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PARAMETERS OF CONTEXT: FROM THEORY  
TO MODEL AND APPLICATION



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thank you

for JMT

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## ABSTRACT

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Context as a concept is now regaining prominence in many disciplines as it is put to work in more diverse domains from anthropology through to linguistics and artificial intelligence (Hasan, 1999). Without a strong contribution from context, the description of semantic behaviour is not enough for the solution of real world problems to which we bring our models. Most recently, this area of research has been given a new urgency by the pressure of computer science and the model building that is required in this area. While it has typically been conceded that context is fundamental to meaning, it had been, and in some quarters still is, considered too amorphous for scientific investigation. Indeed, unless the bounds of context are very carefully defined, there is certainly a risk that it becomes a description of everything (see for example Cook 1990). Within linguistics this concern has often been addressed by reducing the concept of context to the micro scale of the surrounding words or sounds (what we might call co-text). The obverse of this is the Ethnographic approaches, including Hymes (1962) and later Duranti (1992) and others, who have conceptualized context as the framework of arrangements that pertain to the understanding of the whole communicative event. The formalization of a level of context as part of a poly-systemic representation of language has long been emphasized in the work of systemic functional linguists, especially Halliday and Hasan (e.g. 1985). Their approach can be traced back to J.R. Firth's early collaborations with the anthropologist Malinowski (Butt and Wegener, 2008 but also Butt, 2001). These linguists have worked to systematize the concept, and provide a comprehensive account of the relations of context and text (Hasan, 1999).

Because systemic functional linguistics has tended to incorporate context as a stratum within the theory and shows a proliferation of different models of context such as those of Hasan (1999) and Butt (1999/2004), this approach makes an ideal setting to test the movement of a concept from theory to model and application. The central concern of this thesis is a consideration of the changes that occur when we move from theoretical description to modelling and on to application for real world problems. In so doing I consider briefly some of the historical antecedents of the systemic functional approach to context, the representation in theory of the concept of context as well as some of the central concerns that need to be addressed by any model of context. Hasan's (1999) model of context as it has been adapted by Butt (1999/2004) is then applied in an emergency care environment

and consideration is given to some of the challenges that this presents. These challenges show new directions for models of context and ultimately for the theorisation of the concept.

## PUBLICATIONS

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Some ideas and figures have appeared previously in the following publications:

1. Butt, David, and Wegener, Rebekah (2008). **The work of concepts: context and metafunction in the systemic functional model**. In R. Hasan, C.M.I.M. Matthiessen, and J. Webster (eds.) *Continuing Discourse on language: a functional perspective (vol. 2)*. London: Equinox. (Accepted Dec 2004)
2. Cassens, Jörg, and Wegener, Rebekah (2008). **Making Use of Abstract Concepts – Systemic-Functional Linguistics and Ambient Intelligence**. In Max Bramer, editor, *Artificial Intelligence in Theory and Practice II – IFIP 20<sup>th</sup> World Computer Congress, IFIP AI Stream*, volume 276 of *IFIP*, pages 205–214, Milano, Italy. Springer.
3. Wegener, Rebekah; Cassens, Jörg; Butt, David (2008). **Start making sense: Systemic functional linguistics and ambient intelligence**. *Revue d'Intelligence Artificielle, special issue on Modelling and Reasoning on Context*, 22(5):629–645, October 2008.
4. Kofod-Petersen, Anders; Wegener, Rebekah; Cassens, Jörg (2009). **Closed Doors: modelling intention in behavioural interfaces**. In Anders Kofod-Petersen, Helge Langseth, and Odd Erik Gundersen, editors, *Proceedings of the Norwegian Artificial Intelligence Society Symposium (NAIS 2009)* December 2009.
5. Kofod Petersen, Anders and Wegener, Rebekah (2010). **'It's like a poke on facebook': emergent semantics in location aware social network services**. In R. Tawaio (ed.) *Handbook of Research on Discourse Behaviour and Digital Communication*.(Accepted 2009, released 2010).
6. Cassens, Jörg, Kofod-Petersen, Anders, Zaccharias, Marielba and Wegener, Rebekah (eds.)(2010). **MRC 2010: published workshop proceedings**
7. Lukin, A., Moore, A., Herke, M., Wegener, R. and Wu, C. (2011). **Halliday's model of register revisited and explored** *Linguistics and the Human Sciences*.(accepted 2010, released 2011)
8. Santiano, N., Young, L. Baramy, L.S., Cabrera, R., May, E., Wegener, R., Butt, D., Parr, M., Clinical Analysis Group (2011). **The impact of the medical emergency team on the resuscitation practice of critical care nurses** *BMJ Qual Saf* 2011;20:115-120 Published Online First: 6 January 2011.



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## CONTENTS

---

1	INTRODUCTION	1
1.1	The problem of context: an introduction	1
1.2	Context Defined	3
1.3	Context in Use	4
1.3.1	Dictionary definitions	4
1.3.2	Thesaurus Entries	5
1.3.3	Corpus Entries	5
1.3.4	Context in academic use	6
1.4	The outline of the thesis	9
1.5	The Medical Environment	12
1.5.1	The present study	15
1.5.2	The data	15
1.5.3	Significance of the MET system research for hospital environments	16
1.5.4	A Map	16
1.6	Research Relevance	17
1.7	Benefits of Thesis	18
1.8	Situating the current work: a thesis	20
1.9	In Review	21
I	THEORY	23
2	HISTORICAL PERSPECTIVES	25
2.1	A Map	25
2.2	Asking questions about the world	26
2.2.1	The role of a linguist: two views on the world	27
2.2.2	The role of the linguist: another approach	29
2.2.3	Micro and Macro Sociological approaches to language	31
2.3	The context of context	33
2.3.1	Malinowski's Personal Context	34
2.3.2	Social needs, social values and the sources of funding	35
2.3.3	Departments, disciplines and interdisciplinarity	36
2.3.4	A shared social context	37
2.4	Themed research: concerns in theory	40
2.4.1	Boundaries	40
2.4.2	Cognition, personality and intent	43
2.4.3	Inner and outer contexts	46
2.4.4	Dynamics	47
2.4.5	The work context does in theory	50
2.5	The Present State	51

2.5.1	Moving on from Firth	51
2.5.2	From a theory of culture to a model of register	53
2.5.3	Strata and realisation	55
2.5.4	A contextual theory of language: some solutions and some problems	57
3	THEORISATION	59
3.1	A Social Semiotic	59
3.1.1	What kind of resource is language?	61
3.2	Dimensions	63
3.2.1	Dimensions of Language	67
3.3	Stratification	72
3.3.1	Context of context: ideology	79
3.3.2	Can we expect a realisation statement?	83
3.4	System	84
3.4.1	Systems in Systemic Functional Linguistics	85
3.4.2	System Mechanics	89
3.5	Structure or syntagmatic order	91
3.6	Metafunction	92
3.7	Instantiation	93
3.7.1	Register	98
3.8	Review	99
II	MODEL	101
4	MODELLING CONTEXT	103
4.1	Why do we need to model?	103
4.2	What does it mean to model?	103
4.2.1	Parameters	105
4.2.2	Parameters and Variables within SFL	106
4.2.3	Features	108
4.3	Modelling and its realisations	111
4.3.1	Different approaches to context	115
4.3.2	Stratified models of context	116
4.3.3	Systems and networks: Hasan	120
4.4	Issues in modelling context	123
4.4.1	Boundaries and entry conditions	123
4.4.2	Multiple Perspectives	125
4.4.3	The Location of Networks	126
4.5	Representing a model of context	127
4.6	Putting context to work	133
III	APPLICATION	135
5	APPLICATION: APPLYING A MODEL OF CONTEXT	137
5.1	Testing a model	137
5.2	The data set	138
5.2.1	Data collection	139

5.2.2	Meta Data	139
5.3	Analysing context	142
5.3.1	Method	142
5.3.2	Setting out: the Anticipated Context and the Individual Context	144
5.4	Applying a model of context: The MET Context	146
5.4.1	Field	148
5.4.2	Tenor	154
5.4.3	Mode	159
5.4.4	Contextual configuration of an Anticipated or Archetypal context	161
5.4.5	Generic Structure Potential	162
5.4.6	The Anticipated Context: expectations for a social process	167
5.5	Individual instances set against expectations	168
5.5.1	The Instance	168
5.6	Educating in high risk environments	171
5.7	Representing results	174
6	DISCUSSION	177
6.1	What is the value of distinguishing theory, model and application?	177
6.2	What does it mean to examine context?	179
6.2.1	Threshold responding	188
6.2.2	When context is absent	190
6.2.3	Multimodality and context	191
6.3	Pressures on data collection	193
6.3.1	Ethnographic Filming	200
6.4	Issues in working with context	202
6.4.1	Goal Orientation	202
6.4.2	Evidence Network	203
6.4.3	An approach to context	204
6.4.4	Opening moves: the research question	205
6.4.5	Context from the point of view of people – a person centred context model	211
7	CONCLUSIONS	215
7.1	Looking back at where we have been	215
7.2	Implications for the theoretical foundations	216
7.3	Representing context in context	217
7.4	Looking forward	219
IV	APPENDIX	221
A	APPENDICES	223
A.1	Appendix: Context Networks	223
A.2	Appendix: Data from the MET Project	241
A.3	Appendix: Ventola's Flow Chart Representation	249
A.4	Appendix: Publications	254
A.4.1	The work of concepts	254

A.4.2	Making Use of Abstract Concepts	285
A.4.3	Start making sense	296
A.4.4	Closed Doors: modelling intention in behavioural interfaces	314
A.4.5	It's like a poke on facebook	325
A.4.6	Halliday's model of register revisited and explored	344
A.4.7	The impact of the medical emergency team	372

BIBLIOGRAPHY	379
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## LIST OF FIGURES

---

Figure 1	Different weighting given to areas of language	31
Figure 2	Representation of Phillip Wegener's Typology of Context from Butt and Wegener, (2008)	49
Figure 3	Levels of Linguistic Analysis: from Ellis, J. (1966:79)	52
Figure 4	From Butt and Wegener (2008).	55
Figure 5	From Butt and Wegener (2008).	56
Figure 6	From Butt and Wegener (2008).	57
Figure 7	Stratal variation with individual context and semantics.	65
Figure 8	Stratal variation with overlapping semantics and a shared context.	65
Figure 9	Stratal variation with overlapping context and semantics.	66
Figure 10	Stratal variation with shared context and semantics.	66
Figure 11	The dimensions of language – Halliday and Matthiessen (2004).	68
Figure 12	Stratification: reproduced from Halliday and Matthiessen (2004:25).	74
Figure 13	Stratification and the contextual plane representing the union of the social and biological.	75
Figure 14	Stratification and the linguistic sign/sign user relation.	77
Figure 15	Multiple uses of System within SFL	87
Figure 16	Delicacy seen as extending along the cline of instantiation	88
Figure 17	Delicacy seen as a feature of system separate from instantiation and the dimensions of language	88
Figure 18	Three clines and their organising principle	95
Figure 19	The relationship between instantiation, potential, typical and actual	95
Figure 20	Register and GSP in relation to Instantiation	99
Figure 21	Martin's representation of context (Martin 2006).	117
Figure 22	Bowcher's role of language (Bowcher 1999).	119

Figure 23	Stratal view of context from Wegener, Casens and Butt (2008). 130
Figure 24	Moore's representation of the relationship of text and system (Moore and Wegener, 2010). 131
Figure 25	Primary choices within the Material Action system showing use of letters to represent primary network and numbers for choices within that network (Butt 1999/2004). 132
Figure 26	Flow chart representation of context from Ventola (1987). 132
Figure 27	The Participant structure for the Anticipated Context for a MET call. 147
Figure 28	The major systems belonging to the Field network after Butt (1999/2004). 149
Figure 29	Primary choices within the sphere of action system. 150
Figure 30	The Sphere of Action system after Butt (1999/2004) showing unique codes at the end of each branch in the system that can be referenced independently of the system network. 151
Figure 31	Primary choices within the Material Action system. 151
Figure 32	Primary choices within the action with symbols system. 152
Figure 33	Further specification within the Action with symbols system. 152
Figure 34	System focused on narrating. 152
Figure 35	Further specification of Action with symbols network. 153
Figure 36	System focused on discourse. 154
Figure 37	The goal orientation network as set out by Butt (1999/2004). 155
Figure 38	The major systems of the Tenor Network after Butt (1999/2004). 156
Figure 39	System looking at social hierarchy between participants. 156
Figure 40	System focused on agentive role. 157
Figure 41	System focused on social distance. 158
Figure 42	System focused on the shape of the social networks involved. 159
Figure 43	The major systems of the Mode Network after Butt (1999/2004). 160
Figure 44	The Generic Structure Potential for the Anticipated Context of a MET Call. 164

Figure 45	The formulaic representation of the GSP for the Anticipated Context of a MET Call. 167
Figure 46	Perspectives on social processes. 183
Figure 47	Different views of the MET call. 184
Figure 48	Two types of rapid response units. 186
Figure 49	Different text types emanating from a social process. 196
Figure 50	Comparison of field descriptions for different data types. 198
Figure 51	Comparison of tenor descriptions for different data types. 199
Figure 52	Revised goal orientation network. 203
Figure 53	Proposed network for evidence. 204
Figure 54	Proposed network for research perspective. 207
Figure 55	Proposed network for researcher perspective. 208
Figure 56	Proposed description for analysis perspective. 209

## LIST OF TABLES

---

Table 1	The dimensions (forms of order) in language and their ordering principle from Halliday and Matthiessen (2004:20) 68
Table 2	Types of realisation statements from Hasan (1996d:111). 78
Table 3	Reading context from text (Hasan, 1999:233). 129
Table 4	The Contextual Configuration for the Anticipated Context. 162
Table 5	Individual MET Call tenor matrix. 172

## ACRONYMS

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SFL	Systemic Functional Linguistics
MET	Medical Emergency Team
ELAN	EUDICO Linguistic Annotator
LAT	Language Archiving Technology

BGL Blood Glucose Level



## INTRODUCTION

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*"Discourses are not produced in a vacuum, but in contexts which both shape and are shaped by the ongoing interaction." Butler, C. (2003:486)*

### 1.1 THE PROBLEM OF CONTEXT: AN INTRODUCTION

#### Text 1

Beth: Mum, I'll be home by about 8pm  
 Elaine: I presume you'll want food  
 Beth: Yeah, I'm gonna call in and see Sally though..  
       I'm gonna go there about six tonight  
 Elaine: how come he's coming out tonight  
 Beth: aaw I don't know well he might not.. but um  
       I've got just end up I mean I don't care no  
       um he'll just whinge and go 'aw the traffic'  
       like that but.. but I've got to call in and  
       see the others anyway.  
 Elaine: aw right  
 Beth: because well Megan wants me to read her thesis  
       and it's Sally's birthday, well it was her  
       birthday on Friday, but she's having a barbeque  
       and I thought I've got to pick up her thesis so  
 Elaine: you don't really have the time to read it now  
       do you?  
 Beth: aw yeah  
 Elaine: What's her thesis on?  
 Beth: learning  
 Elaine: What do you mean?  
 Beth: it's on music and film like]  
 Elaine: [sorry what was the first part  
 Beth: it's on cued response in music]  
 Elaine: [aw right]  
 Beth: [in film]  
 Elaine: [get dressed!

As outsiders confronted with this text, we are perhaps initially struck by its individuality. It may seem strange, lacking cohesion and, at times, even logic. Indeed the strangeness of the text and the potential for misunderstanding highlight the very real importance of context to meaning making. Given time, most readers will identify threads of familiarity, threads which allow

the casual observer to identify what it is that is going on here. These threads will weave together questions like, what activity is taking place here? who are the participants involved, and how are they connected to each other? what environment or setting are they in? and for what purposes are they using language? Through asking questions such as these we are able to habituate to our environment, to predict what is likely to occur next and what behaviour this is likely to require from ourselves and those around us, both human and non-human. It is understanding the importance of these questions and the ways in which they interact that is central to the concept of context.

Context has probably always been recognised as essential to meaning, since, at least at some level, theorists have needed to incorporate the idea that meaning must depend on context, even if that is only at the level of the surrounding sounds, words, sentences. Just as the discourse that linguists study does not take place in a vacuum, neither do the theories that are developed for the purposes of studying this discourse. Theories have their own context: they do not exist independently of the physical, social or mental environment in which they were developed. Firth (1957) characterised language categories as language turned back on itself, and in the same way, in this dissertation, context is turned back on itself. Context is used to reflect on the nature of context as a concept.

Context in this instance refers to social approaches to context rather than biological or formal cognitive approaches. So, although recognising the greater breadth of context research that may be available, discussion in this dissertation is limited to those approaches which take a social perspective on the modelling of context, and focus is given to one particular social approach, that of Systemic Functional Linguistics (hereafter SFL).

The focus on SFL has a number of motivations. Firstly, it is necessary to select a theory in which context has some prominence and importance. For further discussion on variation in theoretical approaches to language see chapters 2 and 3. Secondly and importantly, working within SFL does not mean that there is agreement over the modelling of context, as is noted by van Dijk (in press). This variability is important for consideration of the ways in which different models can be perfectly consistent with an overarching theory. Perhaps due to its underlying philosophy (see Part I: chapters 2 & 3 below), SFL has always provided an integrated theory of language and context through the incorporation of context as a stratum in the theory of language. Finally, SFL provides a strong focus on the application of theory and model to everyday situations that demands of the theory an ongoing connection with its users. Despite this holistic account of language,

context as a stratum has remained relatively under-elaborated and, it might be argued, as a result, under-utilised.

The relation between theories and their users is not a direct one. Applications of a theory are not always obvious and to appreciate the importance of this it is only necessary to consider the varied criticism that is so frequently levelled at theorists and theories. Typically end users of a theory do not come into direct contact with the theory. Rather, they are likely to come into contact with a model derived from the theory or meta-data in the form of output from the model. This indirect relation makes the process of modelling crucially important, since it is the way in which the theory is put to work.

For the purpose of drawing out the issues involved in modelling context, within this thesis I have used one existing model of context within SFL and applied it in a medical environment. Specifically, Hasan's context networks (Hasan, 1999) and their further elaboration by Butt (Butt, 2000) are used to describe the Medical Emergency Team (MET) environment (see Part III chapter 5 for a further elaboration of the MET environment). This environment, and those discussed in chapter 6, prove (or test) the model of context through their complexity<sup>1</sup>, providing valuable feedback about the strengths and weaknesses of the contextual model.

This process of testing a model should not only be valuable for theoretical development it should also provide something of value to the environment in which it is put to work. By recording the parameters of context that are crucial for meaning making, a better understanding of what constitutes contextually effective communication can be reached. This can then be fed back into the theory to enrich the theory and back into the environment to improve that environment (see chapter 6 for more discussion of this process).

## 1.2 CONTEXT DEFINED

We have begun here without considering what context 'means'. The simple answer, though it might appear gratuitous, is that it means a different thing to different people at different times (Bruce, 1956). This is not as unhelpful or relativistic as it sounds. As Schiffrin (1994:362) argues,

"context is more difficult to define than text. Contextual information is always information that is identified in relation to something else that is the primary focus of our attention. This means that it is impossible

<sup>1</sup> Complexity here is distinct from Hasan's (1999) usage of the term to refer to texts with more than one context although as is discussed in chapter 5, these situations do in fact contain more than one context.

to talk about context in a vacuum: context cannot exist unless we are thinking of "something else" (e.g. an image, a smell, a sound, a word, an utterance, a sequence of utterances) that is located relative to it. The identity of that "something else" (and what kind of sense we are trying to make of it) influences our decisions about what counts as context and about what "parts of" context we find important."

Indeed, one issue that is discussed in this dissertation (see chapter 6 in particular), is that what is required from a model of context varies greatly depending on the task to which it is put. This diversity only adds to the difficulty in defining context beyond a mere 'it depends'.

The meaning and uses of context does depend very much upon the focal point of the research. If research is focused upon lexical items, context is treated as co-text; this is because context here appears as the immediate surrounds of the item. The broader the unit of analysis, the further out context is located, until in discourse analysis it becomes, for some, the social structure and system of society, often expressed in the term ideology (although see chapter 3 for further discussion of this point).

### 1.3 CONTEXT IN USE

One way of understanding context as part of theory is to consider the way that context is used by us in our day-to-day interactions and the ways in which we put the lexical item to work for interactive purposes. Resources for understanding lexis include: dictionaries, thesauri and corpora. Where dictionaries are an indication of the canonized denotational meaning; thesauri show the relationship between other words in the same lexical set; and corpora show how words are used in actual discourse.

#### 1.3.1 *Dictionary definitions*

Dictionaries are a repository for lexical items that are in varied use by a community. They represent the agreed denotational meanings for lexical items. Context is defined as "1. the parts of a discourse or writing which precede or follow, and which are directly connected with a given passage or word. 2. the circumstances or facts that surround a particular situation or event." Macquarie Dictionary 2<sup>nd</sup> Edition. Here already appears a diversity of meaning that is reflected in the academic literature. The Australian Oxford adds to this the further quality of "throwing light on its meaning". So context is that which helps determine meaning. This includes the surrounding text and the surround-

ing circumstances whatever they may be. What is central to all these denotative meanings is the crucial role that context plays in deriving meaning.

### 1.3.2 *Thesaurus Entries*

Like dictionaries thesauri are based around the lexical item, but they generally involve a lexical set so that the associated meanings of an item are available. Although context does not have its own entry in Roget's thesaurus, it is associated with the determination of meaning and the description of the sphere of experience. It gives the following entries: '516. meaning: idea to be conveyed, thing signified, purport, drift, tenor, implication from the context. 591. composition: print, letterpress, text, matter, standing type, context, note, page, column, over-run.' A callous computer thesaurus, really just a set of synonyms, throws up the following list of items for context: Background, circumstance, situation, framework, milieu, perspective and environment. Despite the clear limitations of this, it does give an indication of the types of concerns that are central to context and the use based understanding that we bring as researchers to our models of context.

### 1.3.3 *Corpus Entries*

Corpora are resources for examining language in use, and citations from corpora which include context in some way are presented here.

MICASE: (158 hits from all categories (spoken academic)) "in this context"; "in the context of x"; "the x context"

BNC: (8,482 hits from all categories (mixed general)) "give me a context"

There are several cases where context is seen to be intimately involved in mediating meaning especially in relation to written or spoken words or phrases, but not communication in general. The predominant use of context is as nominal group in a prepositional phrase or with an embedded prepositional phrase. In terms of representation, it is almost always involved in circumstances denoting spatial or temporal location though it tends not to be found in all the sub-categorisations of these.

Although this point is not explored further, it would seem that context is closely associated with circumstantial elements and this is perhaps one of the more obvious ways in which context is seen at the lexicogrammatical level, though clearly the impact is distributed and not just in circumstantial elements. The importance of circumstantial elements for conveying context can be seen in the apparent decline in the need for circumstantial

elements in conversations between those in close, high density, social networks and the build-up of circumstantial elements in conversations between those involved in the opposite kinds of social networks. This pattern is especially apparent in written work, though it is also often necessary for complex spoken discourse to make context explicit.

If we are to go by the lexical item itself, context is literally just that – con-text – or what accompanies or surrounds the text. What remains to be defined then is the meaning of text, or rather text and its relation to culture. This issue will be further elaborated in chapter 2 and 3 where we will consider the question: “what exactly do we mean by text and around text?”

#### 1.3.4 *Context in academic use*

In a paper introducing a special edition on context in *The Journal of Pragmatics*, Akman and Bazzanella (2003: 321) state that “as with other widely used notions that are commonly referred to in everyday activities without much hesitation, context is difficult to analyze scientifically”. Perhaps this says as much about the nature of scientific investigation as it does about the nature of context, but it does reveal a common problem that has faced the history of the concept of context. Context has been the repository of patterning that could not be addressed by existing theories. Yet, whether it be lexical meaning or the understanding of social process, context is crucial.

Despite the obvious necessity of context to the solution of many problems, particularly those surrounding meaning, context has, at least in the past, had the tendency of becoming sidelined in the main press of theoretical research. The centrality of context is what makes it appear so obvious and mundane. As such it has become an addition because it is necessary, but under theorised because it is obvious.

For concepts that appear obvious to be ignored is not at all uncommon. Hasan (1999) begins her paper on context by quoting Wittgenstein, who points out that

“the aspects of things that are most important for us are hidden because of their simplicity and familiarity. (One is unable to notice something – because it is always before one’s eyes)...We fail to be struck by what, once seen, is most striking and most powerful” (1953:50).

This is certainly the case for context, and it is reflected in our difficulty in defining context. As Kress notes in a passing comment, the obviousness of the matter stops it from being seen as a problem (1985:5).

Context as a concept has been made to do relatively little theoretical work within linguistics, despite the semantic consequences of any change in the socio-material conditions in which speech takes place. As the responsibility for explaining patterning at the lower levels of language is pushed out towards context, the need for an elaborated theory of context (i.e. one that predicts from setting to meaning and from meaning back up to settings, at least within specifiable registers) becomes more pressing. The present state of theory is such that individual projects, facing the need to explain events in their data, tend to produce an account of context that is instantial or 'context' specific, and which is informal or discursive rather than parametric.

Definitions of context are diverse and variable so it is necessary to outline how the term will be understood in the current work. Within this dissertation, context will be understood as intimately connected to text. After all, context itself "serves as a reminder that these [context and text] are aspects of the same process" (Halliday and Hasan, 1985). Context is "the total environment in which a text unfolds", including the material and semiotic, both verbal and non-verbal, aspects of that environment (Halliday and Hasan, 1985). As we saw at the start of this chapter, it takes more than a collection or organisation of lexical items for a text to make sense. It is necessary to have some further information about the environment of that text. Context can be expressed as everything that may be necessary for a text to make sense or the way that a connection is made with the culture. It is the seam between the social or cultural fabric and the fabric of language. A text is understandable or recognisable as a text because of this connection.

To illustrate this point, let us return to the text at the beginning of this chapter. How do we know what it is that is going on here? We might begin by considering what the participants are doing. It appears from the text that the primary activity at this point is talk; talk about visiting friends, getting lifts, getting food, and theses, however, there are several indications that this might not be the only activity taking place. The text ends with a directive from Elaine for Beth to "get dressed". This suggests that there might be other activities going on as well that supersede the talk about theses, visits and lifts home. This is further reinforced by the fact that Elaine at one point requests that Beth repeat a section of the discourse, saying "sorry what was the first part", suggesting that her entire focus may not be on the talk at hand, but rather some other activity. If we consider the directive to "get dressed" it would appear that this other activity might have something to do with getting ready and possibly in the morning since it involves getting dressed. Thus, the short term goal of the activity might be to get away in the morning.

A longer term goal might be to plan the rest of the day and an even longer term goal, given the discussion of Beth's apparent interests, might be the maintenance of close social relations. Of course we can't be sure, but combined with the opening line "I'll be home by about 8pm" we can assume that the discourse takes place some time at the start of the day. So, we might expect that the other activity is something to do with food preparation or some other activity to do with getting ready in the morning. In fact, Elaine is preparing lunches and Beth is eating breakfast, so this talk takes place in the kitchen, though we can not establish this from the text alone. The aspects of the context outlined above are referred to within SFL as the Field (Halliday and Hasan, 1985). The field of discourse refers to "the nature of social activity relevant to speaking" (Hasan, 1999:232).

The field of discourse also tells us something about the participants. The fact that Beth refers to her friend's thesis tells us that she is university educated, and thus at least in her 20's. We can not be sure that Beth is female apart from the transcriber's choice of name, but it is suggested from the text that she is female. The relationship between Beth and Elaine is established at the start of the text when Beth refers to Elaine as "Mum". Thus, the agentive relation is mother to daughter, with the social relation being familial and asymmetrical in terms of power. The role asymmetry here is modified by the relative ages and level of education of the participants. Certainly, when Beth is discussing the topic of her friend's thesis she is in control since her mother has no knowledge of the topic, however, we see that the primary context reasserts the familial power relations with Elaine giving Beth an order to go and "get dressed". Thus, the role asymmetry is only partially field dependant.

The social distance between Beth and Elaine is minimal, they are after all mother and daughter, and this is reflected in their discourse. Their language is that of people who share many contexts in common and have a long discourse history. For example, the outsider might wonder at the fact that Elaine's response to Beth's statement that she is going to her friend's house is "How come he's coming out tonight?". This does not flow logically from the discourse presented. It is the leap in logic that close network members make. What is involved in this leap is as follows: Beth would normally get a lift home with her mother, if she is going to her friend's that means she isn't getting a lift with her mother, which means she is getting a lift with her boyfriend on a night when he doesn't typically visit, hence Elaine's question. This complex reasoning reflects the nature of the relationship between the two participants and their long history in common. These aspects of context are referred to in SFL as the Tenor of discourse.



The tenor of discourse refers to the “nature of social relations relevant to speaking” (Hasan, 1999:232).

We might also be interested in the role of language in this environment. Parts of this text are context independent. This textual independence has two aspects to it, namely, that the text might occur anywhere and it is abstract. Both these aspects mean that the text is, to a large degree, not grounded in the physical environment or what Hasan (1999) refers to as the material situational setting. This lack of grounding in the material situational setting makes it difficult to decide what role language plays. It is hard to decide whether or not language is the activity or is helping along another activity. Certainly, without the last line, “get dressed”, it would be hard to establish that any other activity is in fact taking place. Obviously from the disjointed grammar, repairs and restarts this is spoken discourse, but the conversation might very easily be taking place in the car, on the phone or anywhere else. The features of context discussed here are what is generally referred to as Mode. Mode relates to “the nature of contact for the conduct of speaking” (Hasan, 1999:232).

Typically we find that the material situational setting dominates in determining what the primary activity of a context is, but this is largely a matter of boundaries. As is often the case with research, the text presented here has been cropped from a much longer recording of the family, and if I had cropped the text to exclude the final line we would not be able to determine key aspects of the field, tenor or mode and our analysis of the context would have looked a little different. This raises the issue of boundaries, or what we consider as our unit of analysis. The formal elaboration of field, tenor and mode along with issues in a contextual theory of language and modelling context will be discussed in chapters 3 and 4.

#### 1.4 THE OUTLINE OF THE THESIS

Since the 1970's, we have seen a resurgence of pragmatics in linguistics, and a general turn to more functional perspectives in interdisciplinary areas, such as anthropology, artificial intelligence and cognitive science. This has meant that the notion of context has regained much of the prominence it had in early developments within Anthropology. This is a prominence that it has not been automatically granted in Linguistics. Its growing prominence might be seen as a reaction to the “starkly narrow perspective” presented by Chomskyan linguistics (Levinson, 1983). Part of the drive for a theory of context, as was the case in the past, is the need for some resolution for the problems that arise in the field. Thus, for example, researchers modeling in artifi-

cial intelligence realise that scripts and frames for situations are necessary in delimiting what is important in any given situation.

Context has generally been considered too amorphous and intractable for scientific investigation, perhaps just one more area too large to treat systematically. Bloomfield (1933: chapter 9) claimed it was impossible to study semantics scientifically because one would need to include everything. More recently, Cook (1990) describes the study of context as having the potential to become a case of “transcribing infinity”.

Despite public statements about the difficulty of studying social context and its bearing on language, most practitioners have had to conduct their work with some notion of a theory or quasi-theory of context. Whether it was merely an informal setting of the context in which language occurred, or the assumption that certain features of the cultural knowledge had to be transferred for people to understand what was going on in a text or why a text was special, a level of context is inescapable in a working environment.

Formalisation of a level of context has long been emphasised in the work of systemic functional linguists. Some of the early 1980’s work on generic structure included conceptualising the process of interaction as a generic structure with a syntagm and paradigmatic choices analogous with the systemic representation of the grammar, which goes back at least to Hasan (1978). For work on formalising context see for example Halliday and Hasan, 1985; Hasan, 1999; Martin, 1992; Butt, 2000. But context has been and continues to be important to many disciplines and in particular, traditions of anthropology in America sought to integrate context into theories of culture. In linguistics, predominantly pragmatics, the study of groups and personality has used context (see the work of Hymes (1962), and more recently that of Duranti (e.g. 1996)). However, anyone who has attempted to work with context will be well aware of the fact that context is a complex unit of analysis, and as such may be difficult to put on display at the theoretical level, difficult to work with in the field and difficult to report on during analysis.

The first part of this thesis theorises context by setting out from the historical genesis of a systematic approach to context and following the development of concepts from the early 20<sup>th</sup> century through to the realisations that we are now seeing emerge in a number of disciplines. focus is given especially in the network concepts of systemic functional linguistics. These combine Firth’s earlier enthusiasm for Malinowski’s ideas with both Firth and Halliday’s attempts to see meaning making poly-systemically - as the convergence of outputs from various systems - thereby displaying the possible combinations which produce the variability and the meaning potential.

Conceptualising problems of context in terms of variation and complexity has definite benefits and more recent conceptions of scientific problems in terms of variability and manageable complexity have enhanced the opportunities and audience for theories of context in that such approaches set out the parameters which most bear upon the meaning making in a given situation. The new wave of modelling complexity and variable systems is in many ways a return to systems thinking, but with a new emphasis on variability in a dynamic system. This emphasis on the dimensions of change and the simultaneity of change within the system can be modelled as statistical probabilities. Tools for managing complexity have made research into social issues more plausible and diminished the problems of amorphousness and complexity.

Clear description of an environment and identification of factors impacting on this environment can allow practitioners to be better prepared for the variability of their everyday work. Because of the predictive nature of systems, it can also help in the development of simple routines for anticipating problems created by changes. Despite the complexity, this provides a better way of achieving what is needed in an environment and possibly even revisiting the notion of the system in a richer, less formal that is much more oriented to practical problem solving.

Representation occurs at many levels. Not only do we get representation at the theoretical level, but also at the level of application and presentation. The demands of practitioners at each of these levels are quite distinct and lead inevitably to many different models of representations. These necessarily change again when put to work, such that practical applications feed back into the theoretical decisions and should produce an improved account of the contrasts relevant to semantic differences. This resembles the process that a mathematical expression goes through when it becomes an executable expression.

The second part of the thesis is a study of modelling context. Consideration is given to ways in which complex social systems can be mapped or modelled. One of the problems of capturing context is the high degree of complexity that is involved. The second part of the thesis will attempt to cover some of the issues involved in modelling context and some of the difference approaches that have been taken within SFL.

The third part of this thesis applies a model of context. It demonstrates the process of variable representation, where a systemic functional model of context is put to work in the domain of emergency care for the purpose of understanding communication within the hospital environment. This shows how the analysis of context as it is construed in systemic functional linguistics can

be used to better understand social interaction and inform social policy.

It would be ultimately unhelpful to assume that because there is complexity in an environment there can be no predictive potential. Those who work within complex environments such as hospitals manage the complexity every day and are well aware of the difficulties that this involves; however, they are also aware of the patterns that are present in behaviour and that these are not random or disorganised however difficult they may be. Indeed it may be that the key to successful work in this area is a clear understanding of the ongoing patterns of behaviour and an ability to act on this knowledge. Certainly, an essential condition for improving the system is enabling practitioners to pass this implicit knowledge on to others within care driven work and ultimately on to those in management and policy development.

If we consider a social environment such as a hospital, we know that people bring their lay knowledge of context to bear in negotiating social interaction in difficult domains such as those of care and other situations that involve conflict and negotiation. If benefits in education, policy and practice are to be reaped, then the lay knowledge of context, that people already use, needs to be conceptualised and managed through better-defined registers that will provide an explicit language and allow people to generalise across situations rather than consider every instance as novel.

What is provided in part three of this dissertation is a test case for the network driven representation of context, it is the model played out in social reality. The test case makes use of data from joint research between the The Simpson Centre for Emergency Care Research based at Liverpool Hospital and the Centre for Language in Social Life at Macquarie University. This research aims to assist in better understanding the Medical Emergency Team environment for the purposes of defining roles and responsibilities and enhancing the work environment for patients and staff.

## 1.5 THE MEDICAL ENVIRONMENT

Medical environments in general demonstrate the importance of understanding context. Because they are typically, complex, high pressure, safety critical environments, small changes can have a big effect. This thesis focuses in particular on aspects of the acute care environment. Within the acute care environment, focus is given to Medical Emergency Teams.

Medical Emergency Teams (MET) are one example of Rapid Response Systems (RRS). Developed in Australia in the mid 1990's by Hillman, then director of The Simpson Centre, the MET

system is designed to anticipate and prevent serious adverse events for patients hospitals rather than provide a rapid response when patients have already suffered a serious adverse event.

While many RRSs such as crash teams, cardiac arrest teams, or special intervention resuscitation teams are activated only once a serious adverse event, e.g. cardiovascular failure, has already occurred, the MET system aims at prediction. It is the goal of MET systems to “identify, review and treat at-risk patients during the early phases of deterioration” (Jones, Egi, Bellomo & Goldsmith, 2007).

The MET system was developed in the Simpson Centre in 1995 and first implemented in Liverpool Hospital, a large tertiary hospital in Sydney’s South West Area Health Service. Individual hospital trials have proved beneficial with many producing dramatic results (see for example Jones, Egi, Bellomo & Goldsmith 2007 or Bellomo 2006). Uptake of the system was quite rapid and use of the MET system is now widespread, with more than 2,600 hospitals in the USA alone initiating such systems. Despite this positive response, many large scale tests of the MET show mixed results. Reasons for this discrepancy between individual and large scale trialling are diverse.

Because of its fundamentally predictive nature, broadscale testing of the MET system is complex and funding is not oriented towards trialling of human-technical systems or hospital systems in general in the same way that it is for drug trials<sup>2</sup>. The MERIT study (see Chen, Flabouris, Bellomo, Hillman and Finfer (2008) and Cretikos, Chen, Hillman, Bellomo, Finfer and Flabouris (2007) for discussion of the MERIT results), considered by many to be a gold standard in systems testing, found no significant difference in deaths due to the introduction of MET systems. This may be due to a number of related factors.

Firstly, “hospitals are ‘chaotic’ systems, and may be impervious to analysis using linear methodology” (Kerridge, 2000), meaning that those methodologies typically respected within the medical domain are not particularly useful for systems testing. More qualitative or mixed method approaches are more likely to produce better results.

Secondly, interpretation of the results might be clouded by typical expectations from such studies. The MERIT study did in fact produce some very interesting results and results that are not negative for METs. The study revealed a 30% fall in unexpected deaths in both the test and control group hospitals, suggesting, amongst other things, that a sustained focus on death reduction can produce positive results in reducing deaths in hospitals. The

<sup>2</sup> Indeed the testing or research into human-technical systems is underfunded in most environments partly because such systems present a significant challenge for testing and research more generally.

operation and structure of the METs themselves, rather than their overall effectiveness, emerged as the real focus. Human-technical systems are rarely the focus of studies in hospital environments and furthermore represent a difficult focus for analysis even in a non-safety critical environment.

The MERIT study revealed that METs were not called as frequently as physiological triggers might warrant. This has two aspects to it. Firstly, the identification of at-risk patients and secondly, the notification of the MET. In response to concerns over monitoring techniques leading to poor identification of at-risk patients, some hospitals introduced a digital physiological monitoring system. These systems provide constant monitoring and a threshold triggered notification thus reducing the reliance on humans for monitoring.

Interestingly, Cuthbertson and Smith, (2007) suggest that the digital physiological monitoring system does not lead to better notifications, rather it leads to an increase in the frequency of MET calls with a corresponding increase in the number of false calls (but see also Duckitt, Buxton-Thomas, Walker, et al. (2007) and a response by Morgan and Wright, (2007)). This stretches staff beyond capacity and in fact some cases that should have been notified went unreported. This difficulty in reporting suggests that it is not physiological symptoms alone that predict patient decline, but rather a complex ensemble of nursing familiarity with a patient's baseline status, subtle social and emotional indicators and physiological indicators together that indicate a need for MET intervention.

Improving monitoring and notification then requires

“empowering the nurse to say, when the patient has these criteria, that means that they’re seriously ill, that means that there’s a very high chance of them deteriorating and having a cardiac arrest or dying” (Hillman, 2005).

Empowerment of this nature requires a much clearer picture of the MET including the roles and responsibilities involved in the MET system and the relationship of the MET to the wider ward and hospital environment. For a complex system to operate effectively, that complex system must be understood in context and this means understanding the people involved in the system, their roles, responsibilities and the types of activities that take place within that system. It also includes forming an understanding of communication within the system as well as building up a picture of how such processes typically unfold and how novices learn these processes.

### 1.5.1 *The present study*

The study examined in this thesis was part of a wider study conducted by the Simpson Centre into MET systems. The wider study and the one examined in this thesis took a mixed methods approach to the study of MET systems and focused on understanding the functioning of MET in the hospital. Part of this was a close study of the roles and responsibilities of ward staff and MET staff during a MET call.

Because a MET system is a predictive early response system that aims to “...identify, review and treat at-risk patients during the early phase of deterioration” (Jones, Egi, Bellomo and Goldsmith, 2007), a MET call is made when there is

“an acute dissociation between the resources available and the patient’s condition, which is perceived by the carer to place the patient at risk of a serious adverse event” (Devita MA, Bellomo R, Hillman K, et al., 2006).

Because MET were the focus of the study, the decision was made by the primary researchers to define the boundaries of a call as existing from the point of response to the point of departure. Thus the structure of the study shows evidence of taking a MET perspective on a call rather than a ward perspective on a MET call and the perspectival orientation is reflected in the data collected<sup>3</sup>.

### 1.5.2 *The data*

While it is not the central focus, the data discussed in this thesis is high definition video recordings of MET calls from hospitals within Sydney’s south west area health service. This data was combined with loosely structured peer to peer interviews which were recorded and transcribed. This was further combined with metadata analysing the consensus building process which took place during the interviews to define the structure of a MET call, its typical unfolding and the likely roles and responsibilities. Together this forms a particularly valuable data set since it has been fully documented at each stage, with multiple perspectives on an event being recorded and participants’ cognition on the event structure also recorded. This provides a very rich data set, and one that is unusual in its depth and breadth for both medicine and linguistics. Further details of the data collection process and the data itself are discussed in chapter 5 of the thesis.

<sup>3</sup> For further discussion of MET research and the potential risks and benefits see DeVita, M., Hillman, K. and Bellomo, R. (2006)

### 1.5.3 *Significance of the MET system research for hospital environments*

Distinguishing it from existing research into MET systems, this study took a mixed methods approach in an attempt to uncover aspects of MET systems not readily accessible with traditional linear research methods. While acceptance for non-traditional research methods in medicine is still quite low, the use of qualitative and quantitative methods in combination may see better acceptance rates.

The study also drew on professional expertise, making the research subjects an integral part of the study. By doing this, the study reduced the impact of observation of the subjects. Because they became a core part of the project and were given a strong voice, the subjects became invested in the success of the project. This was enhanced by the use of peer researchers. Specialist ICU and emergency care nurses were used in the video and interview process to reduce the impact of the study on the work environment.

At this stage, little or no research has explored the performance of Critical Care nurses who staff itinerant MET teams. This study provided a detailed exploration of the roles and responsibilities of ICU nurses who staff MET teams in acute hospitals in Sydney, Australia based on the visual and inferential meaning of observed clinical practice.

### 1.5.4 *A Map*

The structure and organisation of a piece of writing does not always follow the method of investigation such that though the process of investigation may be cyclical in nature the form of presentation must necessarily be linear, and as such does not represent the method of investigation, but the presentation of an ultimate argument or idea. Marx suggests that

“the method of presentation must differ in form from that of inquiry. The latter has to appropriate the material in detail, to analyse its different forms of development and to track down their inner connection. Only after this work has been done can the real movement be appropriately presented” (1867/1976(tran)).

In this dissertation, while the method of investigation is always in connection and reconnection with the data in a recursive fashion, the presentation does not necessarily reflect this, the fact that this is the case should perhaps tell us something about the nature of language. It represents a study of the process by which a theory becomes a tool for daily use.



This work is divided into 3 distinct, but nevertheless, interrelated parts: Part 1, a history of context and a contextual theory of language; Part 2, modelling context; and Part 3, application of one context model. These parts are intimately related, and have been labelled as separate parts only to foreground the movement from theory to model and application. These parts, comprising chapters 2-6 are held together by an introduction and conclusion which set up (this chapter) and bring together (chapter 7) the central parts (Part 1, 2 and 3) of the dissertation. The data which is discussed in this thesis generally lies outside the thesis. It has been drawn from various projects associated with the Centre for Language in Social Life within the department of Linguistics at Macquarie University. Each of these projects from which data has been drawn has its own goals and reasons for needing a contextual description of its environment. While these are interesting and are discussed where relevant to understanding the movement from theory to application, they are not the central concern of this thesis. The data from these projects is used illustratively throughout the thesis, and, as such, is drawn into all parts of the thesis.

The selection of this particular structure was a motivated one. This thesis is an examination of the process of transforming theory into a working model, and the structure is a representation of this process. The primary concern is the concept of context. So, although the thesis draws on data from various environments, none of these environments themselves are the central concern of the thesis. A three-part structure allows for the examination of the different aspects that are relevant to context modelling without focusing on the design and other concerns of the individual projects. So then, the first part of the thesis is an examination of theoretical issues pertaining to context, the second is a consideration of the process of turning a theoretical representation of context into a working model and the changes that are inherent in this process. It also considers some of the representational concerns in modelling context. The third part of the thesis explores the way that a model of context can be applied in the field, considering the issues of representation in collecting information and in presenting this as results.

## 1.6 RESEARCH RELEVANCE

Ultimately this work aims to bring about a number of different outcomes. Through the conceptual integration of context, complexity theory, and information about local social problems, it will be possible to produce a robust working model of context that is suitable for the field. Such a model prepares the way for the development of manuals; context profiling (as relevant to a

given institution), and the storage of such profiles electronically for the purposes of training, checking and routine management.

This provides the opportunity to examine the theoretical development of a single concept within linguistics over time. Context is a concept that has been important to many disciplines and as such has been looked at from many angles over the centuries. Although arguably the primary interest began in anthropology and linguistics, in that these are perhaps the two disciplines that make the need for context most explicit, artificial intelligence is also an environment in which the need for context becomes apparent. It is anticipated that through this study the various perspectives that have been taken on context will be used to elucidate the nature of context and thus develop a more complete picture, both historical and in terms of contemporary theorisation.

In an attempt to apply a systemic functional model of context to a situation, this thesis considers multi participant discourse in a hospital environment. Hospital environments, and the environment of the medical emergency team in particular, are complex environments and involve multi participant discourse. The dynamics of multi participant discourse is of particular interest to linguists because of the problems that are inherent in this type of description and the pressures that this puts on modelling.

### 1.7 BENEFITS OF THESIS

The benefits to the medical environment mentioned in section 1.5 above are elaborated here as well as the benefits to the linguistic environment. The knowledge of the medical emergency team environment that such a study will produce will be of immense social benefit in understanding the interaction in such team settings and ultimately providing a better environment of choices for the staff members as well as patients. This is of benefit for all the stakeholders, including hospital management, patients, ward staff and emergency team members. A better understanding of the emergency team and its interaction with the ward and wider hospital environment will assist in alleviating the potential for human, financial and system problems that reverberate throughout the entire network.

Not only is research beneficial for understanding the medical emergency team itself, but the research also helps in building knowledge of the wider hospital domain and its operation internally and within the society. Better knowledge of this type of interaction will have benefits for the understanding of interaction in other environments. The medical emergency teams are only one aspect of hospital environments, and though each case may be individual, there is much to be gained from what different instances and viewpoints share. This holds not only for the medical

emergency team, where each case builds a richer picture of the medical emergency team as an institutional context, but also for broader hospital and medical contexts. This knowledge can help us to understand what it is that makes situations similar. It can also help in defining when situations are likely to be predictable in their structure as well as when they might vary from that structure and why. These issues require some understanding, and mapping of, the social structure within which such situations exist (further discussion of social structure as a concept can be found in chapters 2 and 3).

If it is about mapping social structure, the question arises, what can a linguist possibly bring to the analysis of social structure? Social structure is, perhaps quite reasonably, considered to be the domain of sociologists and anthropologists or even economists. But, while these disciplines are certainly central to interpretation, linguistics also has an important role to play in addressing questions about social structure and organization.

If, as Hasan (2004) argues, language is primarily sociological in nature, then it follows that language is inherently ideological in both system and process. The value of linguistic research is to a large degree dependent upon how language is conceived of, since this is what drives the underlying assumptions of research and the general structure of the research. For example, the questions that are asked, the way the research is conducted and perhaps most importantly, the interpretation and generalisation of findings are all themselves a function of the assumptions from which the investigation sets out.

What counts as linguistic evidence depends very much upon how one understands the relationship between language and social structure (further discussion of linguistic evidence can be found in chapter 2 and 3). If we understand language and social structure as being in some way connected, then the linguist can bring to the study of social structure a perspective of semiotics, that is: “anything from the point of view of how it means” (Halliday, 1991).

Language it might be argued is the single greatest legitimator and promulgator of the existing social structure and the mechanism for any possible change. It is also as Hasan (2009) points out the only semiotic system into which all others can be translated. Further more, language has a theory of social structure built into it, in that it presents itself as data about who is connected to whom (and by what means), and given that languages are repositories of terms for discriminating between people, language has a theory embedded within it, such that when you use language you are already buying into a theory of social structure or reality.

We can see that the work of the linguist, far from being irrelevant to the study of social structure, is indicative of social

relations – what is going on, and how changes occur. Disciplines such as psychiatry and psychology are moving more and more towards using language in the theorisation and investigation of individuals (Meares, 2002), and sociologists have long stated the need for semantics in understanding society (Parkin, 1982). The study of semiotics is central to understanding society, and this is as much the domain of the linguist as other disciplines.

There are many points of view on a particular context, and part of the challenge of this kind of research is capturing the way in which these points of view play out as tensions in a particular context. Multiple points of view put pressure on theories of context. In much the same way that filling a bag with water reveals any holes, data of this nature pushes theories to their limits and reveals their weaknesses. It is a useful and necessary step in the process of theory building and will lead ultimately to models that are more robust. So this then is another benefit: that contextual theory is tested and expanded by being put to work in a multi-modal and multi-perspectival environment.

### 1.8 SITUATING THE CURRENT WORK: A THESIS

The problem of context is not unlike many other problems with which we are faced in the social sciences and indeed the sciences in general. They have many aspects and details which must be accounted for and a great deal more which appear as if they must be accounted for in some way. It is this apparent complexity that can result in the claim of impossibility when faced with the task of accounting for context. However this complexity can be managed in a principled way by treating the context on a case by case basis just as other disciplines do e.g. modelling finance, profiling consumers, the demographics of large populations or the intricacies of the human body.

When we approach complexity in this manner we arrive at not one infallible answer, but a probabilistic outcome for the specific question and the specific context set against a growing picture of the whole. Probabilistic outcomes, despite the many issues involved (see chapter 3), do help answer research problems. It is possible to create a model of context that can assist in managing what one has to deal with as the phenomena. This involves defining the relevant dimensions for your problem. This is not unachievable nor does it ignore the complexity of context. It is a manageable target that is ultimately helpful in modelling and theory formation as well as in addressing specific research questions.

Within this thesis I consider what a contextual theory of language looks like when it moves from theory to a working model and application. In so doing I ask what some of the problems

might be in this process and suggest some possible solutions. This is played out in an examination of the Medical Emergency Team (MET) context.

This general aim of the research may be divided into the following more focused research questions:

- What are some of the issues arising when using a contextual theory of language to construct a model?
- What are the core problems when such a contextual model is applied to actual problems in the medical emergency team context?
- What are the advantages and disadvantages of such a linguistic model compared to earlier approaches?
- What are the issues which have to be addressed when turning the chosen approach into a general context modelling methodology?
- what are the lessons learned from this modelling and application process, and how can they lead to improvements in the theoretical foundation?

We will return to these research questions as they arise throughout the thesis, providing more detail and refining the questions.

## 1.9 IN REVIEW

In this chapter we have briefly looked at some aspects of context. Context is of course a very broad topic and not something that can be completely covered and resolved in a single thesis. It is perhaps more accurately seen as a theme of research and something that continues to change as the pressures of research change. To accommodate this restriction, where possible, reference will be given to reviews and summaries that have been done by others.

We have also looked in detail at the structure of the thesis as a whole. To foreground the research questions the chapters have been grouped into three parts which show the focus initially on theory, then modelling and finally application. Attention was given to the primary data set and a brief introduction to the environment from which it was drawn was provided. The medical environment shows the importance of context modelling and brings attention to the problems involved in the modelling and application process.

In part 1 that follows we will consider the theoretical concerns surrounding the place of context in a contextual theory of language. In particular, we will discuss some of the past and ongoing debates surrounding a contextual theory of language. We set out in chapter 2 by reviewing a very select history of research into

context as it pertains to SFL. This concludes by drawing attention to the common themes that emerge from working with context. This is followed in chapter 3 by a more focused consideration of the issues as they are addressed in SFL. Again this is restricted in its focus by moving towards one particular model of context, that being, Hasan's (1999) account of context.

Part I

THEORY





*“The world is presented in a kaleidoscopic flux of impressions which has to be organised by our minds – and this means largely by the linguistic systems in our minds. We cut nature up – organise it into concepts, and ascribe significance as we do largely because we are parties to an agreement to organise it this way” Whorf, B.L. (Carrol, 1956:213-214)*

*“We do not set out from what men say, imagine, conceive, nor from men as narrated, thought of, imagined, conceived, in order to arrive at men in the flesh. We set out from real, active men, and on the basis of their real life processes we demonstrate the development of the ideological reflexes and echoes of this life process.” Marx, K. and Engels, F. (1846/1984: 233)*

## 2.1 A MAP

The previous chapter presented the idea of context and an overview of the thesis. The first part of this thesis is focused on theorisation where attention is given to the underlying approaches to language. Since the focus of part one is theorisation, the central concern in this chapter will be language and the place of context within theories of language rather than context alone. Although it may appear strange, the reason for this focus on language is that, as linguists, the interest is in a contextual theory of language rather than a theory of context. The primary concern in this chapter is with a selective historical account of the formalisation in theory of the relationship between language and context. Preference is given to the social theories of language, and within those to Systemic Functional Linguistics. This focus is practical in nature since it is the social theories that have context as a part of their theory and it is SFL that has been most prominent in arguing for contextual modelling.

Chapter 2 discusses some of the groups of theorists working within the 19<sup>th</sup> and 20<sup>th</sup> century and their conception of context. This time frame has been chosen because it represents a time of change across many subject areas. Out of the interdisciplinarity that existed prior to this time frame, new disciplines were beginning to emerge and define themselves as separate entities. Many researchers during this time appear as independent and as if out of nowhere, yet, clearly they did not arise from nowhere: their

theories and concerns were built on the work of those before them. These theories grew out of the social, economic and political concerns of the day, the philosophical traditions with which they were familiar and the personal backgrounds and social networks of the theoreticians. As Althusser (1968/1970:29) suggests, if it appears that there is “an answer without a question, then with a little patience and perspicacity we can find the question itself elsewhere.” Quite often the question is to be found in the cultural historical context of the researcher if not the work itself.

The increase in the division of labour that was present in the wider community during the late 19<sup>th</sup> and 20<sup>th</sup> centuries was not excluded from academia. In academia, the process of the division of labour involved the separation and definition of increasing numbers of disciplines and departments. This meant that researchers were placed in a position which required them to define themselves against other researchers in order to justify their existence, thus creating an environment of competition that, while it must have existed prior to this, was perhaps foregrounded by the structure of academia and society at that time.

Certain common strands of thought or themes of research arise from this interdisciplinarity and in this chapter consideration is given to how these themes have been resolved in one particular contextual theory of language; that of SFL. By examining the people who have looked at context at various stages, it becomes clear that part of what has helped to shape the theorisation of language from a contextual perspective has been the interdisciplinary nature of its development. In SFL, we see how real world problems, as defined against theoretical problems alone, in various fields have driven the nature of research and how this drive has fed back into the development of theory and more specifically into modelling context.

## 2.2 ASKING QUESTIONS ABOUT THE WORLD

I want to begin this chapter by considering why it is possible to limit the theories under discussion to those of a social nature when we consider context. Primarily, this is because it is the questions that people ask that motivate the research that gets done and the way in which the world is conceived. It would be entirely possible to claim that at least one of the purposes of academia, and quite possibly the most important, is to ask questions about the world. Like everything else, questions do not arise in a vacuum. Behind every question about the world lies, in various states of dormancy, a theory or philosophy about the world, a set of assumptions (whether stated or not) from which those questions arise. This, as Althusser (1968/1970:25) proposes, means that a science

“can only pose problems on the terrain and within the horizon of a definite theoretical structure, its problematic, which constitutes its absolute and definite condition of possibility, and hence the absolute determination of the forms on which all problems must be posed, at any given moment in the science.”

So, these assumptions shape the questions that are asked, the interpretation of evidence, and indeed the nature of evidence.

Yet, to ask one question also hides many others and the questions that get asked can skew the perspective that we have on a topic. This means that

“the same connexion that defines the visible also defines the invisible as its shadowy obverse. It is the field of the problematic that defines and structures the invisible” Althusser (1968/1970:26)

Because the focus has been given to a particular set of questions our understanding can take on a very particularised nature as the “blinded eye of the theoretical problematic’s self reflection” (Althusser, 1968/1970:26). This is also the case with representation (see for example Waddington, 1977).

On occasions, the answers to a problematic’s questions will raise new questions that may not have been foreseen from the original position.

