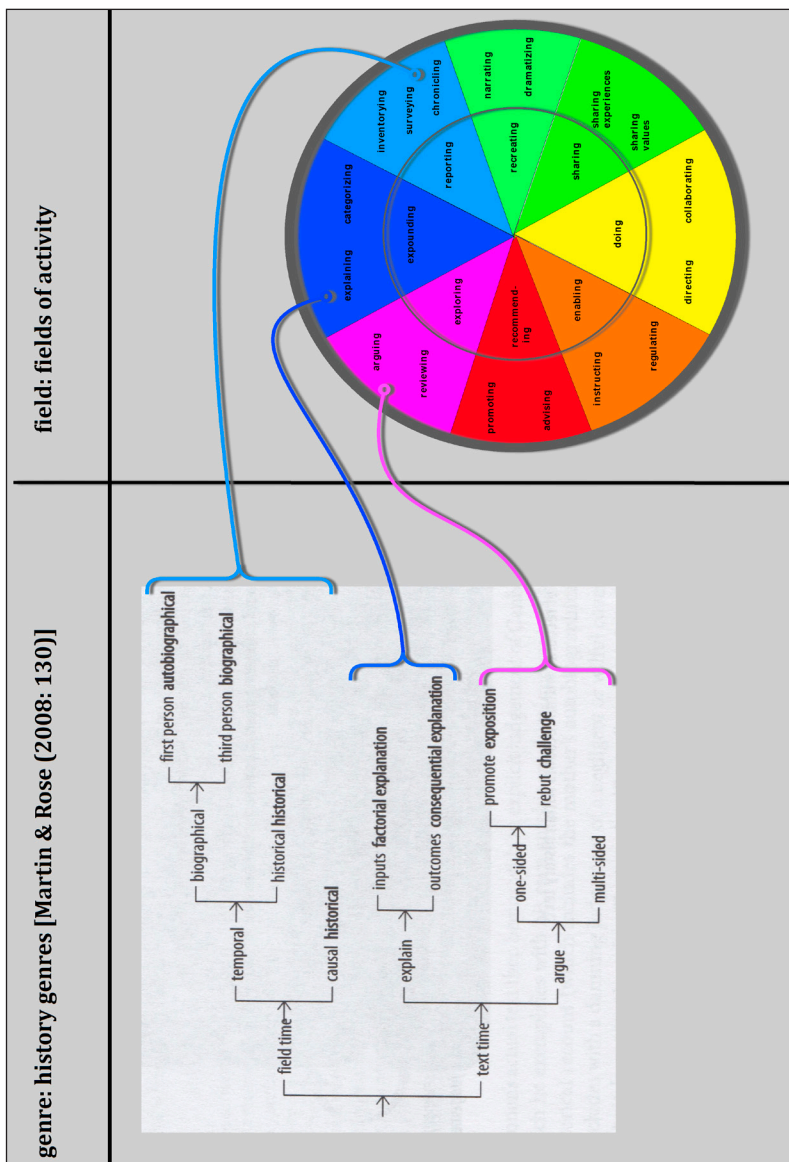
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Figure 24: The typology of history genres in Martin and Rose compared with their agnation according to our account of fields of activity

Before leaving the discussion of genres in the genre model and our work on registerial cartography, let me explore an interesting question: how can descriptions of genres and descriptions of fields of activity be related to one another as they appear to be in Table 2? In the genre model, there would be a problem: they belong to different planes within context — genre and "register", respectively.

Let's consider nature of genre according to Martin and Rose (2003, p. 7-8); they characterize it as follows:

> We use the term **genre** in this book to refer to different types of texts that enact various types of social contexts. [...] For us a genre is a staged, goal-oriented social process. Social because we participate in genres with other people; goal-oriented because we use genres to get things done; staged because it usually takes us a few steps to reach our goals.

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This characterization indicates a possible connection: "social process" can potentially be interpreted as field of activity, or socio-semiotic process[11]. Martin and Rose (2003, p. 13) characterize field as follows:

> Field is concerned with the discourse patterns that realise the activity that is going on. Technically speaking a field consists of a sequence of activities that are oriented to some global institutional purpose, whether this is a local domestic institution such as family or community, or a broader societal institution such as bureaucracy, industry or academia. Each such activity sequence involves people, things, processes, places and qualities, and each of these elements are organised into taxonomies — groupings of people, things and processes; these taxonomies in turn distinguish one field from another. From the perspective of field, the discourse patterns of texts vary in the degree to which they are organised as activity sequences, and whether they are about specific people and things, or about general classes of phenomena and their features. For example, on the specific side text [1:3] recounted a sequence of Conal's personal activities in minute detail, whereas [1:5] described his dog Tammy. On the general side, text [1:11] explained processes in the

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11. As I noted when I introduced the different fields of activity shown in Figure 20: The eight primary fields of activity and their subtypes Figure 20 above, these activities are either social (behaviour: 'doing') or semiotic (meaning: all the seven non-'doing' fields of activity), including semiotic process leading to social process ('enabling', 'recommending'). It is important to distinguish social and semiotic processes, based on Halliday's (e.g. 1996, 2005) ordered typology of systems operating in different phenomenal realms (see also HALLIDAY; MATTHIESSEN, 2006; MATTHIESSEN, 2007): physical — biological — social — semiotic. I discuss the complementarity of social and semiotic analysis in the engagement with discourse in Matthiessen (2013b). In view of this distinction, genre would be a staged, goal-oriented semiotic process: since the typology is ordered, semiotic processes are also social ones; but social processes are not necessarily semiotic: people may engage in interactive behaviour without exchanging meanings.

evolution of life, whereas [1:4] classified crocodiles and enumerated their parts. The examples of variation are illustrated in Figure 1.5 [reproduced here as Figure 25].

