

Register in Systemic Functional Linguistics*

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Christian M. I. M. Matthiessen elaborates on the Systemic Functional Linguistics (SFL) approach to register in this contribution to the inaugural issue of *Register Studies*. He is Chair Professor of the Department of English at the Hong Kong Polytechnic University, where he pursues a scholarly agenda that includes developing the theory of Systemic Functional Linguistics and applying it to text and discourse analysis, functional grammar, issues related to language evolution and typology, and comprehensive descriptive models of register. Throughout his career, Matthiessen has made major contributions to SFL theories and methods. Among his major works is *Lexicogrammatical Cartography: English Systems* (1995, International Language Sciences Publishers). More than any other scholar, Matthiessen has expounded on Halliday's early ideas on register and applied SFL theory to describing models of register variation. He remains an active researcher in the area of register studies which includes his registerial cartography – the comprehensive and systematic description of the registers in a language. Matthiessen's work has left an indelible mark on the theory and systematic study of patterns of register in language use.

Keywords: cline of instantiation, hierarchy of stratification, semiotic, registerial cartography, semantic variation

Introduction

The launch of *Register Studies* is a major event in (applied) linguistics or (applied) language sciences, to use a term for the scientific study of language that seems to be becoming increasingly common, no doubt at least partly because of the way that the terms 'linguistics' and 'theoretical linguistics' have been used since the

* I am grateful for very insightful and constructive comments by an anonymous reviewer on a draft version of this article.

1960s – a way that has tended to embody a fairly narrow focus (thus leading to the need for new labels such as ‘discourse analysis’).

It is a major event because *Register Studies* is the first journal to focus on one of the absolutely central properties of language (and, in fact, also of other complex semiotic systems) – as an inherently functionally variable and adaptable system (rather than a homogeneous or uniform one).¹ The launch is timely because the notion of register has now been well established – thanks to systematic theorization and empirical research going back at least to the 1960s (for an early statement, see Halliday, McIntosh, & Stevens 1964: Chapter 4; for an early corpus-based study, see Huddleston, Hudson, Winter, & Henrici 1968, on scientific English),² so the focus is clear; and the tools and resources for extensive register studies are now in place, thanks to work in corpus linguistics and, importantly, (statistical) natural language processing (NLP).

The launch issue of *Register Variation* includes overviews of approaches to registers in frameworks and traditions that have treated register as a linguistic phenomenon of central concern to linguistic theory, description, and analysis. Each overview addresses five questions, and my task here is to outline answers according to Systemic Functional Linguistics (SFL). To enable me to do that, I will very briefly characterize SFL, focussing only on those aspects that turn out to be essential in its conception of, and engagement with, register (for previous relevant overviews of work on register in SFL, see e.g., Ghadessy 1988; Gregory 1967; Halliday 1978, 1991b; Halliday, McIntosh, & Stevens 1964; Hasan 1973, 1993; Lukin, Moore, Herke, Wegener, & Canzhong 2008; Matthiessen 1993, 2014, 2015a, 2015b; Ure 1982; Ure & Ellis 1977).

1. I write ‘functionally variable’ since there have of course been publication venues for other types of variation in language, e.g., *Dialectología*.

2. Ure & Ellis (1977:198) discuss register in relation to bilingualism and note: “It was in fact in relation to bilingualism that register was first discovered (Gumperz 1959, Ferguson 1959) and named (Reid 1956). (The term *register* was introduced by Reid; Gumperz and many American linguists and anthropologists use the term *code* when discussing the same phenomena.)” This last observation was, of course, made before Biber & Finegan (1994). Another source of insights into the phenomenon of register was Firth’s notion of restricted languages, and also Prague School work on standard languages. Ferguson (1994:16) writes after discussing dialect variation: “Another kind of variation is the linguistic difference that correlates with different occasions of use. [...] The first systematic analysis of this kind of variation, which came to be called register variation, began in Great Britain in the 1960s and is still active (cf. Ellis & Ure 1969; Ghadessy 1988).”

1. How is register conceptualized in Systemic Functional Linguistics?

SFL is one of the functional linguistic approaches to language that emerged around the middle of the 20th century. Chronologically, it is pre-dated by Prague School functionalism, which began to be developed at around the same time as the Malinowski-Firth tradition,³ and it predates Simon Dik's Functional Grammar (which drew centrally on the Prague School) and West-Coast Functionalism in the US. It was first developed by M. A. K. Halliday, as a continuation of Firthian linguistics (including its adoption of contextualism in Malinowski's anthropology) but also with insights coming from Halliday's training in China, especially by Wang Li, in the late 1940s, and early references to the Prague School, US American anthropological linguistics, and Hjelmslev's Glossematics together with Lamb's Stratificational Linguistics. Academically, SFL has always been outward looking and 'permeable' (e.g., Halliday 1985a), engaging in dialogues with anthropology (Malinowski), sociology (Bernstein), educational concerns, computational linguistics and AI, neuroscience, film studies, and a range of other disciplines.

As a theory of language, SFL is holistic: language is theorized as a 4th-order system in an ordered typology of systems operating in different phenomenal realms – physical < biological [physical + life] < social [biological + value, or 'social order'] < semiotic [social + meaning] (see, e.g., Halliday 1996, 2005; Halliday & Matthiessen 2006; Matthiessen 2007, in prep.). Language is thus theorized as a semiotic system – more specifically, as a higher-order semiotic system. This means that it is theorized as a resource for making meaning – a meaning potential (e.g., Halliday 1973), and it is always theorized *ecologically* as part of the semiotic complex of language in context, which is obviously crucial since any approach to register must include an account of context (cf. Ure & Ellis 1977, discussion of 'language events'). Using and testing this holistic theory of language – language as a general human system, researchers in SFL have produced descriptions of a growing range of particular languages. The first in Halliday's focus was Chinese, followed by English; but there is now quite a wide range of descriptions of languages from a number of different language families and linguistic areas (see e.g., Caffarel, Martin, & Matthiessen 2004; Teruya & Matthiessen 2015). Such descriptions of particular languages are designed to be on the path to comprehensiveness – descriptions with comprehensive coverage that

3. Although here it is important to note Mathesius's (1911) early contribution in Czech, "On the potentiality of language phenomena", which was independent of, and predates, Saussure's posthumous book.

can be applied to, and tested⁴ in the course of, text analysis (and, by extension, register analysis), and they are based on extensive evidence from texts belonging to different registers.

In order to theorize language in context holistically as a resource for making meaning, Halliday has opted for a theory where the ‘architecture’ of language is conceived of in terms of relations that are defined in terms of a number of semi-otic dimensions: see Figure 1. Viewing this figure from left to right, we can characterize these dimensions as follows:

- The stratification of the systemic functional metalanguage: the metalanguage we use in modelling systems of phenomena operating in different phenomenal realms is organized into a number of metalinguistic strata (theory, theoretical representation, computational representation, and implementation), ranging from the highest metalinguistic stratum – the theory serving to construe a theoretical model of semiotic phenomena – to the lowest metalinguistic stratum – the implementation of this theory in computer models, as in computationally implemented models of register in text generation (e.g., Bateman & Paris 1991) and in computational corpus analysis (e.g., Teich, Degae-tano-Ortlieb, Fankhauser, Kermes, & Lapshinova-Koltunski 2016).
- The ordering of systems operating in different phenomenal realms, from the most complex systems (4th order systems) – semiotic systems [systems of meaning], to 3rd order systems – social systems [systems of value, or social order], to 2nd order systems – biological systems [systems of life], to 1st order systems – physical systems (see, e.g., Halliday 1996, 2005; Halliday & Matthiessen 2006; Matthiessen 2007). While accounts of register will focus on it as a semiotic phenomenon in the first instance, its manifestation within lower-order systems is of course also relevant, most immediately its manifestation within social order, centrally relating to division of labour within social systems. (It is thus not surprising that early insights into register variation came from sociolinguistics and anthropological linguistics, e.g., Ferguson 1959; Gumperz 1961; Hymes 1972.)
- Within semiotic systems, semiotic dimensions that are global in scope, organizing the total system of language in context:

4. Tested in the engineering sense of testing an account. In the course of doing text analysis, we will find patterns in text that have not yet been accounted for in the description, so we will then revise the description to take account of them. This is, of course, an ongoing process.