“In certain very critical circumstances, the development of the questions produced by the problematic leads to the production of the fleeting presence of an aspect if its invisible within the visible field of the existing problematic.” (Althusser, 1968/1970:25-28)

Where Althusser suggests that any new vantages created will not be seen because they are hidden to the theory, it is also possible to see this as a force for change and growth in a theory in that the answers produced may point to new directions despite the power of obstruction created by a problematic.

### 2.2.1 *The role of a linguist: two views on the world*

At the start of this chapter I suggested that the focus on social theories of language was not so much a preference as a necessity. To explain this let us consider the question of how we perceive language. As outlined in the section above, the infinite theoretical space only exists because of definiteness and this definiteness creates a skew in perspective that is both limiting and necessary (Althusser, 1968/1970).

A consideration of language which focuses on the structure of language, is much more likely to foreground the biological

context in which language is grounded, considering the sounds we make and the organisation of these sounds into structure. Hence, as Halliday (in Parret, 1974) suggests, a focus on the form of language, the grammar and lexis, will mean that the interrelationships under examination are entirely language internal, being bounded on the one side by phonology and semantics on the other. Although there is no reason why it must, this focus has often led to the belief that language is innate and peculiar to humans. The bounded nature of the interrelations means that any questions are inward looking and giving a certain stand-alone quality to language. This approach to language searches for answers to the nature of language in the brain of humans, and is typified by the approach of Chomsky (see for example Chomsky 1972). Since language is the vehicle by which we gain access to another's mental realm, there is a tendency to seek the structure of the mind in the structure of language.

If language is viewed as innate, then its status as evidence is such that one reason to study language might be to learn something about the nature of the brain. Within this approach, the structure of language is seen to reflect the structure of the brain or to reveal underlying mental structures. There is then a tendency to suspect that language categories must be natural categories and therefore evidence that the way a particular language divides up the world is the right, inherent and natural way to divide up the world. Definite questions about the world are then based on these assumptions. Language itself gains a certain status as evidence, or at least certain parts of language are privileged as evidence. This also shapes what is included in the category 'language', since only parts of what others might consider language will be useful for answering the questions which arise from this philosophy.

Chomsky himself grounds this tradition in the work of Plato and the Cartesian philosophers (Chomsky, 1972). Here we see the argument that language is the "mirror of mind" (Chomsky, 1975) and that the reason for studying language is for the purpose of telling us something of the structure of the mind, that the study of language is the search for "universals by biological necessity... that derive from mental characteristics of the species." (Chomsky, 1975:4)<sup>1</sup>. These questions derive primarily from the 17<sup>th</sup> century rationalists, who argued for the universality and

<sup>1</sup> Many researchers have argued strongly against the universalist position that there are innate parameters for linguistics diversity claiming instead that it is social and cultural evolution that play the largest role. This position has recently received support from Dunn, M., Greenhill, S., Levinson, S. and Gray, R. (2011) whose research appears to prove the cultural evolutionist position. It would appear that their work also calls into question the Greenbergian claims for universal systems biases, however it is still very new research and it remains to be seen how this extensive study will hold up to examination and where it will lead.

inherent nature of relational ideas or categories of thought. The rationalist argument seeks to defend the inherent logic of language. The power of this view is that in defending the logic of language, it also defends, whether consciously or not, the social relations that are maintained by language. There were, and still are, strong social and economic pressures on protecting the perception that the categories in language are natural, logical categories and that the social relations that these categories maintain are logical, natural relations.

With regard to context this view of language leads to the idea that context is only of marginal importance, since there is very little that can be said about it in any case. This perspective on language does not view context as being of primary concern in answering questions about the mind and the innate knowledge that is in the mind. Nor does this approach generally consider context to be helpful in addressing any of the other questions that might be raised by such a belief. Since context as it is defined by this tradition must include 'everything that a human can or does know, then it does not seem possible to develop a general theory of context as it serves to permit choice, and neither does it seem likely within this paradigm that there is any future for things such as artificial intelligence' (Katz and Fodor, 1963).<sup>2</sup> If this approach views context as something that must include everything that a human 'can' know in order to account for choice, then this is not something that can be mapped or generalised in any way.

### 2.2.2 *The role of the linguist: another approach*

There are, however, many other traditions of thought that begin from quite different assumptions about language and its relationship to the mind. Although it might be said that all the early philosophers were focused on naming, Aristotle focused much more than most on meaning. The world, he contested, is structured a certain way and the human mind perceives this structure and builds generalisations about it from observations

<sup>2</sup> Szymura (1988) is critical of Malinowski for not producing a framework capable of answering Chomsky's question of why we are capable of producing a theoretically infinite number of sentences and understanding them despite the fact that the question of a practical application of most of them may never arise (Szymura, 1988: 130). It is Chomsky's theory that narrows down the brief of linguistics to such a question and while the issue, raised in the 19<sup>th</sup> century by von Humboldt, is one of the many legitimate questions of language study, it does fall into the mentalism that Malinowski was trying to expunge (language is not a counter sign to thought). The more that can be derived from the semantic structure of social action, the less remains to be imputed to specific innate structures in the brain. More challenging is the corollary of Szymura's question, namely that Chomsky's linguistic framework fails because it prevents many anthropological/human questions from being answered (or even investigated!).

of particulars. So there is a very early distinction between a focus on structure and a focus on meaning. Language need not be considered as social or biological to the exclusion of each other (Everson, 1994).

The intra/inter organism perspectives form a unity. Language as knowledge and language as behaviour are not independent from each other, but form complementary perspectives on language (Halliday in Parret, 1974). The sharp distinction between the two is an unnatural one, and one that results largely from the historical definition of disciplines and the perceived need for demarcation of disciplinary boundaries (Halliday in Parret, 1974). The language as knowledge/behaviour perspectives are two orientations that we might have to language. The predominant focus depends on, and shapes, the questions that are asked. But it must be born in mind that these are not independent from each other and merely reflect the bias of our point of entry to the study of language (Halliday in Parret, 1974).

Viewing language as social suggests that the structure of language is far more likely to tell us something about the structure of society. This then is one reason to study language, for the purposes of understanding society and critiquing its current state. This does not mean that language within this tradition is not useful in answering questions about the brain nor that such questions will not interest researchers within this tradition. Certainly researchers within this tradition have looked at questions of the brain (see for example Matthiessen (1993) or particularly Sugeno (2004) and even Halliday (1979) amongst many others). The status of language as evidence in this tradition is quite different. Here it is a reflection of societal values, beliefs, ideals and theories about the world: it is ideological. As Hasan (2001) points out, when we see language as social in origin, there is no escaping it being ideological because it is not possible within a social view of language for language to be anything other than ideological. This discussion of ideology and language, particularly as it pertains to context, will be revisited in chapter 3 below.

The social and the biological approaches, although intimately connected, represent two very different approaches to language and its theorisation. This difference in perspective on language however, suggests nothing about the respective theorists perspective on the world. The difference in focus between the social and biological approaches can be represented stratally as in figure 1.

The focus on structure makes biology loom large and, since meaning is structure internal, context also becomes distributed throughout structure. By contrast, a focus on language as a meaning system makes semantics and context loom large. It is only then a particular view of language, namely the social view, which will consider the question of context and its importance in the

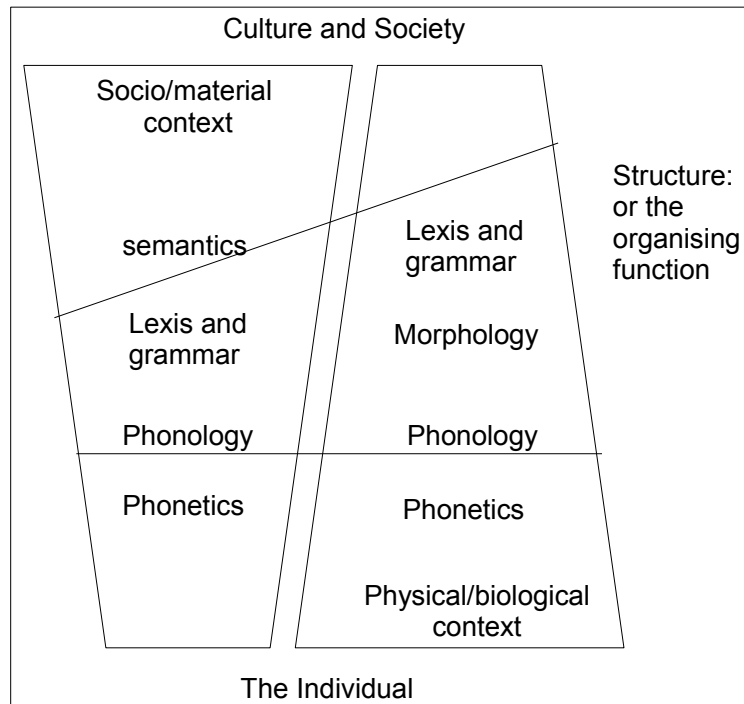


Figure 1: Different weighting given to areas of language

elucidation of meaning to be of any interest. This is a whole language approach which as Halliday (in Parret, 1974) suggests must look outside language since once language is considered as a whole the inter-relationships lead beyond language itself. It is this social perspective that I am interested in within this thesis. I will leave at this point those biological theories since it makes little sense to consider theories which do not find context of any value when the object of my analysis is the modelling of context.

In turning our attention to the social theories of language that do consider context to be of vital importance to the study of language, we find two strong traditions which derive their impetus from sociology. Some of these draw inspiration from macro-sociology, which is primarily concerned with the the structure of society and the interaction of this with the individual. These traditions represent what many now call anthropology. By comparison, others draw from micro-sociology, which is primarily concerned with the individual in society, rather than the study of society per-se. The focus on the individual brings the micro-sociological position much closer to what we might today call social psychology.

### 2.2.3 *Micro and Macro Sociological approaches to language*

Like all dualisms, the macro-micro sociological divide has been criticised by some as being unhelpful and unnecessary (see for

example Callon and Latour, 1981), but it does represent epistemological traditions that have quite distinct levels of analysis as reflected in the names used to distinguish the two groups - micro and macro. In tracing the early traditions of pragmatics, Nerlich and Clarke (1996) suggest that micro-sociologists such as Goffman and Mead were influenced by the individualism and pragmatism of Tarde and Bergson and this traces into the linguistics that developed out of their work.

Though most traditions originating from the macro sociological traditions were functional in their orientation, interestingly, the functionalism of the different schools began from quite different origins. In America this functionalism emerges from the pragmatism of Peirce and James while British and European traditions have come to functionalism through researchers like Wegener, Whittney and Breal (Nerlich and Clarke, 1996:248). So while they may have a similar motivation from evolutionary theory, their realisations are quite distinct. Systemic functional linguistics fits very much more into the British and European tradition than it does into the American functionalist tradition although there are some distinct commonalities.

By contrast with Hymes (see for example Gumperz and Hymes, (1964)), and even Jakobson (see for example Jakobson, (1973)), who also developed functional accounts of language, Halliday's "context of situation" has a place alongside other forms of linguistic statement. The statements most helpful in clarifying this place include his discussions of text and context in educational linguistics (Halliday 1991). When we arrive at the level of a given context, we are already *in the culture* hence, we do not need to proceed to culture. Rather we have the task of elucidating what we find *there* in the *typical-actual*, as Firth referred to it. Halliday's own practice in this regard appears to be cautious: while he arranges his investigations with respect to field, tenor and mode<sup>3</sup>, which are more abstract than Firth's relevant objects; participants etc, the variables seen as relevant for any given account of context/text stay in close proximity to the register under description. Hasan (1995) refers to these kinds of descriptions as being around mid points on the cline of instantiation <sup>4</sup>. Still, the contextual variables permit prediction of the choices *at risk* in the semantics and in the lexicogrammar.

<sup>3</sup> At the Register and context symposium held at Macquarie University February 14-16, 2011, Halliday described how Field, Tenor and Mode arose from the desire of a group of linguists to develop a Marxist theory of language that accounted for the functional variation in language. This design is evident in the resulting organisation of the theory as is discussed in Chapter 3. Recordings of the symposium can be found at <https://wiki.mq.edu.au/display/~mq96317779/Home>

<sup>4</sup> However see my discussion in the following chapter, chapter 3, for more discussion of instantiation.



We see in the development of SFL the bringing together of both the micro and the macro sociological approaches, although it could be argued that the primary influence has been the macro approach. Perhaps the most significant influence on SFL in terms of context, has been Malinowski. Malinowski has typically been considered to belong to the macro-sociological or anthropology tradition. Yet, this is perhaps to diminish the complexity of Malinowski's account. Frazer (1922: ix), in his preface to Malinowski's book says of Malinowski's method that it "takes full account of the complexity of human nature. He sees man, so to say in the round, and not in the flat". Thus, while many at that time considered that "pure sociology should confine itself to the description of acts" (Frazer, 1922: ix) Malinowski saw the purpose of sociology to "understand the actions of men in society" (Frazer, 1922:ix), and thus as being centrally concerned with meaning. So here we see that Malinowski draws from both the micro and the macro in his establishment of the scope of modern anthropology.

### 2.3 THE CONTEXT OF CONTEXT: SOCIAL STRUCTURE AND THE NATURE OF RESEARCH

I want to set out in this section from a stylistic concept familiar to all linguists; that of metaphor. Metaphorical conceptualisations are not natural or inherent or logical, but tied to culture and thus they are ideological in nature. At the same time as metaphors highlight one aspect of our experience, they hide or mystify others, thus, protecting us from any inconsistencies. In foregrounding one aspect of an experience, metaphorical structuring is partial not whole, since, if it were total it would actually be the other, and clearly this can not be so. It is always the case that part of a concept does not and cannot fit, meaning that the metaphor may be extended in some ways but not others.

The scientist is no more free from this than the everyday user of language since the scientist is still an everyday user of language, despite the efforts of many to draw a sharp distinction between the two (see for example Chomsky, 1974). Whole academic theories may be constructed around a metaphor, the metaphor itself constituting the theory. For example, consider cognitive psychology. Here the concept of cognition is constructed as the most complex human construction to date, while in general parlance it is generally constructed as the more complex natural phenomena such as water, air, light and speed (see for example Lakoff and Johnson, 1980). The history of academic research into cognition is filled with models which represent human cognition as wheels, cogs, telephone exchanges, computers and the internet. Ultimately, researchers must be able to recognise that the larger theoretical frameworks or disciplines that we adhere to are to a

great degree the product of culture (Chao, 1994), and that the research carried out reflects the current cultural fashions and concerns (Ceci and Bruck, 1993). We might consider this the context of research, or the context of theory.

As part of a step toward putting context to work, we can use the idea of context to understand its own theorisation. So, context may be used reflexively for its own analysis. In relation to science, Hutten (1956) proposed that the context of the researcher needs to be interpreted as part of the researcher's theory. The academic environment in which a theory develops is as much a part of the understanding of a theory as the theory itself. This is a concept that is useful as part of a discussion of context and its movement from a practical tool through to its inclusion as a dimension of a theory of language which informs the way one might conduct investigations in areas such as artificial intelligence; stylistics, translation and other disciplines. The personal and social history of a researcher deserves serious consideration given that it is precisely this history that gets overlooked in many debates pertaining to the formative influences in an academic endeavour. This may be turned to understanding the impact of Malinowski's approach to the study of society on SFL.

### 2.3.1 *Malinowski's Personal Context*

Malinowski's life is relatively well documented. Malinowski's own belief in the importance of keeping a diary, inspired by Nietzsche, has meant that the greater part of his working life was recorded. The diary for Malinowski acted not just as a record, but also as a guide and tool for reflection. Born in Cracow, Poland, in 1884, Malinowski grew up in an environment of academic discussion. His father, a Professor of Slavonic Literature and Philology at the Jagellonian University, provided an early influence for cultural study, though his father was dead by the time Malinowski was 14 (Thornton and Skalnik 1993).

Malinowski did not immediately follow in his father's line of research. His formative training instead was in mathematics and physics, though by his final years he had switched primarily to the humanities; and he completed his doctoral thesis in philosophy. Though his training in physics in particular was comprehensive, by the end of his degree it could be claimed that the humanities were his focus (Paluch 1988:78). His training in economics, at Leipzig for one year, would also extend the economics that is often not sufficiently recognised in accounts of his work; in particular in his later work on Africa (see Ellen, Gellner, Kubica and Mucha 1988). Malinowski's move to Britain to take up anthropology was central in establishing a strong focus on functionalism in anthropology, which lasted for more than a dec-

ade, during which time he developed strong ties with American anthropology under Boas and Sapir.

### 2.3.2 *Social needs, social values and the sources of funding*

Despite the frequent complaints from some quarters that academia is not part of the “real world”, academia is quite obviously part of society and as such, is subject to the same pressures and forces that shape society. Research may be carried out for many reasons, but since it is reliant on funds from various sources, it is frequently the case that the nature and focus of research is shaped by the needs or desires of those who are in the position to fund the research. This means that research is in many respects subject to the economic system.

The claim that research is independent has never really been true when that research is carried out in an institutional setting. It is possible to claim that private benefactors have been able to produce semi-independent research, although, even in these cases, benefactors have always had influence over the type of research that gets carried out whether this is direct or indirect, conscious or unconscious. This is not to suggest that research is of no value if it is shaped by the funding sources, but it is important to recognise that this is an influential factor in shaping the way in which theories evolve. They must be seen as a response to the various systems in which they exist.

If we were to look back in history to some of the major breakthroughs in research we would be able to see the influence that features of the economic system have had on the shape of research. Let us consider an example taken from Psychology. In America in the 1960's, following the second world war and with the perceived threat of communism at its height, the US government spent heavily on recruitment screening processes for the armed services.

This translated into funding for psychological research into mental health and personality. This saw a boom in personality research in particular into personality models that were adaptable for large scale screening processes which was what the armed services were seeking. From this funding we have since seen the development of the 5 factor model of personality and many other similar models that have proliferated and emerged as deciding factors in other recruitment venues such as the workplace (Shotter 1995).

The injection of funding into an area of research sees long term effects with increased training and further research for many years after the initial injection of funds has run out. It sees a rise in students in that area and can often lead to more money and greater research output. It also spawns a whole reactionary course

of research and it is in this sense twice as productive. Research responds to the dominant mainstream (while still maintaining and nurturing the dichotomy) with a variant or alternative approach or approaches. So not only does a funding injection spark research in the area it funds for many years, but it also sparks a counter research tradition, and this is just as influential to the development of research in that field and those that relate to it. If we move to an example from linguistics, we can see a similar tradition emerging. The needs and desires of computer science are already a strong influence on research in linguistics. Indeed this is an influence on my own work and the requirements that I consider necessary for an adequate model of context.

The nature of research is also shaped by who is involved in the research. Technological advances, for example, can have a profound influence on the nature and development of theories and invention, and context as a concept is no exception here. Social pressures influence the type of research that is carried out by shaping the concerns of researchers, creating problems to be solved, and by directing funding for research. Context has had many involved in its study, though is seldom the single focus of investigation. Only recently has context itself been the primary object of investigation and part of this may be due to our greater capacity to record context. It has, in the past, been developed as part of the means of answering questions about language change, language learning, understanding behaviour and other key questions. Another major influence on research is the effect of those that have a vested interest in it. Context has seen a distinct shift in who has a vested interest in it. With each shift, the dominant motivation for research has changed.

### 2.3.3 *Departments, disciplines and interdisciplinarity*

Richards (1939: 272), in analysing the way that anthropology developed in Britain, claimed that the social structure, academic environment and the challenges and problems faced in the field “actually suggested fruitful problems for investigation, and have led to the development of observational techniques”. These problems inspired theoretical breakthroughs grounded in actual practice. Malinowski was forced to confront a number of paradoxical difficulties in conducting his investigations. The first localised difficulty was simply translation. Malinowski’s inability to translate meanings across cultures by a direct correspondence of crucial terms appears to be the first step in his revision or reinterpretation of functionality.

Real world problems, as defined against theoretical problems, in the various fields has been the motivating force shaping the nature of research in context. This diversity has meant that context

research has been haphazard, a fact which led Darnell to claim that “culture could only cease to be ‘a thing of shreds and patches’ (Lowie, 1920) if its integration could be captured in the models employed” (Darnell, 1990). This has been echoed throughout many disciplines as researchers confront what is perceived as a lack of unity over context.

Culture and context was a ‘thing of shreds and patches’ for Speir, Lowie and Kroeber because they were concerned with the explanation of single cultures and the expedience of this for understanding personality. The same concern with personality can be seen in the work of J.R. Firth working in Britain at the same time (see De Beaugrande, 1991) and Sapir in the US earlier. Firth’s emphasis on persona was also taken up in the contextual work of Gregory and Carroll (1978) who suggest that what we say is an indication of who we are as individuals. Although even as unique persons our habits are neither fixed nor stable but mirror the constant variability of environment and attitude which makes up our lives (Gregory and Carroll 1978:26). They emphasise that language is an indication of our personality through style. The evidence of the style is in the language event, the analysis of which they divide into three: substance, form and situation. The situation is defined by the “relevant extra textual circumstances” (Gregory and Carroll 1978: 4).

The interest in psychology in general, and personality in particular, meant that there was a tendency towards the construction of cultural theory as it pertained to the individual or small group, evident even in the work of Firth; rather than as a unified structure acting at a sociological level (this despite their views that cultural anthropology was a necessary prior to personality and personality testing). This person centred approach to research meant that their models aimed to explicate the culture/personality connection, thereby tying the models necessarily to culture as it related to the individual and thus to the instance (the current tendency to adhere to the instance may be a result of an underlying fear or resentment of general or grand theory). Those with an interest in economics and trade between and within groups, such as Malinowski, again quite probably as a result of the fancy of government and private interest funding, had a greater tendency to attempt to model culture as a whole; though by many accounts this failed (Kuper, 1973).

#### 2.3.4 *A shared social context*

The cross pollination between researchers, each with their different approaches to the study of culture meant that rich and fertile discussions developed around core topics. For example, Malinowski, Boas, and Wittgenstein were preoccupied with similar

problems, and ultimately came to cognate answers. This was not a case of random patterning, but of social patterning - not only of their early life, but also of their social environment and academic environment. They shared early training in mathematics, science and other cultural patterns of Germany and Vienna. Even Wittgenstein's early notion of a logically determined space and scaffolding have parallels with Malinowski's idea that language only has a meaning due to the framework provided by a given context of situation (Gellner, 1988). Both ideas, however, appear to draw on Nietzsche's view of heuristic constructs or mental tools (see Nietzsche, 1873, cited in Vaihinger, 1925 and Butt, 1985/9; and Thornton and Skalnik, 1993).

Their ideas are relevant to much current work between applied, theoretical and pure sciences: for instance, the claims of grounded theory to be working close to the social realities of institutions (Strauss, 1987). As populations, humans have been making and remaking their brains as they have been constantly making and remaking their cultural resources. With these issues in our minds, again Malinowski sounds like our contemporary: "The whole functional approach is based on the principle of the plasticity of human nature and of the possibilities of cultural development' (Malinowski, 1961:8).<sup>5</sup> There was no simplistic polarisation of the biological and the social/cultural in the climate of enquiry from which Malinowski drew, nor in the climate of enquiry which he helped to create.

These researchers, who were leaders of European and US studies of societies and of research that was to construct what people now call the science of anthropology, had similar backgrounds in physics, and mathematics. The scientific background and training of Malinowski and Boas was as much affected by the interdisciplinary nature of doctoral and research environments of the early 20<sup>th</sup> century. Malinowski worked not only with sciences like mathematics and physics, but also with history of economic thought, philosophy, anthropology and psychology. Yet, what would today seem a diverse collection of studies was in fact a coherent metamorphosis into a mature social researcher. It was all part of the one fabric of enquiry, and in this sense we can see the genesis of Malinowski's view that

<sup>5</sup> The core idea of function can be seen to lie behind all of Malinowski's work, and indeed Gellner (1988:172-3) argues that this idea was in place and fully formed before Malinowski left Poland. Gellner (1988) further suggests that Ernst Mach, who tempered Malinowski's understanding of Nietzsche, influenced Malinowski in his work. His influence on Malinowski encompassed the possibility of seeing everything in terms of biological need. This was an idea very much debated across Europe at that time. Wegener had had a protracted argument with Wundt over this issue (Nerlich, 1990: part 2). The connection between biological need and functionality is referred to by Leach (1957: 122). This conception of function is further attributed by Leach to James; though Gellner (1988) disputes this origin.

“Science begins with applications. A physicist or chemist or biologist knows this by heart. What is application in science and when does ‘theory’ become practical? When it first allows us a definite grip on empirical reality; in other words, as soon as a theory is true, it is also ‘applied’ in the sense that it is experimentally confirmed” (Malinowski, 1961b:5).

This was not a simple idea of a sentimental interdisciplinary future but something that was more available already to Malinowski and others. It may now be much more difficult to reconstruct in the current university and disciplinary structure of research specialisations. Malinowski and his cohort of researchers were in the process of defining anthropology as a discipline and a science. In fact they were defining the contextual parameters of their research and this process could still be seen as late as the 1950’s.

The force of this interdisciplinarity may now be much more difficult to appreciate in the current university and disciplinary structure of research specialisations. It seems to us one source of motivation for the emphasis Halliday gives to ‘themes’ and transdisciplinary research (1992:60-61). More directly, it is important in construing the situation of Halliday working with Firth, and with Firth’s demand for a dialectic between actual ‘speech fellowships’ and statements of generalisation. Malinowski and his cohort of researchers were in the process of enacting anthropology as a science.

While we may be committed now to interdisciplinary research, the context of our research makes it implausible or unlikely that the desired interdisciplinarity will be realised in research policy or funded accordingly. Halliday (1992) said that we had ‘still not achieved a transdisciplinary perspective’ and this is even now the case. In fact there are several features of the academic system that make it unlikely to ever develop such a perspective. The academic environment, like any other environment, being a part of the social system is the result of the alignment of so many features that a change to any single feature will produce a radically new environment. There may be no way that we can replicate the features that created, for example, Malinowski’s academic environment, nor would this necessarily be desirable, however, we can achieve a similar end result by working with what Halliday (1992) calls themes. Themes are a coherent focus for research, which can span disciplines and be realised in various ways in each. We can see that themes cut across history to reveal the same questions being asked in different times by different people albeit in slightly different ways. So, here rather than consider the individuals involved in the study of context, the

study of context will be examined from the perspective of the themes that have emerged.

According to Halliday (1992:61; 2004), the most important theme to emerge of recent times is semiotics, that is, anything considered from the point of view of the way that it 'means'. This is a theme that we can see across disciplines. It was certainly a primary focus for Malinowski and his contemporaries, and a core reason for his development of the notion of context, where persons, relevant objects and converging aspects of the biological and physical realms can all be meaning bearing.

## 2.4 THEMED RESEARCH: CONCERNS IN THEORY

To bring out some of the key themes surrounding the treatment of meaning contextually, consideration will be given to some of the early proposals concerning context, with some interpretive excursions into the 19<sup>th</sup> century (although for more detailed accounts of the 19<sup>th</sup> century proposals see Matthiessen, 1993; Halliday, 1973; Hasan, 1995; Ghadessey, 1999). In 1923, Malinowski argued for the significance of 'context of situation' with respect to specifically linguistic purposes. An historical perspective places the more modern criticisms of functional linguistics (see for example van Dijk), into an unusual light: in particular, it suggests that debate about human behaviour has been artificially, even tendentially, polarised into a psychological/social dichotomy. Such a polarisation of thought does not appear to be in the climate of enquiry around, for example, the career of Wegener (1848-1916), one of those who created the environment, which later researchers, like Boas and Malinowski, would turn into distinct fields of study. A consideration of this watershed period is helpful also in determining what is currently required in linguistics and in interdisciplinary work, for instance, for integrating the goals of anthropology on the one hand and for taking up the broad range of tools in pragmatics, on the other.

### 2.4.1 *Boundaries*

Malinowski's work creates some perplexities for a systematic semantics: on the one hand, the description is grounded in a cultural process and one might argue, following his Viennese and academic alter ego Wittgenstein (Gellner, 1999), that we should not ask for further explanation of social conventions. On the other hand, the approach is hard to apply when the units of analysis do not have defined, unequivocal boundaries. While the uncertainties in applying "context of situation" are an epistemological limit inherent in semantics (comparable to



such limits in physics, consciousness studies, and life sciences eg. Heisenberg, 1958), not everyone will be satisfied on this point.

By its very nature context is on the periphery – after all, by most accounts it is what surrounds whatever is being studied, but it is also central since so much of meaning making depends on context. The question of boundaries has led to problems in investigation of social phenomena in general and this is primarily a problem of formalism. The idea that context is an actual thing that has boundaries and an independent existence causes problems for those trying to use context models. To apply a model with any consistency requires an agreed understanding of the boundaries or units of analysis.

Certainly, this was one of the criticisms levelled at Malinowski's work, that as it stood, it was too difficult to apply. Firth, R. (1961) alluded to the fact that Malinowski did not have the problem of selection that his students faced in other areas. And this is echoed by Kuper (1973), who notes a feeling of slight resentment among the students, particularly those working in Africa, concerning the difficulty of applying Malinowski's method with any precision. Similarly, Paluch (1988: 78-79) argues that

“the unequivocal characterisation of the cultural context of the given facts faces the difficult problem concerning the delimitation of boundaries of that context.”

A year later a related idea is put forward by Wolf (1989) who claims that:

“Once context of situation asserted itself as necessary to the elucidation of the meaning of words, it would be clear that, unless a people had a fixed and finite set of things to say in their daily activities, then the number of things they said and the contexts they said them in would be both infinite and indeterminate.”

It is interesting to note the parallel here with Cook's (1990) perspective on context as having the potential to become a task in “transcribing infinity” and the very similar response of Chomsky and others to the task of managing context.

In an approach where social action is seen as part of an ongoing social interaction and ongoing social processes it is possible to analyse interaction in an ever broadening sense of context the basis of which might be considered to be the nature of social relations. So for example, doctor's consultations are seen as part of the ongoing health care process, which is part of the ongoing health profession process and so on. When viewed from the perspective of its place in daily social life, the dynamic flow of social process creates a sense of infinity and it is this boundlessness that some find disconcerting.

However, as Hasan (1995) points out, the “power gained from abstraction is to have to define data in such a manner that it does not include everything that may be going on, for in nature there are no clear cut given, boundaries”, and it is necessary to create artificial boundaries to work with while at the same time bearing in mind the importance of the ongoing social process. These are the means by which choices within a theoretically defined contextual system are made meaningful.

The processes for defining the boundaries of a context are by no means arbitrary, though, by the same token neither are they without difficulty. Essentially it is possible to draw the boundaries anywhere depending, in part, on the functional motivation of the task at hand or what Wegener might have called the *purpose*. While this ambiguity may have made Malinowski’s students uneasy in their own earlier theoretical reflections and applications, it is today not such a strange proposal and reflects the earlier approach of researchers such as Wegener (see Nerlich, 1990).

In this sense then, context does not describe the data, it is the data, it is the means for selection of a motivated piece of interaction from an ongoing flow. It may be that a research question makes it helpful to delimit a situation by marking off any situation where the population that is drawn from changes. Though it may not always be obvious that this is the principle at work, many text selections are made on this basis, for example we can see that a doctor’s consultation is bounded by time and a population change even though the basic field, tenor and mode selections may not change dramatically. The boundaries for the textual analysis may be set by change in material setting and a time chunking, while at the same time recognising that this is all part of ongoing social process and social relations.

A text, as well as being located in the here and now, is both reflective and predictive, thus it is tied to what has gone before and makes contact with what is to follow. A text’s existence in the here and now only makes sense because of what has happened in the past and what is planned for the future. So it is possible then to consider context as starting at each peak or each trough in waves of meaning. Context can be considered as constant but changing in regular ways, which reveals a pattern even above the random noise of daily life. The same result will be achieved if there are certain constant features, for example the same participants. On the other hand, if the main participants hold very different conceptions of the primary goals behind an activity, one must concede that there is a challenge to the unitariness of the context and the agreements about its limits.

There must be at least a cognitive boundary to contexts because functionally we need to define one move from the next. The same pressure to define the day by hours, minutes and seconds etc. is

reflected in our division of the flow of social process into bounded contexts. The fact that most structural descriptions of the order of texts contain some form of orientation, bearings or focus or some such element that focuses the attention indicates at least in part that there is some sort of boundary at work in context. The nature of this boundary is a matter for future investigation since, for cognitive efficiency if nothing else, people appear to need to reflect on existence as a series, thus possessing boundaries. So for each series shift we need to focus on that as a new series with new parameters. Halliday, and others, have prepared the way for managing fuzzy categories. Rather than reject a line of research on the basis that an unequivocal unit was not falling out of the data, one can accept that fuzzy sets are characteristic (and functional) in language.

#### 2.4.2 *Cognition, personality and intent*

The question of cognition and context is not a new one, though many would like to suggest that it is new. It is simply that the social and the cognitive aspects of context are once again come to the fore in modelling and researching in context. It is perceived as a deficit by many that after what has seemed such a long focus on the social aspects of context; the cognitive aspects have still not made an impact on the development of theory. van Dijk (2005) claims that “we as yet do not have an overall cognitive theory of context as a type of mental model”, a situation that van Dijk has spent much time remedying (van Dijk, 2005 a, b, van Dijk, 2006 and van Dijk, 2004 amongst others). However, this is not a new problem, and in fact there are many mental or cognitive accounts of context stemming from the mid to late 19<sup>th</sup> century. Indeed, this period of history was particularly rich in cognitive accounts of meaning and context<sup>6</sup>, and they were the result of asking very similar questions centred on: reference, co reference, and coherence.

But, although the questions are similar, the resolutions have their own peculiar characteristics. According to van Dijk (2005b), “mental models are unique, personal and subjective” and “they do not ‘objectively’ represent the events a discourse is about, but rather the way language users variably interpret or construct such events”. It is this subjective quality of mental models that van Dijk claims precludes Systemic Functional Linguistic models with their objective observability criterion from adequately addressing the mental aspects of context such as purpose and knowledge (van Dijk 2005 a).

Objective observability is, van Dijk claims, a crucial condition for Systemic Functional Linguistics, a condition van Dijk says it

<sup>6</sup> Although they do not necessarily use the term cognitive or cognition

inherited from the behaviourist tradition. I would venture that the objective versus subjective distinction is just as likely to have come from traditions other than behaviourism, though there was a temporal and spatial overlap. This is of course primarily conjecture, but it is not without foundation. Indeed, Halliday (1978: 54) in response to the question "Is your point of view not too behaviouristic here?" responds,

"No, I would say that is emphatically not behaviouristic. It has always seemed to me, and again I am simply following Firth, that behaviourist models will not account for linguistic interaction or for language development."

The quote continues in this vein, but let us assume on this basis that the distinction comes from traditions other than behaviourism as it is most typically understood, or at least as it is understood in the United States.

It may appear that it is of little importance where the distinction comes from if ultimately there is a distinction, it is very important as it fundamentally alters our understanding of this distinction. If, for example, this distinction comes from Marxism or Bakhtin, then objective should more correctly be interpreted as systemic or relating to the system, while subjective is more akin to structure or emerging from the system (see Seliger, 1977: 58 for a discussion of the difference between objective and subjective in Marxist thought). This makes for a very different reading of what is then available for modelling within a Systemic functional linguistic approach. Cognitive aspects may then be accounted for, their status being however as structural output not systemic. Intention would not be seen as a systemic feature, but as emergent, and would thus be a structural feature.

Given the above definitions, we can see that far from treating mental aspects as alien, SFL provides a venue for examining the systemic features, which combine to produce the structural nature of mental aspects such as purpose. It would be fairer to say then, that SFL does not provide a general account of the systemic alignments necessary for accounting for purpose or knowledge - but then, if these are, as van Dijk (2005) suggests, unique and personal, then a general model would hardly be appropriate. If you want to account for everything and treat everything as unique then you can't do it through a general model because a general model averages across the unique to record the common, while at the same time predicting the unique or individual. A model that accounts for everything would become too powerful by including everything, so by saying that context is unique and personal van Dijk (2005) is giving up the prospect of a general model of context.

If the ultimate goal of a research tradition is to arrive at a descriptive account of behaviour based on statements about what people do or don't do without reference to actual behaviour, then objective and subjective lose their value as theoretical distinctions. If however, the role of research is to attempt to account in some way for the motivational forces behind people's actual behaviour or to try to say why people do what they do, then the objective versus subjective - or rather the systemic versus structural distinction is crucial. It is essential to be clear about the distinction between actual behaviour that is observable and motives, which are not directly observable. It is unwise in the extreme to make any assumptions in research about motives - these are end products not our starting point. Actual behaviour on the other hand has status as evidence. Motives in this model are seen as emergent not stated. Behaviour may be used to establish motives but motives themselves are emergent from the system, they are systemically derived, from the selections from the motivated categories of the system networks. Motive is inferred by interactants in discourse through reference to the context, both immediate and assumed.

Without setting out to define the terms, it is interesting to note that there seems to be a redundancy in the terminology associated with cognitive models. It would appear that what cognitive models are really trying to get at is motivation or intent. The semantic drift here is represented in our understanding of the following terms: function, use, purpose, intent, motive/motivation/motivated, and goal. That these terms have for so long been conflated, is indicative of the confusion that abounds in this area.

It is the sharp distinction between the cognitive and the behavioural that is new, not the question of the consideration of the cognitive. In both the work of Wegener and that of Malinowski, the cognitive and the behavioural are seen as being intimately connected. These are seen as so intimately connected and pertinent to the investigation of human interaction that Frazer (1922:ix) claims that "to describe a series of acts without any reference to the state of mind of the agent would not answer the purpose of sociology."

It might be expected that the very individual and person centred focus of the microsociological accounts would lead to a focus on the cognitive and knowledge centred aspects of context to the detriment of the behavioural. Yet, context in these domains did not seem to develop in this very mentalistic way. Rather, what appears is a focus on the material aspects of the context almost to the exclusion of the mental or cognitive aspects. This may be because of their strong focus on the description of real life and an aversion to grand theories or heavy abstraction.

### 2.4.3 *Inner and outer contexts*

Analysis often overlooks what none of us could imagine being without. Wittgenstein emphasised such 'marginal' ideas as the unseen background to making sense (Glock, 1995). Such ideas were fundamental in learning and, particularly as the scaffolding necessary in the education of children (Vygotsky, 1978). The very fact that context is crucial in the understanding of all transactions may have meant that some specialists believed it could be left outside the specialised brief of the linguist. Context was to some so ubiquitous that it was a-theoretical or platitudinous, while for others, for reasons of theory (paradoxically), it was only to be managed instantially, and a-theoretically (viz. Schegloff, 1982).

While treating context instantially, the microsociological or social psychological focus of sociologists such as Goffman and later Schegloff still gives a central importance to context. The concern of these researchers with actual speech and actual life means that they are often interested in the background of speech. They see interaction as performance and hence the context becomes seen as the background or environment for the speech. This backdrop perspective on context means that context becomes rather instantial since it changes with every performance. This is a very concrete or material view of context, grounding it in the physical realm and the here and now of interaction. In these models, context, in a very material sense, forms the backdrop to the drama of everyday life (Goffman, 1959).

J.R.Firth's work with Malinowski in London, and Firth's own fieldwork from Kenya to Afghanistan (Rebore, 2002), confirmed the significance of context and incorporated the notion into a polysystemic, relational theory of choices at many levels. Halliday (1973) integrated 'context of situation' into a linguistic theory that included a separate semantic stratum and a more abstract notion of function – 'metafunction'. Context of situation became the interface between language and the socio-material order (or, more correctly, between language and the dimensions of the socio-material order that are of importance to the processes of meaning in a given instance).

Work by Ellis (1966) and by Mitchell (1958) clarified Firthian theory and its application to an actual community (respectively). Ure (1969) brought a typological order to the linguist's work with semantic varieties, or registers. Work by Hasan (1978, 1984, 1999), in particular, has elaborated and extended the Hallidayan approach by conceptualising the stratum with explicit motivations for the contrasts within the 3 major systems of field/tenor/mode, and by developing the systematisation of the semantic stratum (crucial to activating the descriptive power of context, through

realisation and hence, inevitably, in terms of delimitation in specific descriptions).

Other theorists, in particular Martin (1985; 1993; 1997), have extended the stratification above context to genre, and on to ideology, in order to treat variation through Gleason's (1965) notion of 'agnation' (albeit here, an issue of context and of the levels 'above' context, not of grammatical variants). There have been numerous other significant contributors to the discussion of context in the SFL paradigm – e.g. Gregory and Carroll (1978) and Ventola (1983). Their work too constitutes, in each case, a body of theoretical proposals which permits linguists, and other specialists, to get on with the job of social research.

#### 2.4.4 *Dynamics*

During Malinowski's life the boundaries between linguistics, sociology and anthropology were more porous in that they were less institutionalised, and there was an inevitable flow of ideas between the newly forming disciplines. In this climate, the problem of cultural change was arguably the central question, much as it may still be claimed today. Gellner (1988) suggests that Malinowski's theory of culture revolved around stability. The question arises then: how do we account for cultural change and the dynamic aspects of culture? Paluch (1988) proposes that 'Malinowski's ideas suggest treating cultural change as the formation of a new system'. Though Malinowski did not state this explicitly, the idea is present in his work (see for example his later work on Cultural Dynamics published after his death: Malinowski, 1961). In Hallidayan theory, as well as in work by Jakobson (1973) and by the Prague School (Striedter 1989), this conundrum of dynamics has been (at least for many) addressed by the 'meta-stability' of a system: the very character of the system is to have a changing character (Lemke 1992). The essence of a semiotic system, as relations of relations, is to have no fixed essence.

There was also the acknowledged influence of Phillip Wegener, whose views on language were strongly functional – although it is not for this that Malinowski gives him credit (Malinowski 1923:297). In fact, Wegener's criticism of Wundt (Malinowski's teacher for one year in Leipzig), was that he focused on the structure of language as a formalism and ignored the function of the dynamic dialogic process that was living language (Nerlich 1990: part 2). This was made all the more paradoxical by the fact that Wundt's psychology was explicitly social and was, according to Kuper (1973), concerned with group dynamics. In Wegener, we also see a functionally motivated understanding of alignments between our experiential schemas and our expressions, with the benchmark of congruence drawn from ontogenetic process

(Nerlich 1990: part 2). This is an idea significantly developed by Halliday through his concept of congruence and with his 3 types of text change – phylogenesis (times of the culture); ontogenesis (times of the individual); and logogenesis (i.e. the changing semantic options in the process of unfolding in an interaction).

This is a key point of similarity between both Malinowski's theory and Halliday's linguistic theory – namely, that ontogenesis should throw light on the more abstract functionality and metastability of the adult system. Similarly, Wegener's view of language change set out from a separation of language as function and as an abstract system, and in the idea of mental schemas based on idealisations of known situations. Where we do not already have a schema, Wegener suggested, we impose similes and pre-existing schemas in order to help us make sense of the experience (Nerlich 1990: part 2). These, he said, would gradually become the congruent form. For him, meaning change and variation were the norm and there was a rejection of assumptions of uniformity of meaning across groups. According to Nerlich (1990: part 2), Wegener's theory of language was truly dynamic, interactional, dialogic, and grounded in context. Wegener gives:

“prime importance to the dialogue between speaker and hearer and their collaborative construction of meaning, taking into account the situation, and the mental representations that the interlocutors have of it, as well as their reference to mental schemata and other cognitive structures.” (Nerlich, 1990: xii)

The contextual model as outlined in Wegener is represented in figure 2.

From this background we can see how Malinowski, through his fieldwork, argues that the function that an act has within that context bestows the value and therefore the meaning of that act. Like Wegener, Malinowski worked with the idea that the meaning or value of the unit under discussion is not accessible without understanding its role as social action, rather than as a ‘countersign to thought’ (Malinowski 1923). Having begun at the problem of cultural *valeur* in translation, Malinowski moves out to the illustration of the problem that he faced (the implications of which are teased out in Hasan 1985). Malinowski's example is one of a cultural exchange of shells between nations in the south pacific known as Kula. With Kula, the whole activity needed to be construed as purposeful, as goal directed; yet the activity involved routines and sub-routines, which expressed purposes that do not correspond directly to anything from a European experience. This made the Kula a situation open to the narrow construal of trade in the mercantile sense, or as an issue of the *big*



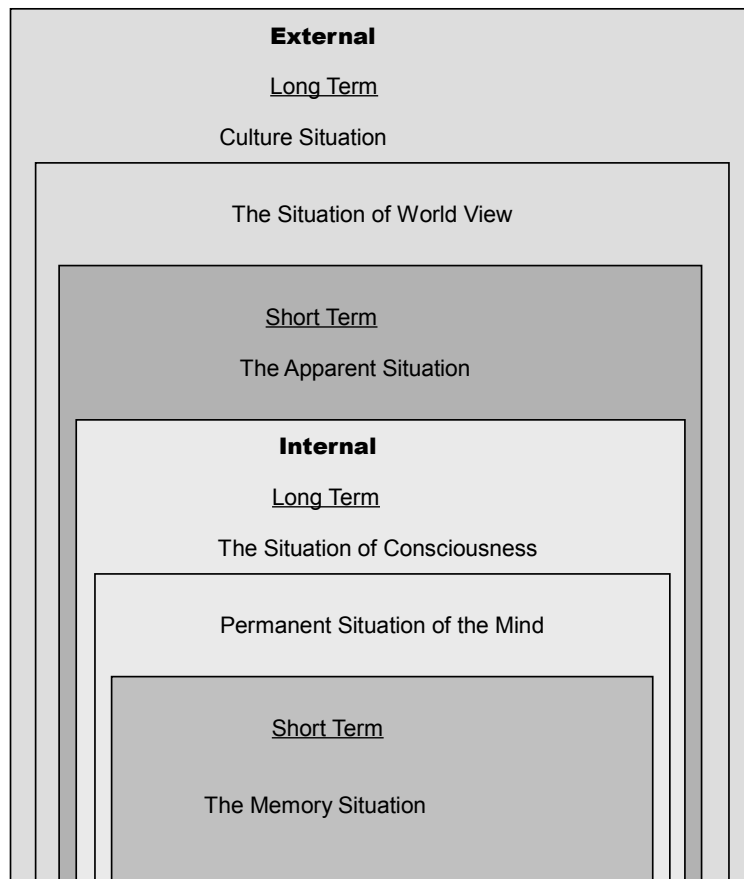


Figure 2: Representation of Phillip Wegener's Typology of Context from Butt and Wegener, (2008)

*man*. It was this temptation to treat the exchange as equivalent to a known and familiar situation that Malinowski was attempting to avoid through his analysis of the total process. According to Paluch (1988: 78-79), the essence, meaning and functions of Kula can be worked out only from the whole cultural system, of which this institution is just a part (Paluch 1988: 78-79).

The approach is inherently organised around process or dynamism (despite the copious notes pertaining to individual words etc.), since it was, in essence, a semantics based on "a pattern of life" (Wittgenstein 1953; Hasan 1996: 1 and x-xx). It is also prepared for by Wegener's idea that there is a co-construction of meaning in situation, that is, that language needs to be considered and studied as social action. In fact, the subtleties of Kula cannot be brought to closure today (semiotic patterns do not offer a statute of limitations). Malnic (1998) tried to interpret the idea in her 10 years of work in the Trobriand Islands. Her interpreter, John Kasaipwalova (poet and Kwenama Clan chief), highlighted a "discipline and moral order in the created experience between two personalities" (Malnic 1998:31). The work confirms and extends

Malinowski's early view that the process of Kula interconnects diverse public behaviours and personal states of mind.

#### 2.4.5 *The work context does in theory*

The role of context in Firthian and Hallidayan linguistics has been widely misconstrued by linguists working both outside and within the functional tradition. Langendoen (1968), in his review of the 'London School', treated the concept as a platitudinous sideshow to the developments in America during the 1960's. Lyons (1964) did not credit 'context', or Firth's other central concepts, with making a significant contribution to semantics. Some introductions to Systemic Functional Linguistics (e.g. Butler 1985) appear to extract little value from the concept of context. Other commentators, in a distant echo of Bloomfield's (1933) attitude to the study of meaning, see the concept as diffuse, unmanageable and implausible in a scientific enquiry – hence as 'transcribing infinity' (viz. Cook 1990).

Because linguistics has for so long failed to promote context, many researchers have maintained and elaborated some cognate term from a parallel academic tradition (for example, in anthropology, rhetoric, stylistics, and typological work). In fact, although it was the breeding ground of early approaches, linguistics or at least many linguists working within the field appear to have turned away from a need to describe meaning, passing the task over to an assortment of tools variously devised and imported from other disciplines. As pointed out by Levinson (1983: xii), pragmatics was undertaken, de facto, by researchers like Malinowski and Firth, and has recently acted as a corrective to the 'stark narrowness' of Chomskyan linguistics.

Malinowski's work with context showed that contexts of situation were by no means obvious or explicit from the language exchanged, and that certain aspects of a culture may relate to each other in ways that were not immediately apparent, nor ultimately tractable (viz. his 6 versions of explaining Kula, as mentioned in Malinowski 1961). His work also showed that it is possible, and indeed necessary, to work with context in a systematic way in the field. In moving toward this systematicity, the idea of function is important in achieving a theory that allows linguists both to manage complexity, and to move beyond description to what we would now call modelling. Malinowski presented cultures as stable synchronic systems, with the consequence that the theorisation of change became a flashpoint of debate much as it became an issue of criticism for Saussurean theory in linguistics (viz. the Russian criticisms cited by Firth 1957, and set out in Volosinov 1928/1973).

## 2.5 THE PRESENT STATE

Traditionally Systemic Functional Linguistics has arisen from British roots, although it has since spread to cover vast regions of the globe and has certainly been influenced by ideas from many different parts of the world. In each continent its understanding and realisation is changed to suit the cultural and structural constraints of its environment. This highlights the importance of having an overarching contextual theory of language that allows researchers to point to the socio-political structure to account for regularities of selection. Hence, the nature of developments within the United States and within Great Britain can be explained in part by the differences in social structure and the research communities (i.e. in relation to the social structure more generally). The work of Malinowski and his students branches out in two directions. One branch becomes a form of anthropological description exemplified by Raymond Firth; and the other is demonstrated by the polysystemic functionalism of J.R.Firth. So, on the one hand we have a structure of values represented by Raymond Firth's work, and on the other we have J.R.Firth's multiple systems of value, with context then becoming the word that covers the role a unit plays within each level of description – 'serial contextualisation'. Both Firths consider context from quite different perspectives and for quite distinct goals and objects of analysis.

During the careers of J.R. Firth and Raymond Firth, Malinowski's grounded approach to semantics took form in two crucial disciplines, and with a new generation of linguists (working in the tradition of J.R. Firth at the School of Oriental and African Studies), the Malinowskian insights were developed into a model of language and language variation. The chief contributors to this shift from fieldwork problems to theoretical model were those working closest to Firth and then to Halliday.

2.5.1 *Moving on from Firth*

The gains made by Malinowski and later Firth were taken forward by a number of different researchers working within a functional approach to language, resulting in various degrees of abstraction and movement forward on the notion of context. In a short, precise explication, Ellis (1966) places 'context of situation' in the overall structure of Firthian theory. Ellis is not focused on a working example, nor on the paradigmatic or syntagmatic details. Rather, he sets out the way the different levels of a neo-Firthian model are integrated as interlocking statements at different levels (of application) and at different 'angles' to interaction. His rep-

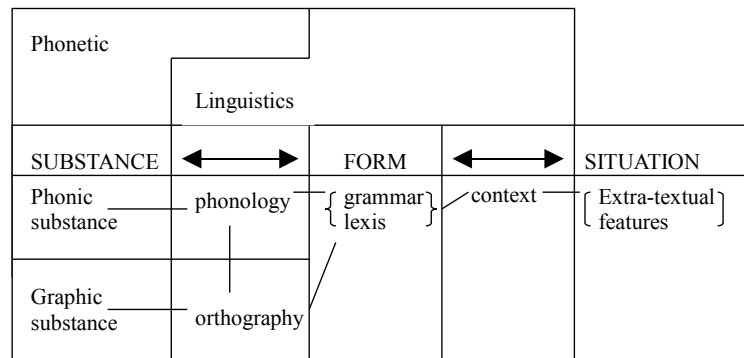


Figure 3: Levels of Linguistic Analysis: from Ellis, J. (1966:79)

resentation of the Hallidayian model of language is presented in 3.

In Mitchell's (1958/1975) study of 'Buying and Selling in Cyrenaica', there is an application of Firth's approach. The social situation becomes another level of description that is "somewhat different in its level of abstraction from other levels" (Firth 1950/1957; see also Mitchell 1958/1975), but one of the spectrum of patterns that needs to be accounted for in the study of language, much as white light consists of the different wave lengths of the colour spectrum.

Mitchell's (1958) method is not systemic as we understand it today; it brings out the dyadic nature of context, the distinction between persons and personalities, and the difference between factors which are obligatory and criterial (i.e. 'technical') as against those ('non-technical') which may be operable in the context of buying and selling and transferable to other contexts, but which are non defining in a given instance. The setting (what Hasan (1973) was to call the 'material setting') cannot be mistaken for the 'context of situation' on the grounds that 'presence' is not necessarily 'relevance' (thereby anticipating much later work in systemic linguistics and semantics). Following Malinowski, Mitchell pursued further distinctions like those between object bound language and locale specific language.

If the Firthian concept of a 'restricted language' (which evolved into the more abstract 'register' of SFL) has to bear greater responsibility in the development of a social linguistics, then there is clearly a need to order the types of texts, by analogy with the classifications that most sciences must undertake in order to bring method to a community of researchers. Ure (1969) addressed this problem of text types by developing a matrix which sub-classifies by functions, participants and modes of delivery. By contrast with traditional taxonomies of genre, Ure (1969) emphasised spoken discourse in line with needs of contemporary linguists.

Halliday's work both continues Firthian tradition and initiates a new period in which the systemic and sociological responsibilities in Firth's methods are integrated in terms of contexts, functions and semantic varieties. The reconciliation of Firth's 'poly-system' and Malinowski's 'context of situation' is the core of Halliday's semiotic model of language (1974; 1978). The tool value of the model includes the way it takes in descriptions from all contexts (from child language to stylistics) and incorporates the profiles in the statistical and paradigmatic descriptions. Halliday, influenced by both Firth and Malinowski, has modelled culture as a complex network of cultural systems existing in a specific relation to language. Because the primary interest for Halliday was the relation to language, elaboration of the systems has centred on its intersection with language. However, steps are being taken (see for example the work of Hasan, Butt, and others working in the area) to expand on our understanding of culture as a complex network.

Systemic Functional Linguistics (SFL) represents the fusion in theory of structuralism and functionalism. Far from being in opposition, structure and function form a dialectic; structure functions and function begets structure. A significant tradition of functionalism can be seen to come to SFL through Malinowski and the anthropological approach in Britain (Butt 2001).

The European influence of Malinowski's functionalism and Saussure's structuralism merge in the theory of Firth and later Halliday and others (Hasan 1985). Neither Firth (1890–1960) nor his student Halliday accept the Saussurean legacy of dichotomies (langue: parole; synchronic: diachronic); however, the fundamental relationalism of Saussure's work contributes to the 'polysystemic' perspective of the British linguists, and also to the idea that the meaning of a unit is the function of the unit in its 'context' at all levels (Butt 2001). This leads to a double use of 'context': 1. as one level of description in Firthian linguistics; and 2. as a perspective on the relations within each level of description (Butt 1996). Rather than view structure and function as oppositional, it is more fruitful to consider them as two halves of the one approach.

### 2.5.2 *From a theory of culture to a model of register*

Context, when used as a technical term in human sciences, is neither transparent nor self-evident in its contribution to theory. The introduction of the notion, as a necessary level of semantic description, came out of the general movement 1890–1920 that placed the scientific study of human cultures alongside other sciences. The necessity of context became apparent to Malinowski, and others, when such early anthropologists confronted

the non-transferability of crucial meanings across cultures, despite the supposedly universal conditions under which human beings lived. The assumption of 'simplicity' amongst 'savage races' was also contested as the non-equivalences in translation drew researchers on into more delicate distinctions and connections within the community under investigation.

Malinowski's (1923) 'context of situation' and 'context of culture' drew attention to the methodological imperative of establishing meaningful behaviours only as they functioned in larger frameworks of cultural values and purposes. Malinowski's imperatives concerning context have now become the motivation of a linguistic model in which paradigmatic organisation (of co-dependent options) provides a new opportunity to describe a cultural context in its own terms. The pragmatic axiom here can be thought of as: what one can mean is what one can do in the specific social order. Such an axiom subsumes the methodological uncertainty of semantics – viz. Saussure's (1974) 'valeur' (though at a different level of abstraction); Wittgenstein's (1972/53) 'patterns of life'; and Whorf's (1956) 'fashions of speaking'. Currently, in Systemic Functional Linguistics (SFL), parameters and specifications at the level of context are proposed in order to show how certain meanings, and particular forms, are 'at risk' (Hasan 1985) (i.e. they are more probable selections) amidst the enormous possibilities of systemic combination in a realisational model of language.