And Martin (2010, p. 12) relates field to institutional activity: "Field is concerned with institutional activity — our participation in domestic, recreational, devotional, governmental and professional life".
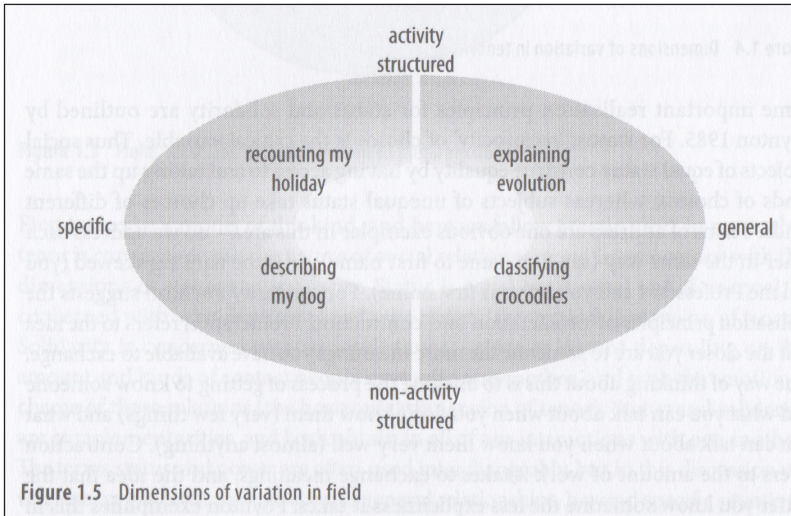
Figure 1.5 Dimensions of variation in field

Figure 25: Martin and Rose's (2008, Figure 1.5)

Not surprisingly, Martin and Rose's (2008) characterization of field would appear to be very much in the tradition of Halliday's (1978) characterization quoted above and so also compatible with the conception of field used here. In this respect, the accounts seem to agree with one another.[12] Interestingly, the field values in Martin and Rose's (2008, p. 14) diagram showing dimensions of variation in field reproduced here in Figure 25 can easily be related to regions within our field of activity diagram (Figure 20 above): see Figure 26. The 'general' field regions of 'explaining' and 'classifying' correspond straightforwardly to the subtypes of 'expounding' in Figure 20. The 'specific' field regions of 'recounting' and 'describing' could in principle map into regions within either 'sharing' or 'reporting'.

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12. They also seem to agree with one another in another respect: field includes both activity and subject matter — the experiential domain or topic area. However, as I will suggest below, activity appears to be activity within subject matter, i.e. the experiential domain, rather than the activity in which the interactants in the context are engaged in.

However, the text examples given by Martin and Rose (2008) are the outcomes of writing tasks set in school, and can be interpreted as exercises in 'reporting' rather than as activities of 'sharing' experiences among friends or family. But when 'reporting' is concerned with personal experience, it is, of course, closer to 'sharing' than when it is concerned with the kind of experience that provides the material for history and news reporting; in the personal realm, autobiography shades into anecdote.
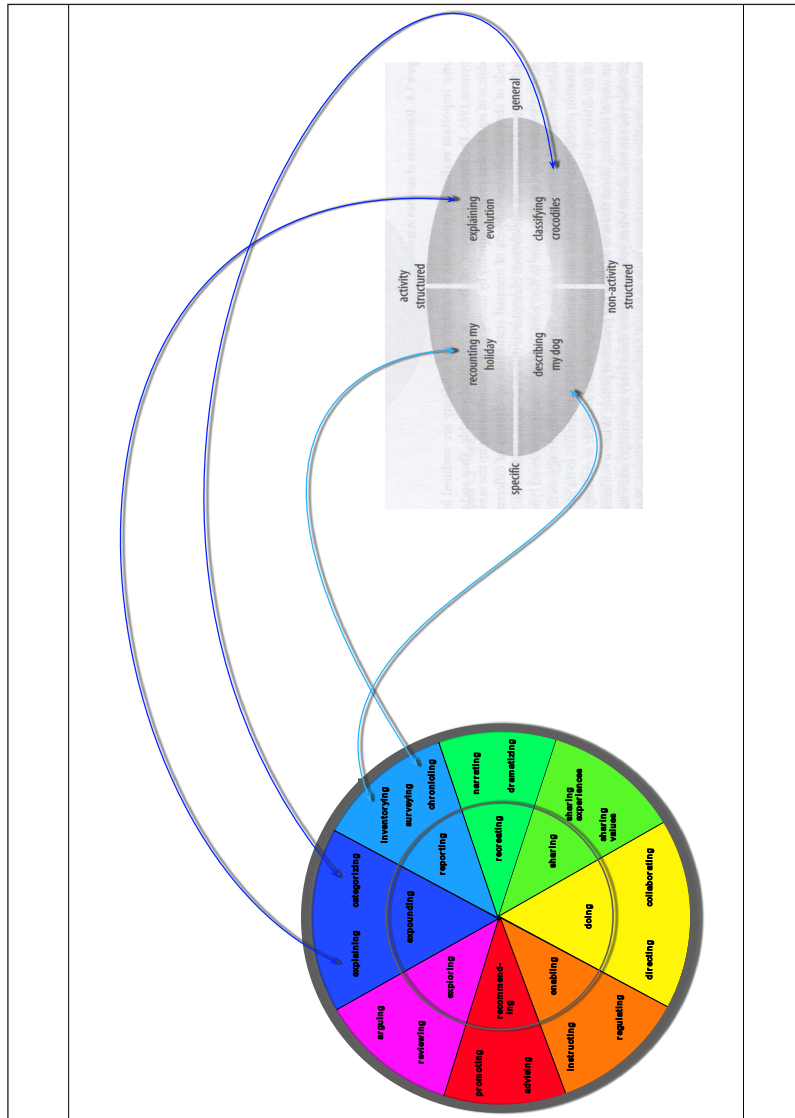
Figure 26: Regions within Martin and Rose's (2008, p. 14) field diagram mapped into regions within our field of activity diagram in Figure 20 above.