- the hierarchy of stratification⁵ (context > language [[content plane [semantics > lexicogrammar] > expression plane [in speech: phonology > phonetics]]),
 - the cline of instantiation (potential – subpotential/ instance type / instance),
 - the spectrum of metafunction (ideational [logical / experiential] / interpersonal / textual)
- Within each stratal subsystem of language in context, semiotic dimensions that are local in scope operating within each stratal sub-system of language in context (but of the same kind throughout, so fractal in nature in the sense that the same semiotic dimensions are manifested in the environments of different stratal subsystems):
- the hierarchy of axis (paradigmatic [i.e., systemic] > syntagmatic [i.e., structural]),
 - the hierarchy of rank (for different strata, e.g., in the grammar English and many other languages: clause > group/ phrase > word > morpheme).

Together, these semiotic dimensions define the overall semiotic space of meaning. It is within this space that we can detect, analyse, and describe variation in patterns of meaning.

Within the architecture shown in Figure 1, the two dimensions that are most immediately relevant to the conception of register are:

- the cline of instantiation, since this cline enables us to locate register variation mid-range between its outer pole of potential (language as system) and instance (language as text), and to characterize it not only qualitatively but also quantitatively as relative frequency of instantiation in a given corpus of texts;
- the hierarchy of stratification, since this hierarchy enables us to locate register variation at the highest stratum of language (semantics), as semantic variation in the first instance in relation to variation in contexts of use.

5. Here “>” means ‘is ordered above’ in terms of the relevant hierarchy, e.g., “word > morpheme” means ‘word is ordered above morpheme’ on the rank scale, and “semantics > lexicogrammar” means ‘semantics is ordered above lexicogrammar’ along the hierarchy of stratification. In the specification of the hierarchy of stratification, “(context > language [[content plane [semantics > lexicogrammar] > expression plane [in speech: phonology > phonetics]])” means: context is ordered stratally above language, which is organized stratally into the content plane and the expression plan; the internal stratal organization of the content plane is semantics above lexicogrammar, and the internal stratal organization of the expression plane is phonology above phonetics (in speech; in writing it is: graphology above graphetics).

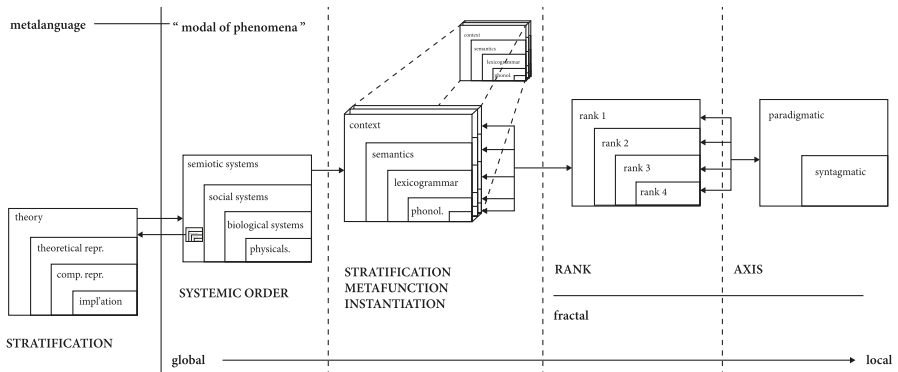


Figure 1. The dimensions of the 'architecture' of language according to Systemic Functional Linguistics

Register variation is thus semantic variation occurring along the cline of instantiation between the meaning potential of language and acts of meaning in texts unfolding in their contexts of situation: see Figure 2, which is designed to bring out the nature of register as inherently indeterminate or 'fuzzy' (cf. Miller & Bayley 2015). By referring to the hierarchy of stratification and the cline of instantiation, we can view register from different vantage points in terms of Halliday's trinocular vision (e.g. Halliday 1978, 1996; Halliday & Matthiessen 2014): see Table 1 – 'from above' (from context, from the potential pole), 'from below' (from lexicogrammar, from the instance pole) and 'from roundabout' (from semantics, from the region intermediate between potential and instance).

Table 1. Register viewed trinocularly in terms of the hierarchy of stratification and of the cline of instantiation

Angle of view	Hierarchy of stratification	Cline of instantiation
from above	from context	from potential pole
from roundabout	from semantics	from region intermediate between potential and instance
from below	from lexicogrammar	from instance pole

In terms of the hierarchy of stratification, register variation is semantic variation according to context of use in the first instance; but since the relationship between semantics and lexicogrammar within the content plane is a natural one (rather than an arbitrary or conventional one), register variation is, by another stratal step, also variation in wording. And certain aspects of register variation will also ripple down to the expression plane, e.g., prosodically in terms of different 'voices' associated with particular registers in spoken language – the auctioneer's voice, the sports commentator's voice, the preacher's voice, and soon, and different graphic conventions associated with particular registers in written language –

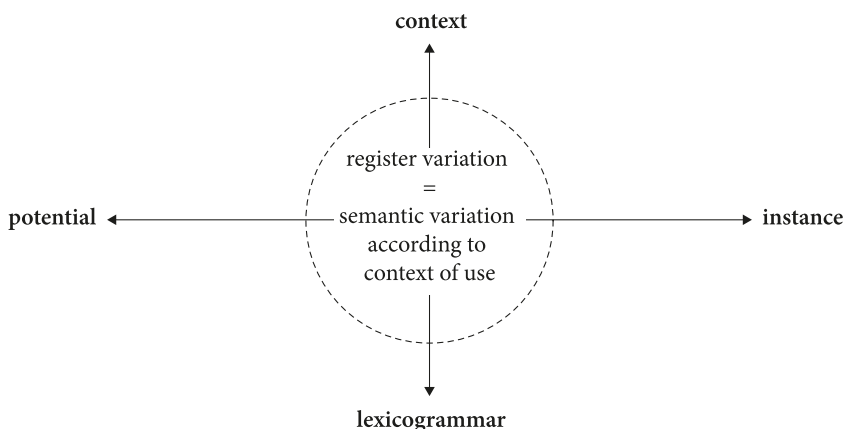


Figure 2. Register variation as semantic variation (in the first instance) according to context of use (so functional variation) midway between the potential and instance poles of the cline of instantiation

the layout of print advertisements, of birthday greetings, of licence agreements, of letters of reference, and so on.