In particular, with Hasan's (1980; 1995) notion of 'contextual configuration', the systemic properties at the level of context are elaborated according to the same principles that guide the systemic mapping of the lexicogrammar, and of any stratum. The contextual configuration (CC) is made up of the specific settings of field, tenor and mode, motivated by a given contextual description. These settings have to be further specified realisationally, both as a syntagmatic potential at the same level (i.e. as obligations and options of generic structure) and as nuclear and variously probable contrasts at the next level of linguistic patterning (i.e. at the semantics).

Many of the specifications at the levels of context and of semantics are established, inevitably, by evidence drawn from the semantic consequences of choices in lexicogrammar and intonation. Linguistic evidence can only be drawn out by such cross stratal shuttling. So too, Saussure's line of arbitrariness, while bringing out the social convention of the relations between grammar and phonology, does not do justice to the solidarity between grammatical choices and semantic outcomes. Descriptive 'delicacy' at the upper strata of semiotic description (again following Halliday and Hasan 1985) is only possible because the grammatical face of the text permits one to demand motivation as to 'why

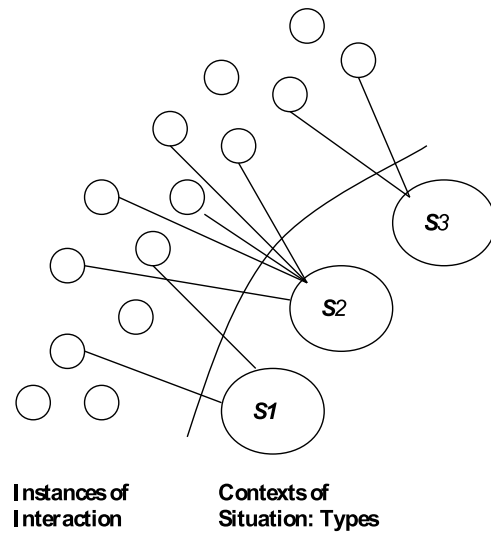


Figure 4: From Butt and Wegener (2008).

this expression and not that closely related one?’ It should not surprise us that the linguist’s task in depicting social process relies on the same hierarchies of inference – from socio-material parameters at one end to the manifestation of sounds/gestures at the other – which we all need to employ in order to interpret our social experience as we are living through it.

### 2.5.3 *Strata and realisation*

The significance of the terms ‘context’ and ‘metafunction’ in a stratal model can be appreciated when we reflect on the ways in which the responsibilities of these concepts developed in the Systemic Functional Linguistics of Halliday. The meaning of a theoretical concept is the work that the concept does in the theory to which it contributes. In this way, it is useful to consider the work to which Halliday puts the terms ‘context’ and ‘metafunction’. In contributing to a realisational model of language (by contrast with a modularised, component based approach), context is a term which mediates between the inordinate instances of meaningful cultural activities and the semantic patterns which realise those cultural activities: ‘context’ is the concept which underpins the ‘semantic varieties’ by which we can characterise situation types. It is the consideration of this realisational model of language that will be addressed in chapter 3 below.

The term context (i.e. context of situation) is the cultural unit of the semantic polyphonies (meaning varieties) which we can refer to as registers. Registers, then, are semantic types (hence ‘genres’) which realise the various transactions we perform to maintain

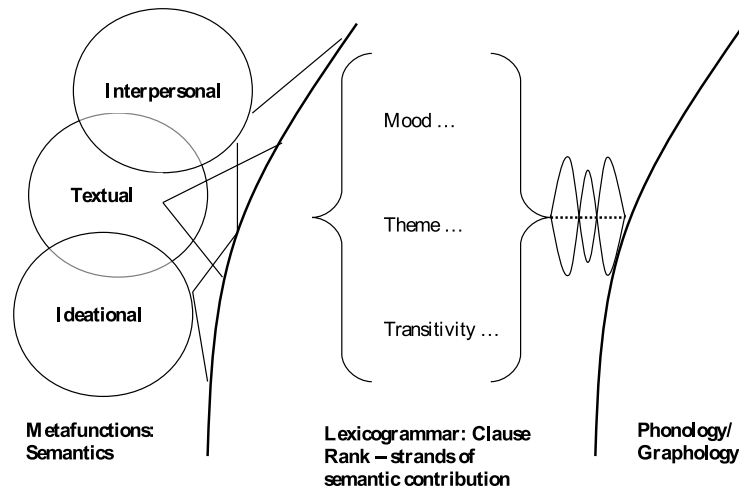


Figure 5: From Butt and Wegener (2008).

our membership of a specific culture. Registers are motivated by cultural context.

Alternatively, when looked at from the direction of the realised, we can say that the contexts of the social order are themselves constructed, or construed, by the specific meaning potential of the register – it is through the specific resources of the language (at that point in its ‘semohistory’) that the context can be fashioned by its speakers.

The ‘situation types’ can be regarded parametrically as particular elaborations of choices across the combinations of field, tenor, and mode. Such generalised parameters assist in separating out the specific strands of meaningful choice which give the context both its instantial distinctiveness and (more importantly, at first) its typological/generic core of tendencies and probabilities. These probabilities, in turn, can be conceptualised metafunctionally as strategies of selection from ‘proximal’ systems of semantic options (i.e. from those semantic options which have the closest, most interdependent semantic consequences).

So ‘metafunction’ mediates between situation and lexicogrammar as a way of interpreting semantic consistencies. This role is best seen as it first emerged for Halliday, namely, from the way it plays out in the lexicogrammar. In working with grammatical systems, Halliday saw that the paradigms of choice themselves tended to cluster around 3 or 4 overarching semantic responsibilities: 1) systems which established the ‘interpersonal’ calibrations of the cultural exchanges; 2) systems which structured the character of experience and connectedness in the situation – its ‘ideational’ content or order; 3) systems which enabled the deployment of interpersonal and ideational choices in the ‘textual’ (and contextual) matrix of the moment.



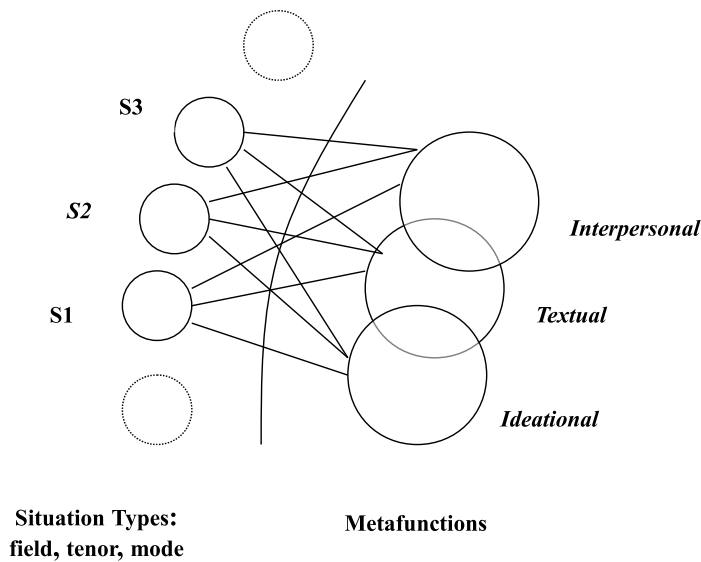


Figure 6: From Butt and Wegener (2008).

When simplified as they so often are, the terms can be misread as stages in a causal sequence. They are not to be read so. The different levels, by which we can discern the consistencies in meaningful behaviour, all happen together as we see in a contextual theory of language.

#### 2.5.4 *A contextual theory of language: some solutions and some problems*

In Halliday's work, an important extension to the Malinowskian legacy has been achieved. Everything in a cultural context may be functional and in that sense, therefore, meaning bearing. But, Halliday is also demonstrating, through the polysystemic mapping of semantic choice, that function (albeit of an abstract kind) provides the optimum way for understanding the internal relations of a language system, not just the externalised tasks to which it is employed. A realisational model is a map of patterns of patterns, all of which occur together on different levels of abstraction – from social configuration to modalities of manifestation (e.g. in sound or writing). This evolved 'happening together' is a key to the power of languages for extending their potential as systems (or, for their speakers to so extend them). Languages are not encodings, but encodings of encodings of encodings. And this emphasises the global technique of Halliday: namely, his method of delimiting the object of enquiry by setting the process of meaning against 5 dimensions. This crucial move towards abstraction lifted the theory beyond a mere descriptive tool and provided it with explanatory power. The value of this move is discussed

in chapter 3 below, where we consider these dimensions and what they mean for modelling context. As will become apparent through considering these dimensions in the chapters which follow, some crucial problems remain especially concerning how context is to be modelled within a contextual theory of language.

## THEORISATION: CONTEXT AND ITS PLACE IN A CONTEXTUAL THEORY OF LANGUAGE

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*“Our schematic constructs must be judged with reference to their combined tool power in our dealings with linguistic events in the social process. Such constructs have no ontological status and we do not project them as having being or existence. They are neither immanent nor transcendent, but just language turned back on itself.”* Firth, J.R. (1957: 181)

### 3.1 A SOCIAL SEMIOTIC

In the previous chapter, chapter 2, we considered some of the historical antecedents to SFL and the general issues surrounding context. SFL as a contextual theory of language can be seen to emerge from the cultural climate and social situation of the era. The discussion in chapter 2 extended up to the period when the notions of context and function were elaborated along the conventions by which other strata in a linguistic theory are modelled, ending at the point where these linguistic principles have been demonstrated in a problem driven model. Halliday was the figure who contributed most to the transition of the terms context and function, that is, to their transition from concepts to dimensions of a working, linguistic theory. The focus of this chapter narrows to consider Halliday’s theoretical elaboration and the allocation of theoretical roles, in particular, our understanding of the dimensions of language. Attention is given to the place of context in a contextual theory of language.

Every theory is built on a set of assumptions and these assumptions shape the questions that the theory sets out to answer. This is not prescriptive, it is merely a case of the categories of language, in this case metalanguage, shaping the way we perceive and think about the world (Whorf, 1954). Indeed, all of language can be considered a theory of the world, so it is of little surprise that our theories shape our questions about the world (Halliday, 1978 – see also Parret, 1974). In linguistics, what this means is that by adopting a certain view of language, we commit ourselves to asking certain questions and proposing certain types of answers (Cameron, 1990). In the case of SFL, those questions and answers are social in nature (Halliday, 1978).

As was discussed in chapter 2, Systemic Functional Linguistics (SFL) is a social semiotic theory that sets out from the assump-

tion that humans are social beings that are inclined to interact (Halliday, 1978). Semiotics is the science of signs (Fawcett, 1990) or the study of sign systems. Halliday suggests that semiotics as we know it today is strongly linked to the ancient Greek stoic philosophers, who, he claims were the first to develop a theory of the sign (Halliday and Hasan, 1985:3). Semiotics, or *semeion*, was originally peculiar to medicine, referring to inference on the basis of some outward manifestation of state (or sign) (Eco, 1984). Hence, the doctor does not require that the patient make a diagnosis, but rather that they present with a set of signs or symptoms, which they as the medical professional interpret. It is this conception of sign that is, according to Eco (1984) carried into our modern understanding of semiotics. We can think of semiotics as a perspective, as a means of looking at anything from the point of view of how it generates meaning (Halliday, 1992:61).

If we take the perspective of looking at anything from the point of view of how it means, we are in the position of viewing all behaviour as potentially meaning bearing, and indeed, all artifacts and even the environment itself (Fawcett, 1990). These different modes of meaning making are all used by humans in their interaction. The broad scale use of different modes by humans does not mean that the different modes have the same meaning potential, since, as Hasan suggests,

“despite overlaps, what can be said through the verbal code is not coextensive with what can be said through the gazing code or the gesture code or the code of dress” (Hasan, 1980).

Each code carries distinct representational capacities which relate to the means of interaction. So, for example, language has the capacity to transcend the here and now with the consequence that its temporal qualities are almost boundless. By comparison, gesture or gaze need some sort of temporal proximity even if this is mediated by technology (for example, technologies such as video enabled mobile technology have significantly enhanced the communicative potential for many Sign language users).<sup>1</sup> These modes, gaze in particular, are heavily oriented towards interpersonal meanings (Hasan, 1980). To see the significance of gesture for interpersonal meaning we need only consider the attempts at iconic representation of aspects of gesture in the form of emoticons.

Variability in semantic potential is not new, after all; Bernstein’s studies showed that different individuals do not share the same

<sup>1</sup> Where once we would have said that modalities such as gesture required a material proximity as well as a temporal proximity technology has meant that neither of these restrictions need apply since gestures can be recorded and transmitted across vast spaces.

meaning potential. The distinction between these two however is that one refers to individuals using a mode and the other to the modality itself. Not having equal access to the full range of meanings in a mode is distinct from the mode itself having a limited potential. Individuals may not have the same access to the mode, but the mode has the same potential whether we access it or not. Here the situation is that the modes themselves do not have the same potential. If this is the case, and certainly it would seem to be, then certain ideas and concepts will be limited to certain modalities; for example, it is not possible to do abstract concepts, or what Hasan (2001) calls decontextualised language, through gestures that co-occur with speech. The implication of this limit on the meaning making potential for different modalities is that they will have a different semantic stratum. They will also have different reactances in the contextual stratum, and may not even have a distinct organising stratum. There is no reason to suspect that each mode should conform to the same dimensional arrangement as language at all. I will return to this point at the end of this chapter.

### 3.1.1 *What kind of resource is language?*

In chapter 2 it was suggested that a discipline sets out to define itself against other disciplines and this definition is as much a statement of what the discipline is not, as it is a statement of what the discipline is. Linguistics has typically been understood to deal with language and the nature and behaviour of language. In saying that linguists deal with language the question of what linguists do has not really been resolved in any meaningful way since it is equally unclear what is meant by language. Most often what is called to mind when mention is made of language is what a child learns or what we might learn as a foreign language. This orientation is more helpful to understanding the nature of our object than it might appear. What we see in language learning is an orientation to the structural aspects of language and this foregrounding of structure is perhaps more obvious in second language learning. After all, “form is significant only in so much as we feel ourselves to be in its grip” (Sapir, 1928/1999:559). Language becomes visible when we focus on it, but otherwise it is almost invisible. As Sapir suggests,

“it can be laid down as a principle of far reaching application that in the normal business of life it is useless and even mischievous for the individual to carry the conscious analysis of his cultural patterns around with him. That should be left to the student whose business it is to understand these patterns.” (Sapir, 1928/1999:558)

Making language visible and understanding the patterns of language is the concern of the linguist.

Halliday (1974:86) sees language “essentially as a system of meaning potential”. So for Halliday then our object of analysis stops at the level of semantics, which is according to Halliday the key to language (1974:87). As Halliday suggests, when we view language from an inter-organism perspective,

“language is being regarded as the encoding of a ‘behavioural potential’ into a ‘meaning potential’; that is, as a means of expressing what the human organism ‘can do’, in interaction with other human organisms, by turning it into what he ‘can mean’. What he can mean (the semantic system) is, in turn, encoded into what he can say (the lexicogrammatical system, or grammar and vocabulary).” (Halliday, 1978:21)

The semantic system is “the meaning potential embodied in language” (Halliday, 1974:86).

But this meaning system is itself a realisation of something higher, or more specifically outside of language, what Halliday (1974:86) calls the behaviour system or ‘a social semiotic’. Halliday expresses it this way:

“I see language essentially as a system of meaning potential. Now, once we go outside language, then we see that this semantic system is itself the realization of something beyond, which is what the speaker can do – I have referred to that as the behaviour potential.” (Halliday, 1974:86)

Interestingly, Halliday has on occasion referred to language as a social semiotic (see for example Halliday 1978). However, in his 1974 account and elsewhere, including the same 1978 text, language is represented as being only one realisation of a social semiotic and it is this later account that we see dominate in the theory. These two views create a tension between whether language is modelled as a mode within a social semiotic or as a social semiotic itself with various modes. Although it is the former model which is taken as the primary representation of language within SFL, it is not uncommon to see other modes represented as sitting within language. This question over the situation of language is a boundary question. For the purposes of the current discussion however, the key aspect, regardless of the question of theoretical boundaries, is the importance given to meaning and the implications of the centrality of meaning for context.

In SFL, context has at least a double usage. Firstly, it is the environment for each system. Thus, the entry conditions for a

system are an environment for that system (for discussion of this use of context see the section on system mechanics below). Further to this use of context, rather than as fully distinct from it, each choice within the system only has a meaning because of its context. That is, its value is contextually dependent. Secondly, context is a stratum within the stratificational model of language (see the section below on stratification for further discussion). Although the first of these uses of context is crucially important for a theory of language which claims to be systemic, it is the second of these meanings that is central to this discussion.

The focus in this thesis is the value of a SFL notion of context, which views context as all the features of a social process relevant to meaning making. These features are traditionally organised into 3 core dimensions of context: Field, Tenor and Mode, where **field** is “*the nature of the social activity...*”, **tenor** is “*the nature of social relations...*”, and **mode** is “*the nature of contact...*” (Hasan, 1999). Although it is a contextual theory of language, context, in SFL is itself one of four linguistic levels, which are related realisationally rather than causally, meaning that patterns on one level both construe and construct patterns on another level <sup>2</sup> Here the complexity of language is managed by modelling it as a multidimensional system. The importance of the elements of this multidimensional system as they relate to context is discussed below.

### 3.2 DIMENSIONS

Although context is the primary concern, it is necessary to understand how context as a concept is positioned within the overall theory of SFL, and as such I want to set out from a discussion of what it means to organise a theory according to dimensions. Dimensions are typically defined as the descriptors necessary to adequately account for an object. Dimensions are potentials in space, and objects exist in these dimensions by realising some of these potentials. So for example, if we think of geometry, we have the dimensions of height, depth, width and mass. Note here

<sup>2</sup> I will discuss this further under realisation, however, as Halliday (1992:358) suggests, metaredundancy explains the stratal organisation and the semiotic principle of realisation “by treating realization as a relation”. This relation as Halliday (1994:254) explains is a dialectic relation. “A text **is created by** its context, the semiotic environment of people and their activities that we have construed via the concepts of field, tenor and mode; it also **creates** that context. The relationship that we refer to as *realization* between *levels* of semiosis – situation (doing) realized in semantics (meaning), semantics realized in lexicogrammar (wording), and so on – is a dialectic one involving what Lemke (1984) interprets as *n*-order metaredundancies. A semiotic event is an event on many levels” (Halliday, 1994:254) (original emphasis). Hence, the relationship of realisation as theorised through metaredundancy is both multifocal and bi-directional, or better dialectic (Hasan, 1996d:110-112).

that an object is primarily a stable entity, that is static and 'real'. As this term is employed in theory, it takes on an essentially metaphorical use, since the object in this case is neither static nor real in that very concrete sense of the word.

The concept of dimensions has a variety of uses in different domains, and as it is employed in SFL it most closely approximates the meaning given in Euclidean spaces. Within Euclidean spaces, the meaning for dimensions is quite specific and refers to "the numbers needed to describe each location" (Simon and Blume, 1994). Within the understanding of dimensions used in Euclidean spaces, description is always from a particular vantage. That is, the numbers needed to describe a location are always skewed to the particular thing that needs to be described and the particular angle from which it is being viewed. The notion of a variable vantage is useful to recall when we turn our attention to meaning and context where we might add the further qualification that description depends on the reason for viewing as well.

Within linguistics and within SFL in particular, the object of our analysis is likely to vary. Semiotics, as outlined above, is concerned with considering anything from the point of view of how it makes meaning. Consequently, in semiotics the object of analysis is meaning though often limited to the sign itself as an isolate (Halliday in Halliday and Hasan, 1985:3). Since as Halliday suggests, SFL is a social semiotic, the object of analysis within SFL is also meaning, albeit a specifically linguistic meaning. Thus, the dimensions of language are more rightly the dimensions of meaning. Although we are dealing here with a muddiness of terminology and the same semantic fuzziness that we are trying to describe in our theory, language as a term in theory has a closer affinity to structure. I will return to this point below, however I want to raise here the potential we have for different representations of the theory.

In figure 7 we see a representation of a stratal arrangement where neither context nor semantics are shared between the modalities. In effect, each modality is a separate system of its own with no interaction. In figure 8 we see a representation where the context is shared between the modalities but the semantics is only partially shared and potentials only overlap to some degree. Figure 9 by comparison has only partially overlapping contexts and semantics that are not shared or truly independent. Figure 10 has both a shared context and shared semantics but separate structures for each modality.

The problem of dimensions is closely connected to complex systems, and I will come back to this point below when I discuss systems in SFL. However, having raised the possibility for diversity in what the dimensions refer to I want to raise another possibility. If dimensions change when our object of analysis



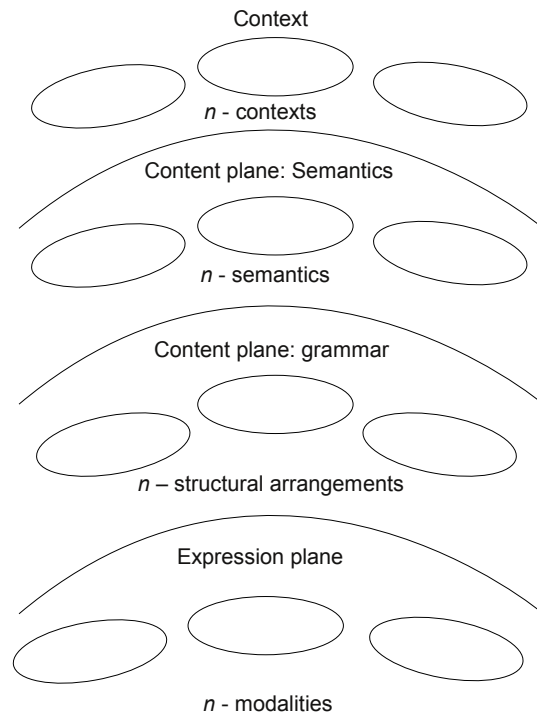


Figure 7: Stratal variation with individual context and semantics.

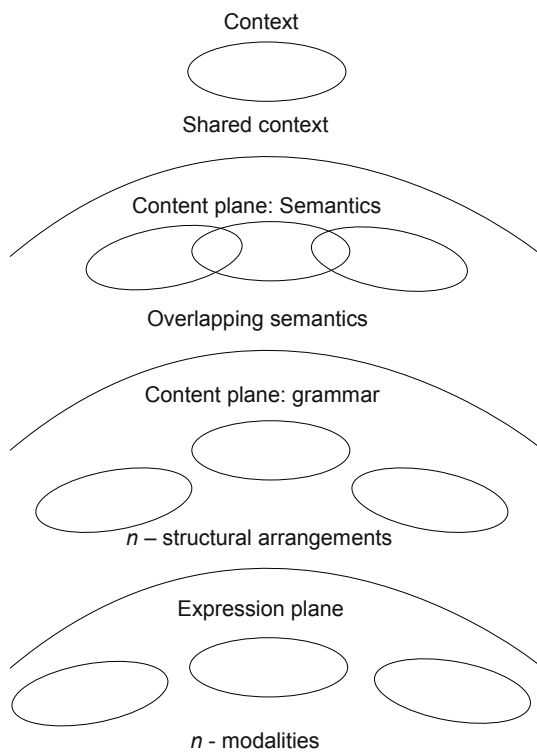


Figure 8: Stratal variation with overlapping semantics and a shared context.

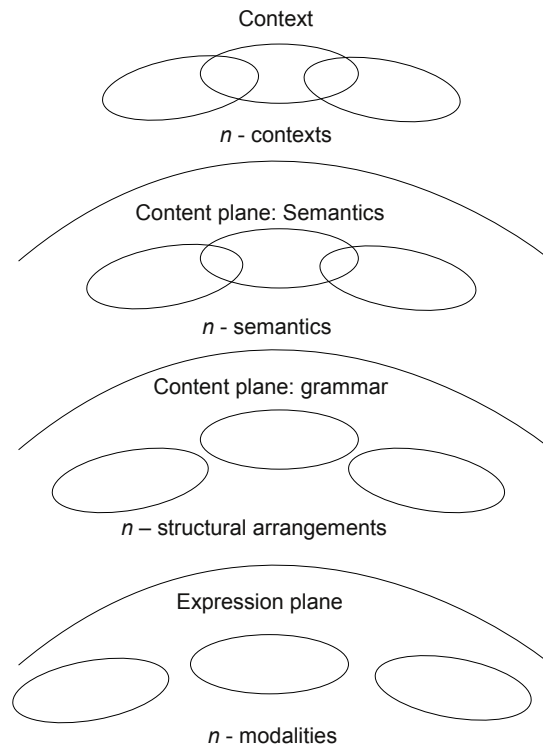


Figure 9: Stratal variation with overlapping context and semantics.

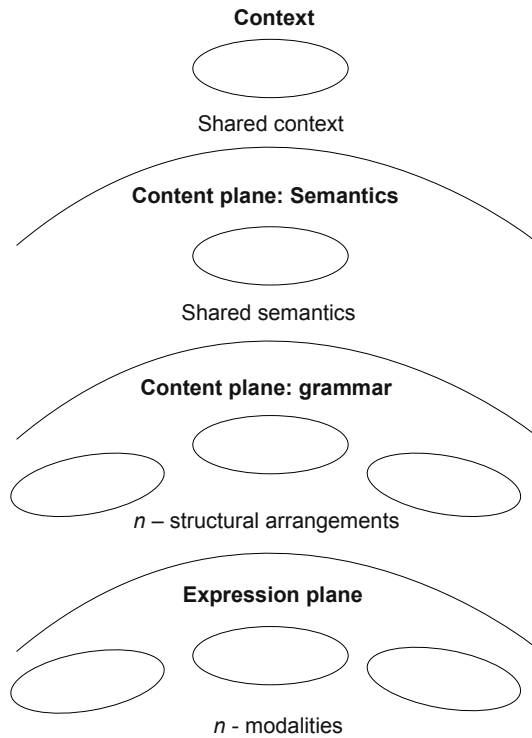


Figure 10: Stratal variation with shared context and semantics.

changes, it is quite possible that although the dimensions for meaning might be one set of concepts, the dimensions for our new object might be another. What this means at the level of context is the descriptors needed to adequately account for a context may vary dramatically, although as we will see, ‘a context’ is a different object to those usually described by dimensions.

If we follow this argument, it suggests that different theoreticians of context may very well consider more or less dimensions necessary for the description of context as indeed is language. This argument also suggests that the dimensions necessary may vary considerably depending on the context being described and the questions being asked (or the job it is being required to do). As Halliday (1974) suggests the way we understand language depends on the task to which language is being put.

In a discussion of functions of language (for further discussion of this see the section on metafunction below), Halliday (1974) suggests that when language is being used to answer other questions such as questions about culture (e.g. Malinowski) or questions about society (e.g. Bernstein) or about the individual (e.g. Buhler) then it is quite possible to have many different functions. This is because here language is being used to “throw light on something else”. However, it would seem that, given the definitions of context and problem, there are a certain set of dimensions which appear to be necessary to the description of most contexts and most research questions.

### 3.2.1 *Dimensions of Language*

Within the SFL perspective, five dimensions that are frequently invoked in dealing with language are: metafunction; instantiation; stratification; system and structure (Halliday and Matthiessen, 2004)<sup>3</sup>. Halliday and Matthiessen (2004:20) represent these dimensions in the following table, describing the dimension, its organising principle and its orders.

These dimensions are also frequently represented in the form of a perspectival figure, which shows the dimensions from the point of view of instantiation seen in figure 11. In figure 11 we see in the foreground the system view of language, and its grounding in the instance.

I will return to these dimensions, however, for the moment, let us consider context. Context in SFL is organised into a metafunctional triple of field, tenor, and mode. Field encompasses the

<sup>3</sup> Although it is interesting to note that the importance of these dimensions has not always been obvious or explicit prior to the Halliday and Matthiessen 2004 publication. Previous statements of the dimensions were not as structured as this statement and did not lay out the relationships in the same way. Central to the discussion of dimensions as laid out in Halliday and Matthiessen (2004) is the question of realisation and its place in the theory.

Table 1: The dimensions (forms of order) in language and their ordering principle from Halliday and Matthiessen (2004:20)

Dimension	Principle	Orders
Structure (syntagmatic order)	rank	clause~group or phrase~word~morpheme
System (paradigmatic order)	delicacy	grammar~lexis [lexicogrammar]
Stratification	realization	semantics~lexicogrammar~ phonology~phonetics
Instantiation	instantiation	potential~sub-potential or instance type~instance
Metafunction	metafunction	ideational[logical~experiential]~ interpersonal~textual

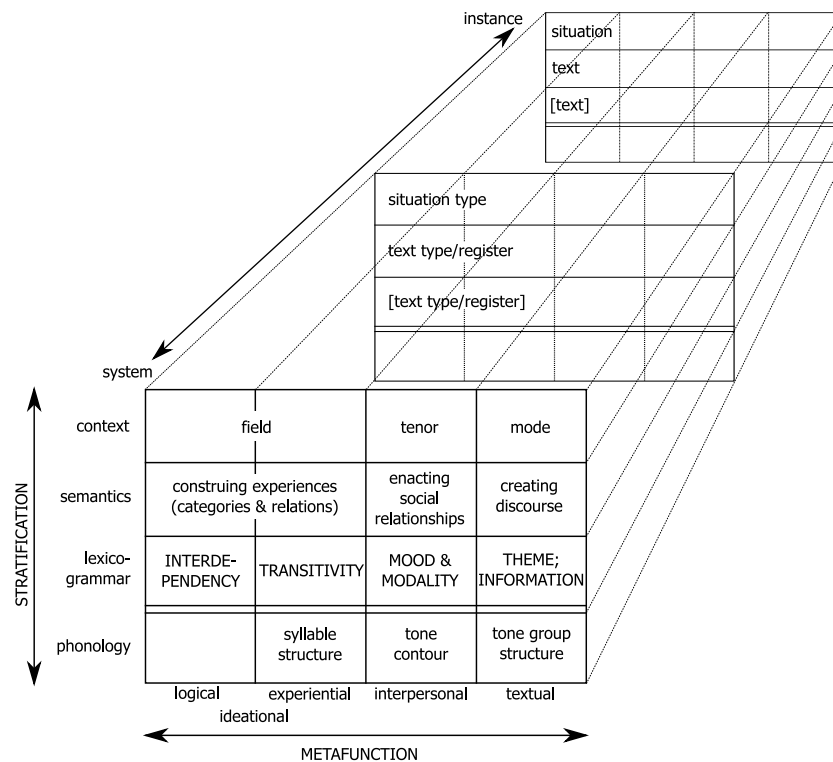


Figure 11: The dimensions of language – Halliday and Matthiessen (2004).

activity going on, tenor the relations between the participants involved, and mode the nature of interaction. As mentioned above, these might be considered to be dimensions in the sense that they are understood to be the descriptors necessary to adequately account for context. These categories are reasonably common across most models of context in one form or another. This is relatively surprising given that, as Halliday (1974) suggests, many of these models are using language to answer other questions and indeed some are not interested in language as such at all, merely in context.<sup>4</sup> Whether or not they are expressed in this way, most models will attempt to cover aspects of the activity, the participants and the structure of the context. Of the triple, mode is perhaps the least likely to be included in a description of context, although aspects which are typically covered under mode are included in other models of context. The reason for this, as we will discuss further in metafunction below, is that mode relates specifically to language. Mode is the means by which language interacts with the context to create text (Halliday, 1974). It is a specifically linguistic function and relates to autonomous linguistics.

Theorising language in context poses some interesting challenges, and I want to discuss some of the issues that a dimensional view of a contextualised theory of language raises. Looked at from the point of view of language, Field, Tenor and Mode approximately realise the dimension of metafunction at the level of context. Realise is perhaps a poor choice of word in this situation since it is a theoretical relationship that I refer to and a better word might be reflect in that they reflect the metafunctional arrangement at each level and are arguably the cause for the metafunctional arrangement at each level. Field, Tenor and Mode are also parameters of context and the metafunctional arrangement can perhaps be thought of as parameters at each level. Parameters, as will be discussed further in chapter 4, would seem to relate to the dimension of system, in that they reflect aspects of specificity. So there is an interesting relation between structure and function suggested in the notion of metafunction and I will return to this point below.

We do not as yet have an adequate or at least consistent account for the dimension of structure at the level of context as it pertains to compositional hierarchy. Halliday and Matthiessen (2004) imply (and this is perhaps because their focus is on the grammar) that both structure and system relate specifically to the lexicogrammatical stratum, yet Halliday (1974) states that “the

<sup>4</sup> Although it must be said that where context is treated as a separate entity from both social structure/system and/or language, these aspects are included in other ways and as such manage to form some sort of unity. Very few people really look at context simply for its own sake. Context is almost always part of answering another question.

underlying organisation on each level is paradigmatic" and this means that organisation on each level is a set of interrelating systems or networks. Admittedly, for Halliday 'all levels' typically refers to semantics, lexicogrammar and phonology so context quite possibly falls outside this question.

In addition to this, the treatment of structure seems to have changed in the Halliday and Matthiessen (2004) discussion. Halliday (1974) suggests that structure is an abstract constituency, relating to the syntagmatic concept. Although rank is integral to the concept of constituency and syntagmatic order, it would seem that they are quite distinct patternings. Halliday (1974:88) states

"the output of any path through the network of systems is a structure. In other words, the structure is the expression of a set of choices made in the system network".

The suggestion here is that representation of structure may very well look quite different on each level, with semantics potentially appearing as further networks. At the level of context, if indeed the dimensions of system and structure can be said to apply to context, Hasan's (1999) contextual configuration can be considered to address the issue of constituency in that it represents an attempt to apply the same methods used in the lexicogrammar, although the notion of rank is still unresolved at context at least<sup>5</sup>.

Of the dimensions, instantiation in particular appears as if it relates specifically to context and this is primarily because it is typically associated with the context/register/situation cline as it is represented in SFL. Although Halliday and Matthiessen (2004) represent it as relating to all levels with the order of the instantiation dimension being potential/subpotential and instance the concept of subpotential seems specific to context or perhaps semantics. Strangely, the organising principle for both instantiation and metafunction are instantiation and metafunction, respectively. I would suggest that the organising principle of a dimension can not be a restatement of the dimension. For instantiation, Hasan (2004) has suggested that the ordering principle might indeed be closer to delicacy (see the discussion under instantiation below).

With respect to the question of delicacy, I tend towards seeing delicacy and specificity as both relating to system, or more specifically to the system /structure relationship. I will discuss this issue further, however, specificity can be regarded as the range of discriminations on a vertical axis while delicacy can be seen as depth of discrimination on a horizontal axis. The principle

<sup>5</sup> There is an argument to be made however that resolution of rank at the level of semantics also resolves the issue at context because of the relation between the two

behind metafunction I would suggest is functional abstraction, since as Halliday (1974:93) suggests,

“fundamentally they (transitivity, mood, theme) are the components of the language system which correspond to the abstract functions of language – to what I have called metafunctions, areas of meaning potential which are inherently involved in all uses of language.”

The importance of this statement for context is discussed in the section on metafunction below. The principle behind instantiation is a little less clear. If the distinction is between potential and actual, then the principle might be something akin to actualisation, textification or concretisation. However, Halliday (1974:87) points out that potential and actual are at the same level of abstraction, and that “this is what makes it possible to relate the one to the other”. Hence, the principle is not one of concretisation. Since this suggests different orders of abstraction as does textification and actualisation. There may be theoretical value in distinguishing between instantiation, actualisation, realisation and exponence (see Butt 2008) which I will discuss later. There is a Marxian sense of concretisation which might be useful to employ here – “the concrete is concrete because it is the concentration of many determinations, hence unity of the diverse” (Marx, 1978 trans.), however there are still problems with the distribution of these terms and I will return to the issue below when instantiation is discussed.

Finally, of the dimensions stratification also presents an interesting challenge at the level of context. According to Halliday and Matthiessen (2004), stratification does not include context (thus it is not a level of language), yet, context stands in a realisation relationship to semantics. Semantics, according to Halliday (1974) and also to Halliday and Matthiessen (2004) is a realisation of patternings of context. If this is the case, and certainly, the metafunctional arrangement would seem to suggest that it is, then this would seem to present a theoretical concern. This issue is further discussed in the section on stratification below.

When we come to an analysis of context, however, it may be that we need to look at the issues of dimensionality afresh. If we are attempting to account for context, not language, but context, our object of analysis has changed and hence, some may argue, so have our dimensions. I want to point out here that I am raising these as options and not necessarily proposing them as solutions. I am in no way convinced that it does make sense to separate out context as a distinct object; on the contrary, I am more inclined to suspect that treating context as an object in its own right leaves the theoretical door open to making context too artefactual.

Nevertheless, it is worthwhile considering this possibility and the reasons why it may not be such a good idea in order that claims of neglect may be countered. It could be that one of the strengths of the SFL approach is that context is not an object in its own right. Rather, within SFL, context is typically seen to be aspects of the culture as they are relevant to meaning, making meaning very much the centre of attention in any consideration of context.

To treat context as an object means considering all of context and this is a concept that is too vast for an adequate account. If context is treated as the object however, it is necessary to reconsider the dimensions, since the object of analysis has changed. This raises the further question, if we can make context a separate object, can each stratum be considered as an object in its own right? This makes more sense for semantics and context, since they are distinct from the other strata in their nature, being the only two which have a dual usage. If language (i.e. linguistics), rather than meaning (i.e. semiotics), is the object then we need to consider if our analysis is in some ways at risk of becoming oriented towards structure because language, unlike meaning, lends itself to a focus on the organisational and structural issues. A focus on language as our object of analysis also separates out the different orders of meaning in such a way that their relationship to each other loses focus. For the moment I will work with the focus on language and consider the dimensions of language as presented in Halliday and Matthiessen (2004).

### 3.3 STRATIFICATION

When we consider a complex phenomenon such as language, we are confronted with different orders of complexity. Most theories of language have separated language into levels of various kinds, recognising these different aspects of language, even if the separation is only between what is referred to as micro and macro linguistic organisation. If viewed from a transformational generative perspective attempts have been made to address this complexity through the notion of components. This approach has been summarised in Steinberg and Jakobovits, (1971), Lyons, (1968) and more recent attempts in Anderson and Lightfoot (2002). Other linguists have used the notion of stratum, for example, Lamb, (1966) in his stratificational linguistics suggests the need for many strata, the number necessary varying from language to language. English, he suggests, may be considered to require 6 strata. Although, as Lepschy, (1970:121) points out, much of structural linguistics takes a monostratal approach, which views the relationship as being one in which "language relates sounds to meanings". Lamb, Pike and Halliday have taken a stratified approach to language. Each of these has addressed the issue in



a different way, but all imply that the language does not make meaning by relating sounds to meaning directly. I recognise the value of a discussion of the various approaches to stratification, however, there is not enough space in the current work for such a consideration. While the authors listed below do not focus exclusively on the idea of stratification, or even the organisation of linguistic theories, further discussion of stratificational and structuralist approaches can be found in Lepschy, (1970); Lyons,(1968) and Parret, (1974).

SFL uses a stratified model of language that incorporates the levels of the expression plane (including sound systems – phonetics and phonology, gesture, pixels etc)<sup>6</sup>, lexicogrammar (lexis/-grammar – or wording and structure), semantics (the meaning system) and context (culture and situation – elements of the social structure as they pertain to meaning). Other theories have treated the stratification as a singular split between sound and meaning, thus making it essentially monostratal (Lepschy, 1970). Halliday and Matthiessen (2004) suggest that this monostratal representation is an ontogenetic relic in the sense that, while the child's protolanguage, having no grammar, does resemble this monostratal configuration, where the sound represents a meaning directly, (or, more accurately, bistratal, having a content and expression stratum), the adult language is more complex.<sup>7</sup> Within the adult system, both the content and expression plane become stratified (Halliday and Matthiessen, 2004). Thus, we as adults have access to a meaning potential which is able to "expand, more or less indefinitely" (Halliday and Matthiessen, 2004: 24) allowing us to variously construe our experience and our social relations. In this way, uniqueness is built in, although it is a very socially oriented uniqueness (hence original rather than individual), since to be shared it must be coded (Hasan, 1999).

Halliday and Matthiessen (2004) suggest that it is not only the content plane which is stratified, but the expression plane as well. Thus, where content is split into semantics and lexicogrammar, the expression plane divides into phonology and phonetics. The

6 The expression plane poses some interesting problems for multimodality as discussed above and these have been considered in the work of Moore (2003 and in press). I take the view, as I discuss in chapter 6, that the different modalities may combine in contextually defined and complex ways to form a stratified 'system' of meaning making and that while each modality independently may not have a distinct stratal arrangement that corresponds to the organisation of language, that, within a given context these may work together to create meaning, thus a stratified system.

7 Adult refers in this usage to the language system not to the age at which we make use of this system since, as Halliday suggests, "children grow up and their language grows up with them. By the age of two and a half or even earlier, the child has mastered the adult language 'system', the framework is all there. He will spend the rest of his childhood – the rest of his life even – mastering the adult 'language' " (Halliday (1978:27)

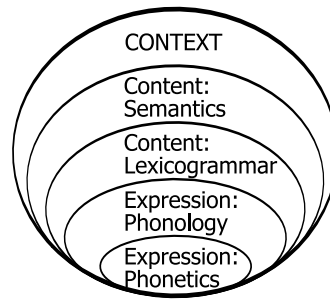


Figure 12: Stratification: reproduced from Halliday and Matthiessen (2004:25).

reason for this they suggest is for “separating the organizing function from the function of interfacing with the environment” (Halliday and Matthiessen, 2004:25). If this is the case, then is it also possible that further stratification is possible at the stratum of context? Do we have an organising function which is separate from the function of interfacing with the sociomaterial environment? If this is the case, then we have a stratum which makes contact with the sociomaterial world (the sociomaterial setting) and one which organises this (context). In many respects this is how context of culture and context of situation comes to be treated, although the distinction here is apparently one of instantiation (see below).

According to Halliday and Matthiessen (2004:26) “the stratified linguistic system is ‘embedded’ in context (cf. Halliday 1978; Halliday and Hasan, 1985; Martin, 1992)”. This may be represented in Figure 12 which is a nested diagram showing the stratification of the linguistic system and its embedding in context.

Figure 12 represents the nested nature of language, showing what Halliday and Matthiessen (2004) refer to as the phylogenetic function motivating the division between content and expression and the strata of semantics, lexicogrammar, phonology and phonetics. What is also indicated here is that context is a stratum within language as well. Although Halliday 1978 and Halliday and Hasan 1985 both suggest that context is in fact outside of language, this distinction is not apparent from this diagram. Certainly context is treated as a stratum within SFL regardless of statements suggesting otherwise. Halliday and Matthiessen (2004:26) for example suggest that “a language is a series of redundancies by which we link our eco-social environment to non-random disturbances in the air (sound waves).” This construal of the relationship would seem to suggest that there is a directional movement from the culture on one side to the biological on the other.

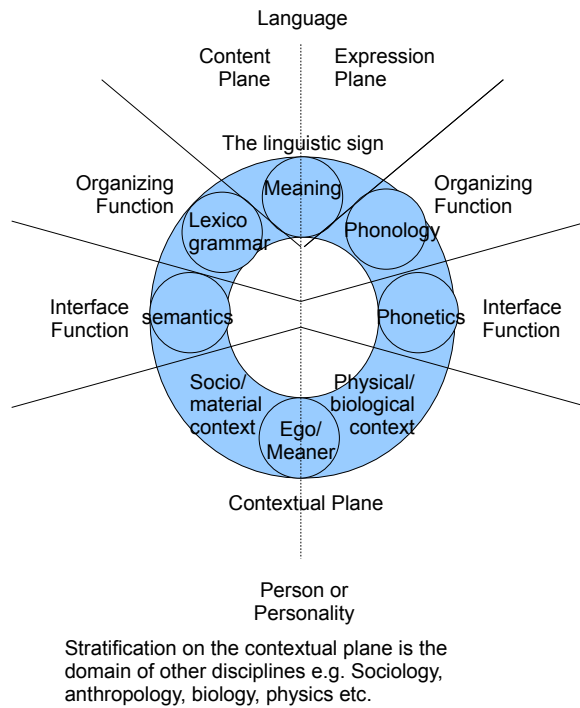


Figure 13: Stratification and the contextual plane representing the union of the social and biological.

The biological and the contextual are logically part of the same plane as indeed the nested circle diagram represents and we can refer to this as a contextual plane, where language meets biology on one hand and society on the other. This perspective is akin to taking the representation of stratification as nested circles and stretching it such that context and biology meet. If we were to pull context out in both directions, so from under phonetics and above semantics, we would see biology emerge below phonetics. The particular structure of the nesting hides the biological because the focus is on the sociomaterial, this being the particular orientation of the theory. If we then take the two ends, context on one side and biology on the other, and represent them as joined together we end up with a perspective as is represented in figure 13.

The stretching of the strata in this way is like looking at language from the point of view of context. This is largely a matter of perspective, if we stand with our backs to biology and move towards social context, asking questions about society and social man, then the social context looms large and the expression plane and hence biological context, becomes less significant, producing the representation as seen in stratification above. Movement in this direction emphasises the special status that the lexicogrammar has since it is the only stratum which has a semiotic stratum above and below it. This suggests it is important in providing

language with the power that it has (Halliday, 1974). Turning towards biology on the other hand the expression plane and hence the biological context are emphasised.

Looking at language from the perspective of context may be problematic since, one of the central ways of limiting the scope of context, both biological and social, has been to view context from the point of view of language, thus context in terms of how it bears on meaning<sup>8</sup>. The representation in figure 13 does not impact on this view, it merely opens it up to reveal the dual dialectic which exists between language and context (extrinsic perspective) and between content and expression (intrinsic perspective). In fact, if it were possible to fold figure 13 in half in two ways we would see the dialectic relations that exist.

Represented in figure 13 is the content plane (lexicogrammar and semantics) and the expression plane (phonology and phonetics). This is set against the functional motivations for the stratification of these two planes; the interface function (semantics and phonetics) and the organising function (lexicogrammar and phonology) (Halliday and Matthiessen, 2004). Since stratification has taken place at the expression plane and the content plane there may be reason to suspect that it has also taken place at the contextual plane. So for example, we might see biological context as akin to the expression plane and social context as akin to the content plane with similar functional motivations for stratification in each, albeit with person or the meaner as the central element rather than the linguistic sign. Although I would argue that any detailed consideration of this stratification lies outside the domain of linguistics since, as Halliday (1978) suggests, at context we are dealing with structural statements which represent the most delicate distinctions of others.

As linguists, however, we are involved in research questions which extend beyond the linguistic realm to questions which are primarily located in the contextual plane and this is particularly true given the focus of SFL on questions which involve going outside linguistics. Thus, we do need to have a theorisation of the relationship of the contextual to the linguistic or at least of how we go outside the linguistic. Although part of the method of addressing such questions will necessarily involve language, given the relation of language to culture (Hasan, 1999), they are not essentially linguistic questions, meaning that they are not within the parameters of linguistic theory. I shall return to this question in chapter 4 where I will discuss the implications of this for modelling context in a contextual theory of language.

<sup>8</sup> Although arguably, the metafunctional arrangement of language derives from Malinowski's configuration of context (Steiner, 1983), suggesting that in fact we are looking from the point of view of context already, albeit, with a focus on the internal organisation of language (Halliday, 1974).

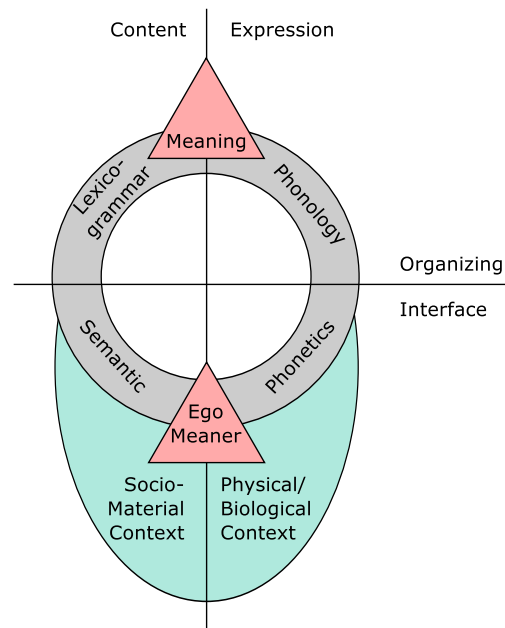


Figure 14: Stratification and the linguistic sign/sign user relation.

We also see in the development of a contextual plane the appearance of the linguistic sign between the content and expression plane and the meaner between the sociomaterial and the biological context. These two related concepts, although intimately connected to stratification, are of a different order. The distinction between stratification and the meaner/meaning relation is better expressed in the figure 13. Figure 13 also better portrays the relation between the two interface strata; semantics and phonetics and their relation to the contextually situated meaner.

The meaner or personality emerges from the union of the biological and the social since these do not exist independently of each other and neither are they independent of language. As Halliday (1978:14) suggests,

“by virtue of his participation in a group the individual is no longer simply a biological specimen of humanity – he is a person. Again language is the essential element in the process, since it is largely the linguistic interchange with the group that determines the status of the individuals and shapes them as persons.”

Context is represented in figure 14 as a plane that includes both the biological and the social. Although Halliday (1978) is very explicit about context being outside language and of a different order, typically, context has been seen as a stratum within a stratificational account of language. This distinction is represented in the diagram referenced where context is seen in relation to, but distinct from the stratificational organisation of the linguistic

system. The confusion here has arisen largely, I would argue, because of realisation and the fact that there is a realisational relation between semantics and context. Halliday (1978:79) explains that the semantic system is a realisation of a social semiotic and while suggesting that there are “many different ways of going outside language” that the semantic system is a realisation of what the speaker “can do”.

Realisation, a concept central to the systemic paradigm, is a question on which there has been much debate and what one might term theoretical dynamism (see for example, Halliday, 1992; Hasan, 1995 and 1996; Lemke, 1984; Matthiessen, 1996; Martin, 1992; Fawcett, 1988; Cloran, 1994; Berry, 1977; Hasan and Fries, 1995 and Butt, 2006). Initially discussed independently of stratification, realisation has in Halliday and Matthiessen (2004:20) come to be represented as the central organising principle behind stratification. Hasan (1996:110-112) discusses the notion that realisation may be seen as being both intra and inter stratal, with Hasan’s focus in this discussion being on the realisational chain.

Table 2: Types of realisation statements from Hasan (1996d:111).

Function		
Structuring	(a) Insert	Intra-stratal: relates facts of different
	(b) Expand	order at the same strata
	(c) Order	i.e. intra-stratal relations
Layering	(a) Conflate	Metafunctional: relates facts pertaining to different metafunctions
		i.e. calibrates metafunctions
Pre-selecting	(a) Rank	Intra and Inter Stratal: relates facts on
	(b) Stratum	one rank to those on another or relates facts on one stratum to those on another
		i.e. inter-stratal relations

Realisation in Halliday (1992) and Halliday and Matthiessen (2004) is prototypically inter stratal<sup>9</sup> Thus, since there is a realisation relation between semantics and a social semiotic (Halliday 1978:79), and realisation is inter stratal, then that social semiotic

<sup>9</sup> The distinction between realisation as inter and intra stratal relates to slight variations in understanding of realisation and the two views are entirely compatible with each other. Thus, while realisation is ‘prototypically’ inter stratal, “we often use the term to refer to any move which constitutes a link in the realizational chain, even one that does not by itself cross a stratal boundary (for example, features realized as structures)” (Halliday, 1992:352). Hence realisation is a shorthand for the entire chain which may be both inter and intra stratal as can be seen in table 2. The central point for our discussion is that realisation is inherent in a stratified representation.

must be a separate stratum. Halliday is careful here to call it a social semiotic and not context. This is perhaps a crucial distinction, and one which I will return to below and again in chapter 4 when we consider the possibility of realisation statements. Having made a sharp distinction between context and the linguistic system, it is crucial to recognise that a linguistic configuration is meaningful because (and only because) it realises a recognisable and construable configuration of socio-material relations. So the distinction between the contextual and the linguistic is very much an artificial one and one which we make largely for analytical reasons.

### 3.3.1 *Context of context: ideology*

Since I have pushed out to the social semiotic, I want to return at this point to the question of ideology. In the previous chapter, the idea was raised that if language is seen as social, then our theoretical representation should see language as inherently ideological. Ideology is one of those terms which, reaching across disciplines, has come to gather so many meanings that, like context it is difficult to define. And these two terms – context and ideology – are intimately connected. Context and ideology are both concepts which frequently need to be invoked in research but which are difficult to motivate with any consistency, particularly in relation to language. Where context may be seen to give species or specifications, ideology is likely to be a semantic drift impacting on all types of text since it is a construal of the social and event structures of daily life (Butt, 2009). Such pervasive motifs can not be avoided since they exist in the small insignificant moments of daily life that we are barely aware of and thus impact on us even when we do our best to avoid them.

Ideology may be thought of as the study of ideas, yet this is not really how it is used. To understand this we need to return to some of its origins. I begin here with Marx because it is from Marx that most of the social approaches to language get their notion of ideology. After all, it was against that biological perspective on language that Marx himself was arguing (Marx, 1867/1976). Marx uses the term ideology largely as a criticism of the universalist tendencies of the economist Destutt de Tracy and the Hegelian Idealists, both of whom he regards as separating the idea from both the social and the mental realm, making it a class of its own above both language and social relations<sup>10</sup>. Thus it comes to be treated as naturally logical and thereby true. Giroux (1981) suggests that Marx never fully developed his treatment

<sup>10</sup> Hence, these theorists were ideologues who, by divorcing the idea from its relation with language and society created ideology – or the study of ideas as an alienable object. A feat for which they were being roundly criticised.

of ideology and he is by no means alone in this claim. It is true to say that it is not possible to isolate a single quote which puts forward a notion of ideology, and given Marx's opinion of idealisation, this is hardly surprising. However, if we consider the themes which run through his work, it is possible to extrapolate from these his conception of ideology (Larrain, 1983).

For Marx, ideology is in a dialectic with the specific mode of production, but often appears in ways that seem natural rather than as a result of, and producer of, capitalism. The archetypal example is the presentation, within capitalism, of the labour exchange as voluntary, which mystifies its actual nature. Under serfdom and slavery, the unpaid portion of labour is obvious, whereas with wage labour the paid and unpaid portions of work are indiscernible, thus presenting the entire expenditure of labour power as an equal and fair exchange for wages. Similarly, profit, the extraction of unpaid labour power (surplus value), appears rather as a revenue earned by capital. Its origin thus seems, superficially, to lie in exchange, concealing its extraction from within the sphere of production.

Superficial appearances aside, it is the accumulation of capital, which, for Marx, is the motivating force under capitalism. Above all, the goal is the accumulation of money capital, or value, money reducing everything to a single unit of measure. Activities and services are deemed unproductive, and their financing socially unnecessary, except to the extent that they contribute to the accumulation of value. If something has no value, the labour that went into it is likewise deemed worthless: the good, service or creation may have a very clear use value, but not an exchange value. To serve accumulation, products must be commodities, possessing not only use values but value. It is for this reason that the pressure towards commodification exists. Under capitalism anything without a clear value will be under threat: either it will not be produced or it will be restructured or transformed.

This brief excursus into a rather economic discourse does have a point. It is here, in the social structure that we find the origins of the ideology that we see in language. They are in a dialectic relation. So, in Giroux's (1981) interpretation of Marx, ideology is on the one hand a system of ideas that distorts reality in order to serve the interests of capital, while on the other hand it is a means of penetrating beyond the consciousness of human actors and motivating change. Much of this mystification process goes on behind the backs of the larger portion of society, not so much because they are deliberately misled or wantonly unaware, but because language as a social phenomenon is all pervasive. Language and thought are not in realms of their own, but only manifestations of actual social life. Thus, they have no inherent veracity or moral imperative (Marx, 1867/1976). But because



they are manifestations of actual social life, we are not aware of the patterning during the conduct of our daily life and nor can we afford to be if we are to maintain smooth social relations (Sapir, 1949). It is in this sense that ideology is both positive and negative. It is a distortion of reality that appears as if natural but our awareness of this is a means of penetrating our daily social processes and thus motivating change.

Kress and Hodge (1979) take up this traditional Marxist approach to ideology, although I would argue have a tendency to idealise it somewhat. They see language as the practical consciousness of a society and that this is necessarily a partial and false consciousness. This leaves room for manoeuvrability over the exact readings of 'partial' and 'false'. Defining ideology as a systematic body of ideas, organised from a particular perspective, Kress and Hodge (1979) thus see ideology as a category comprising sciences, metaphysics as well as political ideologies of various kinds. Ideology they contend, involves a systematically organised presentation of reality which necessarily involves description through language. Hence, presenting anything in or through language involves selection, and selection brings about certain patterning. Language thus becomes an instrument for control and the grammar of a language its theory of reality. So, language here is seen as "the medium of consciousness for society" (Kress and Hodge, 1979). This implies that language is a conduit for thought and that linguistics is a subtle instrument for the analysis of consciousness and ideology in a society without implying anything about its status and reliability as a guide to reality (Kress and Hodge, 1979).

Like Kress and Hodge, Martin (1985) sees any discussion of ideology as necessarily one of language. He conceives of language as a tristratal model with genre being realised in register and register being realised in language. Unlike Kress and Hodge however, he places ideology as a separate stratum within the contextual area. The rationale for this is that any generic choices are inherent realisations of ideology and thereby below an ideological semiotic on the realisation scale (Butler, 1989). Ideology, like all semiosis in Martin's model, can be approached from either the synoptic or dynamic perspective, that is, as product or process. Although their separation is only a logical one, practically they are inseparable, and must be remembered as a whole not as parts. Both perspectives are necessary to give a complete picture of what is occurring (Martin 1985). Looked at from the synoptic perspective, ideology can be seen as a kind of lect associated with a particular group of users. From the dynamic perspective, it is more like a type of language which is adopted when a contentious issue is to be debated. This Martin refers to as ideology in crisis (Martin, 1985).