As I have now shown, it is possible to relate the different fields of activity in our typology / topology in Figure 20 both to types of genre as "social process" (as in Figure 24) and to values of field as one of the parameters of "register" (as in Figure 26) in the genre model. Let me summarize these two sets of relationships using one more diagram: see Figure 28. In terms of the Genre Model, the fields of activity represented in Figure 20 can be interpreted as general classes of "social processes" within the genre plane of context but at the same time they can also be interpreted as categories within the field parameter of "register". But since they can't be both, we are left with a conflict that needs resolving. When field is discussed in relation to different genres by Martin and Rose (2008), it would seem that they typically focus on the "subject matter" aspect of field[13] — the experiential domain — rather than on the "social activity" aspect of field (cf. MARTIN; ROSE, 2008, p. 10); for example, they distinguish technical fields from non-technical ones, they talk about disciplinary fields like geography, biology, science — i.e. institutionally constructed experiential domains. From the point of view of the Genre Model, the fields of activity in our account in Figure 20 are most likely interpreted within the genre plane as a typology / topology of "social processes".

From my point view, as I pursue the project of registerial cartography, genre and field of activity "collapse" into field of activity: there is no separate higher plane of "genre". If we ask how activity in the sense of what's going on in a situation is taken account of in models of context, my answer is: within the field of activity aspect of field. The answer in the Genre Model seems to be: within genre, as "social process" although given the characterization of field, one would expect that activity in the sense of 'what's going on' in a situation should be dealt with within both genre and field. However,

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13. The subject matter may of course include activities, as with Martin and Rose's (2008, p. 30) example of a hunting sequence; but this is not activity in the sense of the field of activity — what's happening in the context. Martin (1992, p. 544) proposes a "provisional classification of fields" that also needs to be taken into account as the issues I have raised here are investigated further. In his classification, the primary systemic contrast is 'doing' vs. 'studying'; 'doing' is further differentiated into a number of types including guiding, coaching, apprenticing, 'studying' is further differentiated into cooperating and instructing — with institutional domains for these types, e.g. 'apprenticing' in "trades" and 'coaching' in "recreational" domains, either "sport" or "hobby". Martin's (2010, p. 12) examples of fields in a text seem to be concerned with the subject matter of the text (rather than with what's going on in the context in which the text operates); the lists the fields as "education", "electronic communication" ,"the nineteenth century British workhouse", "contemporary banking" and "fast food".

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activity within field seems to have only the sense of activity in the subject matter aspect of field, not in the sense of what's going on in a situation. I have represented my interpretation diagrammatically in Figure 27 (a) through (c). In (a), I have suggested the options available in modelling what's going on in a situation. In (b), I have represented the option I believe has been chosen in the Genre Model: field of activity has, as it were, slipped into subject matter (field of experience) so that it no longer represents what's going on in a situation, and what's going on in a situation is modelled only within the contextual plane of genre.

The accounts given of genre in the Genre Model literature look to me like **field-based views of situation types**, i.e. views that foreground characterizations in terms of fields of activity — what is going on in context, activities such as explaining, classifying, describing, recounting, debating. This is why it is possible to relate our account of fields of activity to genre taxonomies. At the same time, situation types can be viewed from the vantage point of tenor or from the vantage point of mode; in fact, they ***must*** be viewed in terms of both tenor and mode as well as field. For example, we need to produce views of situation types according to institutional role, including the range of situation types from those involving the family roles of early childhood that are critical to socialization to those involving the professional roles of adulthood. Similarly, we need to sort situation types according to the contrast between private and public relations. Further, goals relate to all aspects of situation types, not only to the "social process" of genre; there are field goals, tenor goals and mode goals.

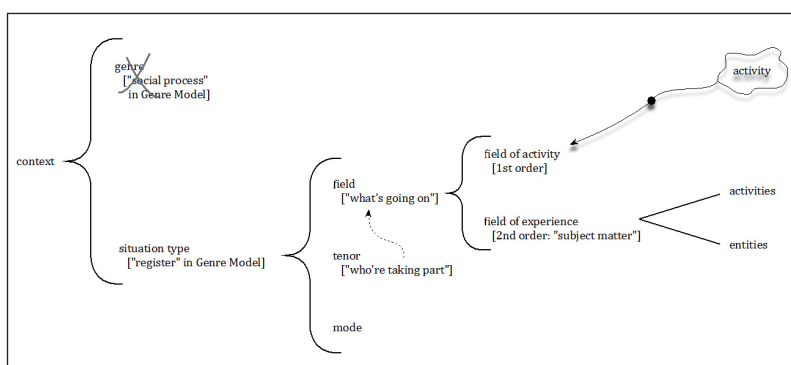a)   Options in modelling activity (= what's going on in a situation)
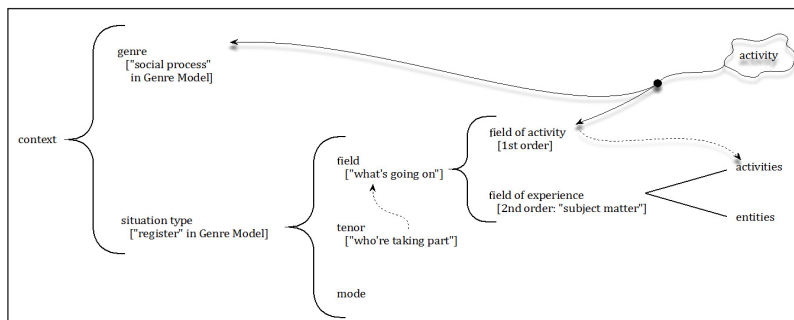
b)   Genre Model (in my interpretation, CMIMM)
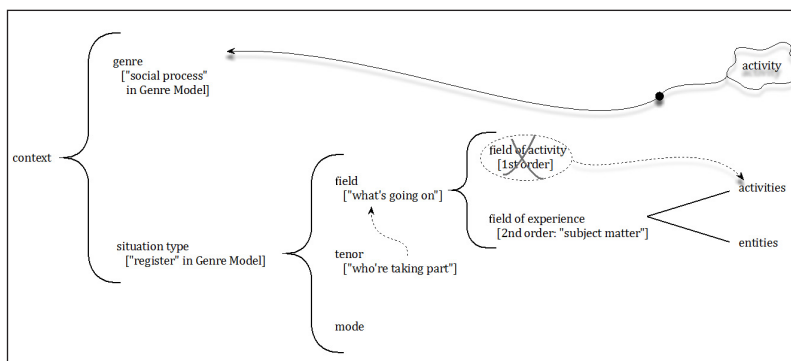
*Modelling
context and
register: the
long-term
project of
registerial
cartography*