In Systemic Functional Linguistics, register is conceptualized as a central property of language as an inherently variable system (cf. Gregory 1967; Halliday, McIntosh, & Strevens 1964; Halliday 1978, 1991b, 1994; Hasan 1973); more specifically, register is conceptualized in terms of functional variation – i.e. variation in language according to context of use (cf. Figure 6, to be discussed below), so a given register is a functional variety of language. By the same token, a given language is nothing but the total aggregate of registers at any given period during its evolution (cf. Figure 5, to be discussed below). This point is important because while languages continue to evolve – unless catastrophic conditions intervene, many registers have limited life-cycles: they emerge under contextual pressures, flourish, but may then disappear when the contextual conditions have changed. Thus during any given period of time, a particular language will be an aggregate of the registers current at the time, but the mix of registers will change over time (e.g., Ure & Ellis 1977: 197) – the evolution of the registers of modern science, the administration of nation states, the workings of capitalism is part of the recent history of a number of (standard) languages (recent = last five centuries or so).

As already noted and shown diagrammatically above (Figure 2), register variation can be located, in the first instance, in terms of two semiotic dimensions – the cline of instantiation and the hierarchy of stratification – together with the two other major kinds of variation in language, dialectal variation and codal variation:⁶

6. When registerial variation was introduced as a kind of variation in SFL, dialectal variation had, of course, been recognized and studied for a very long time, so writers often compared

see Figure 3. The three kinds of variation differ in terms of their location along the cline of instantiation, and in terms of the nature of the variation along the hierarchy of stratification (semantic, lexicogrammatical, phonological variation). Register variation differs from both codal variation and dialectal variation in that it is variation according to variation in the context of use, while in the case of the other two types of variation, the context remains constant. To further clarify the difference between dialectal variation and registerial variation, I have adapted a comparative table from Halliday and Hasan (1985: 43), where dialects and registers are contrasted: see Table 2 (cf. also Halliday 1978: 35).

I will now discuss the location of register variation in terms of the dimensions of (i) stratification and (ii) instantiation in turn.

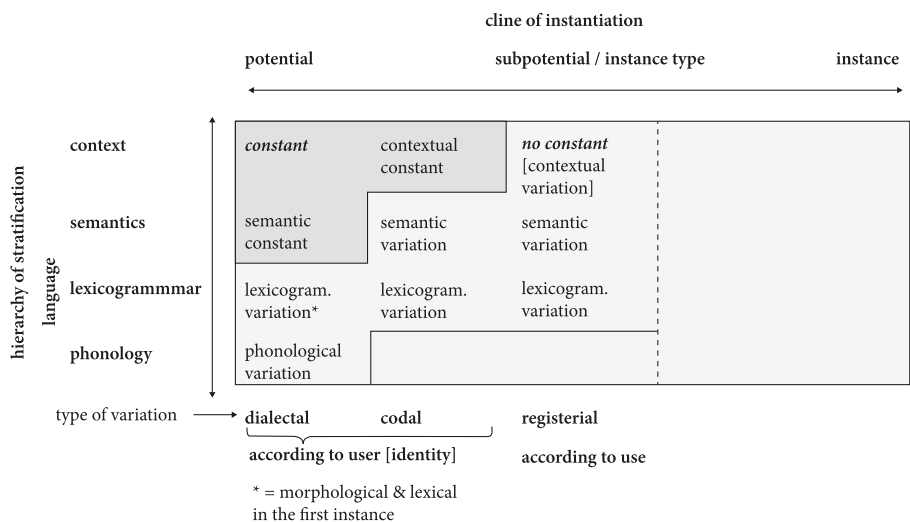


Figure 3. Registerial variation as one of three major types of variation in language characterized in terms of location along the cline of instantiation and in terms of the locus of variation along the hierarchy of stratification

and contrasted registerial variation with dialectal variation (e.g., Halliday 1978; Halliday, McIntosh, & Strevens 1978): see Table 2. These two kinds of variation were contrasted as variation according to use, i.e., registerial variation, and variation according to user, i.e., dialectal variation. But thanks to the work by Basil Bernstein, Michael Halliday, Ruqaiya Hasan and other linguists became aware of another type of variation, codal variation, and began to theorize it in terms of SFL, and to describe it (e.g., Halliday 1994; Hasan 1973, 1989). Codal variation is sub-cultural variation in the deployment of the semantic resources of language – sub-cultural according class or in principle any other socio-economic category playing a role in the organization of society. Halliday (1994: 236) writes: “the codes are different patterns or habits of speech ... adopted by speakers of the same language as a result of sub-cultural variation”. He goes on to problematize the notion of codes in terms of the cline of instantiation (it is quite clear that codal variation is semantic variation in the first instance).

Table 2. Comparison of dialects and registers (adapted from Halliday & Hasan 1985: Table 3.1 varieties in language)

Property	Dialects (dialectal varieties)	Registers (diatypic varieties)
variety according to	user dialect is ‘what you speak (habitually)’ i.e. determined by who you are geographically or socially (region &/or social class of origin &/or adoption) dialect reflects social order in sense of social <i>structure</i> (types of social hierarchy)	use register is ‘what you are speaking (at the time)’ i.e. determined by what you are doing (nature of activity in which language is functioning) register reflects social order in sense of <i>process</i> (types of social activity)
Location along cline of instantiation	potential pole of cline of instantiation	midway between potential pole and instance pole
Stratal constant	semantics – dialects are <i>saying the same thing differently</i>	no stratal constant (variation according to context) – registers are <i>saying different things</i>
Stratal location of difference	phonetics phonology lexicogrammar: lexis (grammar to a certain extent) <i>but not in semantics</i>	semantics and <i>therefore</i> lexicogrammar (as realization of meaning) <i>but rarely in phonology</i> (some require special voice qualities)
Extreme cases	anti-languages mother-in-law languages	restricted languages languages for special purposes
Intermediate cases	subcultural varieties caste or social class provenance (rural/ urban) generation (parents/ children) age (old/ young) sex (male/ female)	occupational varieties technical (scientific, technological) institutional (e.g. doctor-patient) other contexts having special structures (e.g. classroom)
Variation in and attitude towards types	Note: members of a community often hold strong attitudes towards its dialects, owing to the function of dialect in the expression and maintenance of social hierarchy. One dialect may acquire special status as symbolising the values of the community as a whole.	Note: registers as semantic configurations that are typically associated with particular semiotic contexts (defined in terms of field, tenor and mode). They may vary from ‘action-oriented’ (much action, little talk) to ‘talk-oriented’ (much talk, little action).
Interconnection	<i>But</i> , there is close interconnection between registers and dialects; so there is no very sharp line between the two. There is division of labour: different members have different social roles – so certain registers demand certain dialects (e.g. bureaucratic register: standard dialect), and on the other hand different social groups tend to have different conceptions of the meanings that are exchanged in particular situations (Bernstein’s codes).	

- i. In terms of the hierarchy of stratification, register variation is semantic variation in the first instance – the meanings at risk in a recurrent context of use; Halliday (1978:111) writes:

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 by varying degrees of specificity; but the existence of registers is a fact of everyday experience – speakers have no difficulty in recognizing 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 superposed 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.