It is not entirely necessary to make this distinction between the dynamic and the synoptic. Hasan treats ideology as present in both the system and process of language. Thus, it is both synoptic and dynamic at the same time. Taking the most frequently quoted Marxian definition of ideology as "a deliberately misleading system of ideas", Hasan (1986) proceeds to give a reading of this definition saying that ideology is deliberate in the sense that "it arises from sustained social practices" (Hasan, 1986:125). Hasan also states that the process, as Martin calls it, can be deliberate in the way that certain ideologies can be maintained and nurtured deliberately "through receiving a coherent-seeming philosophico-logical rationale in the uncommonsense reflections of a community" (Hasan, 1986:125).

In response to the claim that ideology is a misleading system of ideas, Hasan says that "a system of ideas can definitely be misleading even while it is being supported by an overarching, most clear-sighted-seeming analysis of social phenomena" (Hasan, 1986:125). However, as Hasan points out, this can not be true since it leads the researcher to an understanding of the ideology in question, since if something is universally false it must be true at least in one sense. And here we return to Marx's suggestion that ideology is both positive and negative; being both the reason and the means for change.

The concept of ideology, for Hasan is further defined and specified as diagnostic of the underlying principles that structure the society in which an ideology is both embedded and supportive. Hasan sees ideology as evidenced in the small day-to-day events and activities that people carry out without any conscious reflection. Thus, like Marx, who pointed to the apparent inherentness of certain ideologies in language as being crucial to their continued prominence, Hasan claims that "the most important attribute for the maintenance of ideology appears to be its socially constructed inevitability" (Hasan, 1986:125). It is through language and its dialectic with the social structure that ideology is nurtured and maintained as a "socially constructed system of ideas which appears as if inevitable" (Hasan, 1986: 126).

Ultimately, the claim that language is ideological rests on the stance which is adopted on the nature of language. If we believe that language is bio-genetic, then language as a system can not be ideological as we should all reach the same conclusion as to what is right and wrong, good and bad, true or false, and we do not. If however, language is socio-genetic, then it must have ideology, since, there is a dialectic between process and system. The system is formed by the instance and the instance is informed by the system. If one is ideological, then the other must be also (Hasan, 2001).

Language is dynamic; it is forward moving at the same time as it is rooted in history. Language arises from the impact of the material with the conscious modes of being and thus it is subject to changes in the material conditions (Halliday, 1992). Since they are in a dialectic, change will occur at both ends: the material conditions and the linguistic conditions must change together.

### 3.3.2 *Can we expect a realisation statement?*

According to Halliday and Matthiessen (2004), realisation is the central organising principle of stratification within a SFL theory of language. It is the basis of the systemic organisation, and for Halliday, realisation is a four-way articulation. Realisation 1. construes, 2. is construed by, 3. reconstrues (to bring time in) and finally 4. does it all symbolically i.e. redounds with (Halliday, 1992:352-359).

This realisational relation is one that is inter stratal. Realisation is a central principle of stratification, and because of this we can say that stratified systems might also be called realisational systems (Halliday, 1992 and Butt, 2006). It is abstract in nature, since the strata themselves do not exist in any material sense. Yet as Halliday suggests, realisation is "... a solidary relationship, and the more it can be projected on to context, the more solidary it becomes" (Halliday 1994). Having said this the exact nature of realisation at context is unclear.

Because of the relation between context and semantics (while context lies outside language, it is in a realisational relationship with semantics), there is reason to expect that there will be realisation statements. But there is no reason to expect that these realisation statements will be of the same form or nature as realisation statements between other strata since the system is not symmetrical. The issue here is that

"as long as you concentrate your attention on the core of the linguistic system, on linguistic form (grammar and vocabulary), then the interrelationships that you are studying are – or can be treated as if they were – wholly bounded within language, since their immediate points of reference are also within language: on the one hand the semantic system, and on the other hand the phonological system. But once you become concerned with the linguistic system as a whole, including the semantic system, then you have to look outside language for your criteria of *idealization*" Halliday (1974:82).

The way that Halliday goes outside language is to allow others to answer questions at the level of context. Here he employs Bernstein's (1971) theorisation for two reasons: 1. Bernstein's work is "a theory of the social system with language embedded in it" (Halliday 1974:83), and 2. it examines the function of language in the social system. So, here we have the means of idealisation, as Halliday refers to it, for the semantic system, since, "the semantic system, which is the meaning potential embodied in language, is itself the realization of a higher level semiotic which we may define as a behavioural system or more generally as a social semiotic" (Halliday 1974:86). So with context networks we step outside language to other fields. We will return to this when we examine contextual models in chapter 4, with a focus in particular on how both Hasan and Butt have employed this strategy. I will state here however that this strategy is only possible because both the social theory (Bernstein, 1971) and the linguistic theory (Halliday 1974) are structured around the same Marxist philosophical underpinnings whether explicit or not. Certainly in representing the ultimate realisation of our semantic system as dependent on Bernstein's (1971) representation of the social system Halliday is supporting Bernstein's methodology which as Bernstein says, "used Durkheim and Marx at the macro-level and Mead at the micro-level to realize a sociolinguistic thesis" (Bernstein, 1971:196).

### 3.4 SYSTEM

A wide range of areas make use of systems as an analytical construct and organising principle. This diversity can now be seen in the interdisciplinary concept of systemics and all its variants (e.g. cybernetics, systems theory, complexity and complex systems thinking). Klir (1967), noticed "profound similarities between phenomena in diverse fields" and set out the principles behind systems as a way of explaining this apparent connection. Systems are interrelating entities and may be real or abstract. It should be pointed out however that real systems are not describable and are in fact the object of analysis in most cases, while abstract systems are our means of analysis or our analytic tool. There is also a distinction between natural and designed systems, and again, it should be remembered that natural systems are natural in a limited sense of the word just as real systems are 'real' in a limited sense of the word. Our recognition of a system as a system is an artifact of our analysis not an inherent property. We decide what a system is by defining its boundaries and deciding, for various reasons, what is in and out of the system, what is part of it and what is part of its environment.

Behind the idea of systems is their interaction with the environment in which they occur. Context, or more properly the concept of boundaries, is integral to the organisation of systems. Systems can be analysed both qualitatively and quantitatively. Complex systems theory is perhaps closest to the use to which systems is put in SFL.

#### 3.4.1 *Systems in Systemic Functional Linguistics*

As the name suggests, within SFL, description on each stratum is functionally organised into systems. What this means is that language is represented as a set of choices. Systems represent not what is, but what is possible. In this sense, systems are on the paradigmatic axis of language (Halliday and Matthiessen, 2004 p. 22). Although a student of Firth, Halliday (1974:39-40) suggests that his particular take on syntagmatic and paradigmatic is much closer to Hjelmslev in that he sees the the system as potential and that this potential is coupled with its actualisation. Halliday (1974) sees this as distinct from Firth's notion of the typical/actual that suggests that both paradigmatic and syntagmatic relations are at the same level of abstraction.

While seeing his view as distinct from Firth's in the sense that it is a more abstract representation, Halliday (1974) does suggest that potential and actual are at the same level of abstraction, this being necessary for the two terms to be relatable. This statement would appear to bring Halliday's claim more in line with Firth's claim, however, Halliday's (1974) distinction is between potential and actual, which is, as he says, distinct from Firth's (1957) Typical-Actual. While Firth's (1957) typical/actual distinction might be said to be a statistical relationship of the typical based on the average actual, the potential/actual is a projected potential that may or may not have an actualisation. The potential is an idealised possibility against which the actual is set. Thus, we have a potential, a typical and an actual. The relationship between typical and actual is one of average, while the relationship between typical and potential is one of probability.

The tight interconnection between the dimensions becomes apparent when we attempt to discuss them independently. In discussing systems it becomes clear that the instantiation relationship is integral to a discussion of system. The dimensions behave in an interconnected way much like dimensions in other areas of research. Just as a dimension such as volume is almost impossible to talk about without invoking other dimensions, here system needs to invoke both structure and instantiation. Halliday (1974:101) for example states that "in considering the system as a potential, I personally find it useful to characterise this entirely in paradigmatic terms, and to regard structure, the structure that

underlies the process, as derived from this".<sup>11</sup> This makes it quite clear that there is a tight relationship between structure, system and potential. What is not entirely clear is how this corresponds to the Halliday and Matthiessen (2004:20) representation of the relationship.

In Halliday and Matthiessen (2004), instantiation, system and structure are distinct and in this particular section I will try to focus on system despite the interconnectedness of the concepts. System appears to be being used in a number of different ways. Firstly, there is system as in the language system or the social system or the semiotic or behavioural system. This is the kind of system that Halliday refers to when he says "I see language essentially as a system of meaning potential (Halliday 1974:86). This corresponds to system as potential and relates to the cline of instantiation (see below for further discussion). Secondly, there is system as in the semantic system, the lexicogrammatical system, or sounding system. This is the use of system expressed in the quote "this is what I mean by potential: the semantic system is a network of meaning potential." (Halliday 1974:87). Lastly, there is the meaning of system that is expressed in Halliday and Matthiessen (2004) and encapsulated in the the quote which follows on from my previous citation "the network consists very simply of a set of interrelated systems" (Halliday 1974:87). Halliday continues "the *system* being used here in the Firthian sense, though perhaps slightly more abstract, and making fuller use of his own 'polysystemic' principle" (Halliday 1974:87). It is this final use of system which I will discuss below under system mechanics since this is the closest to the use of system presented in Halliday and Matthiessen (2004:20).

The multiplicity of uses for system do lead to some confusion over terminology. The system which we analyse should not be confused or conflated with our analytical representation of that system. Our analytical system is knowable and finite while the other is not. These are two very different levels of abstraction. The system is essentially our object of analysis<sup>12</sup> while system networks are our means of describing that system. The multiple uses of system as laid out in SFL are represented in figure 15.

<sup>11</sup> Bateman (2008:25-26) has suggested that the focus on the paradigmatic represents one of the central problems with SFL and is a major barrier to the theory being useful in developing automatic parsers. A similar argument has been made in O'Donnell and Bateman (2005).

<sup>12</sup> Although as Halliday (1985) suggests the domain of linguistics or indeed a social semiotic stops short of attempting to account for the social system itself, rather, it draws on the social system as explanation. If we consider it in terms of our model above, then what we have is the parameters for the theory or the bounds within which certain things hold. So, we do not try to explain why the social system is as it is or make predictions about the social system, rather we use the social system to understand language.

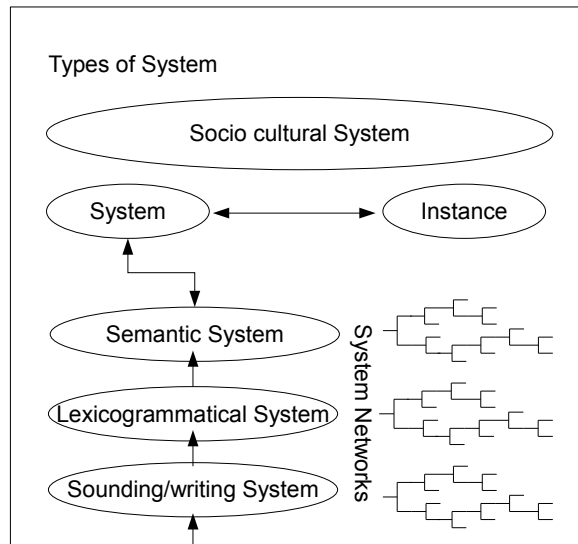


Figure 15: Multiple uses of System within SFL

The question of abstraction also extends to the relationship between system and instance and we will discuss this further below. Within the dimensions of language as represented within SFL the positions of the systems are seen by Hasan (2004) to extend towards instance with the instance being the end point of the system. Within this representation, delicacy is mapped onto instantiation. Mapping delicacy in this way means that systems run from system, or the more abstract representation, towards instance, or the more concrete end of representation. In this representation generality is opposed to delicacy and specificity maps onto stratification. This representation is seen in diagram 16.

Alternatively, it is possible to see delicacy and specificity as being entirely located at system. Here they are seen as an abstraction occurring at the dimension of system. A variation on this is the separation of delicacy and specificity from dimensions and as features of system not conflated onto any dimension of theory. This particular representation sees delicacy and specificity as features of system where system is understood to be either the language system or systems at a level of language rather than the abstract notion of system or the social system as a whole. Hence, in this understanding, while specificity and delicacy relate to the extension and elaboration of systems in general they are only meaningful in terms of description and thus at the stage of modelling. This conception of system is represented in figure 17.

This distinction as outlined above is what Halliday refers to as the line between theory and description (Halliday, 1961/2002); Halliday, 2002). Delicacy in Halliday (1961/2002:58) is described as,

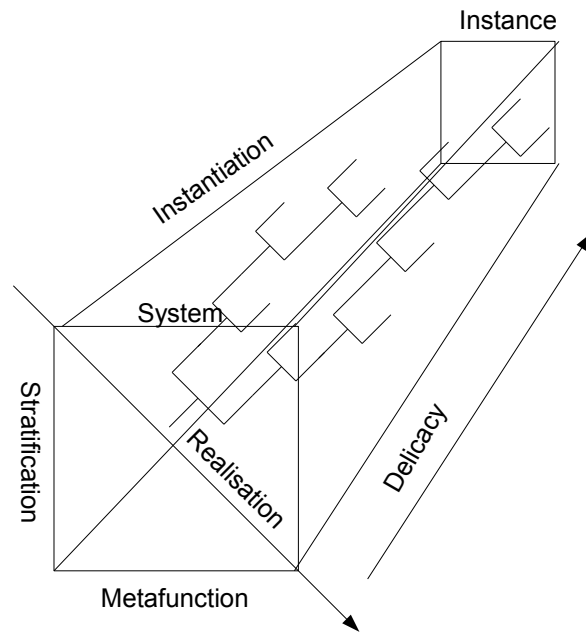


Figure 16: Delicacy seen as extending along the cline of instantiation

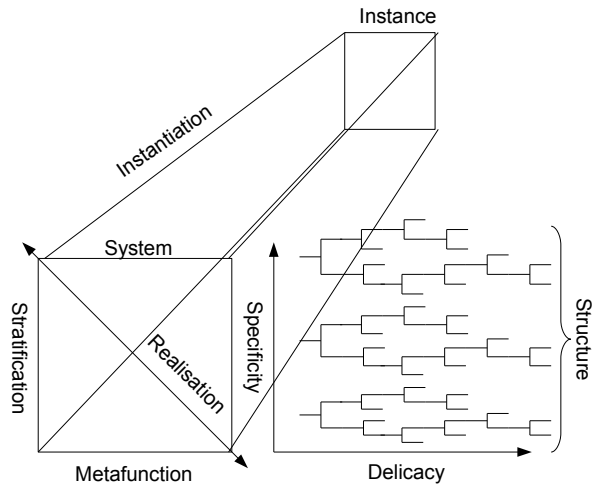


Figure 17: Delicacy seen as a feature of system separate from instantiation and the dimensions of language



the scale of differentiation, or depth in detail. It is a cline, whose limit at one end is the primary degree in the categories of structure and class. In the theory, the other limit is the point beyond which no further grammatical relations obtain: where there are no criteria for further secondary structures, or systems of secondary classes or formal items. In description, delicacy is a variable: one may choose to describe a language without going beyond the primary degree, still being comprehensive in rank and exponence and making use of all the categories of the theory. Each subsequent increase in delicacy delays the move to the exponents and thus increases the grammaticalness of the description. The limit of delicacy is set by the means at one's disposal.

This is a somewhat problematic use of cline and one which appears to have proliferated in SFL. Cline, as it is generally understood in the wider scientific community relates not to degrees of delicacy, but to degrees of relatedness. Hence, cline is more appropriately associated with specificity (note here the relationship to species) than it is to delicacy. There are problems with associating the notion of a cline with delicacy or specificity since specificity in SFL systems are aspects of a system not types of and delicacy is subcategorisation thus neither truly match the concept of cline. Where cline does seem appropriate is in discussing the degree of relatedness between things, be they registers, genres, texts, languages or smaller units such as process types (although here one verges on entering into the problem of delicacy and specificity). The distinction here is that this is not a place in the system but a path through the system or more correctly systems. Thus, it seems cline is a concept most appropriately applied in description not theory.

### 3.4.2 *System Mechanics*

All levels can be represented as networks of options with the networks rendering any degree of complexity by combining 5 primitives:

- **or:** option between X or Y
- **and:** option between X and Y
- **only if:** only if X and Y
- **both:** both X and Y
- **iteration:** re-enter the system and choose over.

For further discussion on this point refer to Hudson (1971), Butt (1999/2004) and Berry (1977).

As well as the primitives outlined above, the organisation of the systems centres around the distinction between 2 crucial elements: parameters and features. These distinctions, like the primitives above, are very general in their usage, however, they are here defined for their specific usage within SFL and may be thought of as being at the level of system mechanics, since they relate to the organisation of networks. They are used in a similar way on all strata, but they have changes peculiar to context.

Halliday and Hasan (1985) suggest, that context is outside of language and is thus a different sort of environment (see also Halliday and Hasan 1976 and Halliday 1978). Context is different to other strata because of the relationship in which it stands to the other strata. Context may be thought of as being in some respects similar to the parameter for all other strata and as such, standing in a distinct relationship. Although, as Firth (1957) suggests, each strata provides an environment, and is therefore like a parameter. Halliday (1974) departs from Firth on this point at least. Where the environment of a system for Firth was part of the structure, for Halliday it is systemic. This is expressed in the following outline of the definition of systems from Halliday (1974:87).

“Let me just define it: a system is a set of options, a set of possibilities ‘A, B or C’ together with a condition of entry. The entry condition states the environment: ‘in the environment X, there is a choice among A,B and C.’ The choice is obligatory if the conditions obtain, a choice must be made. The environment is in fact another choice (and here I depart from Firth for whom the environment of a system was a place in structure – the entry condition was syntagmatic, whereas mine is again paradigmatic). It is equivalent to saying ‘if you have selected X (out of X and Y), then you must go on to select either A,B or C’. The ‘then’ expresses logical dependence – there is no real time here – it is a purely abstract model of language as choice, as sets of interrelated choices.” Halliday (1974:87-88)

By building in values for probabilities we arrive at a weighted description that is customised to the ‘typical-actual’ of a given situation type (or register). Individual situations, roles, or participants can be profiled by their pathways through the networks and/or by the ensemble of options across the levels which are most typically invoked (Halliday and Matthiessen, 2004). And thus we return to our question of the relationship between system, instantiation and structure. This issue will be, at least partially, discussed in the section on structure.

## 3.5 STRUCTURE OR SYNTAGMATIC ORDER

Structure is another term which has many meanings for many people. Structure has been utilised across many disciplines and for very different reasons, meaning, as Halliday (1974:88) suggests, “we may have some confusion here through the use of the term *structure*”. Within systems theory, structure usually defines what a system is made of, or defines a network of many to many relations. Within mathematical logic, it is more like a set together with functions and relations and in social theory it is underlying relatively enduring patternings or relations. Although it is possible to see the underlying connections between these diverse meanings, and this is by no means an exhaustive account, the way the term is employed in SFL is somewhat different and, one might add, various.

As we employ the term in SFL, structure usually defines the output of a system network. As Halliday (1974:88) states,

“the structure is the form of representation of syntagmatic relations. The output of any path through the network of systems is a structure. In other words, the structure is the expression of a set of choices made in the system network”.

The definition of structure as given in Halliday and Matthiessen (2004) varies considerably from the use of structure as outlined by Halliday 1974 and elsewhere. Structure is seen to be organised around the concept of rank. As represented in Halliday and Matthiessen (2004), structure appears to relate only to the level of grammar. Certainly this is where rank has been most clearly elaborated, however, if structure is seen as the representation of choices from systems, and systems are a means of representation on all levels, then it would seem that structure (and thus a rank scale) is also possible on all levels. The caveat here is that for Halliday at least, context does not fall into the stratification of language. However, context does have a realisational relation with semantics and thus we might expect that there is a rank scale in context and that it is in fact the structural output from system networks at the level of context that semantics interfaces with.

Structure is also seen to be a constituency relation and here Hasan’s (1999) notion of contextual configuration and generic structure potential seems to fulfil the requirements for a structural statement. However, the way in which this specifically represents a set of choices from networks at the level of context needs to be explored more fully. This will be discussed further in chapter 4 where we consider some of the different modellings of context within SFL.

Representation of structure is potentially varied on each level (Halliday 1974). While a constituent representation is “an adequate form of representation of the structures that are the output of the lexicogrammatical level” (Halliday 1974:88) there is no reason to expect that this will be the structural representation on other levels since as stated previously, the system is in no way symmetrical. The semantic system for example may have very different representations of structure and context different again. Halliday (1974) suggests that the structural representation of semantics may be some form of relational network.

While social structure is certainly important, and is arguably our means of idealisation at the semantic level, it is function that is perhaps more important in understanding the relation of the linguistic system to the social system. Although forming an integral part of the name of the theory, function in SFL seems to be under utilised as a concept. It is function which underpins the idea of Generic Structure Potential and function which is (meant to be) the organising principle of systems and networks and the underlying organising principle behind context more generally. Within SFL function is most prominent in the form of metafunction.

### 3.6 METAFUNCTION

Metafunction forms one of the core dimensions of language for SFL. In chapter 2 we saw the strong functional roots from which SFL drew its motivation. These understandings of function were largely mathematical in origin. What this has meant is that in SFL we see a distinct line drawn between function as use and a more abstract understanding of function. This separation of function from use is a crucial move in making function do more work as a theoretical concept. Halliday (1974) sets out from the options available to English middle class mothers in constraining the actions of a child. Notable in his overall functional theory is the way that the development of a network of semantic ‘options’ rests on the distinction of ‘use’ from ‘function’/‘metafunction’. Language is employed in a myriad of uses; and the consideration of myriads of such uses leads to a more generalised (though still not general in a mathematical sense), more abstract statement of affinity of purpose – the movement towards generalisation being another necessary step in any account of phonological, lexicogrammatical, semantic or contextual regularities. At the grammatical ‘face’ of purpose, one seeks evidence of co-dependent options (as Halliday earlier found in mapping networks for lexicogrammar). Mood and modality contribute to meaning in a way that is not evident between, say, transitivity and modality. The ‘interpersonal’ work of mood and modality exemplify functionality inherent in the or-

ganisation of the systems of coding. This is not a case of 'bigness' (viz. the earlier 'macrofunction'), but of abstraction (hence, the introduction of 'metafunction'). The term 'sociosemantics of language development' refers to this process, whereby the original social functions of the infant's proto-language are reinterpreted, first as 'macro-functions', and then as 'meta-functions', functional components in the organisation of the semantic system (Halliday 1978: 121).

Macro-functions are a case of generalisations from the social functions of the proto-language, but metafunctions are a grasping of the abstractions that come from experiencing the world and the separation of function from use. An important extension to the Malinowskian legacy has been achieved – everything in a cultural context may be functional and in that sense, therefore, meaning bearing. But, Halliday is also demonstrating, through the poly-systemic mapping of semantic choice, that function (albeit of an abstract kind) provides the optimum way for understanding the internal relations of a language system, not just the externalised tasks to which it is employed. By contrast with Hymes, and even Jakobson, who also developed functional accounts of language, Halliday's 'context of situation' has a place alongside other forms of linguistic statement. The statements most helpful in clarifying this place include Halliday's (1991) discussion of text and context in educational linguistics. The trope Halliday employs is that of 'climate and weather'.

When we arrive at the level of a given context, we are already 'in the culture' – hence, we do not need to proceed to culture. Rather we have the task of elucidating what we find 'there' in the 'typical-actual', as Firth referred to it. Halliday's own practice in this regard appears to be cautious: the investigations which he undertakes are organised around field, tenor and mode (more abstract than Firth's relevant objects; participants etc.). But the variables cited as relevant for any given account of context/text are proposed in relative proximity to the register under description (i.e. around mid points on the cline of instantiation, see discussion of this point in Hasan 1995). Still, the contextual variables permit prediction of the choices 'at risk' in the semantics and in the lexicogrammar.

### 3.7 INSTANTIATION

Halliday uses a tripartite representation of language, which has language as system, language as behaviour and language as knowledge. Language as system encapsulates the abstract structure of language. This accounts for the regularised (although changeable) patterning that we see in language. It is this regularity that makes prediction and a certain degree of formalism

(at least of a functional nature) possible. Language as behaviour looks at the activity of language, while language as knowledge looks at the way in which we know language. But we do not do these things independently. We do not know language as a set of abstract rules. Rather we know language in the sense of knowing how to use it, in the sense of knowing how to communicate with others (Halliday, 1978). In practice these things occur together. When we do research, it is language behaviour and knowledge that we face; yet it is the seemingly inaccessible system that we need to encode in order to produce or predict text.

The concept that encapsulates this problem is what Halliday (1978) calls the cline of instantiation. This is a way of looking at the relationship between System (which at the level of context means the culture) and Instance (which at the level of context means the situation that we are in), although the relation is perhaps not as uncomplicated as this definition suggests.

Instantiation does not have such a wide spread usage across different fields. Relatively restricted in its use, instantiation may be seen as a term in mathematics, formal logic, philosophy and computer science. Many of these usages are related quite closely to each other. Perhaps the most useful for our purposes here is the Aristotelian *Principle of Instantiation* which suggests that a property that is stated must be instantiated (Loux, 2006). Although not strictly originating with Aristotle, the idea was pursued quite strongly in the work of Aristotle (Loux, 2006). The strong realism of the principle as stated here is lost to some extent when we move from pure description to systems theory. This point is discussed further below.

Elements of the principle of instantiation may be seen in the usage to which computer science puts the term and this is perhaps a more useful approach for understanding instantiation in SFL since the realism so evident in the Aristotelian approach has been modified to some extent. Instantiation in computer science relates specifically to ontology development, most often in object oriented programming, where creating an instance of a class is called instantiation.

Within SFL instantiation is at some points, used to map the move between system at one end and instance at the other. The three central notions which relate to instantiation are set out in figure 18.

But these concepts, while related to each other, are distinct concepts. This relationship between instantiation, potential, typical and actual is represented in figure 19.

It was suggested above that a systems theory approach to instantiation is not so laden with realism. Certainly, the concept of system and instance as set out under instantiation in SFL would seem to be a much more abstract notion than that indicated by

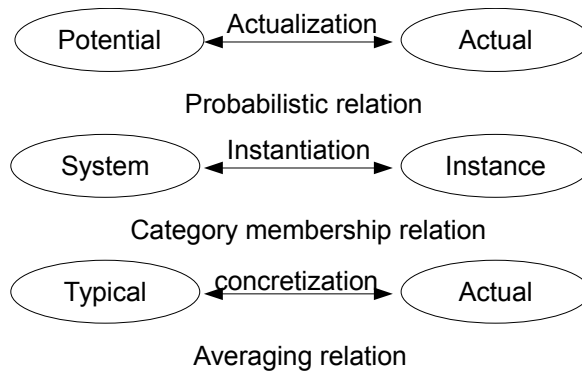


Figure 18: Three clines and their organising principle

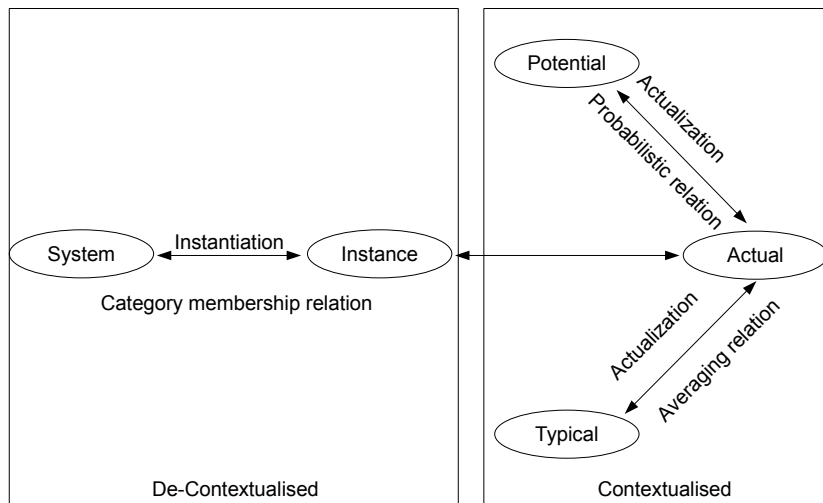


Figure 19: The relationship between instantiation, potential, typical and actual

the principle of instantiation. Because of the nature of a system and the abstraction involved, it may be that an uninstantiated class in a system is the ultimate example of choice or potential. Because the instance is not real in the sense of being contextually locatable, but is rather a representation of a selection from the system, it may be that it is possible to create a text that has no contextual likelihood. Instantiation as a relation is not contextualised. It is, as Halliday (1992) suggests, entirely intrastratal. Because it is intrastratal it does not reach the actual. The actual is interstratal and thus is contextualised. Instantiation is the relation that exists between the theoretical abstract and an instance of that abstraction. As such it can be thought of as a relation rather than a cline. The relationship of instantiation exists between all abstractions and the instance of that abstraction regardless of the level (see footnote for further discussion of this point).

Love (2009) in commenting on instantiation makes the point that

“what is highly contentious is that ‘saying the same thing’ in such a case is to be interpreted as instantiating an abstract invariant, viz. the ‘thing’ ... that has been said twice. Once one makes that reifying move there is nowhere to stop ... at what specifiable degree of enlargement do the differences and gaps begin to matter and why?”

Love’s concern here is an important and genuine one. The issue of reification is certainly one which needs to be addressed in any theory and the concern of comparability of ‘sameness’ is central to the issue of instantiation and indeed several other issues such as congruency and, more importantly, agnation <sup>13</sup> .

Love’s concern here stems in part from a non-stratified modelling of language, which produces a flat analysis of patterns that would otherwise be spread across the strata. Once language is modelled as stratified, the levels of abstraction become clear and we see that there are very definite points where gaps and differences matter and that these matter for a particular reason. As Hasan (1996d) argues, sameness relates only to the category being instantiated and not to other features. Hasan (1996d) draws here on the example of agnation. Agnation, Hasan (1996d:112) suggests, is variable, with “the variability resulting from what is treated as the defining characteristic of the paradigm under focus i.e. what systemic features are required to be in common”.

Love (2009) also raises the concern that through the abstraction involved in instantiation, we run the risk of creating “entities that are merely artifacts of the method itself”. Again, this is a valid concern, however, it is the case with any abstraction that it results in artifacts. Love’s two concerns are connected: by distinguishing between when difference matters and when it doesn’t we need to abstract, but in abstracting we run the risk of reification and creating artifacts. Further, we run the risk of conflating our object of analysis with our method of analysis or analytic tool. This to my mind is a more perturbing problem, however, if we are to theorise at all then we need to take these risks. Language itself shows the history of reification and the creation of artifacts. As an abstract system, an abstract theory of our experience and world, language faces the same problems of reification.

These concerns aside, the notion of instantiation in SFL is entirely non-contextual and located within theory and within a

<sup>13</sup> Indeed, the idea of a potential rests upon the notion that there is a sameness between things on various criteria such as meaning. This makes the determination of a basis for establishing similarity crucial to SFL as a theoretical description of language.



particular strata. Although it has been suggested that instantiation relates to the Firthian concept of “renewal of connection with data” (see Firth 1957 cited in Hasan 1996d), this does not mean that we connect with actual contextualised data. Hasan (1996d:112) states that “there is no valid SE such that it cannot be instantiated”. This statement seems to suggest a return to the realism of the Aristotelian claim, however, she continues by saying that “instantiation is not necessarily something that has already been ‘said/uttered’; it is the ‘sayable’ – what could be taken as an instance of the category in question” (Hasan 1996d:112). This clarification places instantiation firmly within the realm of theorisation and, although Hasan (1996d:112) also suggests that instantiation is not strataally limited, her example, that the same clause could instantiate selection expressions (SE) on various strata, only further suggests that language is stratified and that descriptions on one strata are simultaneous to descriptions on other strata, making the realisational relation more obvious.

In one very limited sense it is possible to see the instantial relation as reaching from descriptions at different levels of abstraction through to the actual contextualised language. As Martin (2006:296) points out in a footnote,

“all levels of abstraction instantiate; so referring to genre and register as subpotentials on the instantiation cline is in fact a short-hand for saying that their realisation in discourse semantics, lexicogrammar and phonology/graphology instantiates too”.

However, the relationship of instantiation is not best represented by a cline, since the relationship of instantiation is between an abstract category and an instance of that category and this is not a relationship of variation. The relationship between instances is better represented as a cline since here the same abstract category may be instantiated by otherwise differing instances.

The variation in instances is represented in Martin (2006) as something that is modelled by instantiation. Martin (2006) refers to instantiation as one of his three hierarchies, these being realisation, instantiation and individuation. Martin (2006:285) draws on the metaphor of climate and weather as set out in Halliday and Matthiessen (1999). Instantiation, Martin (2006) suggests is like the weather; “the capricious flux we experience day to day”, while system is like climate, “the relatively comforting inertia we try to use to plan”. The metaphor leads astray somewhat however, since weather is not “the capricious flux we experience day to day”. Weather and climate are, as Martin (2006) says in the very next line “the same thing looked at in different ways”. This is an important distinction and one that Halliday makes when he says that they are at the same level of abstraction. Instantiation is a relation between the category and an instance of that

category. The 'capricious flux' that we experience is just that, a capricious flux. Weather by comparison is relatively organised since it corresponds to the climatic measures. The problem with this metaphor is the same problem that we have with instantiation for selection expressions at a number of the strata. Once we have selection expressions which take in patterning from across several categories (like weather or any systemically emergent feature such as power) then we have a partial conflation with structure and instantiation <sup>14</sup>.

As a step towards discriminating between the different types of relations that pertain I am proposing that a distinction be made between the two interstratal relations – realisation and actualisation – and the two intrastratal relations – instantiation and exponence. Realisation and instantiation have been covered already, however the further elaboration of these together with actualisation and exponence remain for future research. They are the subject of a paper in preparation based on a conference paper given at ISFC 2010 in Vancouver. Briefly, following Butt (2001 and 1996) exponence is defined as the relation between terms within the same strata. Actualisation is defined as the relation between the actual and either the potential or the typical. To bring in the notion of context we need to move from the notion of instantiation to the notion of realisation and this brings us to register.

### 3.7.1 *Register*

Falling between the system and the instance or the potential and the actual or the potential and the instance is subpotential (Halliday and Matthiessen, 2004). It is subpotential which makes the dimension of instantiation seem particularly to focus on context, although, as we discussed above it relates to all of the strata (Halliday, 1974). Instances that share a similar function, e.g. instances of ward rounds in hospitals, typically share a similar structure. Halliday and Matthiessen, 2004 refers to these situation types as registers and they represent a functional variety of language. The value of register is that we do not have to describe everything. Register can be thought of as an aperture on the culture. So, we are not faced with the full complexity of the culture. This does not mean that we do not keep the culture in mind. Any picture of a part of the system necessarily has the full system behind it. With register we set out from the instance, but keep in mind that each instance is a take on the system. Our notion of what constitutes an instance is shaped by our understanding of the culture/system. So, although Halliday represents the relation-

<sup>14</sup> This issue is covered in Hasan's discussion of realisation mentioned previously where she outlines the relationship between inter and intra stratal realisation.

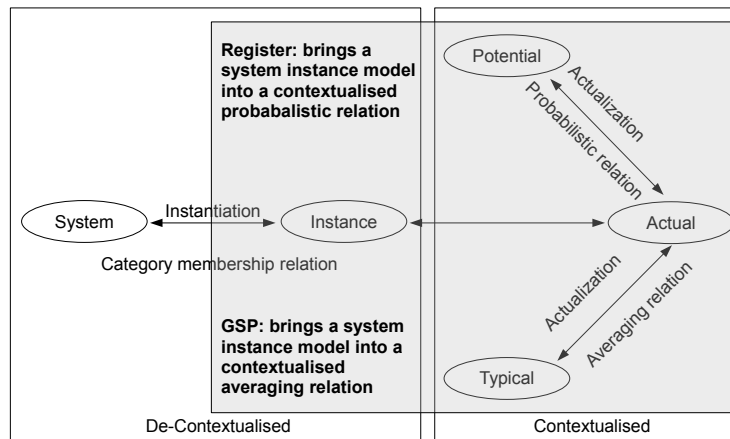


Figure 20: Register and GSP in relation to Instantiation

ship between system and instance as a cline of instantiation, it is probably best understood as a dialectic since the two are never actually possible without each other. Register does not so much sit between system and instance<sup>15</sup>, as it is a take on system and instance at the one time. It is the culture brought to bear on the instance of the social process. This means that we are not faced with the unhelpful uniqueness of each instance, because we are viewing it through the system and therefore foregrounding the shared aspects. Neither are we confronted with the seemingly impossible task of transcribing the infinity of culture as suggested by Cook (1990), because we are viewing the culture through the aperture of the instance as we see in figure 20.

I will return to the notion of register in chapter 4 when I consider models of context and how these theoretical principles can be made real in a model.

### 3.8 REVIEW

In this chapter we have briefly considered the dimensions which underly the SFL theory of language and issues which surround these dimensions. In the next chapter, chapter 4, the potential implications of these dimensions for the modelling of context will be considered. I want to reiterate some of the central issues that have been raised in this chapter. So far the distinction has been made between theories which examine linguistic form and

<sup>15</sup> Note that I am referring here to the relation between the culture as system and each situation as an instance of the culture. This represents one of the emergent features that risks conflating structure and instantiation.

those which examine meaning, with the latter being exemplified by Halliday's approach. In this chapter we have given attention to Halliday's theory and how this is organised through dimensions such as system, structure, metafunction, stratification and instantiation. In theories which are organised around meaning, the unit of analysis becomes unclear at best, with fuzzy boundaries being common. While structural approaches can concentrate on language as in many respects an isolate, a meaning based approach must go outside language. So an interesting question is raised for meaning based approaches around what the object of analysis is and this is why Halliday suggests working with fuzzy boundaries at all levels (Halliday, 1974). If we are interested in meaning then in some respects our object of analysis is meaning, and this suggests that we will have to go beyond language since meaning is dispersed not localised. If our object of analysis is meaning then the dimensions as we understand them may have a different import.

Halliday's approach to the question of our object of analysis appears to be to locate language (or if we like the structural approach) within a social semiotic (although clearly within a biological/physical semiotic as well). The structural aspects are seen to be functionally motivated by the behavioural potential and language as our object stops short of this behavioural potential at semantics. So while being in a realisational relation to the social semiotic (with the implied stratificational relation that this entails), language stops short of the social semiotic and is only one of many different modalities which are in a realisational relation to the social semiotic.

While being a useful approach to creating theoretical boundaries, this approach also creates some interesting ambiguities. If language stops short of the social semiotic but must go beyond it where meaning demands it then context is that which is required to make meaning. So context in this approach comes to be considered only to the extent that it is necessary to make meaning suggesting that our view of the culture is limited by our modality. Since as Hasan (2004) suggests, each modality will have a different, though potentially overlapping, semantic potential it may be that since context is in a realisational relation with the semantic potential that different modalities have a different contextual arrangement as well. The implications of this for metafunctional arrangement and for registerial patterns in multimodal texts will be further discussed below. In particular, we will look at Hasan's model of context and the value of this model for applications in the domain of medical discourse.

Part II

MODEL



## MODELLING CONTEXT

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*“A theory is a means of action” Halliday, 1994:xxix*

## 4.1 WHY DO WE NEED TO MODEL?

Theoretical modelling is the powerhouse that turns a theory into something usable. In the previous chapter, chapter 3, consideration was given to a contextual theory of language and what this means for the theoretical positioning of context as a concept. In this chapter, the focus turns to that of modelling. Chapter 3 concluded by suggesting that SFL provided a fruitful basis from which to develop models of context, primarily, because of the potential to locate such models within a broader picture of language and society as a whole. This potential makes SFL particularly suited to the consideration of social aspects though it runs the risk of neglecting biological and material aspects that may also impact on meaning.

## 4.2 WHAT DOES IT MEAN TO MODEL?

While the relevance of the distinction between theory and model may not be immediately apparent, nevertheless, it is a central step to make in order to put a theory to work. There is certainly truth in the oft quoted line “there is nothing so practical as a good theory”. However, there is a further move required to make a theory practical; that of modelling. In shifting from theory to practice, it is necessary to create something that bridges the divide between the abstraction of theory and the mess of actual life and this grounding of the theoretical takes the form most frequently of a model. As a representation of actual life, it is this model that is modified to actually be worked with when the point of application is reached. Ultimately this process should feed back into theorisation and hence back into model and on once again to actual practice.

As discussed in chapter 1, a theory, while being “a means of action”(Halliday, 1994) is only such if it is transformed into a means of action through the process of modelling. A model may be defined as a simplified abstraction of reality (Lucey, 1991). The principle for this abstraction is derived from the theory within which that model sits. Thus, within SFL, the principle for abstraction in modelling is typically function and the means of representation is typically that of system, although, it is pos-

sible to develop contextual models consistent with SFL without necessarily using these principles.

For context, the implications at the level of theory are that context is outlined through the categories of field, tenor and mode that map onto the metafunctional elements of interpersonal, ideational and textual. So, field is the functional element of the culture or social structure that recognises that we need to know what is going on, tenor is the functional element of the social structure which encodes our social relations and mode the functional element of the social structure which recognises our need for organisation and structure. Of these, mode is perhaps the most problematic in its location in the social structure, while field and tenor have quite distinct and clear connections with our social organisation and impact on language in interrelating and strong ways. Yet these concepts are not something with which a research question in the real world might be approached. They are a theorisation of how society works. To be in a position to actually apply these concepts, it is necessary that we define what is involved in each of these functional elements.

Because there are different types of modelling, the process of modelling requires that we establish some central concepts in order to build the model. Systemic functional linguistics has tended towards parametric modelling, at least in name, even though there is some concern over the validity of the application of parametric approaches in linguistics and particularly within SFL. Despite concerns (see for example Penke and Rosenbach, 2007), many have used parametric approaches and it is particularly popular in generative linguistics and universalist approaches more broadly (see for example Chomsky, 1981 - Principles and Parameters theory). Even so, in many cases the use of parametric is more of a metaphoric use than an actual application. Indeed, it may be that SFL has adopted the language of parametric modelling without necessarily adopting the process.

Parametric models are, broadly speaking, distributions that can be described using a finite set of parameters (Schervish, 1995). Parametric modelling requires, firstly, that the boundaries within which our model holds are defined (see Roberts, 2001 for a discussion of motivations for model selection). The definition of boundaries is done through the notion of parameter (see below). Once defined, parameters are considered, for the purposes of the model, to be relatively fixed. The model, working within these parameters, is designed to explain certain types of variability. These are defined as the variables (see below). Variables will change, and the model is designed to explain this change. Finally there are aspects of the model which will be reasonably peripheral except in certain environments. These aspects are referred to as features. The concepts of parameters, variables and features and



their importance for modelling, in particular the modelling of context, are discussed in the sections which follow.

#### 4.2.1 *Parameters*

According to Klein (1971), Parameter was first evidenced in the mid 1600's, from the Greek meaning para (beside or subsidiary) and metron for measure. Originally a term in geometry until the mid 1920's when it came to mean a measurable factor used to define a particular system, although it is unclear what system refers to here. Modern common usage has more in common with perimeter and hence takes on the meaning of boundaries, limits or characteristic factors.

While it is not entirely clear which of these senses is being drawn on in SFL, at least within parametric modelling a very broad definition of parameters is that they are the conditions under which certain things hold (Howell, 1997). To make this definition slightly more specific, parameters might be said to serve the purpose of summarising the environment for a model. They summarise the key features of an environment in which a model is claimed to hold. Although it is possible for parameters to change, once they are used to define the boundaries of a model, they are considered to be relatively fixed. Because for the purposes of the model they are considered to be constant it is possible to think of parameters as being static, however, we know that they can change and in this sense they are dynamic. This is the same way that we consider the social system or the language system. Although we know that it can change, we do not as a rule experience that change and certainly when we analyse these aspects of social life we treat them as if they were static, at least for the purposes of analysis.

Because they form the boundaries or the environment for the model, parameters can be thought of as assumptions that are taken as given. Although we recognise that they may change, a model does not account for changes in parameters since there is no feedback on parameters. So, while the model can note that the parameters have changed and take this into account a model doesn't seek to explain the causes of changes to parameters since this would mean going outside the model. In this way, changes to parameters means changing models.

We can see then, that the stated parameters for a model will define what a model is attempting to account for, thus, they will also define the grounds against which a model may be judged. If a model does not have the parameters suitable for a particular research question then it is not an appropriate model for that research question and either a new model or a new research question may well be needed.

#### 4.2.2 *Parameters and Variables within SFL*

Parameters as they are used in SFL to model context refer to the distinctions crucial to meaning making. As mentioned in chapter 3, since SFL is focused on language, context is viewed from the perspective of language, thus, how it relates to meaning. Unless we are going to attempt to account for absolutely every aspect of a context which, as we will see in chapter 5 is unnecessary, not to mention unhelpful (see Cook, 1990), it is necessary to establish some means by which to limit context. Hasan (1999:232) highlights the problems associated with this in pointing out that “if to make context an effective tool for analysis it must be contained, then we need to be clear what aspects of the interactants’ material and social conditions of existence are integral to the concept and why”.

Perhaps the first step in doing this is to define the concepts which organise our analysis. Firstly, the central organising principle behind SFL is function, which suggests that our view on context is a functional one. Indeed this is the principle by which Halliday (1974) organises his approach to context. The functional set which emerges as central to a linguistic view of context for Halliday is Field, Tenor and Mode. These relate to the experiential, interpersonal, and textual metafunctions. Thus, although van Dijk (in press) finds it concerning, it should come as no surprise that models of context from within SFL use field, tenor and mode as their starting point.

Field, tenor and mode are, according to Hasan (1999), the three parameters of context. Hasan (1999:232) also refers to the relevant context as “a theoretical construct with three variables”. This later definition being particularly unhelpful because it both construes context as a theoretical construct and represents field tenor and mode as variables where they are otherwise represented as parameters<sup>1</sup>.

Given the distinction between parameters as the boundaries for a model and variables as that which changes in a model and that for which the model is designed to explain, it is necessary to assess how these relate to SFL. Certainly that which remains stable is a concern for language in context, or the relevant situational features as they pertain to meaning. In SFL this typically means the categories of field, tenor and mode. As van Dijk (in press) suggests, these categories remain constant even across different models of context so might be taken as the linguistic parameters of context for SFL.

Field, tenor and mode as parameters define the boundaries for models of context within SFL, but organisation beyond this varies

<sup>1</sup> Though it should be noted that the true parameter of context for SFL, as with many other approaches, is relevance to meaning.

considerably. Since field, tenor and mode are the parameters of context, the particular sub-systems within each of these which account for aspects of specificity would be considered variables. Depending on the question which is being asked, it may require more variables (increasing specificity) or fewer variables (decreasing specificity) to discriminate between contexts or to adequately account for context.

Variation in specificity means that what varies in SFL is selection of categories within field tenor and mode, or what are often referred to as the sub-systems. It is linguistic variation relating to these categories that the SFL approach to context tries to explain despite the sometimes ambiguous relationship between them. Hasan (1999:232) relates it this way, "since language in use realises some given CC (contextual configuration), any variation in CC will naturally activate some variation in this language; it is this kind of variation that in SFL we refer to as register variation."

Interestingly, sub-systems within field, tenor and mode could also be considered parameters since their inclusion in the system is predicated on their being crucial to meaning making. Yet, they are typically used in ways which more closely approximate variables and this perhaps belies the ambiguity that exists between these two terms and certainly Hasan (1999) ranges between calling these tools, parameters, concepts and variables.

The representation of context through a parametric approach is a somewhat loose analogy in that there is no formula that field, tenor and mode are a part of and the variables are for the most part binary not measurable. Indeed there is some confusion over whether field, tenor and mode are parameters or variables or something else entirely.

Those models which use systems and networks as a means of representation potentially incorporate a further problem in that networks presuppose choices so that it should not really be possible to leave out choices deemed irrelevant for a text/context. Van Dijk (in press) suggests that "the whole framework (and he is referring here to all context models in SFL) is built on a fundamentally flawed notion of context – which in no way reflects a systematic analysis of the (linguistically) relevant structures of the social context". In so doing, he argues for new parameters and a new basis for modelling.

Certainly there is often a need to expand the specificity and delicacy of descriptions. As Hasan (1999:233) suggests, "descriptions at any level of language can vary in detail of focus;<sup>2</sup> the specification of a CC is in principle no different in this respect; it too can be always extended in delicacy". As with delicacy, specificity often needs to be increased to distinguish between two

<sup>2</sup> What Hasan calls detail of focus, others have called 'granularity'. See for example Schegloff (2000).

very similar contexts yet it is unclear how new terms increasing specificity and delicacy are generated, represented and incorporated into the model. Hasan (1999) has suggested that any new terms necessary for a description of a particular text need to be drawn from features.

Hasan (1999:231) argues that

“experience of making sense of texts tells us that some of the situational details are invariably encapsulated with varying degrees of explicitness in the language of the text, others ... might do so only under certain circumstances ... , while information about many other situational features such as the specific time or place of textual composition, the body posture of participants, their general appearance and so on may be encapsulated in the text’s language even more rarely if at all. The question is whether we need to treat all these sets of situational details alike in describing the relations of text and context.”

Hasan raises here an important problem concerning the inclusion of situational features in our discussion of a text’s context. Incidentally, it is also worth noting that Hasan here ranges between calling these ‘situational details’ and ‘situational features’, reflecting the uncertainty that exists about context modelling.

Hasan (1999:232) continues,

“our description of context runs the risk of being as unmanageable as ‘transcribing infinity’ as feared by Cook (1990); see also Levinson (1993), leave aside the question: on what basis can we justify the inclusion of all such details? More basic still: would we really know what the expression ‘all such details’ refers to? How do we conclude that enough has been said about some specific context? On the other hand, if to make context an effective tool for analysis it must be ‘contained’, then we need to be clear what aspects of the interactants’ material and social conditions of existence are integral to the concept and why?”

In asking these questions, Hasan has covered the crucial questions for context modelling and the questions that have come up again and again since context first came to be viewed as important to meaning.

#### 4.2.3 *Features*

Another concept central to modelling is that of features. Feature is a term generally used to refer to any characteristic or quality of

an object that may or may not be relevant to its description. So for example, we may refer to facial features as characteristics which are particularly salient for the individual in their representation but which may or may not be crucial in their identification. With respect to the modelling of context, feature is used to refer to any characteristic of the context not crucial to meaning making. In this sense it is used in a way which is distinct from other uses. This use is consistent with that of Hasan (1996a) who suggests that features include aspects of the material/situational setting. They might also be considered to include distinctions such as the biological or physical setting such as for example, the weather or facial features. It is immediately apparent however, that this distinction creates several problems. For example, features may, in some contexts, be highly relevant to meaning making. If they are relevant to meaning making, then, by the above definition, they should be included as parameters.

It is possible that the above problem might be addressed by including features as parameters only when they are relevant to meaning making and disregarding them when they are not. This course of action, to be considered as a serious solution, would need to resolve some issues. For example, where do the features come from, who establishes their relevance to meaning making and by what measures?

Let us consider the first of these points: Where do features come from? Features are generally considered to be the more concrete aspects of a situation, and usually pertaining to an individual or the environment. There are very different understandings of this word however, for example, Berry, (1977:45, but see also 63) refers to *features* as being that which is “actually chosen by the utterance”. Despite the confusion engendered by Berry’s use of ‘chosen’ (a word which suggests agency and purpose), this usage contrasts with *term* and would refer to a selection from the system as opposed to a contrast in the system.

These two meanings are not necessarily in opposition to each other. In fact, it is not possible to have one without the other, for something to be a feature, it must first be a term. As Berry uses the term *feature* it comes to mean any selection from the system, while as they are referred to by Butt (1999/2004) they refer to non-essential qualities of the situation. Taking this later meaning, we run into the problem that features are typically of a different quality to parameters. While *parameters* have an abstract quality, say referring to things such as social status and role, topic and medium, *features* will usually have a more concrete character. For example, they will refer to things such as facial features, material setting or weather. Combining these two things in the one system

could prove problematic because they are of different orders of abstraction.<sup>3</sup>

Our second question refers to who decides on relevance to meaning and by what measure? This is a problem of perspective. When we define meaning making by whose perspective are we judging it? If meaning making is determined from the perspective of the participants in a context, then which participants do we choose to focus on? It is easy to think of situations in which what is crucial for meaning making for one participant is not at all crucial for the other participant/s. Mixed level disability settings are a perfect example of this. Furthermore, if we take the researcher or onlooker perspective here, which is almost a necessity since it is difficult to truly take the participant perspective, then how do we guarantee consistency across coders? What is our measure for when something is crucial to meaning or not?

A further problem is that of what is done with features when they are not relevant to meaning making. If they are to sit as a sleeper system that is called upon when and if required, then this network/system still needs to be elaborated. This means calling it into existence prior to the establishment of it being necessary for meaning making. What might be sensible here is to borrow systems from other domains since they are not strictly linguistic in nature in any case. Thus, it may be possible to borrow from areas such as biology, geography, physiology etc. But of course, borrowing from others means ensuring that the philosophical assumptions of the model are equivalent to, or at the very least, consistent with SFL.

Furthermore, we run into a problem of theoretical consistency. In the above section, section 4.2.2, we defined parameters as something that is assumed to be constant for the course of a model. If features become parameters then we are not dealing with parameters, as they are assumed to be constants in our model, they are in fact variables and we are effectively changing the model every time that we use it. So then, we do not have a general theory of context, or model of context, but a context or even project specific model of context that changes every time that we use it. This makes it a reflective rather than predictive theory, which limits the potential for formalism.

Limits on formalism are not a negative thing in and of themselves. After all, it is necessary to recognise that true formalism is very much an artifact of our analysis. However, some degree of generality is necessary for a useful theory or model. It is presupposed that a model by definition is general to some extent. What

<sup>3</sup> In fact, these elements exist on two different sides of the contextual plane. The first, (social roles, social status) belong to the social side of the contextual plane, while the other (facial features, body structure, biology and material setting) belong to the biological side of the contextual plane.

is concerning is that this discrepancy seriously compromises our terminology/metalinguage, which suggests that there may be ramifications on other strata.

An extension to the above problem is that, if we accept the definition for parameters stated previously, a model does not attempt to explain changes in parameters. So, as stated above, a parameter remains, or better, is assumed to remain, constant within a model. If features become parameters, the reason for this change would be a variation of great interest for meaning making, and probably something that we would want to be in a position to explain. As constructed however, the reasons behind this change would not be open to consideration by the model.

A possible way around this might be further stratification, whereby a model is postulated above context that attempts to explain variation in parameters at the level of context. Although distinct theoretically, this is, in effect, the same as further stratification at the level of context (see for example Martin 1992). A further alternative here is to move outside context to explain variation, and look to social theory in the form of social structure to explain variation in contextual parameters (see for example Halliday 1978 on language and social structure).

All that is really being suggested here is that there may be some variation in where theoreticians draw the boundaries of a model. What, for example, is the difference between drawing the boundaries of context at the point at which language meets the social structure and taking context to include social structure? Within the first approach, variation within contextual parameters is left to social theory to explain, while within the later, the contextual model itself is designed to explain variation. These two approaches are by no means the only approaches to contextual modelling. The different approaches will to a large extent rely on the different understandings of the relation of language to society and the nature of language and meaning making more broadly. Some of this variability is discussed in section 4.3.1 as we consider some of the different interpretations that SFL theorists have had on context modelling.

#### 4.3 MODELLING AND ITS REALISATIONS

Though it holds potential, SFL has not developed a unified model of context apart from the statement that context may reflect the metafunctional alignment seen at the content plane of language. The lack of a distinct model of context has led to criticism from some, particularly van Dijk. van Dijk (in press), in his paper on parliamentary discourse, levels a number of criticisms at SFL. In particular, in assessing the treatment of context in SFL he claims that:

1. SFL context theory has unoriginal contextual categories,
2. The notions in SFL contextual theory are theoretically unproductive/or inert in that they have barely changed in years,
3. SFL has vague categories, which even SFL has problems defining,
4. SFL contextual theory is heterogeneous with very different theoretical notions described by these categories,
5. SFL draws little inspiration from other approaches such as anthropology, sociology and social psychology,
6. SFL does not give attention to the mental aspects of social situation e.g. purpose/aims,
7. SFL does not address the issue of knowledge,
8. SFL has observability as a crucial condition and thus is not able to consider mental aspects such as purpose or knowledge,
9. The notion of register is rather vague with some treating it as the same thing as context e.g. Martin 1992,
10. One would expect an integration of a pragmatic theory of speech acts or a theory of conversational interaction,
11. Global functions of language (Jakobsen, 1960) are missing from SFL e.g. intra-personal functions, emotional functions, group functions, intergroup functions, cultural functions, aesthetic functions and
12. The triple that organises context in SFL is also reproduced in the concept of register which leads to a strange, arbitrary reduction, and neglect of important aspects of language.