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c)   My view [CMIMM]

Figure 27: The modelling of activity as part of context — within "genre" or field of activity?

I won't try to pursue this line of exploration further here; it would take a great deal of space to sort out the different positions and weigh different considerations. In terms of theory, it has always been the case in systemic functional linguistics that the value of trying out different combinations of semiotic dimensions has been recognized; this is the notion of **flexi-theory**. In terms of praxis, it is possible to draw on the very rich body of descriptions of genres as we extend the context-based registerial map, as I have illustrated in Table 2.
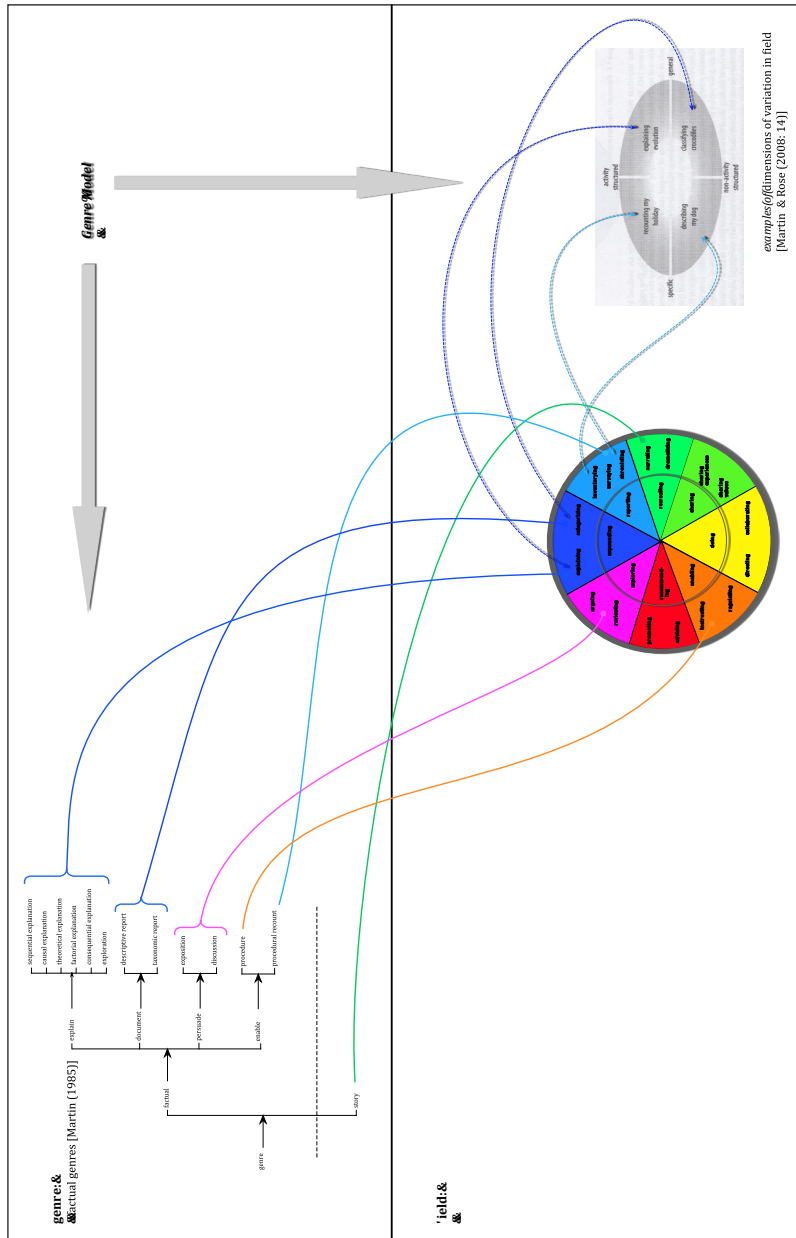
Figure 28: Genre and field in the Genre Model (e.g. MARTIN, 1992; MARTIN; ROSE, 2008) in relation to fields of activity (Figure 20)