So, register variation is semantic variation resonating with contextual variation;⁷ but since the relationship between semantics and lexicogrammar within the content plane of language is a natural one – rather than a conventional (or arbitrary) one, this semantic variation is realized as lexicogrammatical variation (so it can be investigated ‘from below’ in terms of patterns of wording). In general, register variation does not involve the expression plane strata – phonology and phonetics in spoken language, graphology and graphetics in written language, and their analogues in sign language. But, there are principled exceptions (e.g. Halliday & Hasan 1985: Chapter 3) – cases where contextual settings affect the expression plane in terms of constraints, as in sports commentary (see Bowcher 2001) or ‘little texts’ constrained in terms of space (discussed in one of the appendices of Halliday, 1985a), or in terms of symbolism. (Poetry and song represent interesting examples where phonology may be implicated. For an early study of song in the

7. Within SFL, J.R. Martin and his team, working within what they have called the ‘Sydney School’, over the decades have, arguably, foregrounded the view ‘from above’, from the vantage point of context, and posited ‘genre’ as a stratum within a stratified account of context: see, e.g., Martin (1992), Martin and Rose (2007, 2008), Rose and Martin (2012). But, **register** is a functional variety of language resonating with a setting of contextual values – except that Martin used the term ‘register’ in a different way to refer to a level within context. This has led to a great deal of terminological confusion. For discussion, see, e.g., Matthiessen (1993, 2015b). It is also important to note that in the early work in the 1980s, ‘genre’ was located primarily in terms of the hierarchy of stratification (as in Martin 1992) – not in terms of the cline of instantiation; this dimension came into focus later, e.g., in Martin (2010).

Firthian tradition, see Robins & McCleod 1956; they show, for example, how normal Yurok phonology is adapted to singing (e.g., short vowels may be sung on two notes, and voiceless /h/ may be voiced). For more systemic functional work, see e.g., Steiner 1988, on a folk ballad; and Caldwell, e.g., 2010, 2014, on rap music.)

- ii. In terms of the cline of instantiation, register variation is located within the mid region between the two outer poles of the cline, the potential pole and the instance pole. As Halliday (1978:111) points out, a given register and the situation that it is associated with can “be described by varying degrees of specificity”. This is precisely because we are focussing on a region along the cline of instantiation, and we can range from a macro-register to the micro-registers that it consists of. As an example of a macro-register, we can take Halliday’s (1988:140) characterization of scientific English in terms of its contextual values:

The term “scientific English” is a useful label for a generalized functional variety, or register, of the modern English language. To label it in this way is not to imply that it is either stationary or homogeneous. The term can be taken to denote a semiotic space within which there is a great deal of variability at any one time, as well as continuing diachronic evolution. The diatypic variation can be summarized in terms of field, tenor and mode: in field, extending, transmitting or exploring knowledge in the physical, biological or social sciences; in tenor, addressed to specialists, to learners or to laymen, from within the same group (e.g. specialist to specialist) or across groups (e.g. lecturer to students); and in mode, phonic or graphic channel, most congruent (e.g. formal “written language” with graphic channel) or less so (e.g. formal with phonic channel), and with variation in rhetorical function – expository, hortatory, polemic, imaginative and so on.

The principle here is very straightforward: the more specific the settings of parameters of field, tenor, and mode are within context, the more constrained the range of options in the semantic system will be.

Here it is important to add one further consideration (e.g. Halliday 1991a, 2002a), viz. the choice of vantage point: the region of functional variation between the potential pole of the cline of instantiation and the instance pole can be viewed from the vantage point of either pole:

- Seen from the vantage point of the potential pole of the cline of instantiation, we can characterize functional variation in terms of sub-potentials of the overall meaning potentials – register in the sense of functional variety as sub-meaning potential (and this perspective is reflected in the term that has been

used in the literature on machine translation for register, viz. ‘sub-language’, e.g., Kittredge 1987);

- Seen from the vantage point of the instance pole of the cline of instantiation, we can characterize functional variation in terms of text types – emerging out of recurrent patterns in texts (at the instance pole).⁸

So the mid-region between the meaning potential of a language and instances of meaning (text) can be approached either as sub-potential, register, or as instance type, text type, as shown in Figure 4 and Figure 5. Registers operate within cultural domains located within the overall context of culture – the cultural potential of a community; these domains can be defined by reference to the institutions that make up a culture (cf. Malinowski 1944). For example, we can focus on the institution of healthcare, more specifically a hospital, and we can then characterize this institution in terms of the registers that operate within it (cf. Matthiessen & Fung, forthcoming). To complement this view, we can start with the instantial pole of the cline of instantiation, and sample texts in their contexts of situation in order to identify recurrent patterns that we can characterize as a text type operating in a situation type, e.g. we can posit a generalization based on instances about medical consultations. (Ure & Ellis 1977:199, differentiate between immediate and wider contexts; we can now interpret their distinction in terms of the cline of instantiation.)

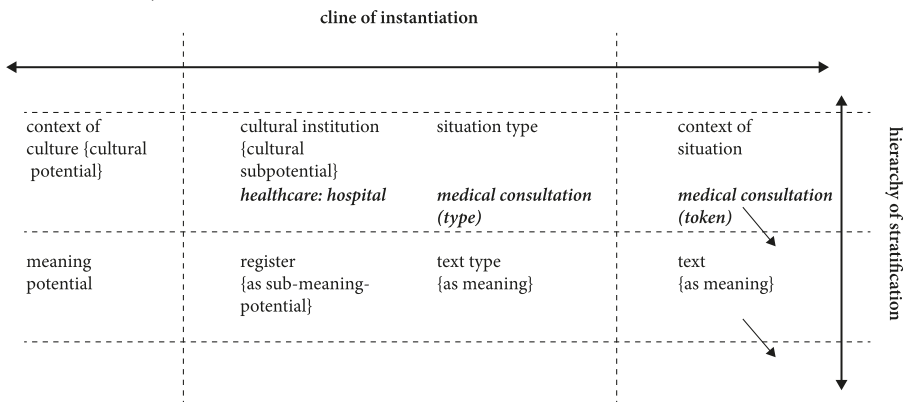


Figure 4. Register and text type as complementary view on functional variation

8. In the unfolding a particular text instantiating a particular variation, there will, of course, be variation; in Figure 2–5, this variation is characterized as “variation during logogenesis”, i.e. variation in the course of the unfolding of a text. If such variation is recurrent, it may be “distilled” as changes in the register being instantiated. (For logogenesis as one kind of semogenesis, see e.g. Halliday & Matthiessen, 2006.)

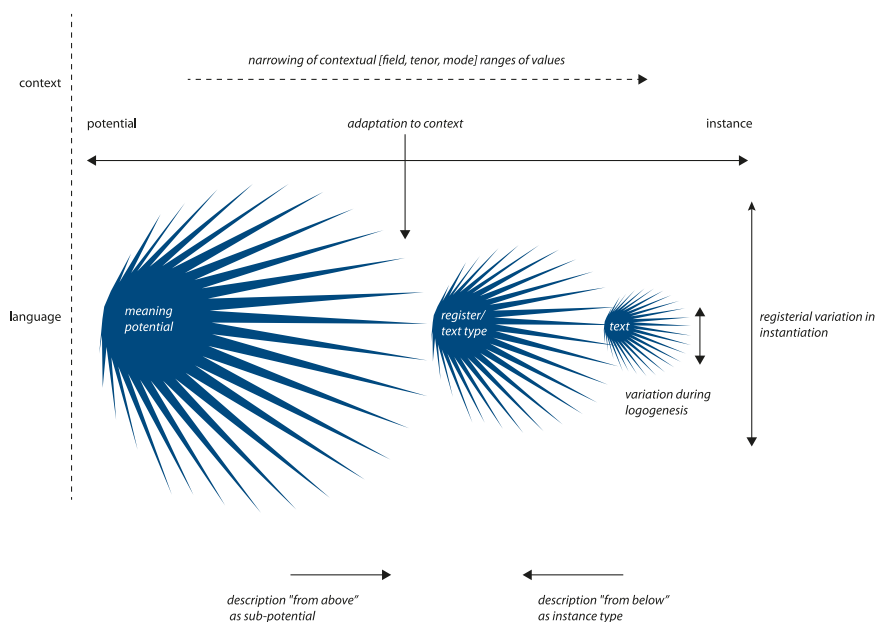


Figure 5. Language extended along the cline of instantiation, showing language as an aggregate of registers, and texts as aggregates of texts

In terms of the hierarchy of stratification, register variation is variation according to context of use – as brought out by the formulation from Halliday (1978:111) quoted above: “A register can be defined as the configuration of semantic resources that the member of a culture typically associates with a situation type.” This correlation between context and semantics can be further differentiated by reference to the spectrum of metafunction in the organization of language. Language is inherently functional in its organization; as a resource for making meaning, it is organized according to the mode of meaning into ideational meaning, interpersonal meaning and textual meaning:

- ideational: construing our experience of the world around us and inside us as meaning;
- interpersonal: enacting our roles, relations and values as meaning;
- textual: presenting ideational and interpersonal meanings as a flow (or more accurately, swell) of information in the form of text.