(van Dijk, in press)

A number of these criticisms have been addressed in chapter 2 and 3 as part of a discussion of the theory, since as Hanson (1958) suggests, "an epistemology eventually raises questions about itself", and this questioning process is part of the development of theory. van Dijk (2000) begins his criticism with a reference to the originality of the contextual categories in SFL. It must be assumed here that he refers to the categories of field, tenor and mode. I will leave aside for the moment the question of contextual categories since it arises in several of his other points, and consider the issue of originality.

It should be noted that this claim of unoriginality presupposes that originality is a beneficial criteria for theory. Although they are distinct issues, the pricing of originality runs the risk of supporting the assumption that knowledge is linear. It would be of interest to consider what is meant by the term originality as it is used in the case presented here because there are a number of different possible interpretations. The implication is that the newest and most different thing is always the best. If this is the case, originality under these assumptions would hardly be challenging



and nor would it be useful. Even a brief consideration of history will show that there is little to be gained however from creating things anew each time. Newness does not equate with better, nor does difference presuppose an improvement. Developments build on each other, and if each person were charged with the task of recreating the wheel each time they set out to build a car in order to fulfil the requirements of originality progress would be rather slow indeed. The criticism of unoriginality of categories seems unwarranted but it does serve to highlight the importance of referencing others at every stage.

The focus on originality is, it might be argued, consistent with van Dijk's concern with the individual and cognition, yet it is difficult to see how such a claim for the importance of originality might be upheld. Knowledge is dialogic, not unitary, and, when considering some of van Dijk's other criticisms it would appear that he is, ultimately, of this view as well. He claims for instance that SFL has not drawn on the influence of other theories such as anthropology, sociology or social psychology. This is a rather baffling claim since, unlike many of the American approaches, SFL draws heavily on sociological and anthropological theories and research in its development. It is also hard to reconcile this claim for the importance of drawing on other approaches with the desire for originality stated in the first point. It would appear in fact that his disagreement is that SFL is *too* original, since he also criticises SFL for not including the global functions of language (Jacobsen, 1967). Aside from the fact that this then suggests that there is a good reason for not having original contextual categories, this criticism also seems to be a result of conflating the term function with that of meaning.

The claim that the terms are theoretically unproductive since they have barely changed in years is not altogether a useful critique. Change is not always productive or beneficial and certainly, theoretical productiveness does not rest on the changing of terms. I would personally agree with the suggestion that certain terms are theoretically unproductive, but this is not because they have not changed in years. Rather, this is because, by having limited applications, they do not do the work that might be expected of a productive theoretical category. Context is a good example here, as van Dijk points out. However the theoretical categories in SFL more typically run the risk of being made to do too much work and thus becoming complicated and unclear. Instantiation for example, in a bid to make it more 'productive' has come to have a number of very different and potentially contradictory meanings.

At least some of the more common criticisms (see for example points 12 and 3 above) might arguably be said to stem from a misreading of function within SFL and perhaps a lack of famili-

arity with many of the central dimensions of SFL theory. Indeed, there are some situations where vagueness might be construed as a synonym for a lack of sufficiently close reading. While it may be true that those who do not use the theory are unlikely to read it closely, it is equally true that there are many terms and concepts that could be better defined and outlined.

The fact that such misunderstanding is widespread, even amongst proponents of the theory, suggests at least some of the fault may lie with SFL. The metalanguage, for example, is widely criticised as being complicated, difficult to understand and unnecessary. While there is a strong and well reasoned motivation for the metalanguage (see for example Halliday 1978 and Hasan 1996a-d), it does create a sense of alienation, particularly as many of the terms in what are often considered traditional approaches, are taken for granted with a kind of naturalness not granted to newer theories.

Furthermore, the metalanguage suggests a uniformity in SFL that does not exist, and this assumption implies that SFL should have a uniform approach to context. Despite this frequent assumption, the only real requirements are that a model should be functional and open to change. Although the name implies a use of system for description, even this is not necessary for a consistent model. Van Dijk makes a good point however when he notes that despite the variety of models of context, they all integrate the triple of field, tenor and mode. Usually the matter of change is handled systemically, though this need not be the case, since, as Halliday (1976) suggests in his interview with Parret, different strata are likely to have different organisations and forms of representation. The theory is quite open to variation and different models since difference can be represented as perspectival change (see Matthiessen, 1993).

Van Dijk's preference for mental models or some recognition of the individual and cognitive means that he draws attention to some of the lesser studied precursors to SFL, namely Philipp Wegener, who, as van Dijk points out, sounds strangely modern in his construal of the cognitive nature of context. In critiquing SFL for not including the mental and cognitive, van Dijk is also imposing his own criteria for a good theory on SFL. It would be equally possible to claim in response that van Dijk is making the theory too complex by posing an extra ontological layer for mental phenomena.

Many of van Dijk's criticisms appear to stem from his construal of SFL as being a theory of context. Because it is meaning and not context that is the object of analysis in SFL, rather than a theory of context we see a contextual theory of language. This makes a considerable difference. In fact, it would appear from the criticisms above that there has been a sharp divergence in the

use of the term theory. It is stretching the definition of theory for example to refer to 'a pragmatic theory of speech acts' or 'a theory of conversational interaction'.

The notions which lie behind conversational interaction and the pragmatics of speech acts are already covered in SFL and not only does it not need to import these from outside, it is counterproductive to do so. These issues aside, it is important to note that SFL is a contextual theory of language which has models of context. What this means for discussing context is that it is quite possible within SFL to have more than one consistent model of context, hence we see various models all of which are driven by the problem which they are attempting to solve, but are all within the framework of SFL. The tolerance for divergence of this nature is an important feature of the theory and indeed a strength of the SFL approach.

While it is not possible to cover all of the models within SFL, I would like to consider the different groups of models as they represent some of the more prominent movements within SFL. A number of these models are outlined below.

#### 4.3.1 *Different approaches to context*

Because it is a contextual theory of language, variety in modelling is to be expected within SFL. A broad theoretical position leaves room for variability and diversity in its ultimate realisations as models. SFL is a flexible and powerful theory that is able as Matthiessen (1993:232) puts it "to play off different dimensions against one another". In the same way that we do not expect universality and conformity in modelling of the grammar, conformity and homogeneity should not be expected in modelling of context. This is perhaps even more true of context since it reaches into the social sphere. Contextual modelling within SFL has seen a number of realisations. Some of the more prominent models are outlined below. The organising principle here is the different approaches which have been taken to some of the key themes which have been outlined in chapter 2 and 3 above.

Matthiessen (1993:231) suggests that once inside the theoretical space of SFL, there are a number of "alternative ways of construing register". The main distinctions Matthiessen (1993) draws out are those between stratified and dimensional views of context the unifying aspect being an understanding that register variation ultimately expands the semiotic space because "variations in the system also create meaning". Matthiessen (1993:231) also suggests that at the same time as it expands the semiotic space, "register also embodies a kind of constraint on what meanings are likely to be made". The difference here is between possibility and probability. Register variation creates changes in semiotic

possibilities and at the same time represents variation in probabilities. It is possible to express register then as the result of the interface between context and language that results in variation in both sequence and element. Matthiessen (1993:235) expresses it this way

“We can interpret register variation as the linguistic system’s response to pressures from above, from the diversity of contexts of communication; ... but as always with characterisations of inter-stratal relations ... the relation is dialectal: register variation also construes contextual diversity”.

#### 4.3.2 *Stratified models of context*

In chapter 3 the nature of stratification was discussed and attention was given to the anomaly in theory that exists with stratification. Given that there is a realisational relation between semantics and context there must be a stratificational relation as well, opening the possibility that there is further stratification at the level of context.

Martin (1992) has elaborated an approach to context which is part of a global approach to the integration of context into systemic functional linguistics. Martin’s proposals are a distinctive interpretation of the theory and applications of Halliday’s functional linguistics. In theory, he is explicitly guided by his interpretations of Hjelmslev (see Martin 1992). In applications, his proposals draw on his collaborations, in particular those coming out of educational work in the 1980’s, but also in relation to descriptions of scientific and technical ‘genres’.

Martin (1992: 493-588) offers an extensive survey of the proposals and problems that have dominated his evaluation of context in linguistics. Central here are: 1) the ‘work’ to which he has put stratification; 2) the way semantic variation is managed under the concept of genre; and 3) his commitment to both critical and positive discourse analysis<sup>4</sup>.

Essentially, Martin stratifies beyond register up to genre, and on to ideology. The key concept in this stratifying is Hjelmslev’s connotative semiotics – semiotic systems which act as the content plane with another semiotic system as their expression plane (as when, as suggested by Martin (1992), the goal directed, staged activities of our culture – our genres – have language as their expression). This appears to preclude Halliday’s ‘weather/climate’ metaphor in that cultural patterns, and gaps, are managed

<sup>4</sup> This is perhaps an unusual use of the term critical and brings it much more in line with the common sense use of the term rather than the theoretical use of the term where critical means something more akin to analytical compared to the evaluative connotations it has in everyday usage

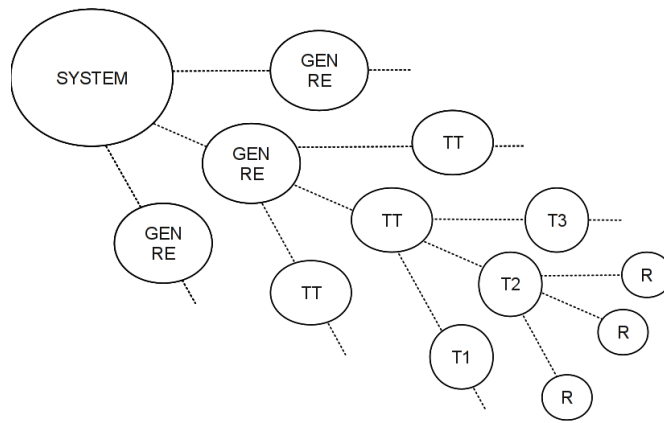


Figure 21: Martin's representation of context (Martin 2006).

in 2 levels of abstraction above register (hence, the 'cline of instantiation' does not carry the same responsibility as it does in Halliday's approach). For Martin, a number of difficulties are better addressed within his schema: for example, the place of syntagmatic description (sequence and order) as Martin sees a strong contrast between synoptic and dynamic representations at the level of context.

In 'Analysing Genre: functional parameters' (1997), Martin reviews his work on genre and positions it in relation to other text theories and his own developing model of 'Appraisal' – the interpersonal systems of evaluation in his discourse semantics. A point to note, however, is the resignation Martin expresses over the stratum of ideology – he notes that researchers have not taken up the proposal in the way that the level of genre has been pursued. On the other hand, he does put forward the prospect of treating generic tensions (i.e. non-congruent mappings between his stratum of genre and that of register) as a form of 'contextual metaphor'. Martin suggests that this may offer a powerful way of handling the progressivist texts which can be so baffling to teachers and learners in school environments (1997:33). The question arises, however, whether or not 'contextual metaphor' subsumes the original motivation for the stratum of genre (i.e. above register), namely that variation and 'hybridity' needed to be gathered into a higher order of process.

Others have made use of the stratified approach to context as well. Lemke (1984, 1988) for example while situating himself within the Hallidayian tradition, places much more emphasis on the role of the context of culture and its impact on the context of situation. His notion of intertextuality is specifically geared towards drawing out this connection between broader social processes and the linguistic system. This intertextuality means that "how we interpret the meaning of a situation and how we parti-

cipate in a situated activity depends on a wider system of cultural formations (discourses, genres, activity types, institutions, modes of representation) not fully available or wholly contained in the immediate situation itself" (Lemke, 1997:49). Perhaps because of this wider regard for the cultural context, Lemke (1997) places much more emphasis on the cognitive and the interplay between cognition and context.

Ventola, (1987) again sets her work well within the Hallidayian framework, drawing in particular on the roots of the SFL contextual views on language by focusing on Malinowski and Firth. In some respects it might be claimed that the stratified approaches to context are much closer to the roots of SFL than the non stratified approaches since they draw much more attention to the cultural aspects of context. Working with much the same approach as Martin, Ventola (1987) also stratifies through to ideology. More specifically, Ventola (1987) is concerned with the unfolding nature of social contexts. In this respect Ventola's work is driven by the concern for dynamics but there is also a perceived need to better understand the structural elements of genre. Indeed a concern for dynamics drives many of the different approaches to modelling context. O'Donnell (1999) also shares this concern as does Hasan (1996c) although these theorists deal with the issue in quite different ways.

O'Donnell (1999) provides one of the more complete discussions of the issue of dynamics in contextual models of language. Taking Hasan (1999) as the theoretical basis for his work, as well as giving a thorough overview of dynamic approaches to context, O'Donnell (1999) provides an account of how text and context change throughout an interaction.

Butt (2004) also models context stratificationally, however, his approach is to stratify at the level of culture and use system networks at the level of the situation. His stratification is instantial in that it is a different kind of stratification for each description of a context. Thus, the hospital environment is stratified one way (an example of this approach was given by Butt and Moore in a talk given at the Friday afternoon seminar at Sydney University in 2005), while other environments are stratified in a different way. This brings his approach much closer to Hasan's approach with systems and networks. Butt's approach is still very much at the proposal stage and the instantial nature of this approach may limit its productiveness as a modelling of context since each project will create anew the divisions in the culture and thus restrict the transferability of results and analysis.

If stratification is taken as an option at the level of context, then one way to maximise the productiveness of such an approach may be to generate a set of categories which may be customised for individual environments with the ultimate aim of generating

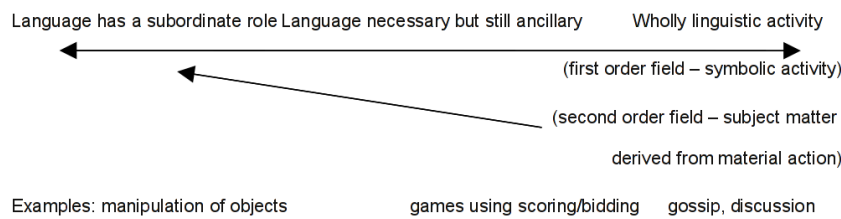


Figure 22: Bowcher's role of language (Bowcher 1999).

system networks for each strata. This is simply because some form of generality is needed if the model is going to be useful in more than one context.

While there are definite theoretical concerns with the notion of further stratification at the level of context, the greater of these being that context is a strata itself, there are very good reasons for wanting further stratification. When setting out to define a generic structure potential, reference is generally made to the function of the identified context in the culture. In establishing the function of a context, consideration is given to the ever widening culture, so there is a sense in which researchers stratify without necessarily being explicit about that stratification.

In outlining an approach to language, Bowcher (1999: 142) suggests that "the system of language may be viewed as a potential of choices from which speakers select to make meanings. Selections from this potential constitutes instantiations of this system, and these instantiations can be viewed as text types, or registers". From this theoretical base Bowcher (1999) goes on to suggest a "set of concrete guidelines that can be used as a tool for investigating the degree of institutionalisation in the context of situation of a social process". One of the aspects that Bowcher (1999) suggests is relevant to the investigation of the degree of institutionalisation in a context of situation for a social process is the role that language plays. In figure 22, Bowcher represents the variability in the role that language plays in a situation and presents some examples of situations that would instantiate these categories.

Lassen, (2003) stresses that context should not be a mere description of variation but should try to explain that variation. There is consensus, Lassen suggests, on taking Halliday as a point of departure for context modelling and here she is in agreement with van Dijk. In particular Lassen's work sheds light on the relationship between context and lexicogrammar and specifically Lassen draws attention to the relationship between lexical density and context. Lassen's (2003) description of the method of collecting and selecting texts as part of the context provides one of the motivations for my own modelling of method as an integral part of context descriptions.

Grimshaw (1994) offers an unusual situation of a formal testing of different approaches to analysis. Grimshaw's study shows the vastly different approaches that researchers take to the same bit of text from the same situation. The questions these researchers ask and the methods they employ display some of the key issues in context research.

#### 4.3.3 *Systems and networks: Hasan*

Hasan describes her approach to context in the following way:

"Context of situation as construed by discourse is a tripartite entity, each component of which is always active in the production of a text. Thus, instances of discourse must always construe the specific identity of social action, what is being done by way of using language: this aspect of context is the field of discourse. At the same time, the language in use must be indicative of the social relations being enacted between the interactants: this is the tenor of discourse. And finally, the text's language must also be indicative of the nature of the contact between the speaker and the addressee – whether the two are face to face, if the addressee is present, or if absent whether the addressee is actual or virtual (Hasan, 1999), and so on: this is the mode of discourse." (Hasan, 2004a:21)

This brief description by Hasan raises several interesting points about her view of context. In the opening line of the above quote, she refers to context of situation as a 'tripartite entity'. This implies that context of situation (as construed by discourse) is an entity. The representation of context as an entity is in part unavoidable. Once we start to talk about 'context' we must, at some point, come to refer to it as an entity since all our language pushes us in that direction anyway.

Apart from the language driven semantic drift towards reification, this reference to entity and instance is perhaps also due to the discourse focus on context. As Hasan (2004a) says, her view is "context of situation as it is construed by discourse". Elsewhere she refers to this relation as a dialectic, however here we get the sense that Hasan's view on context is very much one that is built through discourse. And Hasan does have a point when she says that it is discourse based because as she suggests, this idea can be traced back to Plato and Aristotle and reflects a text focus (Hasan, 2004a). It is the context that appears built in to the discourse that is examined and it is, at least partly, because in Hasan's view we have a bounded notion of discourse that context becomes an entity.



Hasan (2004a:21) extends this point further suggesting that

“the qualifier of discourse is a reminder that unlike the ‘cultural activity theory’ associated with the Russian, especially (neo-) Vygotskian literature (Engestrom et al. 1999), ‘context theory’ was not intended to apply to all kinds of social action, being designed specifically with discourse in mind.”

Leaving aside the reference to ‘context theory’, Hasan in this quote makes a distinction between the social action and those aspects of social action which relate specifically to discourse, or to use her words are ‘construed by discourse’.

This distinction poses some problems for multimodal research in that it restricts context of situation to discourse. Indeed, context of situation as Hasan models it includes the other modalities as part of the context rather than as the discourse. This restriction causes some problems for modelling alternate forms of communication such as communication through challenging behaviour, augmented communication or computer mediated communication of some forms.

Because of this limitation, Cassens and Wegener (2008) suggest that Hasan’s (1999) model of context be combined with Activity theory as outlined by Engestrom et al. (1999). Combining the two theories allows for at least two important extensions. Firstly it allows for a much broader definition of discourse to include all forms of social action and secondly, it includes non-human actors as potential meaning makers, which is an important inclusion for ambient intelligence research.

Hasan puts the concepts of context and metafunction ‘to work’ by analogy with other fundamental terms of linguistic modelling (viz. strata, rank and constituency etc.). Hasan, (1999) expresses some concern over the nature of systems at the level of context, specifically, that while there is assumed to be a true dependency in systems there is a default dependency in systems at the level of context. This default dependency creates a natural interrelation between the systems at the level of context that at other strata are realised as distinct systems.

Despite this concern, Hasan still maps description at the level of context as a set of system networks. Her contextual configuration (henceforth CC) is a systemic approach to the specification of similarity and contrast across contexts, with the features themselves drawn from networks of field, tenor and mode. This is to present context as if it could be represented through paradigms and realisation rules much as can be now seen in Hasan’s own mappings between semantic networks and the lexicogrammar (Hasan 1996d).

The contrasts of features that make up the CC have to be motivated from research experience, and Hasan (1999) gives the

most detailed account of the rationale for the contrasts in her field network.

Other problems that she has taken up in order to bring the treatment of context more in line with the accounts of systems on other strata include:

- how one relates generalisations about context to personal autonomy and the inherent variability of social process;
- how one deals with parallel contexts and other issues of boundary delimitation;
- how contextual regularities provide indices of sociological patterns - coding orientation, ideology, power, class, and social reproduction;
- how contexts enact specific relations of gender and class;
- how the paradigmatic features of context play out as syntagmatic potential realised in Generic Structure Potential; and
- how semantic systems can be elaborated so that realisation statements can operate from generic element to nuclear semantic feature and on to most probable grammar.

Hasan's (1999:232) model of context sets out from the traditional Hallidayian conception of context as being "a theoretical construct with three variables". There is a fuzziness in the terminology here with parameters being referred to as variables, however, since they are later referred to as parameters we will assume that the distinction to be made is that field, tenor and mode are parameters of context while their subsystems are considered to be variables. The basis for this assumption is that field, tenor and mode as our vantage on context remain relatively constant and define the boundaries for modelling context, selections within each of the subsystems however vary from context to context. Again, this is a little confusing since parameters are usually statements and by the above definition the subsystems would be considered parameters as well since they remain constant. This is perhaps a problem with using a parametric approach to modelling. While parameters are used to define system boundaries it is usually a different type of system to those used in SFL.

Building on the classical Hallidayian approach, Hasan (1999: 232) structures her model of context as follows: field tenor and mode she refers to as the *contextual construct*. She then goes on to define the "totality of its detailed features - the specific values of field, tenor and mode relevant to any any particular instance of speaking - as the *contextual configuration*." The later term she refers to by the acronym CC. Thus, for Hasan CC falls

along the cline of instantiation, being an “instantiation of (some category of) the contextual construct” (Hasan, 1999:232). I have discussed in chapter 3 the potential for this to be structural rather than instantial, but since Hasan (2004b) views delicacy as projecting along the instantial cline, this would certainly fit that interpretation.

#### 4.4 ISSUES IN MODELLING CONTEXT

What these different approaches within SFL, together with a consideration of the historical roots of context, show, is that when it comes to modelling context for actual use, there are a certain set of problems which concern any attempt at modelling. Despite the differences in metalanguage, most people working with language in context are in fact trying to achieve the same thing, or at least something very similar and this leads to a consideration of very similar issues.

Anyone trying to account for language in context at some point needs to contain context in some way to stop it from becoming the endless account of everything that ever was. This means that there will need to be some consideration given to boundaries and, if it is a systemic model of context, usually some consideration of entry conditions. Dynamics and change will also feature as a concern as will time and other temporal factors. Cognition and individual variation will also be important and finally issues of where to locate context and how to represent contextual variation feature as common concerns for many. The commonality of these concerns may well provide a link between otherwise divergent approaches that allows for dialogue.

##### 4.4.1 *Boundaries and entry conditions*

As discussed in chapter 2, one of the central concerns in modelling context is defining the boundaries. Malinowski and those before him faced similar problems and Malinowski’s students complained bitterly about the difficulty of defining boundaries when working in Africa and other places where boundaries were not clearly defined. In practice no context has a boundary that is defined and it is up to the analyst to define the boundary themselves as part of the analysis.

In an approach such as SFL, where social action is seen as part of an ongoing social interaction and ongoing social processes it is possible to analyse interaction in an ever broadening sense of context the basis of which might be considered to be the nature of social relations. So for example, doctor’s consultations are seen as part of the ongoing health care process, which is part of the ongoing health profession process and so on.

This of course creates a sense of infinity, and it is this boundlessness that some find disconcerting. However, as Hasan (1995a: 186) points out, the "power gained from abstraction is to have to define data in such a manner that it does not include everything that may be going on, for in nature there are no clear cut given, boundaries", and it is necessary to create artificial boundaries to work with while at the same time bearing in mind the importance of the ongoing social process. These are the means by which choices within a theoretically defined contextual system are made meaningful.

The processes for defining the boundaries of a context are by no means arbitrary, though, by the same token neither are they without difficulty. Moore (2004) defines some of the problems faced. There are many principles by which the boundaries of a context might be defined and these follow recognisable principles both in linguistics and statistics. It is possible to use compositional (or paradigmatic) and sequential (or syntagmatic) information to create boundaries for a context. Moore uses the idea of a dialectic between context and language to mean contextual dimensions such as Field, Tenor and Mode following Butt (1999/2004), and "the clarifying role of sequencing of interactive moves in achieving the configuration of contextual parameters". For example Knowledge about GSP and sequence within an element of GSP will provide good information about the boundaries of a context.

In her analysis of Doctor/Patient interaction, Moore (2004) distinguishes her phases "on the basis of Field, Tenor and Mode at the level of context, and in terms of experiential, interpersonal and textual semantics". Though essentially it is possible to draw the boundaries anywhere depending, in part, on the functional motivation of the task at hand or the purpose. Moore points out that the boundaries between phases are best treated as fuzzy boundaries – an idea not at all unscientific in the way that it may have seemed in the past.

In this sense, context does not describe the data, it is the data; it is the means for selection of a motivated piece of interaction from an ongoing flow. It could be that you want to mark off any situation where the population that you draw from changes. Though the value of this choice is not all that defensible, there is a sense in which many text selections are made on this principle, for example we can see that a doctor's consultation is bounded by time and a population change even though the basic field, tenor and mode selections may not change dramatically. Likewise, in analysis of data from family interaction the boundaries for the textual analysis are set by change in material setting and a time chunking, while at the same time recognising that this is all part of ongoing social process and social relations.

A text, as well as being located in the here and now, is both reflective and predictive, thus it is tied to what has gone before and seeks to make contact with what is to follow. A text's existence in the here and now only makes sense because of what has happened in the past and what is planned for the future. So it is possible then to consider context as starting at each peak or each trough in waves of meaning. Context can be considered as constant but changing in regular ways, which reveals a pattern even above the random noise of daily life. The same result will be achieved if there are certain constant features, for example the same participants. On the other hand, if the main participants hold very different conceptions of the primary goals behind an activity, one must concede that there is a challenge to the unitariness of the context and the agreements about its limits.

There must be at least a cognitive boundary to contexts because functionally we need to define one move from the next. The same pressure to define the day by hours, minutes and seconds is reflected in our division of the flow of social process into bounded contexts. The fact that most structural statements that have been devised contain some form of orientation, bearings or focus or some element that focuses attention indicates, at least in part, that there is some sort of boundary at work in context. The nature of this boundary is a matter for future investigation since, for cognitive efficiency if nothing else, people appear to need to reflect on existence as a series, thus possessing boundaries. So for each series shift we need to focus on that as a new series with new parameters.

#### 4.4.2 *Multiple Perspectives*

In attempting to account for context, the researcher is faced with the problem of point of view. While participants in a context will need to share crucial elements in order for the process to be effective, most people won't see this shared event in exactly the same way. The elements that must be shared for an event to proceed relatively smoothly are almost of more value to research than what makes them unique. After all, this particular theory is one of interaction not introspection. In a social view of language, the researcher is concerned with what goes on between individuals not individuals themselves, meaning that the individual is not the primary focus of the analysis. However, despite the focus on the shared elements of the context, the question of point of view is still an important one primarily because of the construction of the networks. The point of view of analysis is not that of any participant, for the researcher, it is that of eavesdropper and this can be problematic .

As is often the case with research that relies on report, there is the problem of whose point of view gets recorded. When context networks are used to record details about a context, there is a built in assumption that the resultant view is from one particular angle. Many of the networks actually require that the research assume the perspective of one of the participants. Obviously, there is the researcher's own perspective that gets built in to any account, but because it is an interactionally based contextual model, problems are encountered when aspects of the networks require that the context be recorded from one view point. For example, if I am building up a picture of the Tenor, it is necessary for me as a researcher to take one person's, or at least one group of person's, point of view.

In most cases, taking multiple soundings of the context can resolve this problem. For example, if you take the context portrayed below, it is possible to record the context from the point of view of the MET members (layered and plural), the Ward staff (layered and plural), the research team (plural), and any family or visitors (varied and plural). If each instance is recorded from each perspective, the resultant picture becomes quite a rich portrayal of the context. While this will be valuable for answering many research questions, it becomes very cumbersome for the purposes of real time recording.

It is possible to take multiple points of view and this is essentially what the research team at the Simpson Centre are attempting to do in their recordings and interviews. We certainly want to recognise the multiplicity of perspectives that will exist in a context. In most cases the mode will be fairly consistent while the tenor and field could vary greatly from participant to participant. Despite this variation, these are still just different perspectives on the same context; we wouldn't necessarily want to call them different contexts. After all, 'the nature of interaction is inherently social, no matter how personal the ends it is made to achieve' and what we are looking at is multiple perspectives on the same context, because a coded context is a shared context.

#### 4.4.3 *The Location of Networks*

Research can be caught between too much generality and too much specificity. In a problem that is specific to those attempting to map context through system networks, the issue of where the networks sit becomes important. Hasan (1999:224-225) but also more explicitly Hasan, (2004b:175) suggests that

'if context of situation is to context of culture as text is to the system of language, then, by analogy, so far as context theory in SFL is concerned it is like having

the theory of text, but without an ability to show its relation to the theory of language system'.

The location of system networks at the level of situation is a problem in theory because while systems of choice may be individually actualised at the level of instance, they are systemised at the system end. This may be a result of working from a corpus based instance approach. Because you enter at the particularities, the particularities are foregrounded. If you are trying to build it from situation you are entering at the particularities and trying to build it back. This enhances the aspect in which things are distinct and individual. Certainly we are interested in the differences that pertain between instances and what makes them unique, but it is what they share that will often be of the most value to us.

At one level, all contexts of care are alike, and you can code them all as being similar. Doctor, mother, teacher, or politician are all similar roles at an abstract level because they are all positions of care, but when you come in at each situation you are focused on the differences between those, not the similarities. It is necessary to keep in mind the systemic similarities between contexts. These are more likely to be foregrounded when we look from the system end of social structure.

However, the similarities and differences are just different viewpoints on the same context, and it is always necessary to have both perspectives. They are answers to different questions, and both are useful. Contexts very soon start to individuate, some much sooner than others, and it is useful to see how things are different. Nevertheless, it is also very useful to see how they are alike, particularly for the process of policy formation. Similarity can reveal the patterning that is not otherwise obvious. Systemised context networks not only differentiate between contexts, but also reveal the similarities. There can be numerous points of view, and all the pictures are needed to build the dimensionalised view. The value of such a dimensionalised view is that it provides an account of context that is multi-perspectival and as such inclusive.

#### 4.5 REPRESENTING A MODEL OF CONTEXT

One of the most persistent issues with modelling context is how context is represented. It is commonplace to think of meaning as being multimodal yet diagrams, figures, tables and other forms of representation are frequently overlooked as a crucial form of meaning making. Waddington (1977) explored the potential that exists for different means of representation creating different meanings. He covered some of the different ways in which the same scientific idea might be communicated. Similar issues have been explored by Halliday and Martin (1993) where they discuss

some of the issues involved in the communication of science. Butt, D., Halliday, M., Matthiessen, C., Teruya, K. and Wu, C. (2004) and Tuckwell (2007) have raised related concerns when they discuss the representation of evolution and the problems that are faced when complex ideas are represented, including diagrammatic and particularly iconic form.

Linguistics as a scientific study faces exactly the same issues. There is just as much complexity in representing ideas about language and meaning as there is in representing ideas about evolution. Indeed as both Butt and Tuckwell suggest, anything using complex systems thinking rather than linear cause and effect type reasoning will have challenges when it comes to representing these ideas be they in diagrammatic or linguistic form. Given the approach taken by SFL in mapping language and meaning it might well be expected that representation will present a problem for any of the strata.

While representation on the other strata are by no means resolved beyond debate, they are perhaps more regularised and there exist fairly standard means of representation for grammar, phonology, and even some might argue semantics, although here again a similar problem exists. Context however is particularly lacking in any regularity to the ways in which it is represented. This is not unique to SFL by any means. The problem of representation is common to all attempting to deal with mapping context no matter what the approach. One of the reasons for this is that context means so many different things and the complexity with which we are faced when mapping context is such that any representation is going to be difficult.

This lack of regularity in representation within SFL is another reason that uptake of the models has been slow. If it is not easy to see how to pick the model up and use it in an environment then it is unlikely that it will be used. This has further ramifications because lack of use of a model means that it does not get tested and as such does not get any feedback or verification as to its usefulness or fit to the environment.

Typically, context within SFL has been represented as a table with one row each for field, tenor and mode. Alternatively this can be seen in a box or something similar. This representation follows the statement approach taken by Halliday and others (see for example Halliday and Hasan 1985, Hasan, 1999). Statements about context reflect Halliday's approach to context as outside language and represents a selection from a system located beyond language. Thus, we have a statement of context as it relates to language.

This is perhaps true for most accounts of context. It is quite common to make a statement about what the context is and then to move on to other forms of analysis. These approaches



Table 3: Reading context from text (Hasan, 1999:233).

**Field of discourse:**

promoting a sociological publication: giving overview of content; foregrounding distinctive qualities...

**Tenor of discourse:**

*agentive relation*: promoter addressing prospective buyer: virtual addressee imagined prototype: adult; educated; interested in social questions...

*social relation*: institutionalised; peer; promoter dependent on buyer's goodwill, buyer dependent on promoter's service...

*social distance*: near maximal...

**Mode of discourse:**

*role of language*: constitutive...

*channel*: graphic; no visual contact; monologic; no process sharing...

*medium*: written...

tend towards representation as a box or table with the context statement within it. This is true for the representation of results as well as the model since they differ very little. Notice for example that Halliday (1985, 1994, etc) represents his model of context as being a set of statements about context not a system and his results as being a selection from these statements. Halliday's results are also seen as answers to questions about context.

Of more difficulty are the approaches that use system networks or typologies to model context. These approaches, and here I refer specifically to Hasan and Butt, take field, tenor and mode to be starting points for mapping out further delicacy at the level of context. The systems at context are not elaborated to the degree to which other systems are and, as Hasan (1999) points out, behave differently, making representation more difficult. Not only are the systems cumbersome to work with, but they take up large amounts of space and need to be explained each time they are used. Because they only make sense in relation to each other, the whole systems need to be presented rather than sections alone.

There is no shorthand representation for system networks at the level of context meaning that other forms of representation have not taken hold as alternatives. As such, presenting the models to others requires a statement about the entire theory before presenting the model of context. This makes publications in interdisciplinary forms difficult if not impossible.

It is generally necessary to assume some degree of familiarity with the model or ideas in the model and often this can be covered in a simple diagram, but there is no simple diagram for

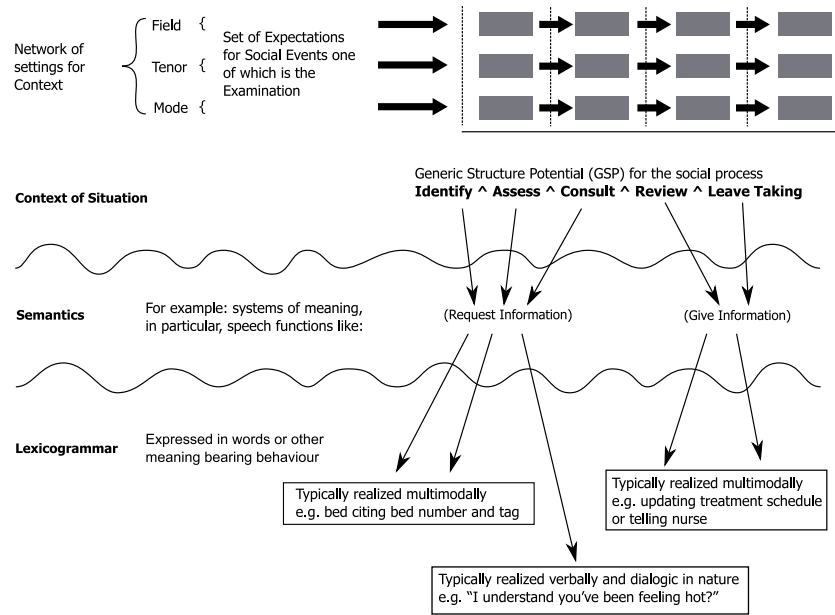


Figure 23: Stratal view of context from Wegener, Cassens and Butt (2008).

representing models based on systems. Some have used stratal representations to cover this idea, showing patterning across strata. Yet even here the diagrams are so complex that they do not really save space or act as a shortcut for explanation (see for example figure 23 from Wegener, Cassens and Butt, (2008) and figure 24 from Moore and Wegener, (2010) but similar representations have been given in Butt, Moore, Astolfi, Borg, Langley, and Ross, (2002) and also Butt (1999/2004)). Despite these limitations, such diagrams have also been used to present results (see discussion in chapter 5) and can be beneficial particularly for publications or presentations where they can be particularly helpful for an inducted audience or can be used to present an overview of the theory for a new audience.

Systems also present a challenge when representing the system itself. It is necessary to decide between presenting the entire system or parts of the system incrementally as in Hasan (1999). The presentation of the entire system is a nice representation since the idea behind systems is that of potential. The selections made from the potential are only truly meaningful when seen against the entire potential (see chapter 5 for a discussion of the implications of this for results). However, as is immediately apparent, this is not always practicable since the systems take up an inordinate amount of space, certainly precluding the presentation of the model in a journal article or conference paper. This restriction has interesting implications for the development of academic dis-

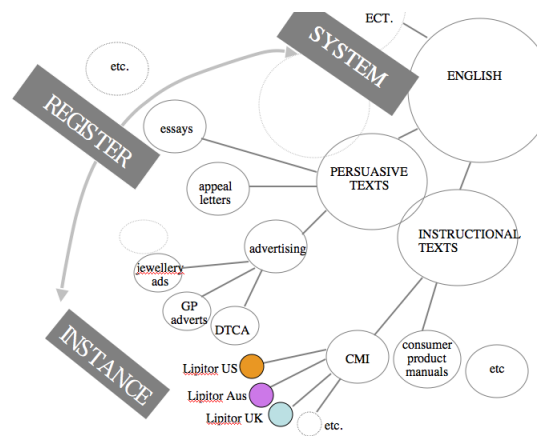


Figure 24: Moore's representation of the relationship of text and system (Moore and Wegener, 2010).

cussion and debate and indeed the shape of research (see chapter 2).

In presenting the systems themselves, it is necessary to distinguish between the different systems and their relationship to each other. Hasan (1999) does this by placing icons of various kinds on the systems (see Hasan, 1999). This is of course going to be problematic as you increase delicacy and specificity.

Butt (2008) approaches the problem of system labels by labelling the systems with letters and the selections with numbers. Thus the letters represent what we might consider parameters (i.e. relatively fixed) and as such able to be represented by letters, while the selections are variables that can be represented by numbers.

This representation means that selection statements can be presented as a set of letters and numbers representing selection paths through the networks. However, it should be noted that while this makes metadata storage easier, this is meaningless without access to the networks themselves and we return to the problem of how to present the entire network potential. The use of letters and numbers add further confusion in that the numbers representing the variables are not counts or values but merely a code representing the system.

A variation on this problem is that faced by Ventola (1987). While Ventola (1987) is attempting something quite different to a systemic representation of context, there is a similar problem in representation. Like the system representations, Ventola's (1987) flow charts (see figure 26 and also Appendix A-3) require the presentation of the entire chart for selections to be meaningful. They are perhaps even more at a disadvantage than the system networks in their space requirements. They do however have the

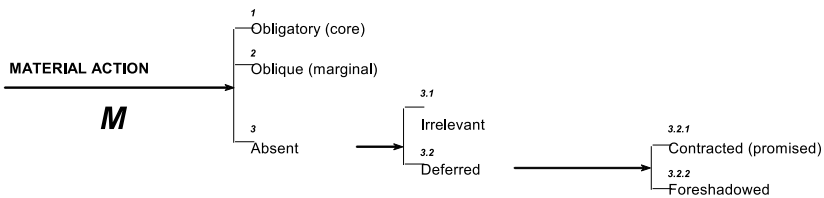


Figure 25: Primary choices within the Material Action system showing use of letters to represent primary network and numbers for choices within that network (Butt 1999/2004).

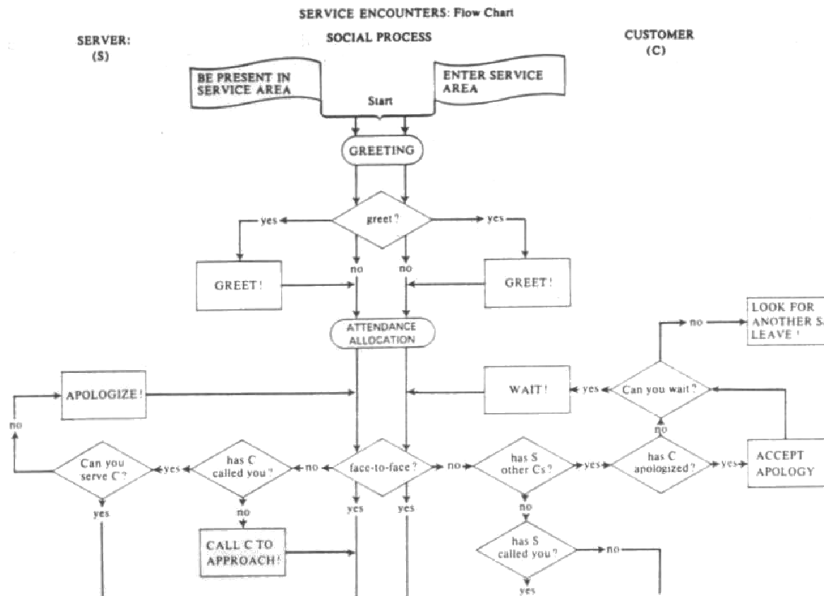


Figure 26: Flow chart representation of context from Ventola (1987).  
Full chart can be found in appendix A.3.

advantage of being familiar and readily accessible to a wider audience.

What this section displays is the extent to which representational issues are hampering the spread of the tool and shaping the future of academic debate. As was discussed in chapter 2, social, economic and technical changes can have a dramatic impact on the shape of science and academic debate. It may be that the next few years sees a growth in online interactive publications. This change might have a positive impact on models that have space intensive representations. Many of these issues recur when we attempt to apply these models and will be further discussed in chapter 5 when we consider the implications for applying a model by applying Hasan's context model to a hospital domain.

## 4.6 PUTTING CONTEXT TO WORK

In this chapter we have seen how a contextual theory of language begins to put context to work by modelling it. van Dijk (2008:28)<sup>5</sup> in criticising the different models within SFL (although he calls these theories) remarks that “we can not escape the conclusion that the whole framework is built on a fundamentally flawed notion of context – which in no way reflects a systematic analysis of the (linguistically) relevant structures of the social context, as was (and is) the overall aim of context theory, also in SFL.” His criticism then lies with the theory itself and herein lies one of the biggest problems. The issues that exist in theory inevitably flow over into the models that are constructed within that theory. When no distinction is drawn between theory and model then it becomes very difficult to see where the problems, if there are any, lie.

The differences in the models presented in this chapter lie in their understanding of the relation between context and language presented in the theory. There is an ambiguity in the theory in relation to how context is understood and this lends itself to more variety in modelling. Field, tenor and mode have perhaps remained as constants across the models at least partly because they represent a means of making a connection between grammar, semantics and context.

While different models have given better insight into different aspects of context, it is unclear how these different aspects combine with each other and with grammar and semantics. In the absence of a clear theoretical guide as to the connection each model has developed a separate way to connect the different aspects meaning that models are doing what should really be the responsibility of the theory. This means that it becomes even more important to select the most suitable model for the research question at hand.

Particular attention has been given to Hasan’s (1999) model of context as an example of the way context may be modelled within SFL as a contextual theory of language. As part of the consideration of modelling, some examples and proposals for the representation of context models have been discussed along with their respective strengths and weaknesses.

In the chapter which follows, chapter 5, consideration will be given to the challenges that are faced when a model is put to use. Specifically, chapter 5 examines the application of Hasan’s (1999) model of context as adapted by Butt (mimeo) to a situation

<sup>5</sup> This quote was originally taken from chapters placed on van Dijk’s website <http://www.discourses.org/>. It was originally listed as van Dijk (2002:30), however the same (or very similar) quote can now be found in van Dijk (2008:28) and variations of this quote can be found in other publications.

within the medical domain. This displays both the adaptations necessary for application of a model and the problems that are encountered.

### Part III

## APPLICATION





## APPLICATION: APPLYING A MODEL OF CONTEXT

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*“The more crystallised bonds of social groupings, such as the definite ritual, the economic and legal duties, the obligations, the ceremonial gifts and formal marks of regard, though equally important for the student, are certainly felt less strongly by the individual who has to fulfil them.”*  
*Malinowski, (1922:19)*

### 5.1 TESTING A MODEL

In the previous section, section 2, we examined some of the possible models for context within SFL. Chapter 4 concluded by exploring the value of Hasan’s (1999) model of context. In this chapter Hasan’s model of context and its extension by Butt (1999/2004) will be put to work in a hospital context using video data gathered through the Simpson Centre for Emergency Care Research. This will be used to discuss some of the strengths and weaknesses of the model and to propose some areas which need further consideration. In so doing, I aim to apply Hasan’s (1999) model of context as outlined and extended by Butt (1999/2004). Critical discussion of the networks themselves and problems with their application will be held over until chapter 6, where these will be discussed with reference to data from other contexts as well. This approach to the analysis stems from a desire to display the ability of the networks to be useful in solving real world problems without consideration necessarily being devoted to the discussion of their limitations. Where possible notice of the intended discussion will be given in chapter 5 although it will not be discussed until chapter 6.

This research is motivated by the need to predict variation at the level of semantics, lexicogrammar and phonology. Context is central to our ability to predict such variance because it specifies the probable from the possible. As Raymond Firth (1951:10) suggests, although we may not find conformity to a recognised rule, some statistical regularity is observable in people’s actions. If language is considered as a system laying out the large set of options from which users select in a given instance, then in order to make a prediction about the selections that are likely to be made we are faced with the problem that there will be an infinite array of options that might be selected. Model is specified here because what is being presented is only one possible model that

is consistent with a systemic functional theory of language. It is also a functionally formal model and as such refers to a process of abstraction.

Within a systemic tradition that treats context as existing in the same relationship to situation as text does to language, context may be represented at the cultural level as a series of networks. These networks are related to each other by means of either realisation or co-occurrence. If systems are related and co-occur they may be said to be aspects within the same system; if they are unrelated or only partially related, then they are separate systems within the same network; if they are in a causal relation, that is, they represent the cause for choices within a system, then they are part of a separate network and thus in a relation of realisation.

The relationship between the language system and the social system or social structure is a complex one. (Halliday, 1978:155-156) describes the relationship as being such that "in a hierarchical social structure such as is characteristic of our culture, the values that are assigned to linguistic variants are social values, and variation serves as a symbolic expression of the social structure." This represents the relationships involved as being multivariate and complex, and any attempt to represent them necessarily becomes complex itself. This, of course, is one of the problems for representation at the theoretical, methodological and practical level. Complexity makes representation complex, and quite often leads to compartmentalisation as a means for dealing with this complexity. This will be discussed below in the section on representation. Let us begin however by discussing the data which forms the basis of this study.

## 5.2 THE DATA SET

The data presented here comes from the Medical Emergency Team (MET) research project conducted by researchers at The Simpson Centre, a medical research centre based at Liverpool hospital in the southwest area health service of Sydney, Australia. While we are focused here on defining the roles of MET members, this is only a small aspect of a much wider study into the design, operation and training of MET members. Analysis of roles and responsibilities was done through a time and motion study followed by consensus-building interviews with MET staff centering on the division of a MET call into phases or segments. The data set is diverse in its nature, consisting of ethnographic film, recorded interviews, recorded focus sessions, ethnographic notes on both the film and interview, secondary analysis, and documentation from within the hospital domain. These different data types are very different in their nature and relationship to

the description of the MET domain. The details of the variation between the different data sources are discussed further below.

### 5.2.1 *Data collection*

The hospitals under analysis in this study fall within the South Western Area Health Service of the Sydney Metropolitan Area Health, Australia between June and December 2006. From the hospitals located within this area health service, three hospitals were selected representing, a Tertiary Referral Hospital (TRH), a Major Metropolitan Hospital (MMH), and a General Metropolitan Hospital (GMH). Purposive sampling was used with MET calls in each hospital being filmed over an eight week period during day, evening and night shifts. Collection times ranged across weekdays and weekends to capture the potential for temporal variation in the structure of care. In total 26 MET calls were recorded. During this time the researchers typically camped within the hospital.

Data collection took the form of ethnographic filming and ethnographic observation techniques. Using a Sony (Digital HD Video Camera Recorder – HDV 1080i) and a Panasonic (Digital Video Camera Recorder – AG DVX100E) with attached shotgun microphones, the clinical researchers (ICU nurses) focused on the the ICU nurse and the scene in general for the duration of a MET call. During this time, a further two clinical researchers acted as ethnographic observers and kept a journal of their observations and impressions during the MET call. This data was useful not only in providing a layering of perspectives on the scene, but also in identifying people later in the videos and on the audio files. Subsequent to each MET call, the ward nurse and the MET nurse were interviewed using a semi-structured interview technique to elicit their impressions of the success of the MET call, including what the call was for and how they felt about the call.

There are a number of issues around the data used in this study. Apart from the fact that it is a particularly rich and diverse data set that covers many different aspects of the MET, the data stands in very different relations to the MET call. These different relations make the data's status as linguistic evidence different in each case. These relations are modelled in chapter 6. With regard to the film based data, there are a number of issues that are relevant for all multimodal data sets including, how it is presented, how it is stored and how it is used. These issues will be further discussed in chapter 6.

### 5.2.2 *Meta Data*

The resultant multimedia data set was managed using EUDICO Linguistic Annotator (ELAN). Designed by the Max Planck In-

stitute specifically for linguistic analysis, Elan is an annotation tool which allows the researcher to store, create, edit, annotate, analyse, search and visualise multimedia data. While it is itself multifunctional, ELAN forms part of the Language Archiving Technology (LAT) tool set which includes; Addit (a note adding plug in), AMS (a tool which grants or denies access to (part of) a database), Annex (annotation exploration tool), Imdi (creates, searches and modifies metadata), Lamus (language archive and upload tool), Lexus (web-based lexicon tool) and Synpathy (manual syntactical annotation tool). The visual and inferential meaning of the actions of the MET nurses were annotated separately for each video. Data collection and analysis spanned an 18 months period, with two researchers and eighteen clinicians (accredited Critical Care Nurses or the equivalent) completing 29 sessions over a 7 months period. All participants in the study were experienced with the MET system. The duration of the sessions ranged from 50 mins to 6 hrs 30 mins.

The participants and their peers (critical care nurses – themselves the subject of a subsequent study) were invited to code and engage with the analysis of the visual data. Establishing peer groups facilitated by clinical researchers for the purpose of coding the data provided access to the experimental data base generated in clinical settings that is fundamental to expert clinical performance. It should be stressed that this was central to the approach taken by the researchers at the Simpson Centre and is not necessarily part of a contextual analysis although their approach was certainly guided by SFL contextual principles.

The analysis carried out by the Simpson Centre took the form of classification on a number of levels of abstraction. The first order was at the more concrete level of narrow task-orientated assessment, as in the performance of technical bedside responsibilities (reference the specialist nursing paper). Firstly for each video the smallest possible units of meaning of the actions of the MET nurse were annotated by the two researchers. At this initial stage of the analysis the focus for the researchers was a description of what was going on in the MET calls. This focus took the form of a description of the actions and behaviours that were carried out by the participants in the videos. While it would be possible to analyse the actions of the participants in detail (see for example Moore, 2007)<sup>1</sup> the focus here was the domain based description for small groups of activities (e.g. ‘measure blood pressure (BP)’, ‘record Blood Glucose Levels’ (BGL), ‘request patient information’). For sixteen sessions each researcher annotated videos individually, which were later cross referenced

<sup>1</sup> In fact, detailed studies of gestural and speech based communication within the MET setting were carried out as part of the wider study into MET systems. These studies used the same data collection and storage methods.

between the two researchers. For another six sessions they annotated together. This process took four months. At this stage of data management, groups of participating clinicians engaged with the analysis process. All annotations and analysis of the data from here on were group based.

The second order of abstraction made explicit the pressures that shape the choices MET nurses make in the context of MET calls. This drew on the understanding of what a MET call was and the nurses training for such events. Thus at this level the orientation was not so much to the instance, but to the notion of MET as a recognisable context. The third level of abstraction drew on the more abstract context of hospital culture and the place of the MET within this culture, thus at this level the orientation was to the function of MET within the hospital and the purpose of each phase as a function of the culture.

Because the potential for variability between hospitals in the understanding of roles and responsibilities was also of interest, participants only coded MET calls from within their home hospital. This ensured that participants involved in coding had an intimate knowledge of the hospital culture and were able to specify the context and structure of MET calls within their hospital.

Groups were moderated by one researcher and at least one observer to provide continuity across the groups and maintain high levels of reflexivity. Interactions were peer oriented with emphasis on making explicit the shared clinical knowledge and experience accrued. Some had also been participants in the videos, hence the analysis reflects a large group of experts and adds to the descriptive and interpretative validity of the results. All sessions were recorded on audio tape.

During coding and analysis, delineation between researchers and clinicians was minimised. As part of the terms of reference for the group sessions, any conflicting interpretations were resolved and agreed on before the close of session. On each occasion the observer kept a detailed record of all changes made to the annotations, including the reasoning behind these, in an Excel spreadsheet. There are also numerous ethnographic notes on this process and the process was filmed in each case.

Interestingly for the process of tracking cognition about context, each session was filmed and transcribed and every detail of the research process was recorded, meaning that detailed documentation for these discussions and the reasoning associated with them is available for all three stages of analysis. This depth of data provides insight into the way people reason about context and the different ways that they are able to conceptualise the nature of context. The discussion of the potential for multiple views on context is discussed below and further in chapter six.

### 5.3 ANALYSING CONTEXT

A significant part of understanding the definition of roles and responsibilities in a MET call is a matter of understanding the context. This means understanding the MET context, recognising and reading the context as well as examining communication within the MET context. Although, from a linguistic point of view, the study as carried out by the Simpson Centre was an amalgamation of semantic and contextual analysis since the categories were typically based on a professional ontology. What proved problematic for the researchers was the fact that each participant who was interviewed about the MET videos broke up the context in a slightly different way. They use different words to describe what is going on, respond to different aspects of the MET environment, and argue for their divisions on different grounds. This was problematic because the project was trying to reach a consensus over the key phases of a MET call. From the point of view of context modelling this is not the problem that it was for the research team because the variation that they found is just the kind of variation that a context model attempts to explain.

For linguistic theory, the value of this project is not just that it reveals the structure or phases of a MET call, but also that it provides a rich, multimodal and multiparticipant environment which reveals something about the multiple perspectives that need to be accounted for in a model of context. This challenge to modelling can be explored through the application of Hasan's (1999) model of context. At this particular point I will focus on a contextual analysis of the MET call without discussing any of the complications that arise. The discussion of these complications will be held over until chapter 6.

#### 5.3.1 *Method*

Context is essential to understanding meaning, a point that, as we have seen in chapter 2, has been recognised since the earliest studies of language. As Halliday (1985:10 in Halliday and Hasan, 1985) suggests, 'the situation in which linguistic interaction takes place gives the participants a great deal of information about the meanings that are being exchanged, and... that are likely to be exchanged'. Hasan (1985:55, in Halliday and Hasan, 1985) takes this point further, suggesting that if indeed this is the case, '... then it is equally true that the meanings that are being made by the language will give the participants a great deal of information about the kind of situation they are in'. This bi-directional relationship between language and context that is emphasised in the approach that is taken by Hasan (1985 in Halliday and Hasan, 1985) has two virtues. Not only does it

recognise that texts have a structure that we as text users are able to recognise with accuracy and rapidity, but it also calls attention to the culturally constructed nature of texts. As Hasan (1985:55 in Halliday and Hasan, 1985) claims, recognisable types of situations are culturally constructed through the years by the use of certain forms of language. Hence, the situations which fall within a type of situation are constantly changing, meaning that we are able to say, for example, that we are in a buying and selling situation because of the language being used.

This bi-directional understanding of the relationship between context and text as set out by Hasan (1985 in Halliday and Hasan, 1985 and elsewhere) is central to understanding roles and responsibilities, in this particular case roles and responsibilities in METs. It is important that the participants be able to anticipate and predict the meanings that will be made in a situation, that they be able to respond to each situation not as if it were totally unique or unexpected. But we also want participants to be able to shape and change the nature of their working environment, to control the situation and to be in a position to shape the situation through their use of different meanings.

To achieve both predictability and potential for change and control, we need to understand the structure of a MET call and its function within society. But we need also to understand the specific contextual variables (values within Field, Tenor and Mode) which make the realisation of these cultural functions possible and recognisable within the structure of a text.

Hasan's contextual analysis begins by stating a contextual configuration (CC) for a text (Hasan, 1985:55). A contextual configuration is a statement of the 'significant attributes' of a social activity (Hasan 1985:56 in Halliday and Hasan, 1985). Within Hasan's model the tripartite concept of context is known as the contextual construct (Hasan, 1999:232) where 'each of the three, field, tenor and mode, may be thought of as a variable that is represented by some specific value(s)' (Hasan, 1985:55 in Halliday and Hasan, 1985). The CC is a statement of these specific values. When the variables<sup>2</sup> field, tenor and mode are organised as system networks, the values become much more detailed and the CC becomes accordingly more extensive. The notion of CC is important because it is necessary for 'talking about the structure of the text' (Hasan 1985:56). According to Hasan (1985:56 in Halliday and Hasan, 1985) "it is the specific features of a CC – the values of the variables – that permit statements about the text's structure".