6 Fields of activity in relation to tenor and mode values

In presenting our context-based map of registers, I started with field of activity in Figure 20 above. The map based on fields of activity has proved quite useful in a number of areas, including the work on sampling texts in the developing of descriptions of languages (e.g. TERUYA, 2007), translation studies, multimodal studies (cf. above), educational linguistics (cf. MATTHIESSEN, 2006b) and healthcare communication research (cf. MATTHIESSEN, 2013d); the last two are discussed in Matthiessen (2013a). It needs to be supplemented and enhanced, of course, by additional views that incorporate other aspects of contexts: see Figure 29. This figure *illustrates* how the map based on field of activity can serve as the foundation for other maps by adding parameters from tenor or mode, of field itself — field of experience:

- Tenor additions: who are involved in the activities identified in Figure 20 above? The interactants engaging in the different activities can be characterized in maps based on different tenor roles, relations and values such as institutional roles.
- Mode additions: what is the role of language — and of other semiotic systems — in the different fields of activity; how do semiotic systems contribute to the pursuit of the activity? What is the orientation of the situation type, towards field or towards tenor? What channel or channels are available in the pursuit of the activity? Is the activity persuasive, didactic, archival etc. in nature?
- Field additions: what is the experiential domain —what field or fields of experience are referenced and construed in the pursuit of the activity?

In Figure 29, values from these other variables are added to the representation of fields of activity by means of concentric circle, each concentric circle representing a unique value. For example, the four mode value combinations of medium (spoken / written) and turn (dialogic / monologic) are from centre to periphery: spoken and monologic, spoken and dialogic, written and dialogic, written and monologic.
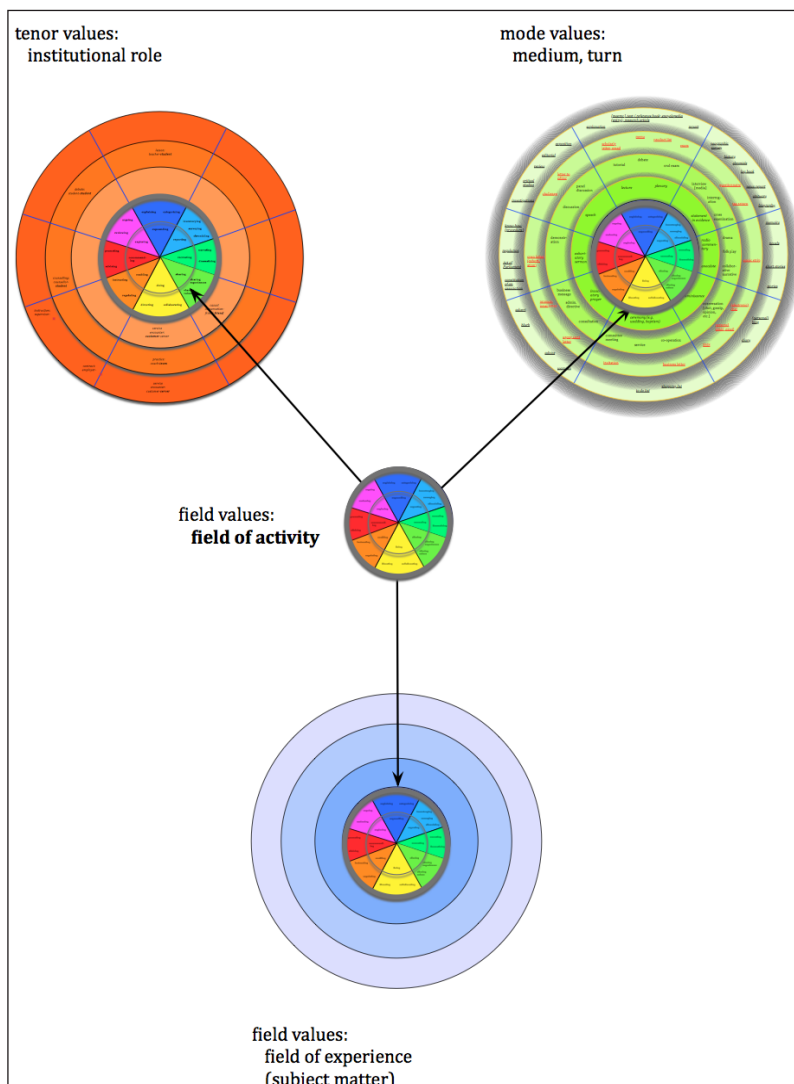
Figure 29: Fields of activity intersected with tenor (institutional role) and mode (medium, turn) and field of experience