These metafunctions have engendered different semantic and lexicogrammatical systems; for example, the primary metafunctional systems of the clause in English (and many other languages, perhaps all) are TRANSITIVITY (ideational), MOOD (interpersonal) and THEME (textual).

The distinct metafunctional ranges of the overall meaning potential of language 'resonate' with different parameters of contextual values, as shown in, e.g., Halliday (1978), Halliday and Hasan (1985, e.g., Figure 2.4), Martin (1992: see Table 3). In an early formulation of this correlation, Halliday (1978:143) writes:

The environment of language, or social context, of language is structured as a field of significant social action, a tenor of role relationships, and a mode of symbolic organization. Taken together these constitute the situation, or context of situation, of a text.

We can then go on to establish a general principle governing the way in which these environmental features are projected onto the text.

Each of the components of the situation tends to determine the selection of options in a corresponding component of the semantics. In the typical instance, the field determines the selection of experiential meanings, the tenor determines the selection of interpersonal meanings, and the mode determines the selection of textual meanings.

(The ideational metafunction embodies two modes of construing experience, the logical and the experiential; the correlation between the field parameter of context and language involves the ideational metafunction in general, not only the experiential subtype.) Key contextual-linguistic metafunctional correlations are described by Martin (1992: Chapter 7) and examples are provided in various studies, including Halliday (1978), Halliday and Hasan (1985b: The Silver text Appendix, 1985c), and Halliday and Matthiessen (2006). The evidence supporting Halliday's (1978) formulation is strong, and it would make excellent sense to undertake a research synthesis type of study to take stock of the work that has been done and to identify gaps and future directions. The work on registerial cartography (e.g., Matthiessen 2015a) is designed to expand the evidential base significantly.

The relationship between the contextual parameters of field, tenor, and mode and the linguistic metafunctions of ideational, interpersonal, and textual meaning can be characterized as one of realization: contextual values are realized by linguistic selections. This is the same type of relation that holds between semantics and lexicogrammar, and between lexicogrammar and phonology (or graphology) – i.e., between adjacent strata within language. But since in this case the relation holds between two kinds of meaning, between contextual meaning and linguistic meaning, it needs to be theorized and modelled as a special kind of realizational relationship, as indicated by glosses such as 'correlation' and 'resonance': the relationship is of a dialectic nature in that contextual values guide linguistic selections,

but at the same time they are specified by linguistic selections.⁹ The correlation between contexts specified in terms of field, tenor, and mode values and registers is shown schematically in Figure 6. As already noted, the more delicate the specification of field, tenor, and mode values, the further to the right along the cline of instantiation is the location of the associated register (cf. Figure 5).

Table 3. Correlations between contextual parameters and metafunctional systems of language (content plane: semantics, lexicogrammar)

Context: parameters	(Realized by)	Language [semantics ∨ lexicogrammar]: metafunctions
field (what's going on: field of activity, and field of experience)	∨	ideational systems
tenor (who are taking part: roles & relations)	∨	interpersonal systems
mode (role played by language)	∨	textual systems

Let me round off my answer to Section 1 by presenting a timeline indicating the development of studies of the phenomenon of functional variation in language: see Figure 7. This sketch is, of course, selective; it is designed to show SFL in relation to other relevant strands. The systemic functional approach to functional variation in context can be traced back to Malinowski's work on contextualism and Firth's adaptation of this framework and notion of restricted languages (cf. Halliday, McIntosh & Stevens 1964: 96); but, at various points it has been influenced – or at least referenced – by other traditions, in particular linguistic work on text types (e.g., Longacre 1974; Longacre & Hwang 2012 for linguistic work on text, or genre, typology), on 'codes' (mentioned above but not shown in the timeline) and accounts of genre (e.g., Hyon 1996; Swales 2011 for approaches used in educational contexts).

9. Hasan (e.g. 1999) has characterized the relationship in terms of “activate” and “construe”: “if in speaking, the speaker’s perception of context activates her choice of meanings, then also the meanings meant in speaking construe contexts” (p. 223). It is important to emphasize that both these notions are inherent in realization, even though “activate” may evoke a sense of instantiation and “construe” may be associated with the ideational mode of meaning.

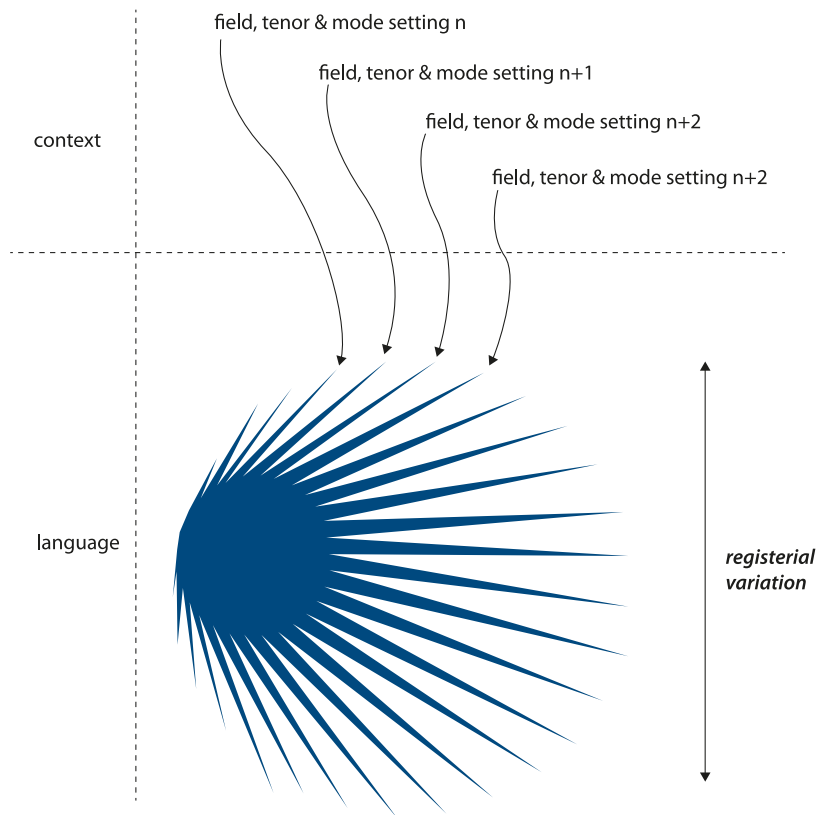


Figure 6. Registerial variation – different registers (functional varieties of language) associated with different field, tenor and mode settings within context

2. How does register relate to the research goals within Systemic Functional Linguistics?

Register is central to many of the applied research goals of SFL, and it is a fundamental part of the general theory of language according to SFL and the descriptions of particular languages. Throughout its development, SFL has been designed with a wide rather than narrow range of research goals in mind (cf. Halliday 1985a), and register is directly relevant to many of them. This orientation in the study of language is what Halliday (e.g. 2002b, 2008) has called *applied linguistics* (cf. also Matthiessen 2012, 2014) – an approach to linguistics where theory is designed to provide the potential for application, theory and application are in ongoing dialogue and constitute complementary phases in the linguistic engagement with language, with social accountability firmly in view (Halliday 1984).