Texts that share a similar CC are likely to share a similar structure (Hasan, 1985: 64 in Halliday and Hasan, 1985). This is referred to as the Generic Structure Potential (GSP). The rela-

<sup>2</sup> See chapters 4 and 6 for further commentary on the issue of variables.

tionship between the similarity of context, that is the similar CC, and the similarity of structure, that is the similarity of GSP, is interdependent, with the function of language being the basis for similarity (Hasan 1985:64 in Halliday and Hasan, 1985).

Hasan (1978:229) outlines this model for examining the structure of text by suggesting that

“...associated with each genre of text – i.e. type of discourse – it a generalised structural formula, which permits an array of actual structures. Each complete text must be a realization of a structure from such an array. The generic membership of the text is determined by reference to the structural formula to which the actual structure can be shown to belong. A text will be perceived as incomplete if only part of some recognizable structure is realized in it; and the generic provenance of a text will remain undetermined, if the part so realized is not even recognizable as belonging to some distinct actual structure.”

Hasan’s (1999) model of context as outlined in chapter 4 was applied to the MET data in combination with other work by Hasan on context modelling and its further elaboration by Butt (1999/2004). In this study the texts analysed are filmed instances of MET calls in selected hospitals in Sydney’s south west area health service. For the purposes of analysis each event is treated as a discrete text, although many are complex texts as defined by Hasan (1999) and certainly each text is multimodal, multiparticipant and multifocal.

### 5.3.2 *Setting out: the Anticipated Context and the Individual Context*

Contextual analysis sets out from a statement of the Contextual Configuration (CC) for MET calls as a recognisable social process, drawing on cultural knowledge of MET calls derived from an understanding of their function within the culture and, more specifically, their function within the hospital culture or domain. From the general CC statement, a preliminary GSP is constructed which posits a structural arrangement for a MET call as a recognisable social process. At this stage, the social process is a conglomerate of past experience with MET calls rather than any instance of a MET call, generic roles rather than specific individuals and generalised named actions rather than specific actual actions. It should be noted that depending on the perspective on the social process, i.e. whether it is a stakeholder perspective or an outsider perspective, the evidence for building a picture of a general CC or general GSP will vary. Because these draw on the cultural or social function of the social process as rationale for



the CC and GSP, experience with actual instances is not strictly necessary.

To recognise the ability of humans to bring to a social process some conception of the expectations for that social process, I have formalised a category which I will refer to as the Anticipated Context. The Anticipated Context may be defined as recognisable social process which has some nominal or other representation in the cultural reservoir and has associated roles and responsibilities. In setting out in our contextual analysis, we will begin with a statement of CC and GSP for the MET as a known social event or Anticipated Context (AC). The AC can usually be established without reference to any actual data<sup>3</sup>. Reference is made to the culture in which the context is situated and the function or purpose of the named social event within this culture. The AC forms a threshold or expectation against which actual instances may be viewed. It is only against this set of expectations that the concept of a good or bad, successful or unsuccessful instance of a particular situation makes sense. In this sense we are establishing a relationship of instantiation between the abstract notion of an Anticipated Context and the concrete individual context<sup>4</sup>.

The concept of an Anticipated Context draws on Bernstein's (1990) notions of recognition rules and realisation rules. Both Hasan (1996) and Martin (2006) also make use of these notions in explaining variation in contexts through coding orientation. Martin (2006:293) suggests that the concept of individuation helps to explain the variability in how people read the social function of a context and links this to coding orientation. Martin (2006) draws on these concepts to explain why different writers produce very different texts about fundamentally the same event. As we discussed in chapter 2, the importance of the individual and unique is of somewhat limited value since coded behaviour is by necessity shared.

Following the establishment of an AC, contextual configurations are given for each specific instance included in the data set. On the basis of these statements of the CC, structural statements are made for each instance. The contextual analyses for each instance are made on the basis of language in each text and combined with information from other data sources relating to that specific text. The resultant statements refer to specific instances of MET calls with specific individuals performing specific tasks and behaviours. These statements are referred to here as the individual contexts or ICs. The IC statements are then

<sup>3</sup> Data here refers to filmed or recorded instances. Typically some kind of data will be used however it will most frequently be of a different nature (see chapter 6 for further discussion of this point).

<sup>4</sup> Although note my previous statement (see ch 3) about the nature of instantiation and its limitation to the theoretical hence the non contextual nature of the relationship. This causes problems for abstraction at the level of context.

compared to the AC statement to ascertain the variation in CC and GSP that exists in texts that have CC's of a particular nature. The comparison of IC with AC allows researchers to examine which values of the variables field, tenor and mode are most likely to result in favourable or unfavourable variation from the AC in any particular IC. This comparison between AC and the instances of IC allow for the establishment of the actual roles and responsibilities in a MET call and result in a better understanding of the MET and its relation to the hospital domain.

Variation between the AC and IC for the MET calls is then compared to variation in other contexts of care to establish crucial overlaps and similarities as well as the potential for important disjunctions between these contexts. This comparison allows for the consideration of domain based challenges such as the problem of educating in high risk environments. Education might be considered to have certain crucial values which provide the best possible environment for quality education to take place. High risk environments such as surgery, air traffic control, flying, emergency work, rescue and emergency department care amongst other environments are typically counter to the optimal teaching environment yet all are situations where training or specialised education is crucial. By working to understanding the relations between these situations we are better placed to provide the best possible training for high risk environments.

#### 5.4 APPLYING A MODEL OF CONTEXT: THE MET CONTEXT

In setting out to analyse a context our first problem is to establish the boundaries of our unit of analysis. Typically it is preferable, for a number of reasons, for there to be some agreement as to the unit of analysis. This is important for continuity if nothing else. When our analysis is at the level of context however, it becomes increasingly difficult to establish any kind of fixed unit of analysis. Certainly, the question of boundaries has been a longstanding issue for social science, science and the study of context in particular.

In the case of the present study, as well as being identifiable on the basis of nominal existence, boundaries were defined on the basis of perspective. The researchers set out to elaborate the roles and responsibilities of MET team members, and specifically, the roles and responsibilities of MET nurses. As such, they approached the MET with a particular question in mind. This being the case, the MET calls were viewed from the perspective of the MET nurse to the extent that the researchers effectively became embedded (literally – they slept within the emergency room or the ICU tutorial room) MET members in much the same way that journalists might be embedded with a military group.

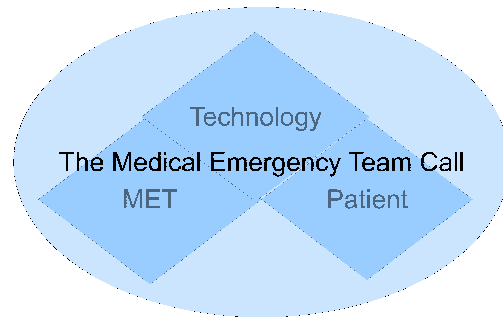


Figure 27: The Participant structure for the Anticipated Context for a MET call.

In the present case, the researchers were embedded with the MET and they thus filmed the MET scene from the MET perspective not the ward perspective. The researchers started and stopped filming when the call started and stopped for the MET. Thus, the film is skewed towards the MET perspective limiting the value of the data for answering multiple questions. I would propose, for example, that the scene would look quite different for a ward nurse or a family member or even ancillary staff. However, the criticism that is levelled at this approach when used in war reporting does not necessarily hold when used in mapping a specific context, although this point will be discussed further in chapter 6. Here the researchers are setting out to understand a context from a particular perspective so it is inherently perspectival work and in this instance relatively unproblematic.

The deliberately perspectival nature of this research means that, in describing the context, we can enter our context networks from a particular perspective. In this case, we will take the perspective of the MET as a team rather than any individual within the team since we are considering an Anticipated Context at this point in the analysis. The function of a MET call, as was discussed earlier (see chapter 1 and sections 5.1 - 5.4 above) is to make specialist equipment and skills available in a ward context as required. They are there to solve a specific medical emergency with a specific patient. As such, it is possible to consider the primary participants (at this stage) as beings the patient and the MET with the potential for technology as a mediating participant. This relation and the boundary limits of our context are outlined in the diagram below.

Because boundaries are important to our daily conduct, they are often central to issues that people may have within a context. For example, one of the issues that emerged from interviewing staff after the MET calls was the nature of handovers at the end of the MET call. Handovers form an important phase in a MET call for both legal and practical reasons. Both of these reasons

stem from the culture in which a MET call sits. In this case it is the medical environment in Australia. From the perspective of staff involved in MET calls there is a need to define clearly the boundaries of a MET call particularly at the end, when there is a tendency for the call to trail off into nothingness, making it difficult to handover the case smoothly and creating the potential for important information to be lost. This allows us to examine another issue central to the modelling of context, that of boundaries in context.

Analysis sets out from a statement of the MET context as an Anticipated Context or AC as outlined above. The unit of analysis for an AC is that of the culturally or domain defined social event. In the case of the present study the unit is the MET call as filmed by the research team, which as discussed above, takes the perspective of the MET. The bias towards the medical emergency team's perspective is not unreasonable, to use Halliday's (1994) reasoning, since the social event (MET Call) takes its name from the team from whose perspective the event was filmed.

The contextual configuration or CC given here is based on context networks developed by Butt (2006) which extend those developed by Hasan (1999). The rationale for the selection of these networks is that these networks have the distinct advantage that they have been primarily developed with reference to domains which might be said to fall within the general category of contexts of care and more specifically, health care domains. While there are a number of problems with the construction of these networks, many of which will become more apparent as they are put to work (see chapter 6), the health care domains most closely approximate the domain under investigation in this research. This alignment between the domains means that the distinctions which are made on the networks are more likely to be the distinctions necessary for the current context.

#### 5.4.1 *Field*

The field network will be our point of departure since it focuses our attention on the task that is typically held to be behind a MET call. The field network comprises four systems from which selections must be made: sphere of action, material action, action with symbols and goal orientation. With the exception of the system Action with symbols, the systems originate in Hasan (1999) although they appear here with modification. Sphere of action responds to the need for "the subject matter to be defined" (Butt, 1999/2004) and provides the choice between specialised and quotidian. Specialised indicates activities requiring a commitment (typically a prolonged commitment) to training (typically a

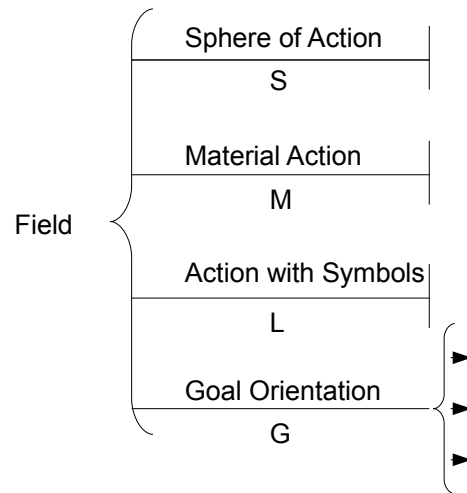


Figure 28: The major systems belonging to the Field network after Butt (1999/2004).

formalised training), while quotidian refers to activities necessary for group membership.

The entry condition for this system is that of a social process as a whole, an abstract notion of the social process or a text as a whole. The exact nature of a social process as a whole would usually be defined by the coder on the basis of the same sorts of principles by which they decided the boundaries of the situation. What may of course prove problematic here is the coding of situations where small scale shifts in sphere of action appear to be taking place resulting in the potential for a complex context. In such a situation, it may prove useful to have a smaller entry unit than the entire text.

The MET scene might quite easily be coded as both *specialised* and *quotidian*. The ambiguity between *specialised* and *quotidian* is perhaps true of any institutional context, since typically training as well as non-specialised attention to context are required to adequately perform within the context. Although it is not directly accessible from this study because the perspective chosen during data collection was the MET perspective, the simultaneously *specialised* and *quotidian* nature of the MET context can perhaps best be seen from the perspective of the ward staff, where a good nurse will be attuned to the everyday activities of the ward as well as the *specialised* nature of the task at hand. In fact the everyday or *quotidian* activities may play a much bigger role in the smooth running of the *specialised* aspects of the hospital than has previously been thought.

One perspective of a MET call is that it is *specialised: natural: direct: technical (and perhaps cladistic)*. Yet it might also be true to say that the MET is *quotidian:institutional:initiation:apprenticeship (and perhaps practice oriented)*. Certainly, although the MET requires



Figure 29: Primary choices within the sphere of action system.

training and is in this sense *specialised* there are distinct *quotidian* aspects to it, which it shares with other contexts of an institutional nature. As a slight aside to this selection, it should be noted that within the sphere of action system, *quotidian* appears to have a different entry condition; that of individual or group.

*Material action* concerns the role that activity plays in the context. Here again the entry condition or unit of analysis for this system appears to be distinct from other units of analysis. In order to make use of this system, it is necessary to have as the entry condition an entire context. However, analysis here appears to be based on the individual in the sense that individual differences in this system exist particularly in multiparticipant contexts, which may reflect crucial aspects such as roles or other tenor related categories.

When we consider the idealised MET call as an entire context, it would be necessary to say that *Material action* in the MET call is *obligatory*. However, many instances of the MET scenes show that there is a clear distinction between ward and MET staff on *material action*. The participatory distinction in the classification of the context with respect to *material action* foregrounds a crucial tenor relation. Since ward staff have called the MET, it is the MET who must perform the *material action*, thus, for ward staff it may be only *oblique* or even *absent:deferred:contracted*. This issue will be discussed further in chapter 6.

The system *Action with symbols* refers to the necessity or otherwise for language to be used in order to carry out tasks in this context. This system provides between necessary and unnecessary and then between a wide variety of options for describing the purpose of the text if *action with symbols* is deemed necessary. Here again the entry condition is the context as a whole. Considering the MET call as a named context, most would state that *action with symbols* is *necessary: conceptual: reflection based*. The last of these distinctions is designated for those contexts where problem solving is the primary concern. This would certainly be the case for MET calls however as we shall see later it is necessary to distinguish further at this point if we are to cover the variability inherent in instances of MET calls.

The final system within the Field network is that of *Goal Orientation*. *Goal Orientation* is arguably one of the more consequential of the systems within field (Butt, 1999/2004). It relates to the motivations for action as they are outwardly manifested. The

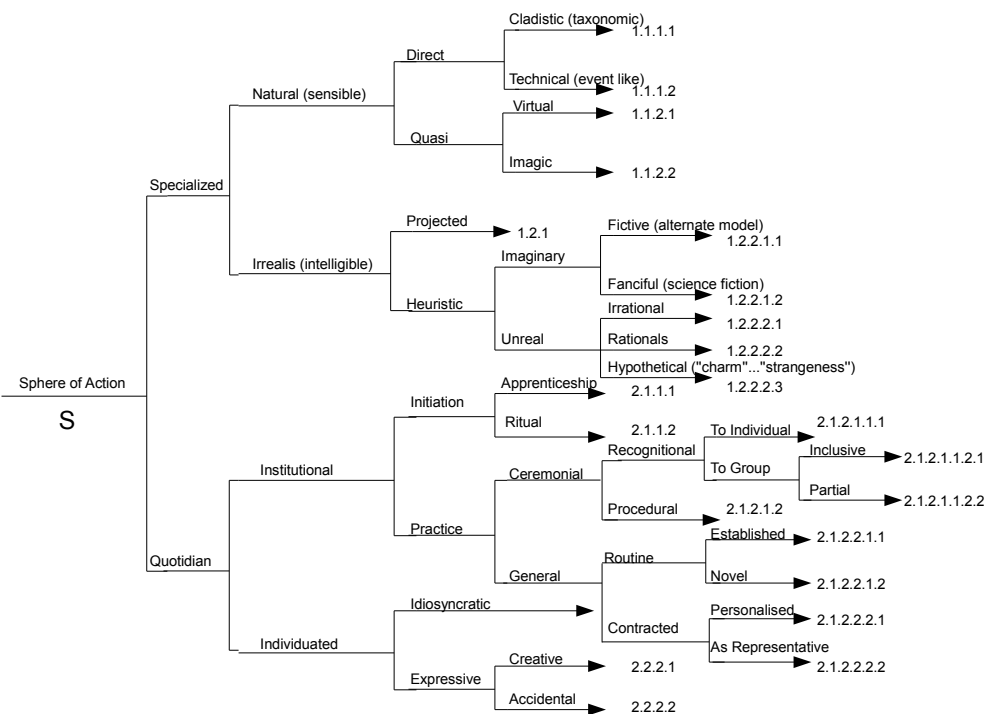


Figure 30: The Sphere of Action system after Butt (1999/2004) showing unique codes at the end of each branch in the system that can be referenced independently of the system network.

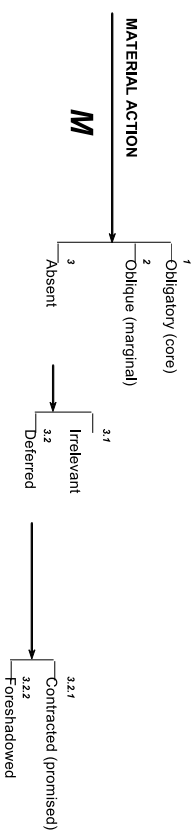


Figure 31: Primary choices within the Material Action system.



Figure 32: Primary choices within the action with symbols system.

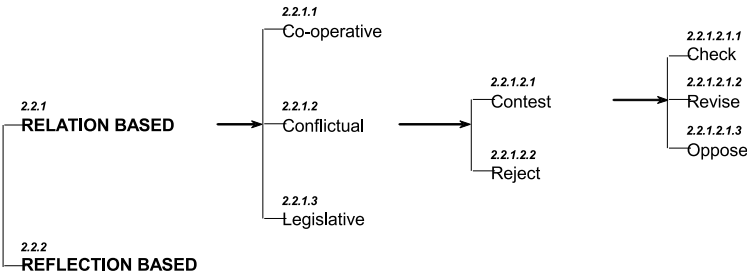


Figure 33: Further specification within the Action with symbols system.

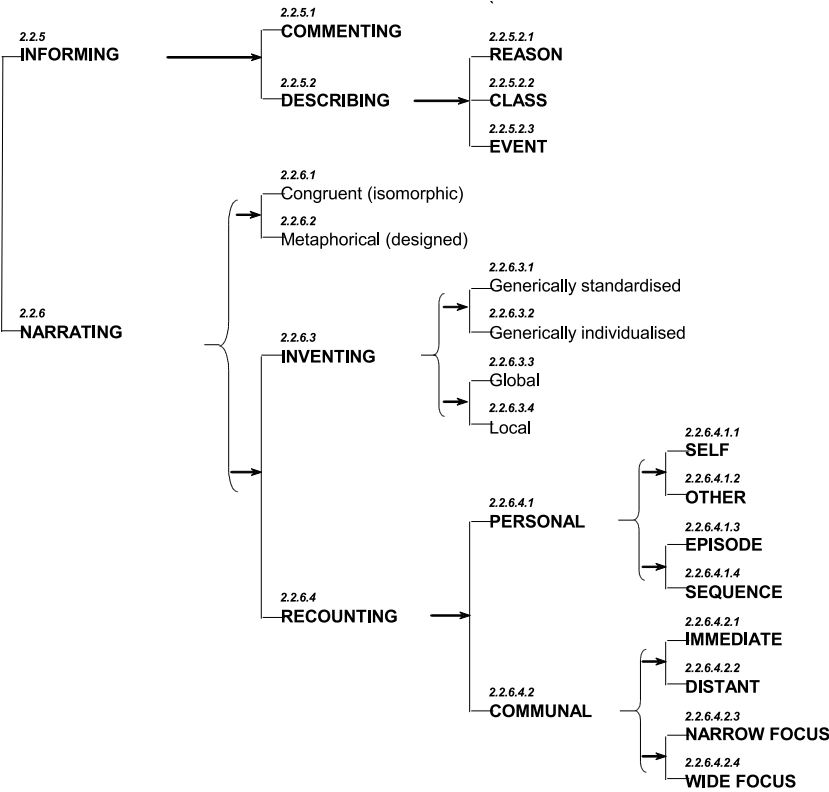


Figure 34: System focused on narrating.



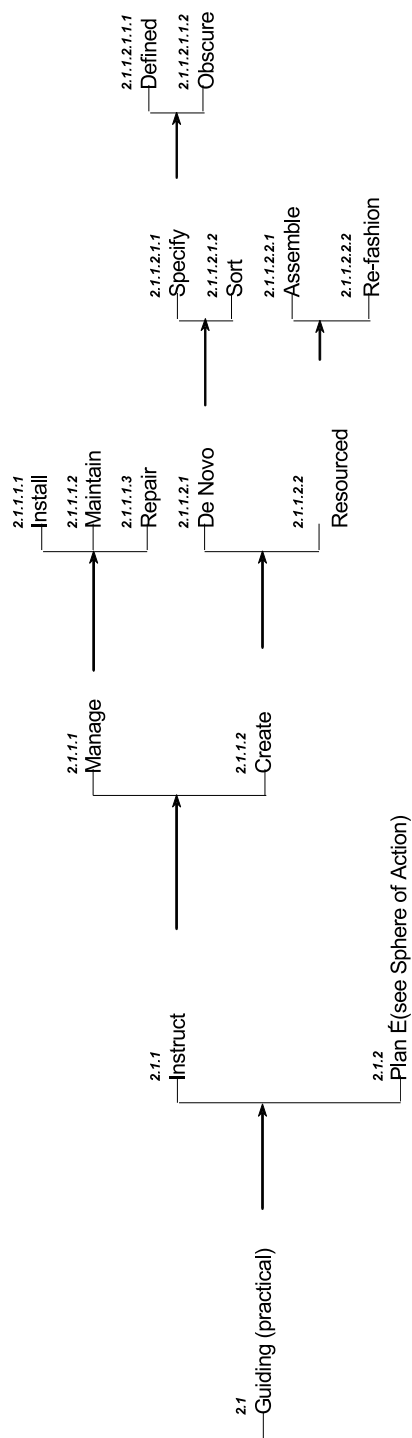


Figure 35: Further specification of Action with symbols network.

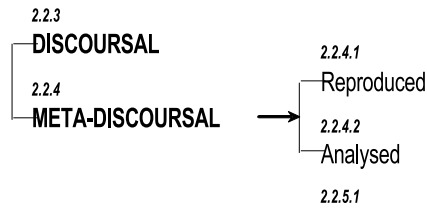


Figure 36: System focused on discourse.

obvious problem here is one of accessibility. The same criticisms that were levelled at van Dijk in chapter 4 are equally true here. With the exception of what is revealed through language, it is not possible to gain access to people's private mental world. Particularly given the behavioural orientation of SFL, statements of goal orientation may prove problematic.

Given that the goals of participants within a situation are rarely perfectly aligned, it would seem that the unit of analysis for this system is the individual. This raises the question of how we are to deal with multiparticipant data when the units of analysis are different for each system. It would also appear that the goal orientation system is perhaps relevant to all of the other systems within the other networks. While it is important for goal, it often relates more to the method of proof or evidence used for category selection than to the field as such. As will be discussed further in chapter 6, it may be possible to code all our selection according to an evidence network.

Following the network as laid out in Butt (1999/2004), the *temporal orientation* to goal is *immediate* (game-win or auction-buy). The *evidence* for the goal orientation is *overt* and *defined by activity*. The *orientation to the goal* is *constant*. We will return to some of the issues associated with this later in chapter 6.

#### 5.4.2 Tenor

The tenor network is an attempt to encode the social relations pertaining to meaning making in a particular situation. The tenor network comprises four systems. These are *Social Hierarchy*; *Agentive role*; *Social Distance and Network Morphology*. These systems capture the relations between participants in a context. Participant here may also be seen to include artificial intelligent devices following the arguments put forward by Nardi (1996) although this will be discussed further in chapter 6.

*Social Hierarchy* is the first of the systems which will be considered in a tenor description of the MET call environment. *Social hierarchy* captures issues of equal or unequal distributions of social status and power. This system is broken into smaller systems

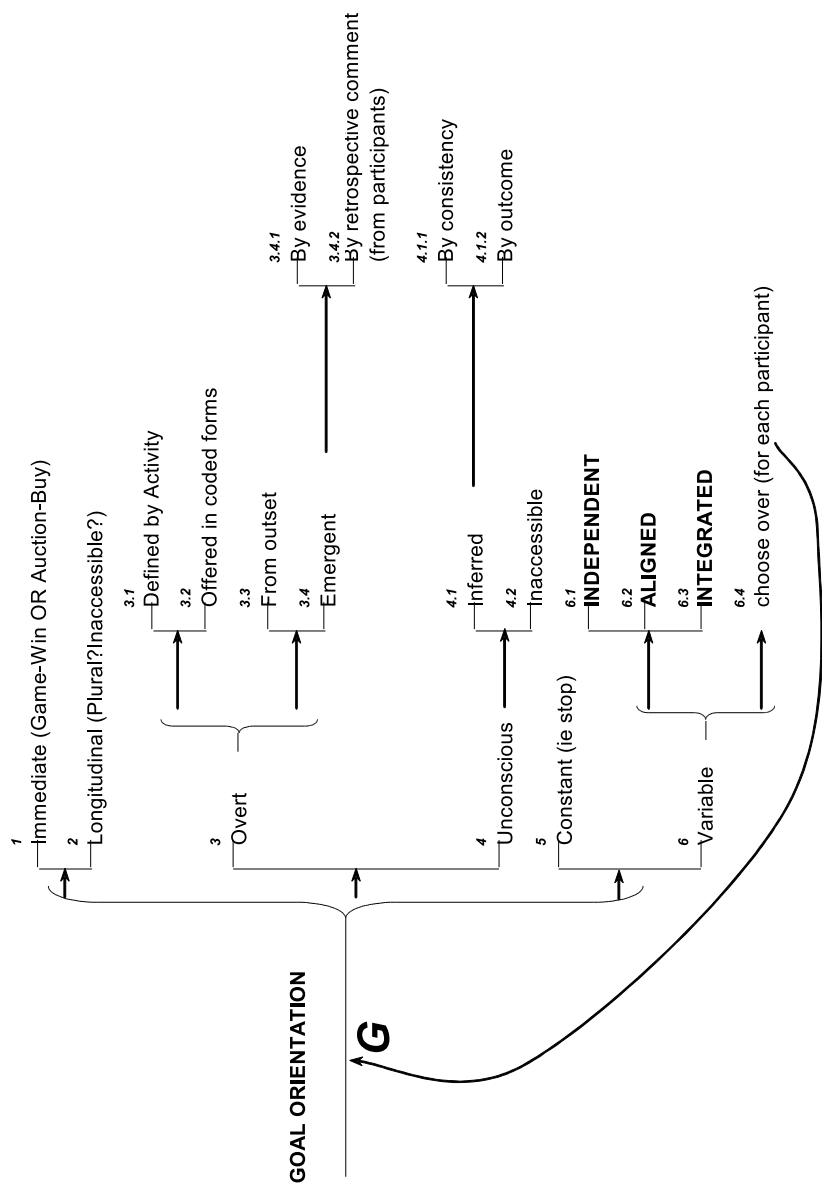


Figure 37: The goal orientation network as set out by Butt (1999/2004).

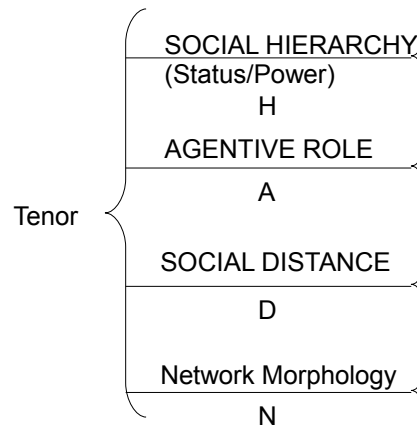


Figure 38: The major systems of the Tenor Network after Butt (1999/2004).

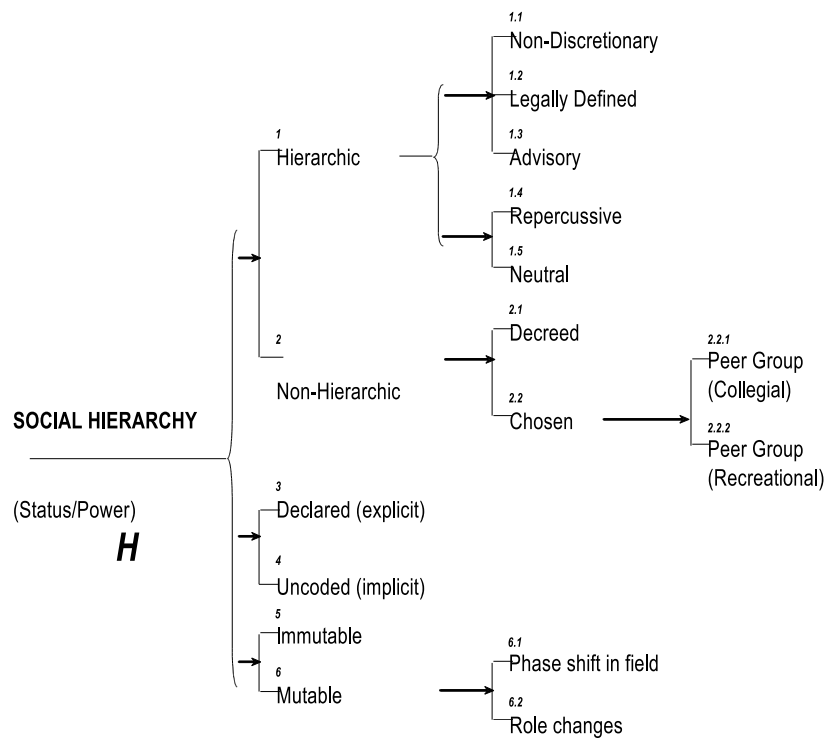


Figure 39: System looking at social hierarchy between participants.

of *hierarchy*; *Explicitness and Mutability*. The MET call environment is *Hierarchic*: *Legally defined and repercussive*. The relationship is *explicit and mutable*, changing with *changes in field*.

The second system is that of *Agentive Role*. *Agentive role* focuses on variation in the roles of the participants involved in a context and how these roles are established and maintained. The focus here is on the implications of these roles on meaning making in the context. *Agentive roles* is divided into 3 subsystems: *Acquisi-*

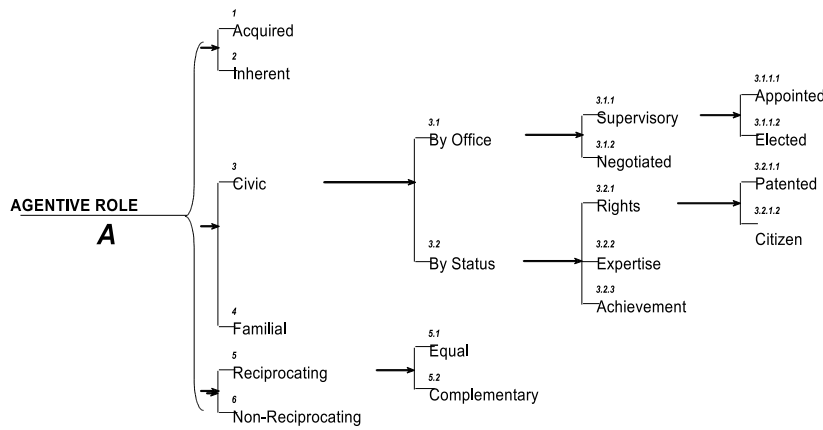


Figure 40: System focused on agentive role.

tion; Role Achievement and Reciprocity. The MET call environment as a named social activity has acquired roles that are *civic in nature, by status, expertise*. These roles are *non-reciprocating*.

It is clear from this analysis that there are some analytical problems in using these systems. Firstly, the terms are reasonably open and this proves problematic when attempting to apply them consistently across contexts. Secondly, the entry conditions vary across the subsystems within a system. This is perhaps more concerning because we are attempting to describe an archetype of a named social event rather than an actual instance, however, research suggests that most contextual descriptions do in fact work with an archetypal event rather than actual instances. Hasan (1999) and Halliday (1999) for example both use this approach when setting out in their analyses. I will set this problem aside for the moment however and return to it later.

The final two systems – *Social Distance and Network morphology* – both address issues of social networks and are drawn from Social Network theory. The entry conditions for these systems are even more problematic but again, we will set this aside for the moment. *Social distance* covers the extent to which participants know each other. This system is divided into the subsystems of *Complexity, regularity and code*. There are classification problems with these systems however, as always, we will discuss this further in chapter 6.

*Complexity* considers the nature of the relationship between participant, looking at the number of contexts within which these participants interact. In the MET context networks are typically *uniplex*, with interaction being of a *business nature* and typically *assigned* since patient allocation within a ward is most often non discretionary. *Regularity* considers the frequency of the interaction. Within the MET call interaction may be considered to be *regular* but *perfunctory*. The final subsystem is that of *code*. This divides

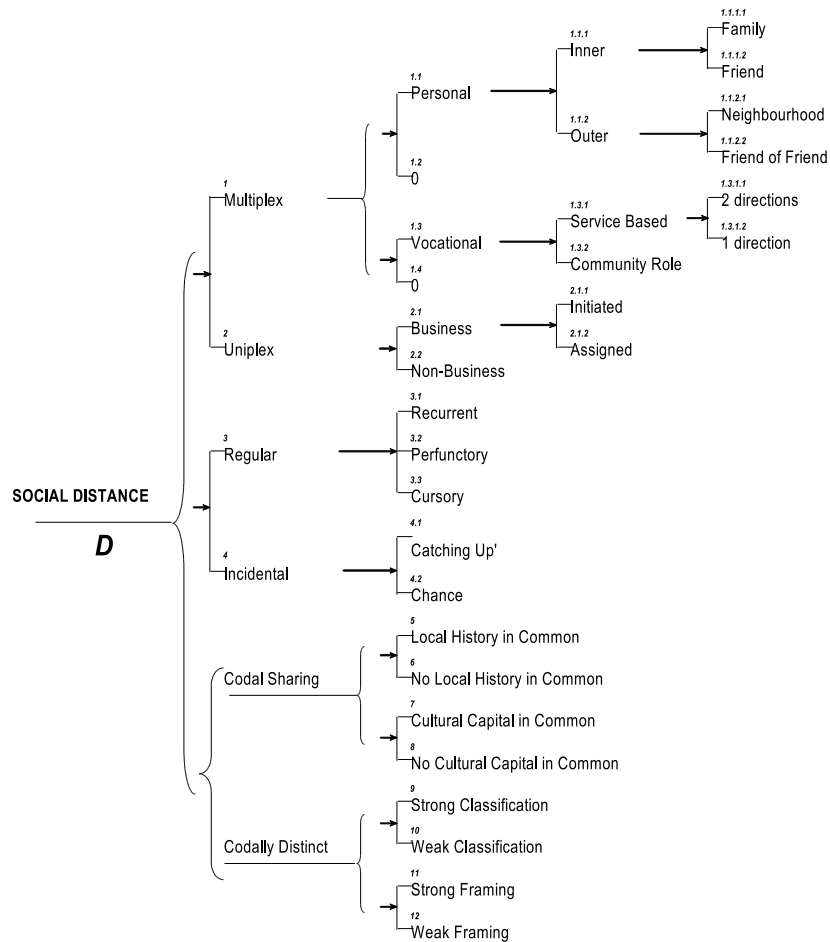


Figure 41: System focused on social distance.

into *codal sharing* and *codally distinct*. *Codal sharing* is typically characterised by *no local history in common* and *no cultural capital in common*. The MET situation typically has *strong classification* and *framing*. The activity is distinct and identifiable and roles and responsibilities are clearly set out.

*Network morphology* attempts to account for some of the other social network features that may be relevant to interaction in the context. *Network morphology* is divided into *scalar* and *non-scalar* features. The *non-scalar* features divide into *group structure* and *role organisation*. *Group structure* for the NET is group focused and sub-grouped. *Role organisation* is primarily field dependent however because it is an institutional setting, the roles are also positionally defined. The scalar features include; *density*, *diversity*, *directionality*, *centrality*, and *clustering*. All of these categories are binary. For the MET situation, *density* is low, *diversity* is high, *directionality* is typically *one way* (although we will return to this point), *centrality* is high, and *clustering* is low.

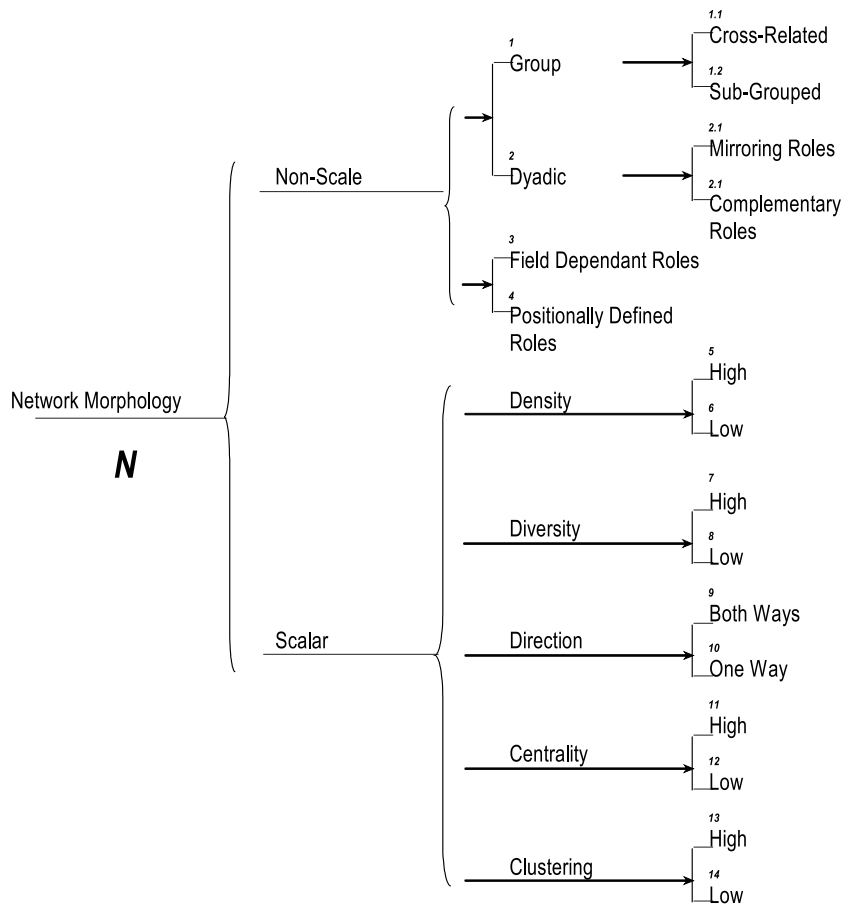


Figure 42: System focused on the shape of the social networks involved.

#### 5.4.3 Mode

Our final consideration is that of *mode*. The *mode* network is concerned with the method of interaction and it is divided into three systems including; *role of language*, *channel* and *medium*. *Role of language* looks at the dominance of language in the context and is primarily concerned with how important language is to the activity. The MET call can mostly be defined as a *supported* domain. That is the *role of language* is to support the activity, it is requisite for experiential elements to move the activity forward at most points.

The *channel* system encodes aspects of the signal including the *signal characteristics*, the *temporal horizon* and *streaming* aspects. The *signal characteristics* in a MET call are typically *phonic: human: linguistic* since most communication is done through speech, however it should also be noted that a large segment of time during MET calls is given over to documentation in which case *signal characteristics* also include *graphic: mono: orthographic: alphabetic and handwritten*. Interestingly, technology plays a significant role in MET calls and much time is devoted to reading machine indices

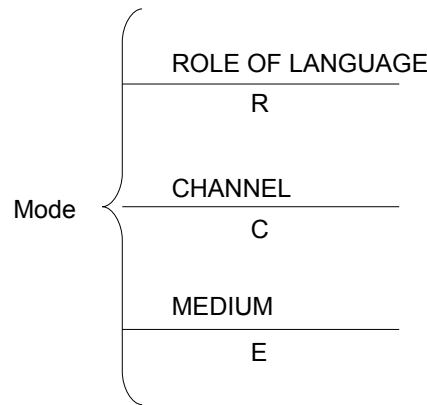


Figure 43: The major systems of the Mode Network after Butt (1999/2004).

and listening for significant sounds that carry meaning for the specific environment within which they occur. There is no option within the network which entirely conveys this mix of signals especially since *graphic* and *phonic* are binary options. I would however suggest that the MET call contains *phonic: machined: other:noise:ordered signals*, although this does not entirely capture the signals involved.

With respect to the *temporal horizon* of the signals within a MET call, most signals are *real time: face-to-face or electronic*. While it is true to say that some information, indeed much of the information, is *mediated* within a MET call this mediation is either *face-to-face* or carried *electronically* and the intervention is neither a *disruption nor an intervention* that impacts significantly on the signal. Indeed if we consider the *streaming* of signals within a MET call, many of the signals are *multiple and overlaid* reflecting Hasan's (1999) observation that institutional contexts are typically multiply coded for context. For example, staff will typically receive information verbally, via a visual display, via a sound and via a colour or icon. This layering of information is crucial in such environments. Frequently this may even extend to having multiple machines which test the same thing and present different forms of output. This is important to consider when creating and implementing technology within such a domain.

*Medium* is the final system within the Mode network. *Medium* is distinct from, though related to, *channel* in that it considers the organisation of the signal. Butt's (1999/2004) networks do not follow the typical distinction made in SFL between *Channel* and *Medium* in exactly the same way that it is usually made. *Medium* in Butt's (1999/2004) networks relates more closely to the text and attributes of language. Classical SFL usage makes the distinction here between creation and reception. The *Medium* system divides into three subsystems; *structural tendencies, organisational tend-*



*encies, and consistency.* For the MET call environment, *structural tendencies* are more *spoken-like* since this is the primary means of signal exchange within the environment. *Organisational tendencies* are towards more *crystalline or dense* organisations resulting in modification and embedding. *Consistency of medium* is more *wave like*, with *phases* being marked by *density*.

#### 5.4.4 Contextual configuration of an Anticipated or Archetypal context

Many of these points need further elaboration to account for their selection and this will become more apparent as we consider some of the instances of MET calls as opposed to the abstracted named social event or what we think of as an archetypal MET call. Despite the problems associated with this form of analysis, it is possible to state a contextual configuration for an archetypal event provided that the structure of this event is established prior to setting out the contextual configuration. By this I mean that it is necessary to establish your boundaries and your participant sets prior to starting the contextual configuration. This is necessary, apart from any other factor, because any analyst will need a sense of the boundaries and participants that are relevant when working through the networks. In most cases the boundaries and participants can be established by reference to the function of the social event in society. As Halliday (1994) suggests, if an event is named it is because it is recognised as important to a culture for some particular reason or reasons(s).

Taking into consideration the function that the medical emergency team serves in the hospital domain and the purpose of a medical emergency team call, it is possible to establish a contextual configuration for the MET call as an archetypal or Anticipated Context. This CC as outlined in detail above may be represented as seen in table 4. In this table, the selections from the system networks is show by the reference code displayed on the system networks seen in figures 25, 28 - 43 and in Appendix A-1. Although this representation saves space, it does have the problem that it is impossible to understand the code without consulting the networks and looking up the code. It is possible to become familiar enough with these codes that the general selection can be seen just from the code however, this is certainly not transparent.

This statement allows us to make predictions as to the anticipated generic structure for MET calls as an archetypal event. It is this structure which is reflected in the highest order of abstraction in the research carried out by the Simpson Centre. The final phase of interviews conducted asked participants to consider MET calls in general without reference to any specific recording or analysis

Table 4: The Contextual Configuration for the Anticipated Context.

Network	Systems	Selections for Anticipated Context of MET Call
<b>Field</b>	Sphere of Action	S1.1.1.2 or 2.1.1.1 or even 2.1.2.2.1.1 (although there is less evidence for this)
	Material Action	M1 (but this is strongly perspectival)
	Action with Symbols	L2.2.2
	Goal Orientation	G1, G3.1, G3.3, G5
<b>Tenor</b>	Social Hierarchy	H1.2, H1.4, H3, H6.1
	Agentive Role	A1, A3.2.2, A6
	Social Distance	D2.1.2, D3.2, D6, D8, D9, D11
	Network Morphology	N1.2, N3, N6, N7, N9, N11, N14
<b>Mode</b>	Role of Language	R2.2.2
	Channel	C2.1.3 (but also 1.1.1.2 and elements of 2.2.2.1.1), C3.1 (or 3.2 with elements of 4.2.2 although human), C6.1
	Medium	E1, E2, E5.1

or without reference to actual instances that they might have experienced. While recognising that it is not possible to stop people from drawing on personal experience, and in fact ethnographic notes taken during these interviews and the recordings of the interviews suggest that people do in fact draw on personal experience for reasoning, nevertheless, it is possible to achieve a certain degree of abstraction from the immediate context by asking people to consider MET calls as a hospital function. The abstraction is recognisable in the marked difference between how people coded the context when asked to consider the MET as part of the wider hospital situation. Thus, since we are able to give a contextual configuration for such an abstracted context it should also be possible to give a generic structure potential by reference to the same means.

#### 5.4.5 *Generic Structure Potential*

The MET scene then can be regarded as a defined social process. Certainly it is defined in the language as a separate identifiable process suggesting that it is possible to isolate it for analysis (Halliday, 1994). Hasan (1996c:46-47) states that for institutional settings it is possible to state a Generic Structure Potential (GSP). This is simply to say that there are some contexts which tend

more towards being heavily structured and organised and thus are less likely to be open for individual negotiation and more likely to have a recognisable generic structure that is reasonably predictable. Institutional settings are here defined as situations that are multiply coded for context and that have convergent coding (Hassn 1996c:46).

The GSP is an abstraction that represents the 'total range of textual structures available within a genre' (Hasan, 1996c). The MET scene is certainly an institutional setting, although as we will see later it also has features of a non-institutional setting and this creates some of the problems around handovers. Knowing that the MET call takes place in an institution is not enough to consider it an institutional text. We can easily think of highly individuated texts being created within an institutional setting.

The MET call is institutional by virtue of it being a multiply coded social process. By the very labelling of a process it is defined as a situation. The MET call forms an interruption in the flow of hospital activity for most cases. If it becomes routine it is problematic. The participants in a MET call are highly coded with the tenor of the participants being laid out not just by the way they are labelled, or by the way in which they interact but also by what they wear. Just like the surgical environment, the MET call, by its very nature, relegates the patient to a typically non-participant status. The patient is goal or target because they are usually unable to participate in the text (this is usually the motivation for the MET call) or at least unable to participant in a significant way. This means that the primary interactants within a MET call are the ward staff and the MET staff.

These participants are coded by their dress and by their language. The clothing also indicates hierarchy within each of these groups as well. As well as being multiply coded, the MET call is also an example of convergent coding. The semiotic message of the material setting, the language, and gesture all converge. This extends to the staff taking multiple readings of the same information e.g. the ward staff take the blood pressure of the patient before they call the MET, then they take it again when the MET arrive, then the MET take it themselves, then they might use their (the MET's) own machine (this does actually give more information than the ward machines in a lot of hospitals), then they might direct the ward staff to check it manually.

The MET scene then is an institutional text that is defined by the culture prior to any specific instance that might take place. Each MET call is not really an opportunity for negotiating the structure of a MET call even though each instance represents a taking up of the potential structure and the potential is defined by our multiple experiences of instances. This means that over time the instance can change the potential, though only in the

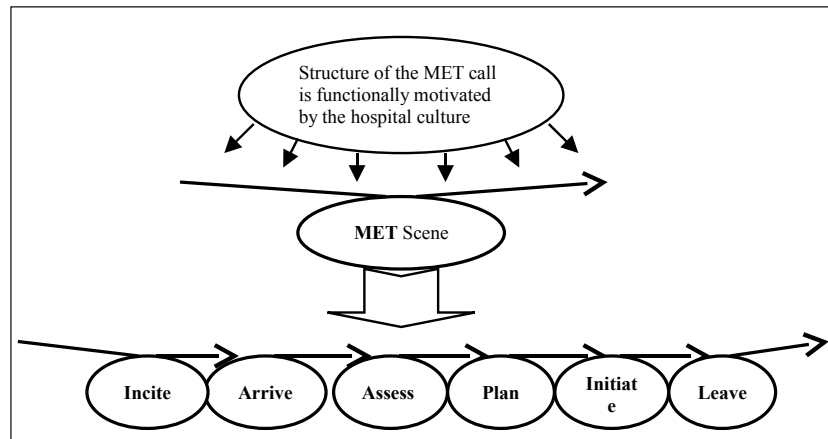


Figure 44: The Generic Structure Potential for the Anticipated Context of a MET Call.

same way that a single human contributes to the course of human evolution.

Firstly, for a MET call to take place there must be an inciting event. The nature of the inciting event is different for the two participant groups. All participants in a MET call are initially engaged in the ongoing social process of the hospital. A MET is drawn from either the Emergency department or the Intensive Care unit and they are engaged in the running of these departments until a MET call is made. Semantically, a MET call takes the form of a request and response. From the ward staff perspective, the inciting event actually resides with the patient in the form of a sudden decline in function of one or more of the vital signs, while for the MET, the inciting event is a MET alarm in the form of a pager message. The decline in the patient's well being is often (but not always) severe enough to remove the patient from further interaction, but prompts the ward staff to make a call for a MET.

The long-term goals of this call may relate more to hospital resources e.g. the desire to have a patient moved to intensive care, and this will influence the course of the dialogue during the call. A call from ward staff will be made via pager and will typically be realised lexicographically as a circumstance of location: spatial e.g. Bed 56 ward 2. For the MET members the initiating event will be received via pager and will semantically realise a request that requires them to perform some action. It might appear as if the pager call semantically realises a command, e.g. MET call Bed 56 ward 2, but it functions as a request because only one member of a MET has to respond to fulfil hospital regulations, thus members have a choice.

In many instances not all staff respond, and this is largely based on their knowledge of the social process, e.g. whether that bed

number is critical or not and the current pressures on emergency and intensive care. A MET is made up of various individuals, and the individuals that respond to a particular call will be a source of variance for the way the MET call plays out.

The initiating event phase is followed by arrive. Arrival as a structural phase may be distributed throughout the call from the individual team member perspective, but from the perspective of the ward staff it takes place when the first MET member arrives at the scene. Clearly arrival must take place for a MET call to take place. Depending on the reason for the call, dispersed arrival of team members can affect the structure of the call. But it is typically the extent and not the order of the phases that is affected. For example, delayed arrival of the MET registrar will see the elongation of the assessment phase. It will also see a short recount provided for the registrar when they arrive to catch them up on activities.

Arrival is not fixed, as the MET scene represents a semi-permeable space with staff and in some cases family moving in and out of it for the duration of the call. The information received during the initiating event forms the knowledge that the MET members have when they arrive. The value of this information will vary depending on how it fits in with what has gone before it e.g. specific knowledge, prior MET calls for that bed, knowledge of that patient or general knowledge, reasoning about the likely problem based on the typical ailments for that ward.

Upon arrival, MET members need to assess the situation. Assessment is where the MET finds out about the problem. This means that they need to establish a baseline for the patient and test their current status. This phase is made up of smaller phases that together make up the assessment phase. The assess phase can be broken up into elicit information, clarify information and assess information. These phases can repeat many times within the assess phase.

These phases are typically realised semantically by questions and answers, and might be realised through gesture, material action or through language. At this stage in the project, the exact nature of the lexicogrammatical realisations is not possible to state, because the full set of analysis at this level has not yet been completed to a stage that would enable us to develop the statistical likelihood of different microstructures within this particular phase.

The assess phase is typically followed by a plan phase. The plan phase is where documentation, a key aspect of any MET call takes place. The planning phase sees the planning of treatment and the preparation of medication or forms of intervention. Although this phase might be quite small and may be realised within another phase, it is important to the playing out of a MET call. The plan

phase may involve aspects of the assessment phase, and is likely to be semantically realised by negotiation and proposition.

This phase of the MET call is likely to be the most interpersonally charged section of the call. This is because this is the point at which the ward staff and MET team are most likely to be set up against each other. The decisions made at this point will need to be carried out by the ward staff on an ongoing basis, so it is important that the ward staff are fully engaged in the decision making process to avoid unnecessary conflict that might be caused by unequal tenor relations. It runs the risk of dividing the ward and MET staff into two teams with independent motivations. This is counter to the goal of the MET call that is to stabilise the patient, and this is something that is best achieved when a single team with two perspectives is created.

The plan phase will be followed by the initiate phase where the decisions formulated during the plan phase are put into practice. This is important because if the patient does not improve, then the assessment, plan and initiate phases will need to be repeated. This phase is likely to be realised semantically with orders, requests and compliance. As with the other phases there is not enough lexicogrammatical analysis completed on this phase to allow an accurate prediction of the lexicogrammatical realisation. The initiate phase is central to achieving the ultimate goal of a MET call. From this point the scene begins to wind down. We begin to see references to other scenes, to rosters, to other environments and generally topics outside the MET call (although they may have a bearing on the scene at hand).

The final stage that draws the MET call to an end is the leave taking. This is the point at which the MET scene is closed off and the staff members return to their normal tasks. This phase is crucial in a hospital setting because it is a way of maintaining safety, reducing accidents and of allowing the flow of hospital life to return to normal after an emergency situation. This phase will have features of a casual conversation in the way leave-taking takes place. Gestural cues orient the participants to the start of the phase and are followed by language-based signs.

In most cases the team members are already oriented to leaving because the initiate phase typically leaves semiotic space for winding up the MET call because it involves actions that are very familiar to all members. The leave-taking phase includes a phase that is central to any hospital environment, that is the hand over. The hand over should contain a recount of what is wrong with the patient, the decision for treatment, including what has been done and what should be done in the future. It should also contain space for debriefing even if only for a short period.

Inciting event^Arrival^[Assess^Plan)•Initiate^Leave)]	Key [] = realization dispersed ^ = is followed by () = optional element • = order may be reversed
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Figure 45: The formulaic representation of the GSP for the Anticipated Context of a MET Call.

So the generic structure potential for a MET call can be represented as a sort of formula for the unfolding of the event. This is presented in figure 45.

5.4.6 The Anticipated Context: expectations for a social process

The above sections outline the expectations about context and structure for a medial emergency team call. These two sets of expectations I have referred to as the Anticipated Context. The Anticipated Context is an attempt to capture the mental schema that people operate with for a particular context through the information that is encoded about a context in language. Any attempt at such an abstraction will of course confront the difficulty of finding a balance between system and instance. Certainly I am conscious when proposing this category of the profound theoretical problems associated with assigning expectations to groups rather than individuals.

Anticipated Contexts as set out here share a distinct similarity with registers, however, they are not a registerial description. The Anticipated Context is not based on shared meanings but on our understanding of the culture and the function of the context within the culture. While we might wish to consider a MET call as a context of care or as belonging to the care register, when we describe the Anticipated Context we are describing what we expect a MET call to be like on the basis of our experience with the culture and the function that we see this context as having within the broader cultural context.

The implications of considering how we (as researchers or practitioners or both) expect a context to be are that we will often reference something familiar that we see as being similar and it is very likely that we will get it wrong. Just as Malinowski found that the Kula could not be described by reference to the familiar patterns of western life, it is likely that attempts to describe a situation with which we are unfamiliar will result in many errors. But this is not always a problem. Sometime we may want to discover the erroneous schemas that are likely to be used for a new situation.

While there are many issues in this kind of analysis, one of which is the distinct possibility that each individual will have a very different expectation of how a context should unfold, Santiano et. al (2011) found that the greater consistency in coding came at the more abstract levels of contextual description, where participants were asked to consider the MET call in general. This consistency suggests that people do operate with a general concept of what to expect in a context and what is expected of participants within a context. It may well be argued that mismatches in these expectations are the primary cause of minor conflict in daily life. So while we may expect and be expected to behave in a certain way actual instances may often vary significantly from these expectations. Crucially, even very small variations can have a big impact. Bernstein (1971) refers to the context that we anticipate as the recognised context and it may resonate with ideas raised by van Dijk (2004) and even earlier by Wegener (Wegener cited in Nerlich, 1992).

## 5.5 INDIVIDUAL INSTANCES SET AGAINST EXPECTATIONS

In the above section, we examined the MET call as a distinct, named social process that was easily identifiable to its participants. However, while we may operate with a set of expectations about a social process, individual instances of these social processes will vary from this expectation such that the instance may not even be recognisable as an instance of the social process to those outside the event. In the section that follows, more detailed consideration will be given to one instance of a MET call although other instances will be discussed more generally from different hospitals. In so doing, we will examine some of the problems associated with contextual analysis at the level of the individual instance. Some of these problems include boundaries, units of analysis, perspectival issues, and representational concerns. Although these problems will be obvious from the analysis I will discuss them further in chapter 6.

### 5.5.1 *The Instance*

Our first concern arises when we attempt to set the background for each of the instances. Because each instance is an actual record of daily life that has a materiality, their variability from each other and deviation from the Anticipated Context may be explained by factors such as day of the week, time of shift, position within the shift and team construction amongst other factors. While these factors may be highly relevant, either directly or indirectly, to meaning making, there is currently no way of recording these



factors within the context networks and their inclusion within the networks is by no means simple.

This problem goes back to our question of the applicability of parametric modelling for context. Certainly, variation in parameters is not something that this form of modelling does not attempt to account for, hence factors which may explain variation are not essential to the description. However, it is typical of most accounts to include some sort of 'stage setting' element to the contextual description and these are typically factors which most people would consider to be part of context. It is for this reason that many theorists (see Cook, 1990) see context as an impossible goal in analysis.