Such additions need to be worked out and examined in detail. Here I will just touch on the addition of the tenor variable of institutional role (also known as "agentive role"): see Figure 30.
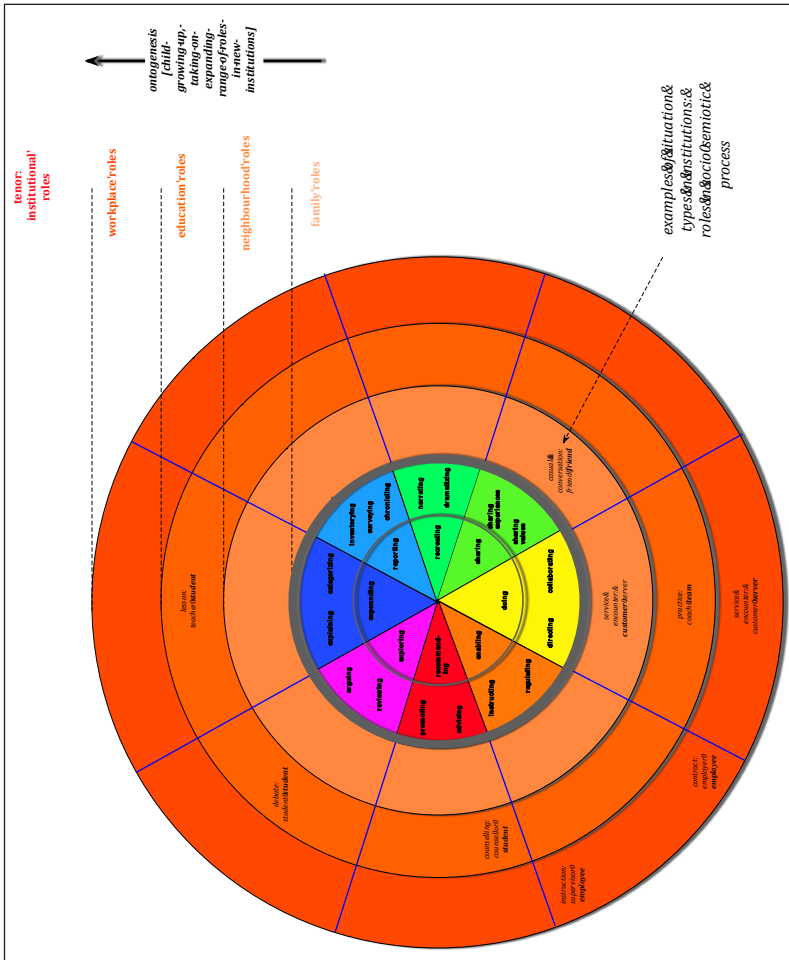
Figure 30: Field and tenor intersected — fields of activity in combinations with different sets of institutional roles ordered ontogenetically

The diagram in Figure 30 adds the tenor parameter of institutional role to the central field of activity representation of contexts showing how different institutional roles are involved in different activities. For example, in the diagram, 'sharing' involves the symmetrical roles of 'friend', whereas 'enabling: regulating' involves the hierarchic roles of 'employer' and 'employee'. The institutional roles I have included are merely illustrations of the general principle of intersecting field of activity with institutional role. I have arranged the concentric circles to suggest a developmental ordering from family roles in early childhood to workplace roles in adulthood.

By mapping the intersection of fields of activity with institutional roles, we can profile institutions to determine what kind of semiotic labour is done by what combinations of people, thus developing a field and tenor based understanding of the division of labour that is characteristic of an institution and of the registerial repertoire people have to master in order to take on particular institutional roles.

Conclusion

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Almost exactly half a century ago, Halliday, McIntosh and Strevens (1964, p. 90) characterized the "state of the art" in the description of the registers of a language:

> While we still lack a detailed description of the registers of a language on the basis of their formal properties, it is nevertheless useful to refer to this type of language variety from the point of view of institutional linguistics. There is enough evidence for us to be able to recognize the major situation types to which formally distinct registers correspond; others can be predicted and defined from outside language. A number of different lines of demarcation have been suggested for this purpose. It seems most useful to introduce a classification along three dimensions, each representing an aspect of the situations in which language operates and the part played by language in them. Registers, in this view, may be distinguished according to field of discourse, mode of discourse and style of discourse.

(The term "style" was later replaced by "tenor".) It is of course difficult to say how far we have advanced in terms of addressing the lack of descriptions of registers that they identify; but it is quite clear that there has been very substantial progress, particularly in the description of registers that play important roles in education: Christie and Derewianka's (2008) tour de force overview of learners' engagement with registers as they master them in writing from early primary school to late secondary school would not have been possible 50 years ago, but thanks to the systematic research in educational linguistics since the early 1960s, they were able to give a very clear sense of the growth of registerial repertoires through the school years in Australia.

The long-term project of registerial cartography is designed precisely to continue and expand efforts of this kind in order to deal with the lack of "a detailed description of the registers of a language". I have sketched a registerial map based on the view "from above" — a context-based map, devoting most of the time to a field-based project. In the previous section, I indicated how this field-based map — more specifically, this map based of field of activity — can be extended by additions of views derived from tenor and mode. But we also need to complement the map by moving upwards along the cline of instantiation so that we can begin to see how situation types combine to form **institutions** (see further, MATTHIESSEN, 2013b), as shown in Figure 31.
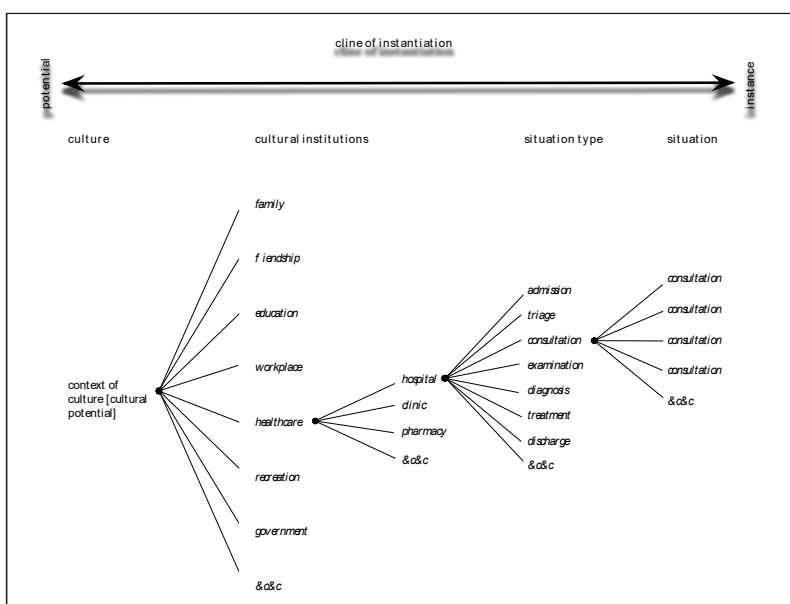
Figure 31: The extension of context along the cline of instantiation as a basis for registerial maps