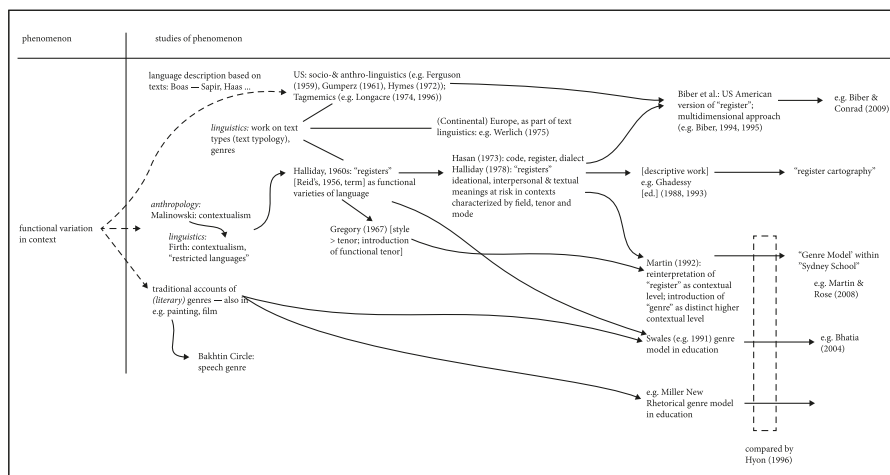


Figure 7. Partial map of traditions in the study of functional variation in relation to which “register” in SFL can be located

Adapting a term from medicine, we can note that applicable linguistics includes translational research; and, it includes what is often referred to nowadays as knowledge transfer from universities to other institutions within society, including both governmental and commercial ones. These characteristics mean that the research should lead to positive impacts.

To be applicable, any approach to language has to be both theoretically holistic and descriptively comprehensive. Thus, the centrality of register in SFL also follows from its general theoretical goal of providing a holistic theory of language in context (and now also of semiotic systems in general in context) and of producing comprehensive descriptions of particular languages (and now also of other particular semiotic systems):

- In the holistic theory of language in context developed within SFL, register variation needed to be included as one kind of linguistic variation, alongside dialectal variation and codal variation, as represented diagrammatically above in Figure 3.
- In the comprehensive descriptions being developed of particular languages, the sampling of texts from different registers has been a central part of the descriptive methodology, as illustrated e.g. by Kumar’s (2009) description of Bajjika and Mwinlaaru’s (2017) description of Dagaare, or else the focus on one particular register, as illustrated by Patpong’s (2005) description of Thai based on narrative discourse.

An important aspect of applicable linguistics is text analysis, stated already by Halliday (1964), since text analysis is essential for many applications, including ones in education, healthcare and professional translation and interpreting, and also for the development of descriptions of languages, including accounts of their registers. The first major study of a register in SFL was arguably the characterization of scientific English by Huddleston et al. (1968), based on a corpus of scientific English texts. But the theoretical account of register was already part of the picture, and it was characterized by Halliday, McIntosh, and Stevens (1964:77) as “the variety according to use”, contrasted with dialect as “the variety according to user” (cf. Table 2 above); and they explored its role in L1 and L2 teaching. Similarly, Catford (1965:89–90) discussed register in translation, as part of a general exploration of “language varieties in translation”. Consideration of register was already important in language description at this early stage of the development of SFL, as in Barnwell’s (1969: Chapter 4) differentiation of units ‘above the sentence’ in narrative vs. conversational discourse. In fact, Halliday (1959:4) presented a description of a particular register of Mandarin, ‘a personal biography of Genghis Khan, beginning with an outline of the legendary history of the Mongol people and extending, in the last two chapters (designated in one tradition as ‘supplementary’), to the first part of the reign of Genghis’ successor Ogodai Khan”.

In the 1960s, the notion of register was thus already important in educational linguistics, translation studies, and language description in SFL. Register has continued to play an important role in these areas (e.g., Bowcher 2001; Ghadessy 1988, 1993, 1995; Leckie-Terry 1995; Lukin et al. 2008; Steiner 2004; Hansen-Schirra, Neumann, & Steiner 2012; Teich et al. 2016, and see Table 4), although in educational linguistics it has often been explored in terms of ‘genre’ (e.g. Martin 1985, 1992; Martin & Rose 2007, 2008; Rose & Martin 2012). Since the 1960s, other areas have kept being added, including computational modelling of text generation (e.g., Bateman & Paris 1991), contrastive studies (e.g., Lavid 2000; Murcia-Bielsa 2000; Teich 1999), healthcare communication studies (e.g., Matthiessen 2013; Matthiessen & Fung forthcoming), and multimodal studies (e.g., Bateman 2008; Matthiessen 2009; Hiippala 2014, 2015, 2017; Zhang 2018).

3. What are the major methodological approaches that are used to analyse or account for register in Systemic Functional Linguistics?

Since register in SFL is part of a holistic theory of language in context, the methodological approaches used in accounting for the registers that make up a language (or other semiotic system) are simply aspects of the general methodological approaches, also used in, e.g., text analysis and language description. The

methodological approaches relevant to accounts of register can be derived from the interpretation of register variation in terms of the cline of instantiation and the hierarchy of stratification outlined above (see Figure 2 and Figure 3); in terms of both these semiotic dimensions, we can characterize methodological approaches relevant to any activities in linguistics involving analysis and description.

In terms of the cline of instantiation, we can approach register variation either from the potential pole or from the instance pole. When we approach register variation from the potential pole, we describe registers as subpotentials – as meanings at risk within the overall meaning potential within some institution, as illustrated by Halliday's (1973) description of the register of regulatory semantics in the institution of the family and Hasan's (1996) study of the semantic strategies used in realizing the stages of a traditional narrative context. When we approach register variation from the instance pole, we analyse this variation as recurrent patterns found in texts operating in contexts of situation at the instance pole of the cline of instantiation, and we interpret these patterns as text types.

In either case, the account may be qualitative or quantitative. Halliday's (1972) description of regulatory semantics is qualitative, but quantitative information could be added in the form of register-specific probabilities – resettings of the global probabilities of the overall meaning potential of the language (cf. Halliday 1978, 1991b). Studies based on samples of instances – on corpora – are naturally likely to include quantitative information in the form of relative text frequencies (see, e.g., Freddi 2005; Huddleston et al. 1968; Teich et al. 2016).

In terms of the hierarchy of stratification, we can approach register variation from context ('from above'), from semantics (from its own level – 'from round-about'), or from lexicogrammar ('from below'). When we approach it from context, we try to identify recurrent ranges of field, tenor, and mode values that combine to define semiotic regions within institutions (as in Halliday 1972 and Patten 1988). In other words, we approach register variation from the point of view of the contexts of use that put the meanings constituting a register 'at risk'. When we approach register variation from lexicogrammar, we can automate the search for patterns using tools from corpus linguistics and NLP as long as the patterns are low-level enough to be identified automatically (cf. Wu 2009; Matthiessen 2014; Teich et al. 2016).