What is often thought of as the stage setting element of context Hasan (1999) has called the *material situational setting*. The material situational setting is problematic in its theoretical relation to the networks (see chapter 3), however we may venture to think of it as being a step removed from the networks. For example, variation in the material situational setting may be the cause or at least partly the cause of variation in the contextual settings and the resultant variation in choices in the network may influence meaning making. We can see this more clearly if we consider the MET call data.

Variations in the time of day, the ward, etc are all aspects of the material situational setting. Variation here does not impact on language directly. It would be drawing rather a long bow to claim that variation in the time of the day results in variation in meaning making patterns during a MET call. However, it would be perfectly reasonable to claim that variation in the time of day does impact on staffing, potentially changing the tenor relations of the MET, the Ward team or even the research team. Time variation also impacts on people's concentration and focus and other things which may then impact on meaning making. Our focus then, is on establishing the connection between the material situational setting and the context networks and the resultant impact on meaning making.

In the instance of a MET call recorded in Appendix A-2<sup>5</sup>, we see a MET call from the point at which some members of the MET arrive through to the point at which most members leave. The transcript does not include the initiating call or the work carried out after the MET had left to restore the ward to normal

<sup>5</sup> I am grateful to The Simpson Centre for allowing me to refer to this study in my thesis. Although slowed by the funding withdrawal at the centre, joint publications are being produced on this work and more information on the research will become available as it is published. Unfortunately it is not possible to show the videos that accompany this transcript and upon which analysis has often been based. I would also like to thank the patient and their family together with the staff at the hospital involved for agreeing to be a part of this study.

procedures. As the primary analysis relies on the video and interviews which are not available it remains for future work to provide the analysis of these individual situations in more detail, however it is possible to consider briefly some of the differences between the Anticipated Context for the MET call and the Individual Context of a MET call shown here.

Of particular interest is the differences in the participant structure represented in table 5. Shown here is a sample matrix of the participants involved in the situation. This particular matrix shows the Anticipated Context participants as the first level and under this are the participants for the Individual Context and the contextual configurations for this instance have not been stated in the table.<sup>6</sup> These have been shown here by their roles rather than their names so the matrix represents a breakdown of the role structure of the call. While here we consider only the important aspects of tenor that vary between the two it is also potentially possible to show all aspects of context in this way. Field may be represented as negotiated action between dyads or groups and the same for mode.

The first point of interest in this situation is that the patient plays a role in the shaping of the context. Although most participants suggested during interviews when thinking about the Anticipated Context, that patients were rarely an active part of the MET call, in this instance the patient is active in establishing his baseline health. Although the ward nurse is much closer to the patient in terms of the time they spend with them and their familiarity with the patient's condition, in this instance we see the MET RN address the patient in highly personal vocatives while the Ward RN refers to the patient with pronouns. This represents a potential discrepancy in how we use evidence for making statements about context and displays a problem with evidence at the level of context that will be discussed further in ch 6 namely, that if we treat use of personal or intimate vocatives as evidence of close personal tenor roles then it is equally possible to say that close personal tenor roles are characterised by use personal or intimate vocatives. Furthermore, if such a relationship exists between these two, then how much weight should be allocated

<sup>6</sup> At the start of chapter 5 I stated that data in this particular MET research project was explicitly collected from the MET member point of view. It was also focused on the more macro level meaning that variation in individual conceptions of the situation were not the focus. This bias in perspective means that multiple and individuated perspectives were not available for consideration in the data collected. The tenor matrix presented here represents an example of how this variability might be explored and represented in future work. Traditionally, SFL descriptions of context focus on one perspective and typically on the generic or the specific rather than a comparison of the two. Often the perspective is that of the researcher, although presented as if from one participant. Participant observer research allows for more direct involvement of participants in the description of their own relationships with a context.

to the relationship in determining context? In this particular case, the MET RN does not know the patient at all while the Ward RN is quite close and had formed a significant bond with the patient.

The Ward RN and the MET RN also form an interesting difference. While the MET RN has higher qualifications and more training on average than a Ward RN this is not always the case and it is not always relevant to the tenor relations of the participants. In this particular case both RN's display knowledge of different kinds and drawing from different bases. While the MET RN draws on checks and technical support to make decisions the Ward RN draws on mental impressions and feelings from ongoing interaction with the patient. To put this another way, the MET RN is engaged in judging the patient's responses and readings against a standardised threshold, while the Ward RN is engaged in judging the patient's current status against a prior personal threshold for that patient as an individual. This brings the two RN's into conflict with each other and their tenor relations are quite negative. As it turns out, the Ward RN is correct in her analysis leading to further conflict at a later stage, although this is in no way apparent from the excerpt as presented.

Although much more could be presented on the differences between the Anticipated and Individual context, it will remain for future work to elaborate this process. We will return to some of these issues in chapter 6 where the implications of these for modelling are discussed.

## 5.6 EDUCATING IN HIGH RISK ENVIRONMENTS

Thinking of text as evidence for something else, we can look at medical emergency teams as examples of high risk environments. By high risk we refer to environments where a lot is at stake and in these cases what is at stake is lives. Other high risk environments within the medical domain include intensive care the emergency department and first response work. Part of becoming an expert in any environment involves being aware of context and responding appropriately to context. This is even more true for high risk situations where the response time is reduced and the impact of making a mistake is much greater. Participants need to be able to recognise what context they are in but also respond to differences (GSP variation) in the context and potential changes (dynamics). Understanding education in high risk environments is about recognising what different contexts have in common, what they share, and the potential contextual similarities between superficially different contexts.

From the point of view of modelling context, this situation has brought some interesting results. This is an example of micro and macro structure at work (Halliday, 1994). Variation in participants

Table 5: Individual MET Call tenor matrix.

Individual MET Call <i>Researchers have been omitted</i>		MET			Patient	Ward			
		MET TL	MET RN	Medical Registrar	Patient	Ward Resident	Ward Nurse	Ward RN	Intern
MET	MET TL	–							
	MET RN		–						
	Medical Registrar			–					
Patient	Patient				–				
Ward	Ward Resident					–			
	Ward Nurse						–		
	Ward RN							–	
	Intern								–

division of a situation is unproblematic because a situation can be construed as having both a macro and microstructure and participants can respond to both. Generally, the more institutionalised a situation is, the more likely people are to respond to the macro structure. By contrast, the more open and dynamic a situation is the more likely people are to respond to the microstructure.

Although the MET scene is an institutional situation, as is shown above, it is also a relatively new situation. MET systems have only been around since the 1990's, which for a social structure makes it a relatively new situation. The more novel a context is to a participant the more likely they are to respond to the microstructure. This is evident in such situations as driving or learning a new game. This is also true for a culture. The more novel a context is to a culture, the more likely participants are to respond to the microstructure. This is because the macro structure of a situation is derived from our experience with numerous instances of microstructures from which we build a picture of common features that become a macrostructure. This is an important step cognitively, because we could not function as a community (or as individuals) if we were to respond to every situation as a new and entirely unique event. If we were to continuously respond to the unique, and make no abstraction from our continued experi-

ence of events that might be categorised as similar despite small scale variation, we would be unable to make predictions about the future however immediate or distant.

Because of this process, variation in the structure of a given instance is to be expected. An instance is a selection of choices from the potential structure which is what we recognise as the macro structure. Essentially what the team from the Simpson Centre were doing in trying to build consensus was building a picture of the 'expected' or the potential for a MET call. This is not to say that without the intervention of the research team the MET call is undefined or without boundaries, because the MET situation is part of a wider situation it is already shaped by the relations and topics of this situation. The fact that MET calls are medical contexts already provides us with a restricted set of options for the structure of a call. This is because a medical context is legally defined in certain areas, thus limiting the set from which choices are made. It is this that allows researchers to construct a GSP for the MET call. But this does not mean that there is no variability. At the level of instance, as we have seen, we would expect a great deal of variability. What is being attempted here is to account for that variability and to predict variation at the level of semantics and/or lexicogrammar.

The situation of the Medical Emergency Team call that is outlined above illustrates some of the problems that face a description of context. MET calls are part of the ongoing social process of the hospital and this is part of what motivates the structure of a call. There are times during MET calls when the social processes of the hospital impinge on the MET call e.g. when staff members don't turn up to the call because they have more pressing duties elsewhere, or when talk during the call turns to rosters or bed allocation. But they are also a clearly defined context with distinct and identifiable boundaries. A call must start and it must finish, staff must make some difference to the patient, they have readily identifiable participants and a fairly clear goal.

Much of the MET context is outlined in hospital policy and established as part of daily practice. Through reference to this context of culture, and by reference to a body of instances it is possible to outline a GSP that is agreed on by most if not all participants. Each instance of a MET call will map a slightly different path through the generic structure. Different material settings, different participants, and different problems will shape the take up of the potential structure, thus creating variation. Once the generic structure potential is established, it is possible to outline the structural selection for further instances, mapping the choices for each participant and how these work within the context, after all, 'each text is an individual; each has a distinct

identity, in the sense that it is not the replication of any other text' (Hasan, 1993:89).

## 5.7 REPRESENTING RESULTS

Just as the complexity of context presented a problem for representation at theory and modelling it is perhaps even more problematic with application. Here we must consider the purpose to which the results are being put, the general outcome that is being attempted and the audience to which it is to be targeted. Representation will also vary according to the aspect of context which is being represented. For example, GSP is represented in a number of different ways depending on audience and outcome, similarly for contextual configurations.

GSP, by its definition, does not refer to the single instance, but the context as an abstract concept. Despite this, it is used to display choices from an individual instance, since it reflects choice against the average or arguably the system. Since it is a structural statement, not a systemic choice, this can be problematic, however, of the aspects of context which are represented, it is perhaps the easiest to convey in both a short space and to an uninitiated audience. In fact, we can use the context networks reflexively to show why this is the case. In terms of representation, GSP has been variously represented as a flow chart, a segment from an ongoing process and as linked speech bubbles.

The system networks present a challenge both for data collection, presentation and visualisation of results. Not only are they large, but the nature of a network means that each selection is only meaningful within the context of the entire choice of selections. This means that each time that you want to discuss one part of a network, the whole network must be presented in order for it to make sense, and in the case of context, this means field tenor and mode, since as Hasan (1999) suggests, the networks are not independent at the level of context.

It is not only this that presents a challenge for networks. Networks can quite easily be labelled for compressed storage or presentation, however, while this makes archiving, analysing and searching easy, it is not useful for presentation to an uninitiated audience. What is needed is some means of representation which makes explicit the distinctions that make the most difference to meaning. Representation of results is itself an important form of communication and some suggestions for this will be discussed in chapter 6.

In this chapter we have seen some of the ways in which context can be applied in a medical environment as well as some of the challenges this brings. In chapter 6 we will discuss these challenges together with findings from other projects to examine

some of the implications for modelling context in a contextual theory of language.





## DISCUSSION

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*“A change in the constitutive rules of class transforms it into another game, but an epistemology is not like a game in this dramatic Saussurian sense.” Wittgenstein, (1953)*

### 6.1 WHAT IS THE VALUE OF DISTINGUISHING THEORY, MODEL AND APPLICATION?

In the previous chapter, chapter 5, the value of a particular model of context was assessed by applying it to a multimodal context within the health care system. The purpose of this process was to put on display both the strengths and weaknesses of the model and to bring to the fore many of the problems that are faced when working with context. Although some consideration of context would appear to be an obligatory move in almost any research, context has not been operationalised to an extent that it is clear how to go about analysing it in any particular situation.

If we consider the state of research in context, it remains difficult to establish where context starts and finishes. The boundaries of context as a concept and as a social process are equally difficult to identify. As a concept, context blends into semantics and lexicogrammar just as social processes run into one another without any clear boundaries.

Equally difficult is the choice of perspective when analysing. While most researchers concede the challenge of viewer bias, there is no clear means of deciding on or reporting on whose perspective we take when we analyse context. Clearly changes in perspective can make a vast difference to the way we see context, yet it remains a challenging variable.

Indeed much of the process of analysing context remains unclear and certainly under formalised. While most researchers agree that context description is necessary, few record the process that they go through to describe it or work through their decisions. Thus, analysing context remains largely narrative based and without any clear reporting of process, any means for making solid comparisons of contexts seems further away.

One of the most challenging areas for context research is how analysis is presented and how this presentation is adapted for different audiences or, to use context, what might be considered different settings of field, tenor and mode. For the system based approaches to context in particular, publication alone poses a significant challenge.

As a step toward setting out a process for context, a distinction has been drawn between theory, model and application. A theory is a psychologically, philosophically and logically coherent set of premises from which it is possible to build models. It is here that we see a setting out of basic assumptions, priorities, perspectives, and motivations. A theory cannot be tested in any real empirical sense. It is the place of a theory to put forward an environment for the development of models, which may be tested. While a theory is not executable, a model, by comparison, should be executable.

A model is typically some representation of the actual viewed from a particular perspective, most often a specific aspect of the theory from which it is derived. It is for this reason that a model can be tested. While it is not possible to constrain the entire theory to test it, it is possible to constrain certain aspects of the theory as represented in a model. A model is grounded to some extent, albeit from a limited perspective.

Applications put a model, and hence the theory, to work in some particular way or in some particular domain<sup>1</sup>. This focus that comes from applying the model will foreground specific aspects of the model, eventually feeding back into reflections on the theory.

The value of differentiating theory, model and application is that the challenges of dealing with context can be set out at their different orders of abstraction, just as we stratify language to set out the different orders of patterning. The challenges for theory are not identical to those for model or application. In chapter 3 we saw some of the theoretical challenges for context such as where we locate context in a contextual theory of language and what this means for what aspects we allocate to context. In chapter 4, we reviewed some of the approaches within SFL to the question of modelling context when it is within a contextual theory of language.

In chapter 5 we examined an application of Hasan's (1999) model of context within a particular domain and raised some of the issues that are faced when such a model is applied. In the present chapter, chapter 6, we take up the issues faced in applying a model of context by considering a range of further domains which draw out the specific issue. Attention will be given to the questions set out above in relation to the ways in which they might be resolved and the challenges that this presents for modelling context.

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<sup>1</sup> Likewise, what we recognise as a domain or area of focus is often shaped by our chosen theory and model and is thus a reflection of both. My conviction that a selection of discourse may be divided up one way is no more or less true than someone else's conviction that it should be divided up another way. They are simply different perspectives driven by different motivations.

This chapter, Chapter 6, explores the challenges of context in relation to the many different research projects within the centre for language in social life and with other universities and research centres. The experience of applying models of context within these different projects has been invaluable for both foregrounding the challenges for context and for shaping the potential solutions that are posed in chapters 6 and 7. In discussing the challenges and specific proposals for dealing with these challenges, I will draw on these different projects in conjunction with the more intensive discussion of MET research given in chapter 5.

## 6.2 WHAT DOES IT MEAN TO EXAMINE CONTEXT?

In considering what it means to analyse something 'in context' we must return to our starting point in chapter 1 and 2 and consider afresh what it is that we refer to when we say context. Context, we suggested, meant consideration of what was around the text or 'con-text'. The sister concept here is 'co-text' or what is together with the text. The implication here is that it must be the whole text which is analysed and that which is associated with the text, or the context. Here again we have a number of interrelated issues to consider, firstly, what does it mean to say 'a text', secondly, where does a text start and finish, thirdly, what counts as the context of a text? How far out around the text do we need to look?

If we are to consider the whole text, then our question becomes what is a text? and where does it begin and end? Thus we have shifted the boundary question from defining the boundaries of context to defining the boundaries of text. This does not make the issue any easier to resolve, but it is an important step in our analysis. While context may be said to potentially contain everything, text may not. For a text to be considered a text, it must have boundaries.

Halliday (1985:10) defines text as "language that is functional", where functional is used to mean serving some purpose in context. So context and text are in this view intimately connected. Of course, from the point of view of context this need not be the case since context has undergone a process of idealisation with the result that, for many, it is open to analysis completely free of the text/texts with which it is associated.<sup>2</sup>

As linguists, when we consider text it is generally as a product. We are not typically giving a running commentary on events as they unfold. To say that we are most often concerned with

<sup>2</sup> In practice, it is impossible to consider context free from the text with which it is associated. In considering context it is necessary to think about the social process that makes it necessary to consider context.

product is not to say that there is no picture of the process. In considering text as product, we are building on a fundamental grounding in text as process. However, there are both theoretical and practical reasons why we typically comment on product and not process.

Firstly, as Halliday (1985:11) suggests, if we are to comment on a text as process we are relying on our understanding of text as product. Because of the relationship between text as product and text as process, to be in a position to make any meaningful comment on the text as an unfolding process it is necessary to understand the system which produced that process and that system is a system of products.

Secondly, for very practical reasons, the text is more likely to be studied as a product because this is how we are able to handle it. A text is recorded, written, filmed or otherwise made into a monumental product for the purposes of sharing analysing and storing. A slice of social process is made static for the purposes of our analysis and it is not just within linguistics that it is necessary to break the subject of analysis into manageable units. The text is just such a unit. It is, as Halliday (1985:10) describes it, "a semantic unit".

Having put forward the claim that it will typically be text as product that we will study, it is always necessary to keep in mind that the text is an artifact of our analysis. Texts are carved out of the ongoing flow of social process. Text, if we can use the term for process, has boundaries and a fixedness only to the extent that we give it boundaries.

It might well be argued however, that humans are inclined to divide up process and give it boundaries and as such, process-ness is, by its very nature, a rather ephemeral sensation. Nevertheless, to gain a full picture, it is necessary to view the text as both product and process, that is, "as a social exchange of meanings" (Halliday, 1985:11).

So returning then to the question of what it means to consider text in context. If context refers to what goes with a text and a text is to be seen as a semantic unit that is language functioning in context, and this text is to be viewed as both product and process, then just as what counts as text will vary, what counts as context will definitely vary depending on our point of view<sup>3</sup>. At some points surrounding text will form the context, at others the economic or cultural system or structure will form the context. Indeed, in most cases text as process will form the context for text as product. This is not necessarily a problem since analysis should

<sup>3</sup> It should be noted that context is only separable from text for theoretical purposes. They are not really separate concepts since one defines the bounds of the other.

always be done with the two perspectives in mind (Halliday 1985).

What is indicated by this variable notion of both text and context from the perspective of theory is that context may well have a 'rank scale' that varies in relation to the text. If we are looking at an individual word then the context will be the group or phrase or more reasonably the clause/sentence (depending on one's persuasion). If we are looking at the clause then the clause complex forms the context, while if we consider discourse or larger blocks of 'text' then context will need to be equally extended to include social process and culture so that we get a picture of meaning.

There is a very good argument that the meaning of an individual word only makes sense when taken as part of a wider set. This is of course how it is represented within a stratificational view of language and is what Halliday (1985:11) refers to as "the semiotic concept of meanings that are created by the social system – that in a sense constitute the social system<sup>4</sup> – which are exchanged by the members of a culture in the form of text"<sup>5</sup>.

The notion of text then is tied to the culture and, at least to some extent, to the function or purpose of enquiry. So in examining text or contextual boundaries we must first consider our reason for looking at a specific text. Halliday and Matthiessen (2004) suggest the distinction be made between looking at text as artifact or text as evidence. As linguists we may look at texts for either or, more probably, both these purposes. If we consider text as artifact then we are treating the text as important in its own right and as the object of our analysis.

Text as an artifact is typically a text that already has established boundaries and recognisable status as an existing text. They have definite design and motivation and can be considered to have a definite start and end point or existence as product prior to investigation. These are most often the texts that we consider as verbal art. They are texts that are valued and regarded highly within the culture. While we may consider such texts as important in their own right we may also use them as evidence for something else. We may for example use them to tell us something about social values, about ideology or about history and context.

When we look at a text as evidence for something else, we are considering it as part of an argument. The text forms part of a body of evidence for claims about the semiotic behaviour of an individual or group, the nature of a group of texts or text types, the nature of a language or the linguistic system or more broadly about the social system be it a point in history, a point in development or within the text itself.

<sup>4</sup> Here represented as being in a dialectic relation

<sup>5</sup> Of whatever size.

As with other conceptions of text, text as evidence may have fuzzy boundaries for the simple reason that the nature of what counts as text is shaped by the reason that we consider it as evidence – thus the nature of text and context are perspectivally variable. The reason why we are looking at a text shapes what we consider a text to be and hence what lies outside the text or counts as context.

Perspective here has a number of different aspects. Perspective may be considered as the reason why we are considering a text/-context, it is also the different perspectives that are involved in the text/context that we choose to look at and whose perspective we, as researchers, have aligned ourselves with. Furthermore, perspective is also our historical location with respect to the texts creation and the text's location with respect to the event that triggered the text. All of these notions of perspective need to be considered and they will all shape the boundaries of the text/-context and the relevance of different types of data as we can see in figure 46.

To see how the interplay between perspective and boundaries impacts on an actual social process, let us consider the medical emergency team (MET) call outlined in chapter 5. As a defined social process, the medical emergency team call should have relatively clear boundaries and an agreed start and end point. Depending on the perspective taken however, the medical emergency team call looks very different. If we consider the theoretical definition provided in chapter 1, the medical emergency team call starts at the point at which the patient's condition falls and ends with the stabilisation of the patient or a decision about their future i.e. being moved to the ICU or writing up a do not resuscitate order followed by a return to normal ward routine.

This view of the MET call is a cultural view. It relates to the functional pressures of the hospital as a whole and to an idealised representation of the MET call. It is this view of the MET call that staff reported when asked during interviews to describe what a MET call was like from the perspective of the hospital as a whole. This view of the MET call is the view that we might teach to students or describe in a text book. It is equivalent to an average of all the actual MET calls or what we referred to in chapter 5 as the anticipated context. It might also be viewed as the typical as opposed to the actual. The actuals are varied and individuated for individuals and groups within the hospital.

If we consider the MET call from the perspective of the ward staff however, it looks somewhat different. In order to be able to recognise a fall in the patient's condition, ward nurses must have a mental baseline of the patients average condition. The need for a mental baseline against which to measure a fall overall in the patient's condition means that for ward nurses, the MET call

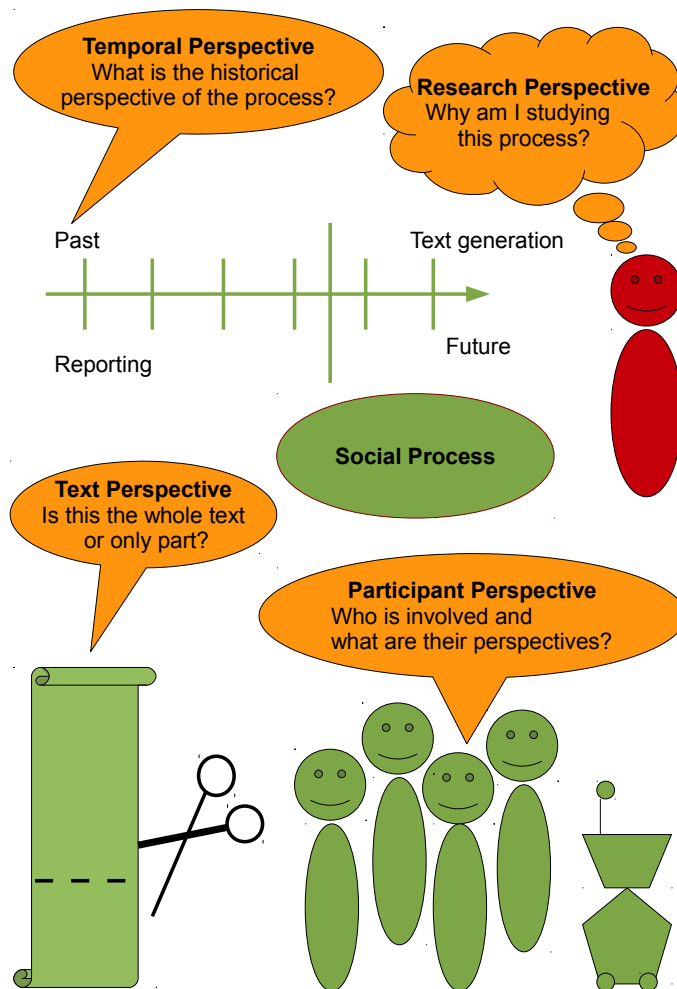


Figure 46: The different views on a Social Process/Text each shaping the form of the Text/Process.

starts at the point at which they begin to notice some change in the patient's condition. Noticing is a very subjective and mental process, and will itself have fuzzy boundaries as staff gradually become aware of a change in the patient's condition. This is followed by testing and monitoring to confirm the patient's vital signs, conversations with senior ward staff to make the decision to make a MET call, notifying family and, if the patient is under care of a specialist, notifying the specialist of an impending MET call. This means that, if the specialist is on call, they will usually arrive before or at the same time as the MET.

For the ward staff then, the arrival of the MET signals an end rather than a beginning. The anticipated context predicts a merging of the two teams to effectively care for the patient, however, rather than merging with the MET and forming one big team, the ward staff effectively hand over to the MET, are

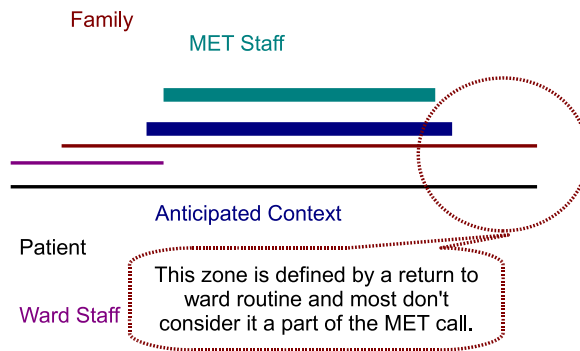


Figure 47: Different views of the MET call.

minimally involved while the MET treat the patient and then take over again once the MET leave, re-establishing normal ward routine.

By comparison, for the MET, a call begins with a pager message calling them to a specific ward and bed. They come from various sections of the hospital, arriving at slightly different times and treat the patient. Once the patient is stable, they document the event, some will leave and some will remain to handover to the ward staff again. The MET call for the MET is the process of stabilising the patient. It ranges from arrival to departure even though not all team members arrive or depart at the same time.

The patient and the family of the patient experience a MET call much more like the ward staff than like the MET because their perspective is much more closely aligned to the ward and to the staff that are working directly on a day-to-day basis with the patient. This has a functional motivation as well. Because the ward staff are the ones who tell the family and explain the situation to the patient, they experience the event from this perspective.

Although we have only considered a small selection of those involved in a MET call, we have covered the key participants and already we can see the divergence in perspectives. This divergence is represented in figure 47.

We can see then that the MET call starts and finishes at different points for different people involved in the text/context. So the perspective that we take on the MET call and our reasons for researching it will influence how we see the MET call and how we define it. The MET call, like all social processes, does not have one true form that it reduces to, rather it has many related forms which for the most part have a common anticipated context. And it is to the anticipated context, that relatively common understanding of the social process, that participants refer in understanding their roles within the social process. Because it is an amalgamation of the different perspectives on the social process, rarely, if ever, is there one participant for whom the anticipated context represents the social process as experienced.



The different views on the MET call that we see are representative of the different roles that participants have in the MET call. But the ramifications of the divergent perspectives are more wide reaching than just different understandings of the boundaries of a context. The participants have different cultural backgrounds in the sense that their educational experience, linguistic background and work environment will vary at least to some extent. These different cultural contexts lead to different anticipated contexts. In chapter 1 we discussed some of the problems that MET systems face, namely, that ward staff often don't call a MET as early as would be needed for the MET system to be maximally effective. However the structure of the MET system itself makes it more likely that a MET won't be called. There are three key aspects which lead to the MET structure not being maximally effective.

Firstly, MET systems are a kind of rapid response unit and are labelled as such in most documentation and educational settings. This means that the existing expectations associated with rapid response units carry over implicitly to MET systems. The most important of these expectations is that the MET is designed for crisis responding rather than for pre-crisis responding. It is not only in MET environment that the dominant expectations of the existing social process carry over strongly to the values of the expected context of the new social process. Faced with a new social process with which we are unfamiliar most will search for similarities between the new social process and ones with which we are more familiar. Often we will get this match wrong, especially if the new process involves what have been called disruptive technologies. Kofod-Petersen and Wegener (2010) found that new or disruptive technologies were often under-utilised because users would liken them to the closest familiar technology and use it accordingly.

Kofod-Petersen and Wegener's (2010) finding raises an interesting possibility. If users under-utilise new technology because they see it as similar to a particular familiar technology, it must be possible to compare the contextual parameters of the different technologies and predict which one will be used as a reference point for the new technology. The same is true for social processes such as the MET call. Sometimes superficial similarities between contexts can mask key differences between them, while apparent differences between contexts can mask key similarities.

By considering the context of the MET call we can assess what familiar processes are likely to be used as a reference point for participants and anticipate any likely shortfalls. For example, while the MET is a kind of rapid response team, the crucial difference between a MET call and other rapid response teams is that while other rapid response units respond to a patient already in crisis, a MET responds to a patient who is not yet in crisis

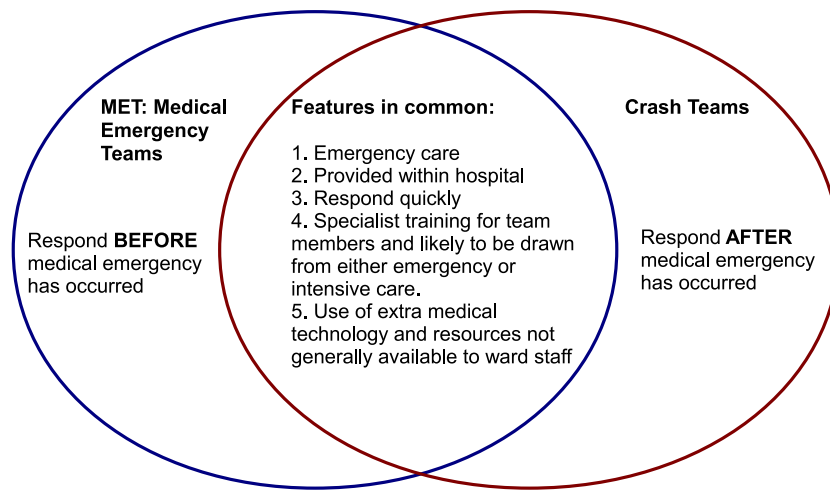


Figure 48: Two types of rapid response units.

but at risk of becoming critical. Thus, while other rapid response units are crisis responding units, METs are crisis anticipating or rather crisis averting units.

If we build an adequate understanding of the MET in relation to similar contexts within the domain and build in this picture a strong understanding of the significant differences, we can emphasise during education the important distinctions between MET and other rapid response units. From an educational point of view, one of the strengths of familiar contexts is that they are learned much faster than unfamiliar contexts so, this understanding of the similarities and differences will mean that staff can be trained to refer to a familiar context which more closely resembles this key aspect of the MET. While in many situations these differences would not have any significant impact, in context such as the MET, these small differences can be crucial. It may be that the MET is more similar in this respect to the ward context or even to safety monitoring in contexts such as air traffic control or nuclear power, although the later contexts lack the sense of familiarity thus reducing their effectiveness as points of comparison.

Figure 48 is a diagram showing the differences and similarities between MET and other rapid response units. It is for this reason that accounts of context need to consider similarities and differences between contexts.

Secondly, the ward staff do not always represent changes in patient condition in ways which resonate with MET expectations of what counts as an emergency. For abstract concepts like emergency, cultural background is crucial to shaping meaning. Cassens and Wegener (2008) argue that abstract concepts such as emergency are highly variable even within the medical domain

or hospital or ward and that this difference in meaning can have a big impact on decision making and behaviour.

On MET call criterion statements, the final criterion is a feeling or sense that something might be wrong. Often this final criterion will be the best for calling a MET early enough for it to be effective, however it is very difficult to represent feeling or a sense in such a way that it will resonate with others. Indeed ward staff often complained of not being listened to while MET staff felt that they were being used to solve shortages on the ward and called too frequently.

Analysis of ward staff representations of decline in patient condition revealed a tendency for using mental processes and modality e.g. "I think he might be getting worse but I'm not sure"; "I just feel like there is something wrong"; "He isn't usually this unresponsive". Such constructions failed to resonate with the MET and this relates to the last of our reasons for MET failure.

Thirdly, because we have two very different cultures shaping the anticipated context of the MET and both of these are crisis responding cultures they have a very different threshold for what counts as a decline in patient condition. Ward staff are used to monitoring daily vital signs for patients who are for the most part improving or at least stable. By comparison MET are drawn from the Emergency department or the Intensive care unit and are more familiar with patients who are in crisis, which is of course why MET are drawn from these two units. In fact there is discrepancy between these two in their culture as well. MET made up of Emergency department staff have different expectations and behaviours to those made up from Intensive care units. If we consider the tenor networks such teams have a high degree of shared cultural background with each other.

These three reasons work together to cause problems for the MET. While it is expected that the ward staff will call a MET when they notice something is going wrong – i.e. they are meant to anticipate decline on the basis of complex threshold responding, because the teams are called from the two crisis centres of the hospital it is unlikely that the staff will feel that they can interrupt such members with something that might not be important thus they are unlikely to call a MET early enough for it to be effective.

Similarly, from the MET perspective, they are used to a very different threshold for patients – their patients are in crisis so they are unlikely to consider changes in a patient's status to be important and, more significantly, these types of changes that are crucial for making MET systems work won't be noticeable for them in the way that such small changes will be for ward staff.

### 6.2.1 *Threshold responding*

Threshold responding is an important aspect of any social process. Strongly associated with the anticipated context, the threshold for what is expected in a text varies depending on the perspective taken. Although it will be an important aspect to consider in any context perhaps the context that puts this on display best is that of war reporting. Lukin (2008) notes in her research that violence is relatively absent from modern war reporting. This absence can be explained by a number of different aspects related to the nature of war reporting. The first of these reasons is that we have seen a shift in who is responsible for the information that we receive about wars. No longer are journalists independent and aloof from the action, they are now embedded within the military units on which they report and as a result are viewing the war from the perspective of the military and thus report on it the same way. Furthermore, the primary, if not the only, source of information about war now comes from the military itself with a drastically restricted flow of information from sources outside the military. Information is now coming from sources such as the military who report on information that is relevant to them, namely loss of assets, financial impact and military targets. As outsiders to the event, this impacts on the perspectives from which we see war.

If I am used to war and the violence involved in war then it ceases to be news worthy. If however I am not used to war then it is news worthy if there is violence. We see a similar sort of discrepancy between local and national newspapers. While a robbery in the local shops is newsworthy for a local paper, it ceases to be newsworthy for a national paper. For military sources the violence inherent in war is no longer news worthy and most media sources are seeing war from this perspective. Those who are seeing war from civilian perspectives are, by comparison, much more likely to see the violence of war as news worthy because it is marked for a civilian population in a way that it isn't marked for a military population.

It is also the case that at a more general level we have certain expectations about a context that mean that it is only newsworthy if something beyond those expectations occurs. The inherent nature of war as a violent social process sets up a very high threshold for violence and leaves violence as the unmarked choice. This means that the only times that violence will be news worthy is if it rises above this threshold (i.e. very violent) or falls below it (i.e. very peaceful, the bloodless coup). Thus, extreme violence and lack of violence are both news worthy. Each text sets up its own set of unmarked choices and to a certain extent we do this at the contextual level as well. There is an unmarked choice or a

threshold for a context and it is only if something that is marked happens that it is news worthy.

It is tempting to suggest that metafunction means that there is an easy relation between context, semantics, lexicogrammar and expression; that indeed field will predict the lexis in any experiential analysis or tenor the interpersonal. The relationship between the strata is a very complex one that is not easily explicated. On the basis of a simple relationship between context, semantics and lexicogrammar, it might be expected that a media report on war or fighting would contain more instances of violent language while a report on a peaceful protest rally would contain less instances of violence.

In any reporting instance there are at least two contexts at play that need to be considered. Firstly the reporting context and secondly the event being reported on. It should also be considered that the nature of reporting is now very multimodal so some instances of violence may very well be covered in the visual mode or split between media sources i.e. more violence is shown through visual modalities where as analysis is done through written or spoken modalities. The occurrence of violence in a report will vary according to a kind of threshold and we can think of this in terms of marked and unmarked.

The threshold for violence will vary depending on the field. Here much lower levels of violence will be deemed newsworthy. The more likely violence is to be associated with that field, the less likely it is to be reported on or the more unmarked violence will be. The threshold for a protest rally is quite different to that of a war. This is largely speculative and untested at this stage. It remains for future work to consider whether there are situations that are highly associated with violence and yet report on that violence.

Threshold exist for most abstract concepts, see for example the variation in understanding of the term emergency between different groups (Cassens and Wegener, 2008). These thresholds will change over time and as a result of complex relations of social and political factors (see for example Wegener's work outlined in Nerlich, (1990) and further discussion of the proto-pragmatists in Nerlich and Clarke, (1996)). They will also change according to the participants, the relationship between participants, the field, the material situational setting as well as the mode. That is to say, thresholds for a social process are contextually sensitive and such thresholds represent an ideological position relating to the view point or perspective on the world.

6.2.2 *When context is absent*

While there are always elements of context that we expect, there are also very good reasons for these expected elements to be absent. In fact these form a set of texts that will often not have the elements from the context that we might expect coded in the text. In giving reasons for why lexis might not be the best basis upon which to build a model of register, Halliday (1974) notes that often the very thing that the text is ostensibly about is notably absent from the text.

Halliday refers to a study from Russia in which the discussion is about potatoes but in which the term potatoes never actually arises. As Halliday (1974) suggests, if you are looking at and holding potatoes then there is no real need to refer to them by name. This he suggests is one of the reasons why lexis as a measure of register should be avoided <sup>6</sup>.

Despite this, Halliday (e.g. 1978) and Hasan (e.g. 2004) have argued that a text will contain a trace of its context and that it is this trace that is important for meaning. If this is the case, then monumental texts such as novels will often be more likely to contain the context as a trace because of their very product like nature, however, the fact that the text is read and re-read across vast time differences means that some of the original meaning will be lost, that the context needs to be re-supplied as we can no longer see its trace in the text except as missing meaning or ambiguity. And, we are unlikely to be aware of missing meaning for anything other than lexical items. We are also unlikely to be aware of ambiguity since ambiguity implies a familiarity with the variety of potential meanings and awareness of potential get lost over time, until it ceases to be potential. A text may also acquire new meanings by its reading in a new time and space by a new audience.

The relevant contextual trace is likely to be missing from certain texts including – texts with a large temporal delay or aspects of language change e.g. historical texts, where the greater the distance the more likely important contextual information is not recoverable from the text; texts with a high degree of close discourse partners e.g. family members or members belonging to a field restricted group e.g. a sports team or professional group (surgical team); and multimodal texts where the important contextual information may be encoded in a modality other than language e.g. gesture or film. The lack of contextual trace is perhaps most frequent with multimodal texts where often the context may be evident in another modality such as the visual mode. Often a text

<sup>6</sup> Although lexis has been shown to be a strong indicator of register and highly effective in natural language processing at predicting features of a text. It is within a restricted set of situations where lexis will be less useful.

will have a mixture of these factors for example, ethnographic filming of families or surgical teams.

### 6.2.3 *Multimodality and context*

Multimodal texts will often not display the contextual trace in the way that single mode monumental texts might. Although multimodal texts more often than not have redundant information transfer, at least some relevant information may be in one modality but not others. Multimodality has become something of a buzz word in recent years but in actuality most contexts and texts are multimodal to some extent. Technological changes have increased the availability of texts of different modality and allowed for them to be combined in new ways for a wider audience but the multimodality itself is not new.

Most human discourse is multimodal. Despite the frequency of the study of single modality discourse, it is single modality discourse that is the outlier. Humans multiply code information and this practice has several strengths. Firstly, multi-coding is a failsafe. If people miss a message in one modality they will likely receive the message through another modality if it is multiply coded. Admittedly, this will not be an identical message since, as was discussed in chapter 3, the different modalities do not necessarily share the same meaning potential. However, this multiple coding has a benefit that, although the meanings created are not identical, at least some modalities will cut across linguistic barriers and other barriers to communication such that, for example, we do not need to speak the same language to understand that someone is upset, happy, angry or sad.

Multimodality also has other benefits for humans because it frees up space in meaning making. Just as the modalities can be used to send the same message, they can also be split up and exploited to send different messages. Such multiple messages through different modalities is a common technique in many childrens' books. One story will be told through the pictures and another, sometimes contradictory, story will be told through the written words. Such basic rhetorical devices as sarcasm and irony often rely heavily on our ability to use different modalities to convey different meanings and our abilities to read these in others. Indeed, inability to read different messages being conveyed through different modalities forms the basis of a number of disabilities and disorders (see for example a discussion of the link with early dementia diagnosis in Kipps, Nestor, Acosta-Cabronero, Arnold and Hodges (2009)).

Similarly, it is possible to use multimodality to create space to do other things with talk. Consider the example raised in chapter 1 of the family getting ready to leave in the morning. Although

we only use a single modality transcript here, in most recordings of the family, the mother is negotiating lunch preparation with different family members through gesture at the same time as she is carrying out a conversation about the weather, sunlight or travel plans with other family members. This modality multitasking is of course not limited to families and is common in situations where there is a temporal constraint or requirement for multiple tasks to be performed in parallel. The same multitasking can be seen in surgical theatres (see Moore, *in press*), emergency rooms or air traffic control. Often surgical teams will talk about seemingly unrelated topics at the same time as they are negotiating complex surgery visually. Such splitting of the semiotic load is more likely to be seen in situations where people are engaged in a shared task with a common goal. Just as language can be social network specific, gestural and visual communication can become very specialised. Complicated codes are developed such that onlookers, as outsiders to the code, often don't know what is going on. Such instances emphasise the importance of other modalities and the material situational setting to meaning making. We are only just discovering the importance of some of these aspects to thinking and meaning making.

The analysis of multimodal context is certainly very much more difficult by comparison to a single modality text. The inclusion of the possibility for multiple stories or nuancing of a story through other modalities makes analysing such situations very difficult. Take the example of a television news report. There are multiple contexts and multiple reports taking place in such a situation. While as an audience we receive the report as a unified whole framed by the anchor, it is difficult to know how to analyse such a situation. As viewers, we see the whole social process as news reporting and we have certain expectations about how such a process should unfold and what it should contain (although it is possible to argue that these expectations are changing). However when we consider an individual instance of a news report we see that it is made up of many different interactions. The news reader is engaged with viewers and with the field reporter. The field reporter is engaged with the people they are interviewing or reporting on and the people they are reporting on are engaged with those around them. Each of these relations represents different fields, tenor relations and potentially different modes, despite the fact that we receive the news story as a whole. Potentially, even the information from each of these interactions is quite different.

To a certain extent this can also happen with monumental texts. There are multiple contexts embedded within the one text and it is necessary to analyse all of these to get a complete picture of what is going on. Moore and Wegener (2010) approached this problem in pharmaceutical texts by assessing each context in turn



to build a richer picture of the expectations that a reader might have. Moore and Wegener (2010) supported this analysis with field studies of how readers reacted to the text and the relations understandings that they drew from the texts.

### 6.3 PRESSURES ON DATA COLLECTION

In chapter 5, I made the distinction between the recognisable social process that is the object of our analysis and the individual instances or situations of this social process. The abstract concept of the social process I referred to as the Anticipated Context (AC) while the actual instances I referred to as Individual Contexts (IC). In working with the MET context making this distinction was a crucial move in establishing an understanding of the domain and behaviour within this domain and it is a move that I believe is important in any analysis of context.

Part of understanding the context is taking account of whose view on context we are taking and how that view or perspective shapes the boundaries and understanding of the social function of the process under analysis. Our understanding of the social process and the subsequent definition of the shape and boundaries of the process will influence the kind of data we collect and the ways in which we use this data for understanding context and the issues in a domain.

Data collection forms a central issue for most studies, and the problems associated with data collection often shape the design and outcomes of the study. There are many different ways of getting information about context and we can think of these different ways as different forms of data. In the previous chapter we saw some of the data that was used to get information about the MET. Primarily this was film based data, with transcriptions of the language from the scene, but there was also ethnographic transcripts, voice recordings and films of unstructured and semi structured interviews. These different forms of data give different views on context and they are all helpful in building a picture of what surrounds the text. This is particularly the case when the information obtained is cross referenced.

While the multiplication of data is useful it also creates an interesting problem in that it becomes necessary to distinguish between these different types of data. Certainly, this is a long-standing concern, with the distinction having been made for a very long time between primary and secondary data or evidence. This distinction draws on the underlying contextual differences that exist between different forms of data and the layering of text production that takes place in social processes. Frequently we talk about the actual event but it is often difficult to know what the actual event is and different people (including different

researchers, participants and other stakeholders) can have very different views on what constitutes the actual event and where the boundaries for this event lie. Since context represents shared coded behaviour, these points of difference will most often be minor, although, potentially very important.

Each production of a text is an event in itself. An event that involves different participants with different relationships to each other and different motivations. The following example from a group home environment shows this distinction clearly although any event may produce texts which flow from that social process.

Consider the following scenario: a resident living within a group home drowns while taking a bath<sup>7</sup>. One carer present makes a call to the emergency services which is automatically recorded by the emergency services. The carer then calls their superior, who also records the call but in note form. They then discuss the incident with the emergency services personnel who arrive which is again taken down in note form but this time as part of a structured report form with set questions.

They are then interviewed by police and subsequently required to give a formal statement at the police station. Police construct a fact sheet on the incident, as do the department of community services head office. The case is handed to the coroner who re-interviews witnesses and creates new documents and accounts of events which are both spoken and written, under different conditions and at different distances in time from the actual initiating event.

The case goes to court and more documents are created. The case is written up in the newspaper, and reported on in a coroner's report. The staff are given counselling, both individual and group based, where the sessions are recorded. The department writes up a case report on the incident bringing in elements from previous documents. Researchers write up a study on deaths in group homes and report on the incident as one of a number of deaths. Family members talk about the event casually within their home and might write about the event in diaries or memoirs.

All of these can be seen as events in themselves and they will each produce text as product. These products may be analysed either as potential evidence for reconstructing the event, the reconstruction of another event or relation or as evidence for

<sup>7</sup> I have chosen this example because death by drowning is a relatively common occurrence in group homes for people with disabilities. Current research between myself and researchers at SINTEF in Norway and IMIS in Germany involves investigating the possibility of creating behavioural interfaces that are sensitive enough to recognise and respond to displayed intention or trainable for idiosyncratic behaviours. It is hoped that such interfaces will afford some degree of protection to residents in the future by reading and responding to complex behaviour as meaning. For actual records of instances of deaths in Group Homes please see the Australian Coroner's Reports.

texts of a certain type or register. The list just provided represents a mere subset of the actual processes which occur following a death in a group home and yet, from this very limited set, we can see that the texts that have been produced as a result of the one event are numerous and accessible for analysis while the initiating event was not recorded and is thus not accessible to the analyst. These texts are all different and the analyst may come in at any point and treat any one of these as their primary text, yet they are all linked to the initiating event and we would in most cases want for analytical reasons to acknowledge this fact.

However, depending on our research question, our relation to the initial event is going to be vastly different. Consider the situation where the researcher is interested in understanding the therapeutic relationship through the study of a corpus of counselling sessions that have been recorded. If one or two of these texts form part of that corpus then the researcher is not really interested in the death in the group home and this is no longer the primary event under analysis, nor are the participants involved the same or their relationships with each other the same. Viewing the text not as evidence for reconstructing the primary event but as a product of a different primary event e.g. a police interview, changes the contextual configuration for field, tenor and mode. New relations are being set up depending on our perspective. This multiple membership of texts is represented in figure 49.

In figure 49 we see that a police officer, coroner, media representative, family member or Group Home Manager might want to reconstruct what happened at the group home. Their reasons for reconstructing the event will be very different, for example responsibility, fault, guilt, news, care or improved services. The emergency personnel may want to look at response times while ethnographers may want to look at note taking during stressful events. Semiotics and particularly a contextual semiotics is crucial to all of these questions but the nature of the question changes the relation to the data as we can see in the diagram above. This kind of representation of how the data fits within social process needs to be the first step in analysis since the location of the data is crucial if we want to understand the purpose and the function of the text in society.

As well as the culture or social structure creating a textual trace, when we deliberately set out to collect data we are also creating texts and these are texts of different orders. We can use context to think about the different nature of these texts. Depending on what we focus on as our text, different traces will be constructed and these traces will have different contextual descriptions. To take an example, if we consider the MET data, the main focus was on the films. These films were taken to be a true

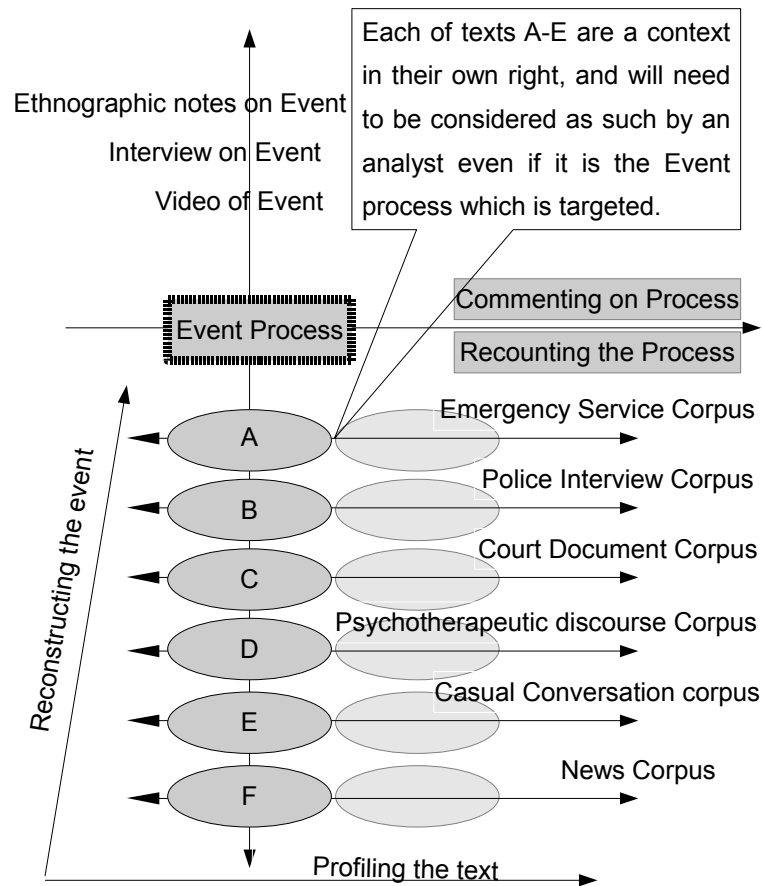


Figure 49: Different text types emanating from a social process.

representation of what takes place during a MET. Setting aside the problems that arise from this, it is possible to consider the context of this data. This is a means of representing the different distance from the actual event<sup>8</sup> that an analyst may be and the different relations in which they stand to the event. If we take as an example, the research project examining MET calls in Sydney hospitals, this project employed several different data collection techniques. These different types of data taken together provide a very rich picture of the MET call and provide details that would otherwise be missed if only once source of data were used. Often we consider the object of our analysis to be the social process that we are recording, but the process of recording is also a social process in its own right and it is beneficial to consider what the different contextual alignments might be for different forms of data collection. For the MET call project MET calls were filmed, researchers also took ethnographic notes during MET calls and then interviewed participants afterwards, including; directly after the call one on one; as a group several weeks later while viewing the call; and finally in small groups to discuss the analysis.

<sup>8</sup> However, note that the determination of the 'actual' event remains problematic.

If we consider these different forms of data as each constituting different social processes that provide information about the MET and MET calls, then we can see that they each have slightly different contextual configurations that impact on the information we are likely to get from these different sources. The networks show the relationships between the different data collection techniques. These descriptions are at the anticipated context level of abstraction in that they don't represent a description for each individual interview or recording. The units of analysis are the social process of recording/interviewing and the social actors of researcher/s and participant/s. Analysis has been done from the researcher perspective since it is the value of the work to the researcher that is at issue in this case. Should the motivation for participation of the participants become important for a research question then it would be beneficial to take the participant perspectives as well, particularly for goal orientation.

For the filmed MET calls, there were a number of researchers in the ward room with the MET. The researchers filming were nurse educators who had been seconded to research and trained to film. The contextual description for ethnographic filming is represented by the green line. The ethnographic notes however have a different description, and this is represented by the blue line. Ethnographic notes were taken during the MET calls by an outside researcher who was not a member of the medical community. When we come to the interviews, we have a number of different aspects that need to be considered. Firstly, the contextual description for interviews in general is represented with the red line.

However, there are a number of different kinds of interviews that have been used. The first of these was the post call interview which took place on the ward immediately following the event where participants were asked to give a summary of the event and to discuss their feelings about the success and typicality of the event. This one on one interview calls for some variations to be made to the contextual description. These are represented by the orange line. The second was a focus group style interview which took place some time later in the research centre and required a selected group of MET members to view a filmed event and comment on what was taking place. With the focus group style interview, we see that certain variations need to be made to the contextual description. These are represented by the yellow line. Finally, MET members were asked during an interview in the research centre to comment on a description of a MET call made by researchers and were requested to consider MET calls in general. This change in contextual alignment is represented by the cerise line.

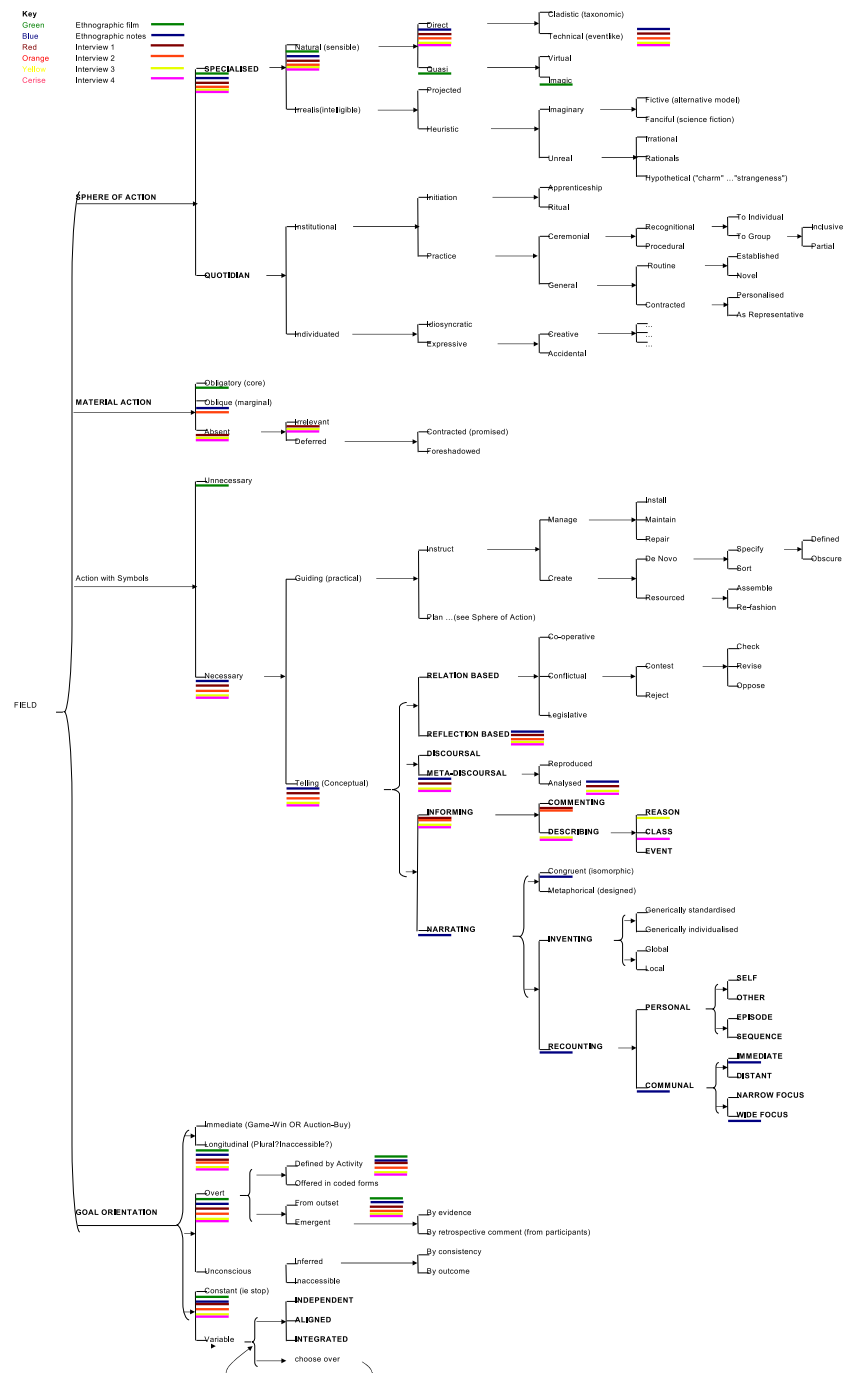


Figure 50: Comparison of field descriptions for different data types.