The registers and text types that we can begin to locate within the overall semantic space of the meaning potential of a language thus function together within an institution, complementing one another as resources in the operation of the institution. The situation types that make up an institution relate to one another in structured ways; one situation type feeds into one or more situation types. This can be illustrated by reference to the "journey" patients experience as they move through the emergency department of a hospital; along this journey, patients will encounter

and take part in a succession of situation types, engaging with different healthcare practitioners in particular institutional roles[14]: see Figure 32 (for further discussion, see MATTHIESSEN, 2013d). (A good illustration from education is Christie's, 1997, description of curriculum macrogenres which occur "over several days, sometimes over several weeks" (p. 147).)
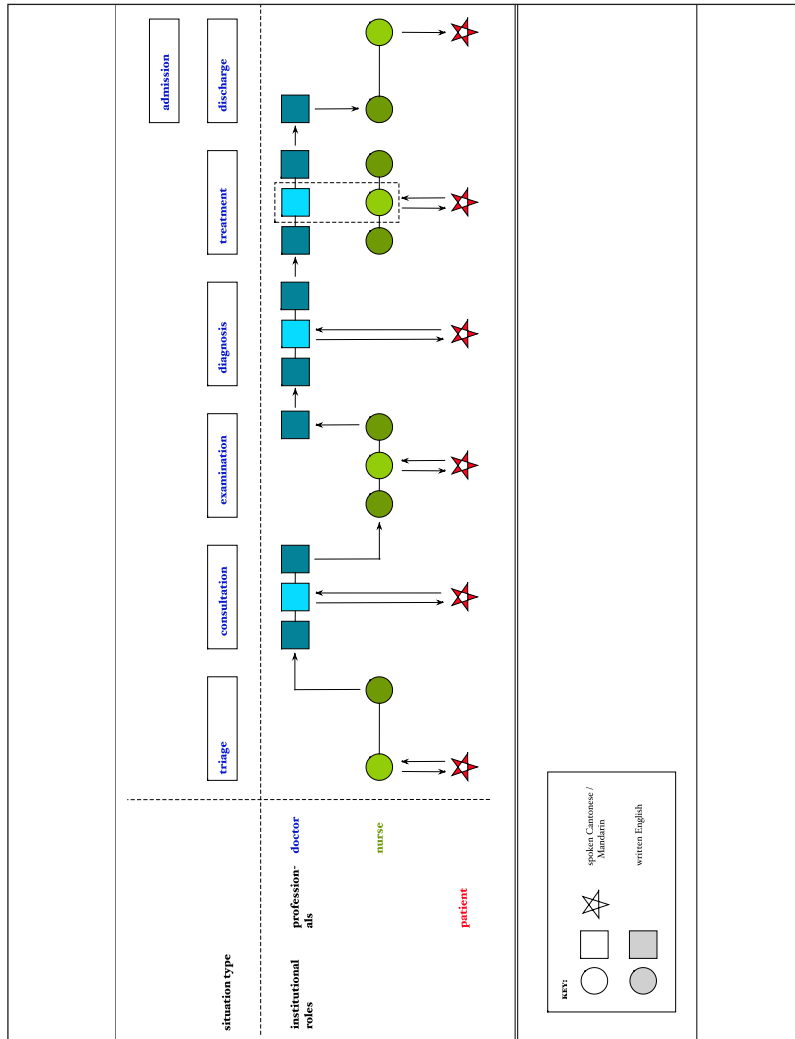
Figure 32: A journey through an institution as a succession of interdependent situation types — a patient journey through the Accidents and Emergency department of a large hospital in Hong Kong (based on accounts by Andy Fung and Jack Pun)

14. One can think of structured sequences of situation types as forming "scripts" in the sense developed in AI beginning with Schank and Abelson (1977).

Institutions can thus be modelled as **aggregates of situation types** that relate to one another in distinct ways such as the temporal succession of the situation types that make up a patient journey. Each situation type is characterized by some **field of activity** (Figure 20) but also by the set of **institutional roles** involved in this activity. These constitute complementary ways of viewing situation types and the institutions that they are part of: see Figure 33. Situation types are characterized by associated registers (Figure 1) or, reflecting the perspectival differentiation of register and text type, associated text types (Figure 4). These registers / situation types are accessed differentially by the people playing different institutional roles. Each role is characterized by a particular **registerial repertoire**, and to take on the role a person needs to master this repertoire.
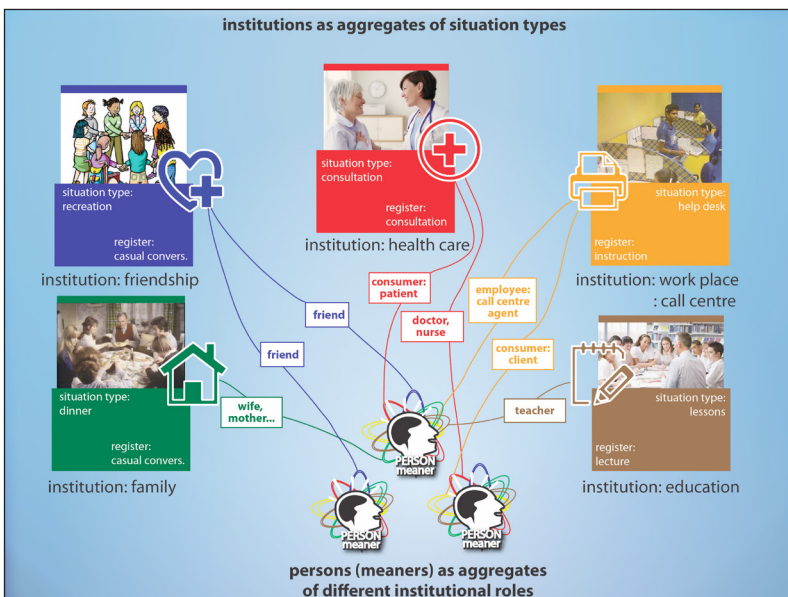
Figure 33: Institutions viewed in terms of (a) situation types and (b) institutional roles