Both the cline of instantiation and the hierarchy of stratification thus allow us to characterize different approaches to the development of accounts of registers; but like the construction of tunnels through mountains, the different directions of approach should meet in the middle – the region indicated in Figure 2 above. The approaches are complementary ways of accounting for registers and register variation.

Importantly, there are methodological trade-offs, perhaps the most important one having to do with the degree of automation of the analysis in relation to the size of the corpus being analysed and the ‘level’ of analysis,¹⁰ as shown in Figure 8. On the one hand, the larger the corpus, the more we need to rely on automated analysis; this is true even for register corpora that will be smaller than general reference corpora for a given language. On the other hand, the higher the ‘level’ of analysis, the more we need to rely on manual analysis because we are still constrained in terms of our ability to automate higher-level analysis, which, in terms of SFL, means systemic and functional higher-ranking analysis within lexicogrammar, and then, beyond lexicogrammar, semantic and contextual analysis.

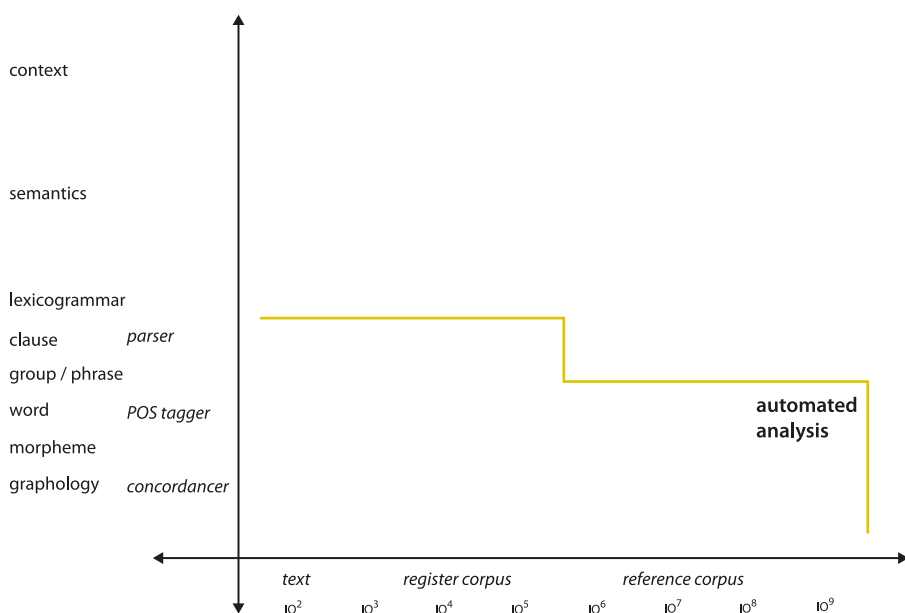


Figure 8. Trade-off between manual and automated analysis in relation to corpus size and ‘level’ (rank, stratum) of analysis

Fortunately, the frontier of automated analysis is being nudged ‘upwards’, as researchers improve computational tools and techniques and also employ statistical methods. A recent important example is Teich et al. (2016). They deploy a “data-mining using register features” to study the evolution of register speciation within computer science and disciplines related to it such as computational

10. I use the term “level” to cover both the hierarchy of stratification and rank scales within each stratum.

linguistics. They are able to investigate this evolution referring to systems of the highest rank within lexicogrammar, the clause systems of *PROCESS TYPE*, *MODALITY* and *THEME*. Their findings are important, both in themselves and methodologically as an indication of what is now possible to do in register studies (Teich et al. 2016:1677):

In summary, our analysis has confirmed that there is a fair degree of dynamicity in scientific language, resulting in registerial diversification over relatively short periods of time (here, 30 years). Our results corroborate the observation formulated by other linguistic scholars (e.g., Halliday & Martin 1993) that in the process of a discipline evolving, it needs to create its own, distinctive register. This is clearly borne out for the contact disciplines but is also true for most of the other disciplines.

Teich et al. (2016) were able to deal with certain clausal systems in their analysis, choosing these based on comprehensive systemic functional descriptions of the lexicogrammar of English represented by means of system networks, realization statements, and function structures, as in Halliday and Matthiessen (2014) and Matthiessen (1995). In general, the choice of what to focus on in accounts of registers constitutes a fundamental methodological consideration. Within SFL, if features are used in the analysis of text, the ability to choose them from comprehensive system networks of features is essential (as in the case of Teich et al. 2016), as is the ability to motivate the choice of features against the background of the comprehensive description. McEnery and Hardie (2012:114) raise the methodological issue of the choice of features in corpus studies and the motivation behind the choice, and they go on to suggest (illustrated by a “fragment of a feature tree for English”, McEnery & Hardie 2012:114) that the kinds of feature used in the multi-dimensional approach to corpus-based register analysis developed by Biber (e.g., 1988, 1995) could be organized into feature trees:

one possible approach is to consider the functions of a language as a feature tree. This could start at the very high level of nominal components versus verbal components (since the noun-verb distinction is one of the most universal features of language structure), and then diversify from there, with attention to contrasting linguistic options and category alternatives at each branch in the tree.

This is, of course, precisely what system networks provide, but in a more powerful and principled way than ‘trees’: systemic descriptions capable of supporting what McEnery and Hardie (2012) call for have been around since the 1960s and used quite extensively in descriptions of different languages and in computational modelling.

4. What does a typical register study look like in Systemic Functional Linguistics?

Since register is so central to SFL, and since it is interpreted in terms of different semiotic dimensions (cf. Figure 2) together with other types of linguistic variation (cf. Figure 3), it is difficult to put forward 'a typical register study' in SFL: register can be approached from different vantage points in terms of the cline of instantiation and the hierarchy of stratification (and within a stratal subsystem, from the vantage points of different ranks, either systemically or structurally); and at the same time it can be viewed ideationally, interpersonally, and/or textually in relation to the contextual parameters of field, tenor, and mode.

As an indication of the range of register studies undertaken in SFL, I have tabulated a number of examples in Table 4, indicating the nature of the approach in terms of trinocular vision, investigative approach (description vs. analysis: automated / manual), account (qualitative, quantitative), and the time-frame (synchronic, diachronic).

In addition to the examples listed in Table 4, many register studies have been conducted within educational linguistics in SFL; they are concerned with the characterization of the registers (or genres) of different primary and secondary school subjects, including the registerial composition of a subject such as history, chemistry or mathematics, and the development of the registerial composition through the school years: for an overview, see Christie and Derewianka (2008); for studies of particular subjects, see, e.g., Coffin (2006), O'Halloran (2005), and also Halliday and Martin (1993), and Christie and Martin (1997). Studies of university disciplines are lagging behind; but there have been important contributions, e.g. Wignell (2007), Teich et al. (2016) – including also the important unique contribution by Parodi (2010) on the distinctive repertoires of registers (or genres) undergraduate students meet in their readings in four different disciplines, in terms that are compatible with SFL.