Figure 33 shows that a **person** is a complex of **personae** or institutional roles taken up in interaction with others as they engage in the field of activity of some situation type within an institution such as the institution of the family or of health care. Each situation type can all be located in terms of the field of activity that characterizes it somewhere on the map in Figure 20 above. (For the "lens" on the system of language in context through personas as complexes of personae, see FIRTH, 1950; HALLIDAY 1978, p. 14-15; BUTT, 1991.)

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If we were to add time to Figure 33, we would be able to trace the path of a person through (for example) a day taking on a succession of different roles in interaction with other persons in a succession of situation types (cf. LAM and WEBSTER, 2009). This would be a kind of discourse log, or (from the point of view of the person being traced) a discourse diary. As an illustration of what such a trace might look like, let me use a diagram from Gu (2001) illustrating discourse activities in a community in the course of a day: I have traced one passible path of a person through these discourses in different institutional settings: see Figure 34. If we take note of the registers that the person engages in with other people, we can call this an example of **temporal registerial cartography** — which is very much like Gu's work on discourse geography drawing on the work by the Swedish cultural geographer Torsten Hägerstrand. Using the map in Figure 20 above, we can add time, represented by concentric circles, and imagine the semiotic movement of a person during the early part of the day: see Figure 35. This could be the basis for a needs analysis identifying the registers a learner would have to master to function in different roles in a community throughout a day.
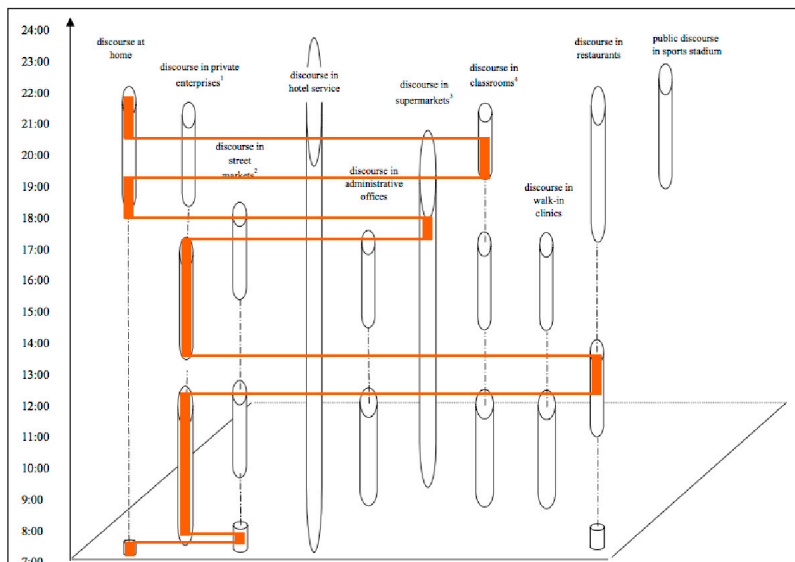

Figure 34: Tracing a person's movement over a day through discourses in different institutional settings (trace overlayed on figure from GU, 2001)
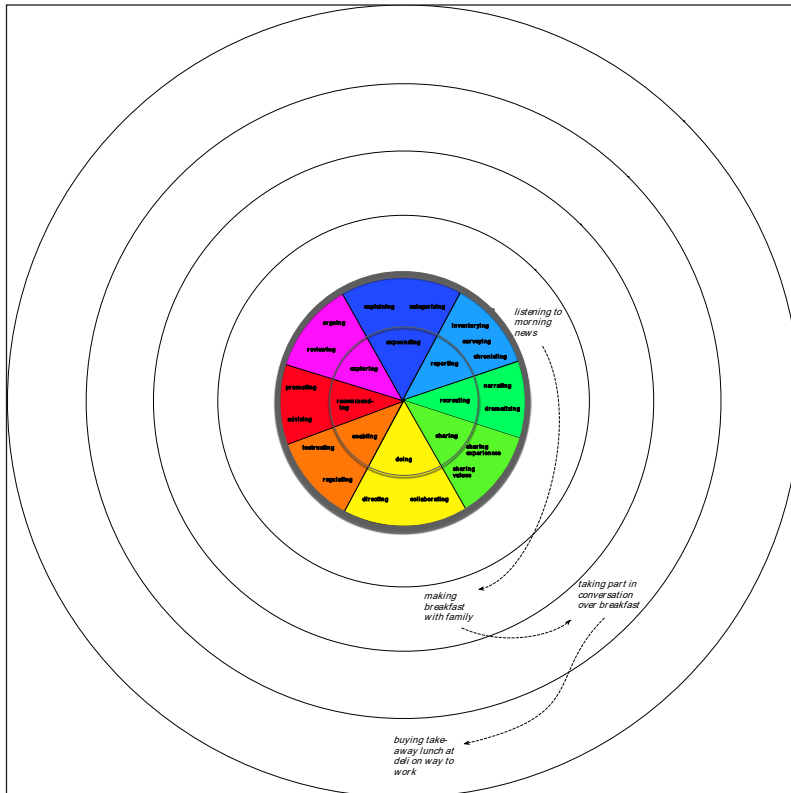
Figure 35: Imagined succession of fields of activity a person takes part in during the early part of the day

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