In addition to description and interpretation in SFL register studies, applications have been a central part of the tradition, often involving the analysis of texts (discourses) instantiating registers within different institutions. The earliest applications appeared in the areas of educational linguistics (cf. Halliday, McIntosh, & Stevens 1964), an early example discussing registers in education (language teaching and bilingual education) being Ure and Ellis (1977) and arguably also in translation studies (cf. Catford 1965), where later work has included not only SFL studies (e.g., Steiner 2004) but also the focus on text types outside SFL, e.g., Snell-Hornby (1995). Educational applications have tended to be developed under the heading of 'genre', as in the Sydney School referred to above (see Rose & Martin 2012).

Table 4. Examples of representative register studies in SFL

Authors	Title	Approach		Time-frame	
Halliday (1972)	Towards a sociological semantics.	from above (context)	description	qualitative	synchronic
Huddleston et al. (1968)	Sentence and clause in Scientific English	from below (lexicogrammar)	analysis: manual	qualitative & quantitative	synchronic
Halliday (1988)	On the language of physical science.	from below (lexicogrammar)	analysis: manual	qualitative	diachronic
Matthiessen & Kashyap (2014)	The construal of space in different registers.	from below (lexicogrammar)	analysis: manual	qualitative & quantitative	synchronic
Teich et al. (2016)	The Linguistic Construal of Disciplinary: A Data-Mining Approach Using Register Features	from below (lexicogrammar)	analysis: automated	quantitative	diachronic
Patten (1988)	Systemic text generation as problem solving.	from above (context)	modelling: generation	qualitative	synchronic
Bateman & Paris (1991)	Constraining the deployment of lexicogrammatical resources during text generation: towards a computational instantiation of register theory.	from above (context)	modelling: generation	qualitative	synchronic
Bateman (2008)	Multimodality and genre: a foundation for the systematic analysis of multimodal documents.	from above (context) & from below (layout)	modelling to support analysis	qualitative	synchronic
Matthiessen (2009)	Multisemiotic and context-based register typology: registerial	from above (context)	description – illustration: pictorial	qualitative	synchronic

Table 4. (continued)

Authors	Title	Approach	Time-frame
	variation in the complementarity of semiotic systems.		semiotic systems

Beyond education and translation, scholars informed by SFL have developed applications to an increasing range of institutional domains, including institutions of the law (cf. Gibbons 2003; Coulthard & Johnson 2010) and of healthcare (cf. Matthiessen & Fung forthcoming.); and they have applied the framework of register in computational linguistic work (e.g., Bateman & Paris 1991; Patten 1988; cf. also Matthiessen & Bateman 1991).

It would clearly be helpful to sketch a description of a particular register according to SFL as an illustration, but it would take up too much space here – precisely because the SFL conception of register is theoretically holistic and places value on comprehensive descriptions. But clearly, such an example would include the following:

- In terms of the hierarchy of stratification, it would cover (1) the contextual values within the parameters of field, tenor and mode (the contextual setting, of ‘configuration’ in Hasan’s terms [e.g. Halliday & Hasan 1985]), and the contextual stages associated with these values (the generic or schematic structure), (2) the ranges of semantic features and structures realizing the contextual values, and (3) the lower-stratal realizations of these systemic ranges and structures – lexicogrammatical in the first instance, but sometimes also phonological or graphological ones.
- In terms of the cline of instantiation, it would cover patterns mid-range between the two outer poles of the cline, with a specification wherever possible both of sub-registers instantiating the register under description and of the family of registers it might be possible to relate it to. Here, it is also important to include frequency of instantiation: quantitative information about probabilities characteristic of the register (reflecting the notion that a register involves the ‘resetting’ of the systemic probabilities of the overall linguistic system).
- In terms of the spectrum of metafunction, it would cover the whole spectrum since ‘meanings at risk’ inhere in all the metafunctions. (It is of course possible to cut a metafunctional slice from the pan-stratal description, as we did in Matthiessen, Lukin, Butt, Cleirigh, & Nesbitt 2005, extending the account from tenor through interpersonal semantics and lexicogrammar to tone in phonology; but such a description is selective rather than comprehensive.)

- In terms of the hierarchy of axis, it would include both a systemic description and a structural one for each stratum; and in terms of the hierarchy of rank, it would extend from the highest rank to the lowest, also for each stratum.

If we include all these considerations, we would be moving towards a comprehensive description of the register we are concerned with – what I have called ‘register in the round’.¹¹ Naturally, this is not always possible; but if we are selective, we must be explicit and principled about the criteria we use in selecting only part of what would be a comprehensive description.

5. What are the most promising areas of future register research in Systemic Functional Linguistics?

In SFL, progress has been evolutionary in character, with a systematic expansion of the territory of language in context being theorized and of particular languages being described; and this systematic expansion has included semiotic systems other than language in sustained effort starting in the late 1980s. Since register has been theorized as a central feature of semiotic systems from the start, register studies have been part of this evolutionary progress. Consequently, as new languages become the focus of description, so do their registers; and as new semiotic systems begin to be explored, so do their registerial natures, either as semiotic systems with registerial ranges or as more register-specific semiotic systems.

When I was asked to write the final chapter of Ghadessy’s (1993) edited volume of register studies, I suggested that while additional theorizing was important, the highest priority was empirical work in the form of register description and analysis. A quarter of a century later, this is, I believe, still the case – so *Register Studies* will be very important. I have characterized a programme for register studies as registerial cartography: this is the long-term task of mapping the registers of different languages in their contexts of culture so that we can discern the changing

11. Other approaches to register may foreground certain views on this type of variation. If high priority is given to automatic analysis (as tends to happen in corpus linguistics and natural language processing), this is likely to give priority to the view “from below” in terms of both strata and ranks: patterns at lower strata and lower ranks are easier to recognize and analyse automatically than patterns from higher strata and ranks. At the same time, within context, considerations of mode – medium and channel, in particular – are likely to be foregrounded because they relate to how texts are to be sampled and collected when researchers compile corpora (in fact, taxonomies of “genres” in corpora have tended to be mode-oriented [cf. also Martin’s, 1992, observation about folk taxonomies of genres] – at least until richer notions of “situated discourse” came into play e.g. in the work on the CANCODE corpus by Ron Carter and Mike McCarthy and the corpus of spoken Mandarin compiled by Guo Yueguo).

registerial composition of languages over time, and so that we can explore institutions as cultural domains in terms of the ranges of registers that operate within them. Registerial cartography is certainly a challenging task; it entails analysing and describing registers comprehensively in terms of all the systems that make up a language – not only in terms of those features that are easily accessible through automated analysis.

In pursuing registerial cartography, we thus have to transform potential alternatives into complementarities: manual and automated analysis, discourse analysis and corpus analysis, qualitative and quantitative analysis, high-level and low-level analysis. There are still too many studies of registers that are imbalanced, for example involving only small samples analysed manually in terms of high-level systems or large samples analysed automatically in terms of low-level systems. In the former case, we cannot know how representative the analysis is; in the latter case, we cannot get at the higher-level variation that would allow us to explain the registers being explored.

Technological advances will certainly help us extend the reach of automated register analysis (cf. the discussion of Teich et al. 2016, above), and such advances will also help us detect changes in registers over time in an ongoing way, and trends of the kind that are explored in Culturomics (e.g., Michel et al. 2011). Technological advances in image analysis, sound analysis, film analysis and the like should also significantly help work on registerial cartography involving semiotic systems other than language.

The characterization of registers in semiotic systems other than language, or in language together with other semiotic systems, is one of the frontiers in registerial cartography. Another important one is ontogenesis: we need more extensive accounts of the development of registers throughout the lives of speakers, from the early years through the school years and into adult life.

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