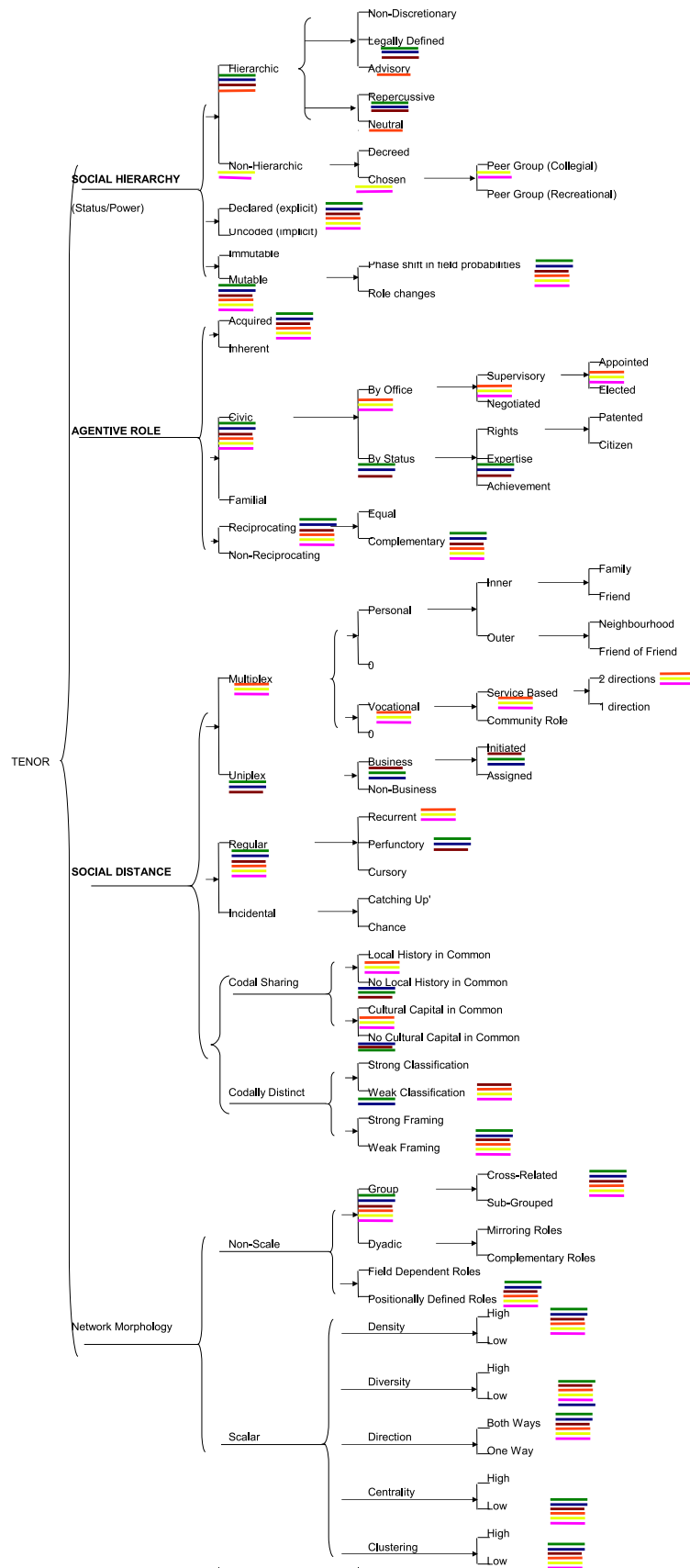


Figure 51: Comparison of tenor descriptions for different data types.

Because we are using language turned back on itself, we can think about the context of our data as well as the context of the MET or hospital or health since these are the texts with which we are dealing. We are using context here as a means of sorting out our data. Each text has its own context as well as a distinct relation to the primary context, social process or initiating event. This relation is reflected in the contextual description and shapes the values of this text as evidence. This contextual description of the data then allows us to sort data on the basis of contextual similarity before we look at the particular social process which has been recorded. Thus we have at least two layers of contextual information before we begin to analyse something in context.

It is possible to divide texts into those which flow institutionally from the primary context and those which are observational and optional such as research. However it is possible to also consider the generic structure of the texts when categorising the different types of data. For example two potential types of data include observational texts, where the data is a recording by one means or another of the social process of the primary context, or, reported texts, where the data is a report on the social process of the primary context from one point of view or another.

Report texts may not be reporting on the primary social process directly, but on the participants reactions or responses, feelings or thoughts. As with all report texts, it is possible for them to look forward as well as backwards, hence, they may include projection into the future or commentary on the here and now as well as reflection on the past from some perspective. Importantly, any one of these texts may become the primary social process depending on the perspective one takes on the text.

### 6.3.1 *Ethnographic Filming*

One of the challenges with multimodal data is that the text is no longer clearly defined as a text. Just as Malinowski's students found that when they went to African communities the boundaries were no longer clear in the way that they were for Malinowski in his island communities, once we move to multimodal texts the challenge of actually recording the data looms much larger than it does for written documents. One of the largest concerns is how to go about filming and how to treat our relationship to that data once it is collected.

Filming in ethnographic and anthropological research has a long and rich history with journals and books being devoted to the study of image based research (see for example Prosser (1998) or Collier (1967)). Banks (1998:18) suggests that ethnographic filming has typically "sought to explore ways in which 'natural'



and 'spontaneous' human behaviour and interaction could best be observed by the motion picture".

The primary motivation for this focus on ethnographic filming was a perception that such recordings were a natural, neutral and complete source of information about the topic under investigation. Even though it is possible to have at least some degree of invisibility with filming, as Banks (1998:19) suggests,

"the fallacy of course lies not in assuming that a camera can become invisible to those it films, but in assuming that a socially, temporally and historical viewpoint can be overcome in what it sees. Even the classic 'invisible cameras' of modern industrial societies – high street bank security cameras, roadside traffic cameras, 'eye in the sky' surveillance cameras on helicopters – are socially located and 'see' from a particular socially constructed viewpoint." Banks (1998:19)

If we consider ethnographic filming from the perspective of activity theory, this natural bias in filming makes sense because the camera is itself an actor in social processes. As Banks (1998: 19) suggests, "the camera is a social actor and it is inevitably involved in the social drama that unfolds before it". It is interesting to consider the implications of treating the camera as a social actor. Obviously the camera is a social actor with at least some very important restrictions in its abilities. The camera can not, for example, make complex theoretical or philosophical arguments in the way that a human might, or engage interpersonally in the way that an animal might. Nonetheless, it is a social actor, even one with restrictions, and it reflects the views, relations and perspectives of the camera user – be it directly or indirectly.

It is necessary, then, to establish in exactly what sense a camera or indeed any other form of technology can be a social actor. After all, the invasiveness of the camera means that the camera's interaction with humans is particularly problematic for ethics. The value is that it captures much more than other forms of data collection, but this is also a risk. Gold (1989:104) argues that "ethical concerns are particularly important since the camera intrudes and reveals more than other methods". This intrusion is a distinct value, but it is also a privilege, and this means that "sensitivity is rooted in a covenantal rather than contractual relationship" (Gold, S. (1989:104-5). It should not be a buyer/seller relation or an exchange of goods and services, but rather an understanding to take care of and bring an understanding to the data. To be a custodian or caretaker of data is different from being a buyer or owner of data and this difference should be reflected in the way we communicate with stakeholders and deal with the issues involved in data of this nature.

#### 6.4 ISSUES IN WORKING WITH CONTEXT: A RETURN TO THE CENTRAL PROBLEMS

Throughout this thesis some core issues that relate to modelling context have been discussed. Although they have been treated as separate issues many are in fact connected as we have seen already in chapter 6.

##### 6.4.1 *Goal Orientation*

Goal orientation has become arguably the most contentious issue in modern accounts of context. Van Dijk (2004) for example devotes much of his criticism to discussing the notion of goal. While his critique suggests that SFL can not logically have an account of goal given its behaviourist roots, thus precluding any consideration of subject internal motivations, such a consideration has always been proposed within SFL (Halliday, 1976/1978). This is not an inconsistency since SFL does not fall strictly within the behaviourist tradition be it British or American (Halliday, 1976/1978). In fact, as we have mentioned previously, Halliday (1976/1978) specifically distances himself from the tradition. This is a case of being clear about what counts as linguistic evidence, and what status linguistic evidence has in relation to other questions (see section on linguistic evidence).

As we saw in chapter 5, the goals of the participants in relation to the context were quite varied. In describing the anticipated context (AC), the goal orientation derives from the relation of the primary participant blocks (as opposed to individuals) to the central task of the process, or what we have called the cultural function of the social process. However the goal orientation network as we applied in chapter 5 has three potential problems. Firstly, the question of temporal orientation, including temporal location and temporal extent, is unclear. Secondly, the question of what constitutes a goal needs to be resolved, and thirdly, the question of objects and goals could be better stated. The network below is my attempt to address some of these issues based on the difficulties I faced when analysing the MET discourse.

The goal orientation network as we applied it in chapter 5 comprises 3 key systems: temporal orientation (longitudinal or short-term); consciousness (overt or unconscious); and constancy (constant or variable). As it stands, this network is definitely usable, as we have seen in chapter 5, however, I suggest that the effectiveness of this network may be improved by making some changes to the network structure as in diagram 52.

The first change is reorganisation of the temporal orientation system. This system codes for the temporal aspects of the goal of an activity. While there are certain benefits to being able to

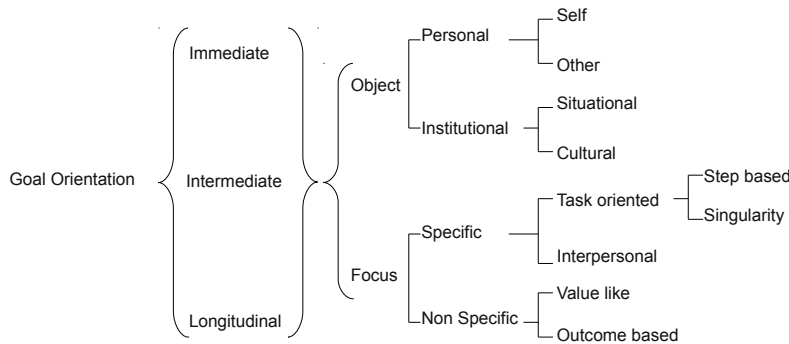


Figure 52: Revised goal orientation network.

choose short term at some moments and long term at others, each participant and indeed any social process will have both short term and long term goals motivating behaviour simultaneously.

I have suggested the following change to this system: temporal orientation becomes a selection from short, medium and long term goals. Thus, selections must be made within each of these networks and I have removed the sections relating to evidence from goal orientation.

I have here chosen to focus on the nature of the goal itself, not the nature of the evidence. Evidence has become a separate network pertaining to all systems of context since it relates to all choices made for all systems.

#### 6.4.2 Evidence Network

Context analysis along with many other forms of analysis is essentially categorisation by means of increasing specificity. As mentioned in the previous section, systems pertaining to evidence have been removed from the goal orientation network. The reason for this is that these distinctions do not apply to goal orientation alone but rather to all choices that are made during analysis. The basics of an evidence network can be seen in figure 53. Previously these categories related to goal orientation and the original arrangement can be seen in Butt (1999/2004) included in Appendix A and used previously in chapter 5 and 6. The distinctions however do relate to all choices made in the context networks.

Interestingly, the evidence used for context analysis proves to be one of the larger difficulties with the approach. Ambiguity results in the potential for circularity. If I decide that a certain context involves unequal social roles, what is my evidence for this decision? If I use language then I run the risk of claiming something similar to the claim that a situation involves unequal social roles because there is an asymmetry in the use of com-

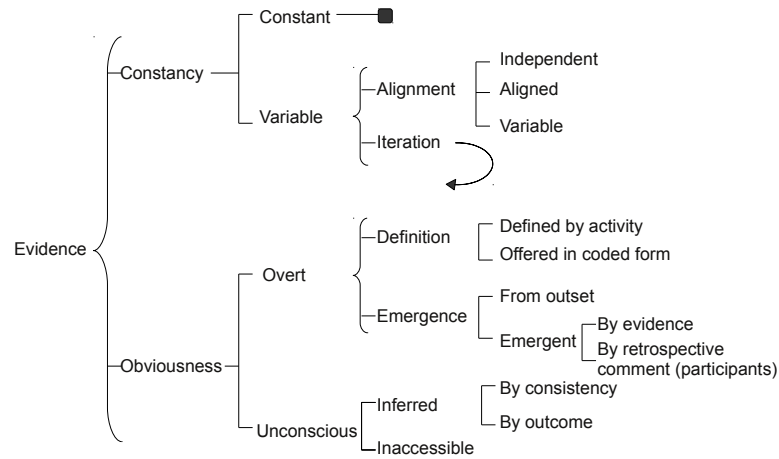


Figure 53: Proposed network for evidence.

mands between participants and that my finding is that unequal social roles result in an asymmetry in use of commands between participants.

Of course neither of these claims is true. There may be a correlation between social role and speech function in some situations, there are far too many situations where it does not hold for a causal relation to be established. Part of the problem lies with where the categories come from. Where use of commands sits very firmly within linguistics (at least by most accounts), social roles is a category that falls outside linguistics and belongs to social psychology or sociology each with their own definitions of what a social role is and what counts as evidence for a social role. The relationship between psychological and sociological patterns and linguistic patterns is often quite striking and useful for both sides, but it is still the case that the basis for building patterns is very different for each discipline and this makes it difficult to discuss the relationships between the patterns.

#### 6.4.3 *An approach to context*

Context cuts across all strata of language, and as such aids the understanding of meaning at all levels. Context can again be seen as that most simple of definitions; everything that is around the text. And this is the key to making context work. Context can, and should, be used to understand the linguistic process; the design of research questions, the collection, storage and analysis of data and the interpretation and representation of results. After all, each action is itself an instance of language in context. As textual analysis, multimodal or otherwise, is carried out, it is context that guides the selections and that makes any findings meaningful. Context does not need to be mysterious or idealised,

but by the same principle, neither is it helpful to reduce or oversimplify. Perhaps what is most needed is a clear setting out of a process.

In this section a process that has been used in dealing with context across various research projects will be outlined. By setting out the process it is hoped that the movement from theory to practice will be obvious and others will be able to apply models of context in their own research with greater transparency. This goal has two motives.

Firstly, there is a need for greater transparency around context. While there is a relatively clear process for carrying out grammatical analysis or morphological analysis, and even to a certain extent semantic analysis, analysis at the level of context has no unified or clear procedure. There are no established units, no guidance as to how one might set about analysing a text in context with the result that we usually end up with a very discursive description of context.

Secondly, and this point is connected to the first, without a clear procedure it is almost impossible to combine analysis from different projects for comparison. At the moment, if one wishes to compare two contexts it is necessary for the analysis to have been done using the same approach and preferably by the same researcher. Ideally it should be possible to compare across research projects no matter who the researcher and no matter what approach was taken. If our comparison is made on a functional basis this should be achievable. Just as Halliday and Matthiessen (2004) compare the traditional grammatical terms with the functional ones, allowing comparison of analysis, so it should be possible to compare different contextual analyses if we know the functional motivation of the distinctions. Such a process is a case of ontology matching.

I refer to this combining as a process of ontology matching because there are definite limits to what can be considered context. Different theoretical approaches and different models within theories differ not so much on what they consider context to be, but on how they organise their description. It is possible to see how these different approaches have arranged information in different ways, foregrounding some aspects and hiding others but in many respects covering the same ground. Grimshaw's (1994) complimentary studies of professional discourse shows this very clearly.

#### 6.4.4 *Opening moves: the research question*

The research question to a large extent defines what Schegloff (2000) has referred to as the granularity of the approach. Mat-

thiessen (1993f:236), in explaining that the researcher is free to examine at whatever level they feel appropriate, suggests that

“we can state the values (of field, tenor and mode) at variable degrees of delicacy so that we can give whole families’ of registers, subfamilies or single registers contextual values depending on the degree of delicacy we select within context. For instance we can group recipes, car repair instructions, and furniture assembly instructions into a family of procedural registers. Contextually, these may all be similar in tenor and mode but they will certainly vary in field. Or, to take another example, in characterising scientific English as a generalised register, Halliday (1988:162) uses very general, indelicate field, tenor and mode values”.

In order to better classify our analyses, it is necessary to give the reason a particular text or social process is being examined. This statement of a research question can be covered by three crucial systems outlined in figure 54. In this group of systems I have drawn on Halliday and Matthiessen’s (2004) distinction between text as artifact and text as evidence and extended this in delicacy to take in more precise statements of the nature of evidence or artifact.

The distinction has been made between whether a text is considered for its own sake or as evidence for something else. If the text is considered for its own sake it may be as an individuated text that is considered for its unique properties or as an archetype of either style e.g. of a particular author or a particular era, or structure e.g. an instructional text. But a text might also be considered as evidence for something else. It might be evidence for social aspects such as educating in high risk environments or power or gender. Alternatively, it might be evidence for something semiotic such as interviewing techniques or questions or the interaction between space and circumstances.

The specificity has also been increased to include a distinction between whether the text or social process is considered to be the social process itself, a comment on the social process or a report of or recount of the social process. This is combined with a system distinguishing between whether the text is complete or not. The text might be known to be complete, truncated, cropped or unknown in its completeness. There may well be further distinctions necessary to give a more complete picture of the research perspective and these can be added to the proposed systems, as can further distinctions to the existing systems.

Together these systems form what I have called the research perspective and they give an indication of the research question.

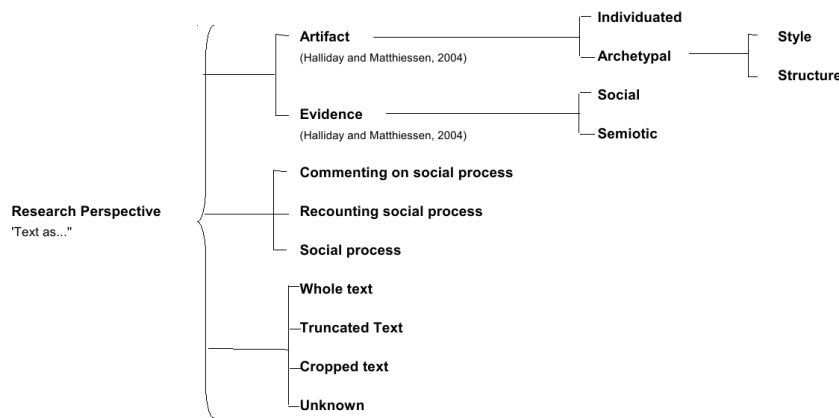


Figure 54: Proposed network for research perspective.

The entry condition or unit of analysis for each of these systems is the texts or social processes collected as data for the research project. Obviously most researchers will have several research questions and each of these can be recorded separately to show how the same data is being used in different ways to answer different questions or to show how different data is being combined to answer these questions.

Just as it is important to give an account of the research perspective, it is also important to get an indication of the researcher perspective. Again this may well be multiple and varied and it is worth recording all perspectives to see what the impact of this may be. The first distinction I have made here draws on Pike's (1954) distinction between emic and etic analysis. Pike (1954) distinguishes between research done from within the group and research done from outside the group. Both offer very important information and it is good to get both forms of perspective on any social process.

If taking an etic perspective, it is possible to be a commentator e.g. a researcher commenting on data they have not participated in collecting, an absent stakeholder, e.g. an interested party that has no direct contact with the data but has a stake in either the data or the results of the study or both, or an observer, e.g. a researcher who is observing the social process from the outside. If taking an emic perspective it is possible to be an active participant, e.g. a surgeon recording their own surgical practice or a psychotherapist recording their own therapy sessions, a passive participant, e.g. a patient recording their own surgery or a passer by caught on film, or a participant observer, e.g. a participant in an event taking notes during the event.

You will see that these systems are not independent from the research perspective. This is also the case with the field, tenor and mode networks. The second system in the researcher perspective is the temporal location of the researcher. The temporal location

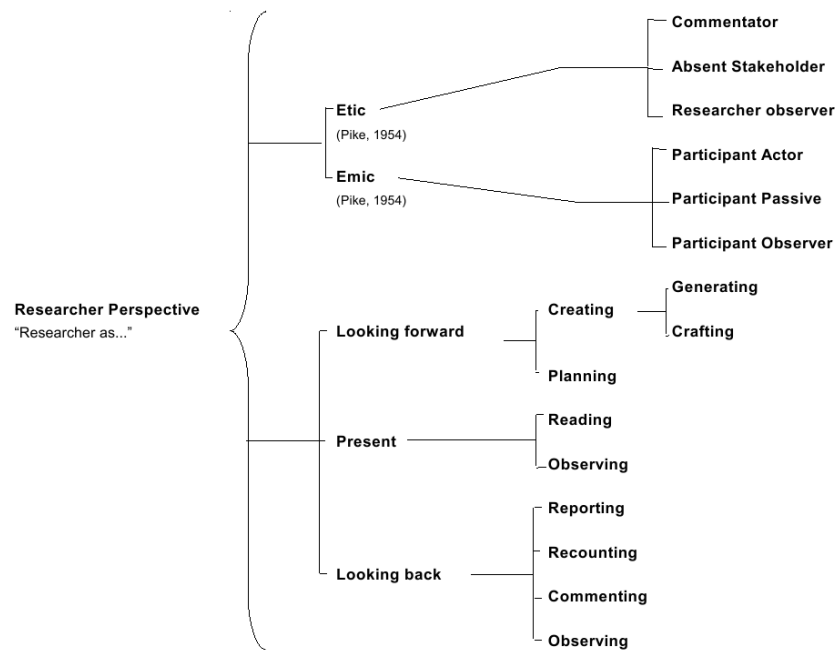


Figure 55: Proposed network for researcher perspective.

refers to the temporal perspective from which the researcher is viewing their data set.

The researcher may be looking forward to creating or generating a text or looking forward in planning a text. The researcher may also be temporally located in the present through observing or recording an event or looking backwards at an event. In looking back, they might also be looking back and reporting, observing, recounting or commenting.

Even with a description of the research and the researchers perspective it is still necessary to have an account of the granularity of the analysis. I have called this the analysis perspective. The analysis perspective considers the focal distance of the analysis by describing the unit of analysis as either a whole register family or something as small as a morpheme. The focal distance is more like a rank scale than a system. As Matthiessen (1993) suggests, it is possible to give a contextual configuration for any degree of delicacy. While degree of delicacy does not refer to the unit as much as it does the level of delicacy that we give to the context statement, the two are not necessarily unrelated. Because it is possible to analyse at different levels, research is often carried out without stating this factor making comparison difficult.

The degree of abstraction is also included here as a variable in the analysis perspective. For most research questions it would be beneficial to describe both the anticipated context and the individual context/s, but it is certainly possible to use one or the other alone. What is important is that the level of the analysis be recorded so that it is possible to compare with other studies.



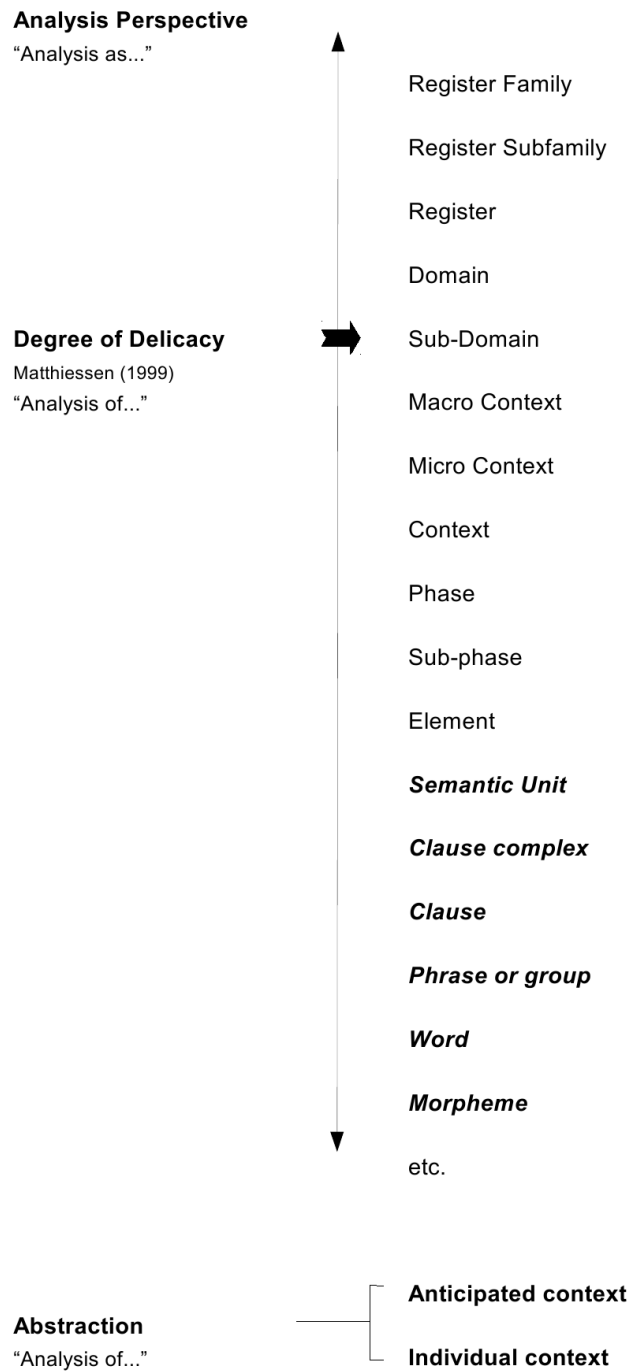


Figure 56: Proposed description for analysis perspective.

As described in chapter 5, the anticipated context refers to the abstract notion of the social process. The anticipated context has general roles as the participants rather than individuals and generic situations rather than a specific situation. Individual contexts by comparison are an analysis of actual events and the individual participants.

The resemblance between these networks outlined here as perspectives: the research perspective, the researcher perspective, the

analysis perspective, and the field, tenor and mode networks is not accidental. The research, researcher and analysis perspectives act as a meta-discourse on the field, tenor and mode networks and frame the analysis carried out using the field, tenor and mode networks. The research perspective focuses on what is going on with the research, the researcher perspective focuses on the social relations involved in the research and the analysis perspective focuses on the organisation of the research.

One of the biggest problems with the system based approach to context as outlined by Butt (2003) is that the systems all have different units of analysis. Even systems within the same network have different units and this can be problematic. Tenor in particular causes a problem because many of the systems seem to be designed for diadic relations while most of the situations that need to be described are multiparticipant rather than dyadic.

Because multiparticipant contexts involve understanding the relationships between a group of people rather than between two people it is necessary to set out the different relationships that exist in some way or to take a unitary perspective and present the analysis as being from one perspective. Even with a dyad, the impression of a single perspective is misleading as there are still at least three perspectives. The challenge for the multiparticipant contexts is that there are a large number of views to represent. Tenor is the most problematic because it is inherently between people rather than pertaining to an individual. Unlike field and mode which consider the nature of activity and interaction, tenor is about the relationship between people and so must consider the two people involved. One way to deal with issues that are between things is to represent them in a matrix.

Matrices such as the sample represented in table 5 in chapter 5, set out the possible comparisons in a context. In this view we can see all the participants and describe their relationships. But multiple participants also means multiple activities and multiple forms of interaction. This means that just as tenor will vary, so will field and mode. It may be that it is also possible to organise field and mode in a context matrix just as with tenor.

Questions about what is going on also become much more complicated once we introduce multiple modalities, which of course, most of language involves. One activity may be going on through language while a completely different activity may be going on through gesture or on visual and through auditory displays. Furthermore what is going on and the role of language might very well vary significantly for the different people involved in the social process.

As well as being a contained way of presenting information, matrices are also a good way to see the redundancies in coding between people in a group. If a group of people have similar

codings in tenor it may be that it is possible to treat this group as a single entity, with a higher probability of similarity in goals and objectives making it more likely that they have similar social roles. They also have the potential for giving a tenor based focus to a contextual description. This person centred representation can be used in modelling context from the perspective of those involved.

#### 6.4.5 *Context from the point of view of people – a person centred context model*

At the start of this thesis I suggested that the application of a model could offer something to the development of theory and subsequently further modelling just as it can bring benefit to the domain in which it is applied. Through applying Hasan's (1999) model of context to the MET domain, the research team at the Simpson Centre were able to build a clear picture of the typical phases of a MET call that was used to construct educational tools and in training. They were also able to define roles and responsibilities for the MET members and raise awareness of problems in the current structure that may result in systems failures. But it would be wrong to suggest that the relationship between the model and these outcomes was direct.

Hasan (1999) and Butt (1999/2004) in constructing their models took the representational tool of systems used in the systemic functional theory and used these to model context. In so doing, they develop systems at the level of situation and leave aside the issue of where these systems sit in relation to the theory as a whole or how these are resolved with respect to the dimensions of language. So one of the changes that takes place in this model in the move from theory to model is the use of systems and potentially the place that these systems sit in relation to language. But this does not mean that this model of context is not useful or that it is inconsistent with the theory. On the contrary, it is merely that there are theoretical issues with the model that remain unresolved.

In applying the model, changes were made to the entry conditions and to some of the categories and organisation of the systems. When these altered systems and entry conditions were used by the researchers at the Simpson Centre, the model was changed further. Some of the abstraction was made more particular and elaborated more for the situation. When findings were conveyed to staff at the hospitals these were altered further to make them relevant to the particular hospital where they were being shown. Further changes were made by the hospital in adopting some of the findings into hospital practice. They focused

on crucial aspects that resonated with their situation and ignored other parts.

These changes raised some questions about how theories and models are used and what this usage means for development of the theory and model used in this situation. What was evident from the changes that were made during the research project was that the model was easy to adapt to the different needs as they arose. Typically it was only parts of the networks that were used not the whole networks and these selections usually reflected crucial areas at risk for the situation.

Of particular interest to the research team at the Simpson centre was parts of the tenor network which they used to establish role descriptions for the MET. Possibly even more important to the team was the generic structure potential for the MET calls. Their adaptation of the model however saw the structure potential statement tend more towards the elaborated and field oriented. Rather than having abstract categories, they developed quite elaborated categories as can be seen in Santiano, N., Young, L. Baramy, L.S., Cabrera, R., May, E., Wegener, R., Butt, D. and Parr, M., Clinical Analysis Group (2011). The phases of the MET, as they called them, were built into teaching as key areas of focus and reflection. Interestingly, participants were able to abstract from this very elaborated potential when asked to consider the idea of a MET.

The experience of this application fed back into the theory and modeling by highlighting the ability of participants to abstract when directed. Participants showed the potential to build an abstract contextual description merely by being directed to consider the MET as an idea rather than referencing the specific situation that was recorded. Indeed it was only necessary for the interviewer to discuss MET systems with staff with no video and at a point removed from either the recording or viewing of the video. This aspect emerging from the application is quite readily incorporated into the model as is shown in chapter 5 through establishing two descriptions of a situation: the anticipated context (relating to the abstract named social process), and the individual context (relating to a specific instance of the social process).

While there is no problem with incorporating this concept into the model, more difficulty may be presented in ensuring consistency with the theory. One way in which it might be possible to incorporate this approach theoretically is to consider how Phillip Wegener's work on context might be more fully integrated with existing approaches in SFL. While drawing on Wegener's work in a very general way, SFL has made little explicit use of the model outlined by Phillip Wegener (see Nerlich 1990 and Butt and Wegener 2008). Phillip Wegener's model of context includes mental schemas based on idealisations of known situations. This

concept could be usefully incorporated into SFL theory to bring about a more person centred approach. The proposals outlined in this chapter taken together can represent a model of context that presents context as inherently between people and yet still takes into account the people involved in any situation and the potential they have for understanding a situation differently. People project their perspectives onto the environment through their interactions and in so doing provide those around them with insights into their individual perspectives.

Within this model the first step in any analysis of a social process would be the meta analysis. The meta analysis is a description of the project itself and involves describing the research perspective or the research activity taking place; the researcher perspective or the researcher social relations involved and the analysis perspective or the organisation of the research. Typically a description such as this would be given in the methods section of a research paper or report without any direct connection being made between the method and the account of context. Inclusion as a contextual description recognises that research is itself a situation where the contextual variables might very well impact on the data recorded and the interpretation of that data. Much of what we describe as methodological differences are the structural outcome of different contextual settings for different methods. The benefit of describing the research context in this way is that by providing a relatively uniform description, it is easier to compare different studies.

This approach is as yet unelaborated. It has been devised from experiences across a number of different projects and the challenges that these presented. It remains for future work to consider how these concepts might be brought together to form an integrated approach to context that is consistent with SFL theory. In chapter 6 a number of different challenges with context description have been discussed together with some suggestions for new ways forward in modelling and applying context. In the final chapter consideration will be given to future directions for contextual research.



## CONCLUSIONS

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*“these imponderable yet all important facts of actual life are part of the real substance of the social fabric, that in them are spun the innumerable threads which keep together the family, the clan, the village, the community, the tribe”*  
 Malinowski (1922:19)

### 7.1 LOOKING BACK AT WHERE WE HAVE BEEN

Although we set out from theory and progressed through to application we have arrived, as one does, back at theory. The process is a circular one, which never ends, but which in its momentum carries forward the work of academia. By putting a theory to work we inevitably move it forward, making any application a step in theory building. So where then does the consideration of language in context, the examination of the challenges for theory, model and application leave us and what changes are necessary?

The overarching goal in this work has been to show how each phase from theory, through model to application and practice have their own unique challenges. In chapter one we considered some of the reasons why we need to examine language in context and introduced some of the challenges to the examination of language in context. In chapter two of this thesis the historical grounding of the contextually located view of language that is employed was considered. By examining a little of the history of context, the similarities and differences between different approaches become clearer in their motivation. Some of the central questions that were introduced in chapter one can be seen to have begun with Malinowski and those before him. Because SFL has considered language in context for such a long time, it was selected as the theory to examine. In chapter three the theoretical underpinnings of one approach, SFL, were considered.

Without selecting one particular model within SFL, chapter four examines some of the different approaches that are possible and that have been followed in modelling context within SFL. This chapter showed some of the challenges which are peculiar to model building and led to the selection of Hasan’s (1999) model as modified by Butt (1999/2004) as a suitable model for application in the domain of emergency care medicine. In chapter five, Butt’s (1999/2004) modification of Hasan’s model was applied within the domain of medicine focusing in particular on med-

ical emergency teams within hospitals in Sydney's western area health service. The goal in this chapter was to foreground some of the challenges and problems with models in actual use not to profile the medical emergency team context. While providing useful analysis for those working in the area of medical emergency research was certainly a key consideration of the research, it was not the primary goal of the thesis and as such only a small selection of the actual data was represented in chapter five. This was expanded in chapter 6 by considering other projects that helped to highlight the problems faced when trying to apply models of context. In this final chapter, consideration is given to what the changes made through application mean at the level of theory.

## 7.2 IMPLICATIONS FOR THE THEORETICAL FOUNDATIONS

One key learning that emerges from the experience of application is that while it is much acknowledged that context is important and in fact, very little can actually be established without considering context, there is a significant lack of structure when it comes to using context in any meaningful way. Each project, each question, each research paper solves the problem in its own way and thus we lose a sense of the bigger picture. If something lacks theory it fails to be modelled and if it is not modelled then people will not use it because it has no structure so is not easily applied. If people do not use the model there is no application cycle and we cease to get the updating that we need at the level of theory. As can be seen, this process is self-perpetuating.

To break this cycle we need to understand what is required from a model for it to be able to be applied with ease in the field. It is also necessary to understand what is needed for representing results and for communicating with others about research. A model of context that makes no contact with the questions that people have or the problems which need to be solved will have no use value. To break the cycle then we need to look at what is needed in the field.

In chapters 5 and 6 we saw some of the challenges faced through the application of one model in one domain. This process showed that, as de Beaugrande (1993) suggests, context (although he is talking about register) is desperately in need of some theory. However, because context is not a thing just as register is not a thing, it is not context or register that need the theory but theories of language that need to take into account aspects of context. SFL already has a strong theoretical structure for looking at language in context as do a number of other approaches to language. By strong theory I do not refer to what van Dijk (2006) calls the "weak triple of field, tenor and mode". Rather, by theory I refer to



a means for considering variation at all levels, of separating out difference and similarity, of locating language as social and of situating it in a biological base. These are the assumptions at the level of theory that make it possible to model context. Without these there is no need and no framework for any consideration of context.

In modelling context I have made several suggestions that may prove useful in application. Firstly, as set out in chapters 5 and 6, I have suggested the division of context into an anticipated or archetypal context and an individual context. This division was motivated by the need to distinguish between analysis completed with an average view of a situation in mind compared to analysis done with a specific situation in mind.

Comparisons between these two analyses may prove useful for various research questions, for example, where it is necessary to distinguish between people's conception of a social process and their actual behaviour in a social process. Other research questions might find it more beneficial to compare individual contexts with each other to determine speciation or anticipated contexts with each other to determine similarities and differences between social processes. It remains to be seen however how well such a conception fits within SFL theory since it is, in effect, a form of stratification at the level of context.

Other developments raised in chapters 5 and 6 include proposals for changes to the goal orientation network and the inclusion of a meta-analysis that considers method as a social process with specific contextual settings. This meta-analysis included an evidence network, the research perspective, the researcher perspective and the analysis perspective. These perspectives take into account the fact that the research method is itself a social process with contextual settings that impact on research outcomes.

It is as yet unclear how useful this approach will be in modelling and application however early indications suggest that it provides useful insights. It remains for future work to see how these perspectives will be integrated into the theory and the challenges that this might present.

### 7.3 REPRESENTING CONTEXT IN CONTEXT

Humans are predominantly visual and it may be that we will see a return to this dominance in the future with the growing concern for multimodality and as representation through visual modes becomes much more common, feasible and accessible. It is already possible to link through to digital video or sound or to incorporate multidimensional diagramming or graphing and in the future such practices may become common place in research papers and books. In representing research outcomes, the past

has seen mostly a text based approach, with descriptive passages standing in the place of context for a text. Often the more interesting representations were in the field diaries and notebooks, where researchers were free to use whichever modality was most suited to their purposes. New technology and changing interaction practices may see this multimodality incorporated into other areas of research.

More recently, at least within SFL we have seen the use of system networks as a mode of representation at the level of context. This is problematic for a number of reasons. Systems require the view of the entire potential in order for selections from that potential to be meaningful. Not only do the categories only make sense, in a very Saussurian way, in contrast to each other, but the significance of the selections for one context as opposed to another are only visible when we can see the full potential. This means that there are problems for publication and for peer to peer discussion since system networks are perhaps not the easiest form of representation to put on display.

This difficulty in display does not mean that they are not useful. The system representation does not have to stay in a fully worked system network and can be pulled apart to display only the most relevant distinctions for the question at hand. Moore (2009) has made very good use of this in showing how different contexts track through the potential in different ways across levels. Wegener and Kofod-Petersen (2010) have also used this approach to show the different contextual settings for different types of data collection and research. This is also an approach taken within this thesis to display graphically the different choices for each context by using different colours to highlight the selections on the networks. Such an approach minimises replication and redundancy but, as a very analogue approach, still needs quite a lot of space since the systems must be represented in full. To counter this I explored in chapters 5 and 6 some other means of representation for systems based models of context. By numbering each system and each branch within each system I was able to produce unique number strings which retained the system based information in each string. Such an approach saves space but also has the problem of being meaningless without the original information to which the string refers.

Individual differences remain difficult to display and one of the possibilities discussed in this thesis is the use of matrices to represent the potentially different perspectives on a situation that participants might have. Matrices appear to be most relevant for tenor relations but may also be useful for displaying field and mode variation since the potential for differences in how individuals and even groups view the description of what is

going on in a social process and the role that language plays in this process.

A person centred approach to contextual descriptions appears to offer a useful way to incorporate cognitive aspects of meaning making yet it remains to be seen what impact this will have on modelling and theory and how best these individual differences can be represented for different audiences.

#### 7.4 LOOKING FORWARD

Ultimately, when we deal with context we are dealing with language in use. If a theoretical approach is concerned with language in use then that theory will share something in common with other theories concerned with language in use. If we consider the functional motivation of different approaches then, to some extent, regardless of the terminology used it is possible to map across different approaches. As long as the broad underlying theoretical principles are not in outright conflict with each other, then different models of context simply represent different views on the same problem.

While it has never really been out of focus in research, context has been in and out of fashion. Research into context has seen somewhat of a resurgence over the last few years and it may be that the years to come will see a similar growth. At the theoretical level an area of particular interest is the relationship of contextual descriptions to language variation on other strata and how this connection is made in an explicit way. This relationship between the unfolding process (GSP) and the situational descriptors is also an area that deserves further investigation. In particular, it is very interesting to consider the potential for different phases in a social process to represent different contextual settings and even to be defined by them. An area that has received much attention in the past and deserves to receive more in the future is consideration of the dynamic aspects of context. This area gains new urgency with new technologies and increased take up of these technologies by many sectors of the community.

With the growth in consideration of multimodal issues, there has been an increased interest in the role context plays in meaning making in multimodal environments. Future research may see a growing interest in areas such as material situational setting and the role that this plays in how we understand a social process and interact in it. We are only just beginning to understand the role touch plays in meaning making and our cognitive development and this is an area that deserves more research attention.

As it was in the past, with researchers such as Malinowski, the future of research into context may well be driven by those who need it most. The imperative for a researcher who really needs

to find an answer will always be stronger than for the merely curious observer.

*"We must learn to take joy in the larger freedom of loyalty to thousands of subtle patterns of behaviour that we can never hope to understand in explicit terms. Complete analysis and the conscious control that comes with a complete analysis are at best but the medicine of society, not its food. We must never allow ourselves to substitute the starveling calories of knowledge for the meat and bread of historical experience. This historic experience may be theoretically knowable, but it dare never be fully known in the conduct of daily life." Sapir (1928/1999:172)*

## Part IV

## APPENDIX

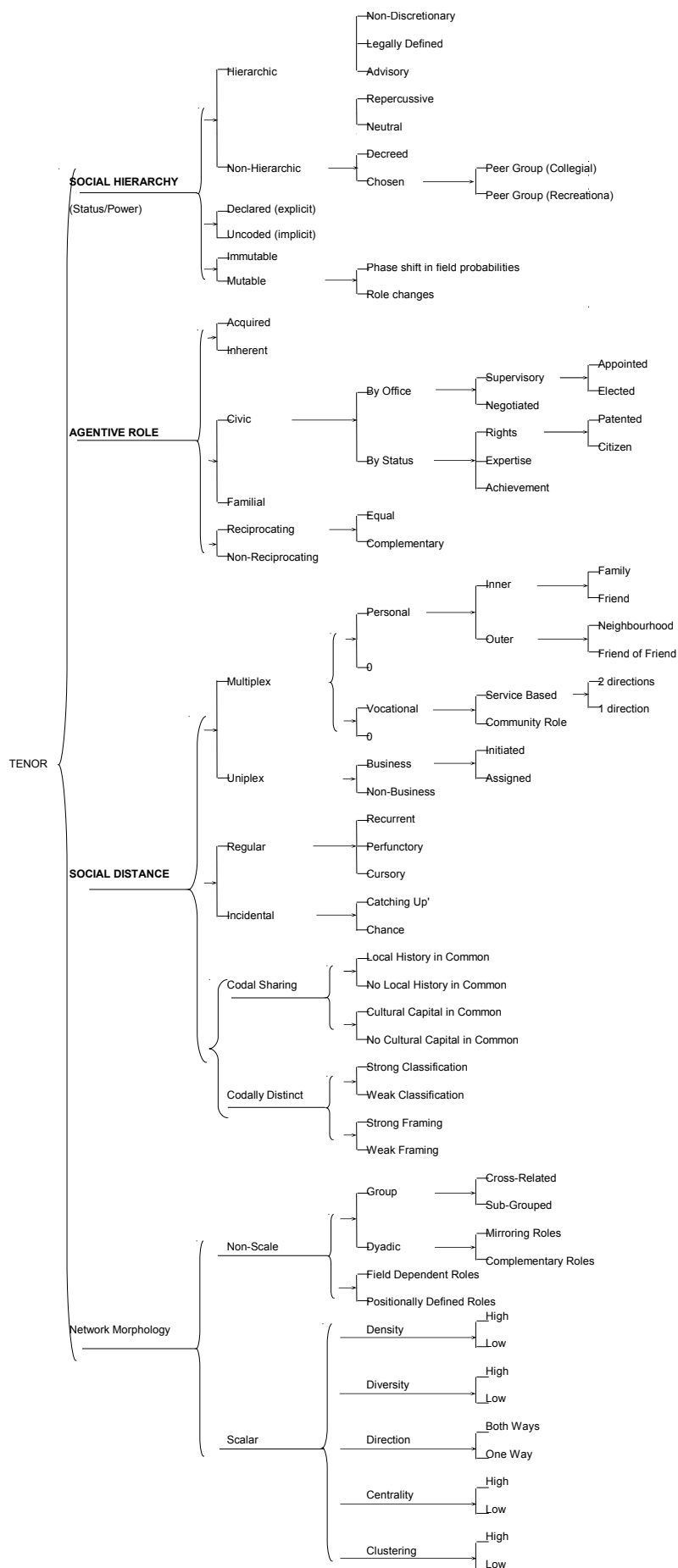


## APPENDICES

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### A.1 APPENDIX: CONTEXT NETWORKS

Context networks developed by Butt (1999/2004) based on Hasan (1999). The text in the tables provides elaboration of the categories set out in the networks.





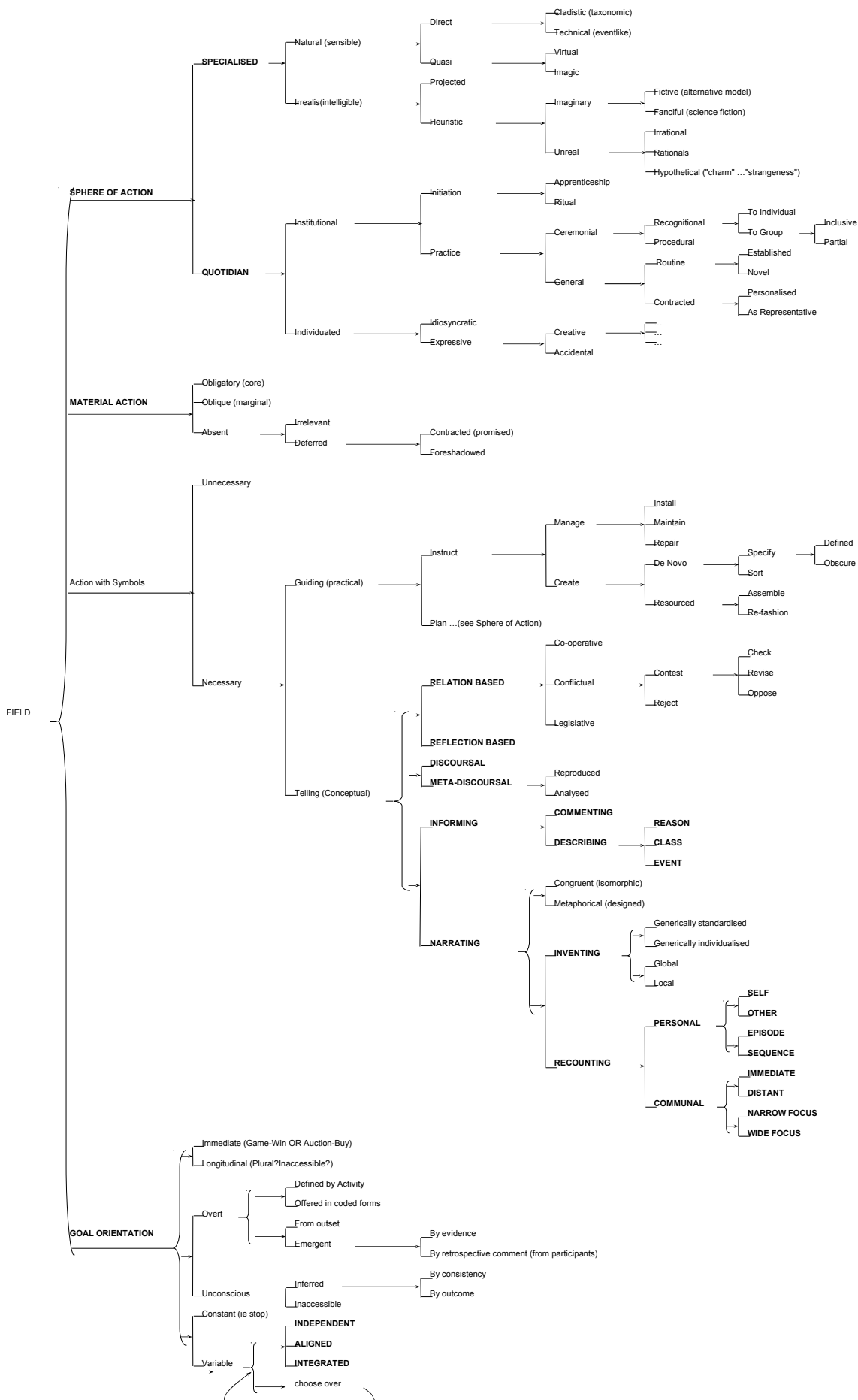
TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Advisory	Second	The different order of power/status exist/extend only to the offer of advice, of past experiences.				
Chosen	Second	The non-hierarchical relations have been entered into by choice.				
Declared (explicit)	First	The power/status relations of the participants are visible ie made explicit by words/obligatory elements/artifacts or other semiotic devices				
Decreed	Second	The non-hierarchical relations are by public arrangement. Law or "natural justice"?				
Hierarchic	First	Different orders of power/status exist within the context ie unequal power/status relations exist between the participants				
Immutable	First	The power/status relations are not likely to shift or change 'in medias res'				
Legally defined	Second	The different orders of power/status that exist are formalized at law - explicit through guidelines				
Mutable	First	The power/status relations are liable shift or change within the context				
Neutral	Second	No repercussions can be expected to follow by not observing the conditions of hierarchy in the interaction				
Non-Discretionary	Second	The participants are not able to/it is not at their discretion to overlook the different orders of power/status				
Non-Hierarchic	First	The power/status within the context is of the same order ie equal power/status relations exist between the participants				
Peer Group (Collegial)	Third	The chosen relations are as a result of the shared experience of work, training, expertise, apprenticeship, institutional profile				
Peer Group (Recreational)	Third	The chosen relations are a result of non-work contacts and activities				
Phase shift in field of possibilities	Second	The shift/change in the relations occurs/tends to occur as the surrounding field/topic change				
Repercussive	Second	Institutional or personal repercussions may be imposed on those who have not adhered to the conventions and expectations of the hierarchy				
Role changes	Second	The shift/change in the relations occurs/tends to occur when the action require a changes of ordinary actant and therefore roles				
Uncoded (implicit)	First	The power/status relations of the participants are invisible ie not foregrounded by semiotic devices				

TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Acquired	First	The actant roles is achieved/acquired through training/qualification/cultural 'capital'				
Inherent	First	The actant roles is an inherent function of age/race/family seniority/gender ...				
Civic	First	The actant role is based in civic determinations				
Familial	First	The actant role is based in the concept of family and its specific local expectations				
Reciprocating	First	The relation is bi-directional ie the participants/actants in the context act on each other				
Non-Reciprocating	First	The relation is in one direction only; transitive; acting on or through another				
Achievement	Third	The status is the result of the some single achievement which bestows relevant kudos				
Appointed	Fourth	A single third party acting by edict/fiat				
By Office	Second	The civic determinations are a function of the actants office....				
By Status	Second	The civic determinations are a function of the actants status....				
Citizen	Fourth	The rights are as a result of expectations surrounding the actants citizenship of the				
Complementary	Second	The relation involves complementary contributions (even differing kinds of assistance) between the participants				
Elected	Fourth	Multiple third parties subject to group decision/assent				
Equal	Second	The relation is equal between participants				Carer to carer
Expertise	Third	The status is the result of the recognition of expertise in a given field				
Negotiated	Third	The role of the office is established by some negotiation				
Patented	Fourth	The rights are as a result of the actants property/ownership status				
Rights	Third	The status is the result of inherent rights				
Supervisory	Third	The role is not achieved by negotiation by rather established/determined by a third party(s)				

TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
1 direction	Fourth	The service is in one direction ie a single service provider				
2 directions	Fourth	The service is in two directions, reciprocating				
Assigned	Third	The business on which the link is based has been assigned to the participant(s)				
Business	Second	The single link is based on business/work				
Catching up"	Second	An incidental meeting, a 'one-off', for catching up				
Chance	Second	An accidental meeting; "bumped into, time pressures or other pressures to "fit it in"				
Community Role	Third	The vocational links are based on a community office				
Cultural Capital in Common		Shared educational, professional, artistic, sporting, recreational orientations				
Cursory	Second	The contact is not regular, not prearranged, and minimal in its expression				
Family	Fourth	The multiplexity is based on family				
Friend	Fourth	The multiplexity is based on friendship				
Friend of Friend	Fourth	The multiplexity is based on friendship once removed ie you have a friend in common				
Incidental	First	Contact is not required/is incidental to the social distance between the participants				
Initiated	Third	The business on which the link is based has been initiated by the participant(s)				
Inner	Third	The personal links are immediate/close				
Local History in Common		Local knowledge shared when local means "in relation to" other typical contacts in that environment. Also implied here is temporal depth				
Multiplex	First	There is a multiplexity of links between the participants in the context				
Neighbourhood	Fourth	The multiplexity is based on shared neighbourhood history				
No Cultural Capital in Common		No shared educational, professional, artistic, sporting, recreational orientations				
No Local History in Common		No shared local knowledge				
Non-Business	Second	The single link is not based on business/work				
Outer	Third	The personal links are once removed/distant				
Perfunctory	Second	The contact is repeated only by issues arising and, therefore, is driven by the function, not by a standing arrangement				
Personal	Second	Some or all of the links are personal				
Personal not applicable	Second	None of the links are personal				
Recurrent	Second	The contact is by regular interaction of a systemic/arranged kind				
Regular (confirming)	First	Contact is required to maintain/confirm the social distance between the participants				
Service Based	Third	The vocational links are service or business office based				
Strong Classification		Extent to which this activity is set off from other activities/forms of business is high				
Strong Framing		Extent to which attention is given to establishing roles and obligations, permitted forms of speaking and appropriate topics in relation to persons is				
Uniplex	First	A single link exists between the participants in the context				



TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Group	First	The relevant network is predominantly organised around a group.				
Dyadic	First	The network is limited/mediated by predominantly dyadic relations/transactions				
Centrality High		The degree to which the transaction is towards the core of the network is high relative to the expectations, probabilities or averages against other networks and registers.				
Centrality Low		The degree to which the transaction is towards the core of the network is low relative to the expectations, probabilities or averages against other networks and registers.				
Clustering High		The extent to which the network breaks up into clusters is high relative to the expectations, probabilities or averages against other networks and registers.				
Clustering Low		The extent to which the network breaks up into clusters is low relative to the expectations, probabilities or averages against other networks and registers.				
Complementary Roles	Second	The roles are complementary				
Cross-Related	Second	Relations exist across the group ie from any of the individuals to any other.				
Density High		The density of the network is high relative to the expectations, probabilities or averages against other networks and registers.				
Density Low		The density of the network is low relative to the expectations, probabilities or averages against other networks and registers.				
Direction Both Ways		The degree to which the network is bi-directional is high relative to the expectations, probabilities or averages against other networks and registers.				
Direction One Way		The degree to which the network is bi-directional is low relative to the expectations, probabilities or averages against other networks and registers.				
Diversity High		The degree of diversity in the network is high relative to the expectations, probabilities or averages against other networks and registers.				
Diversity Low		The degree of diversity in the network is low relative to the expectations, probabilities or averages against other networks and registers.				
Field Dependent Roles	First	The roles within the network are a function of the field (intrinsic).				
Mirroring Roles Positionally	Second	The roles are reciprocating, mirror image				
Defined Roles	First	The roles within the network are a function of other position (extrinsic).				
Sub-Grouped	Second	The group has obvious sub-groups which limit the relations amongst individuals				



TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Accidental	Fourth	Unconscious use of expressive activities.				An actor using stage craft in a personal quarrel.
Apprenticeship	Fourth	Initiation is by knowledge (of a everyday, commonsense kind) taken on and the performance of individuals over a period of time.				
As Representative	Sixth	Participants are representative of the institution's character.				
Ceremonial	Fourth	In respect of a particular occasion or achievement.				
Claustic (taxonomic)	Fourth	Classification is the organising principle and/or the outcome sought.		How are these alike/unlike?		
Contractual	Fifth	Governed by a contract.				
Creative	Fourth	Conscious used of expressive activities to achieve a pre-planned goal.				
Direct	Third	The phenomena is actually in the context, therefore the sensory access is direct.				
Established	Sixth	All aspects of context are 'known'.				
Expressive	Third	Individualised activities that are constructed, planned or passed down by tradition that allow artistry, virtuosity and personal choices to be experienced whatsoever.				
Fanciful (science fiction)	Fifth	Imagined but not constrained by any conditions of experience whatsoever.				Science fiction and fantasy.
Fictive (alternative model)	Fifth	Imagined but constrained by relations/dependencies in our shared experience.				The Ptolemaic and Renaissance views of the solar system.
General	Fourth	Recognisable behaviour is of an 'everyday' sort.				
Heuristic	Third	Concerns investigations, discoveries theoretical reasoning.				
Hypothetical ("charm"	Fifth	Defying analogy to actual human experience	Meaningless descriptors			'charm', 'strangeness', 'color in physics; literary/narrative techniques which leave meaning unresolvable.
Idiosyncratic ("strangeness")	Third	Indexical of a particular individual or individualised sub-group.	Particular blend of factors/cultural influences		Particular 'whimsical' semantics.	The individualised contexts of groups such as the Beatles
Imagic	Fourth	Constraining relationship exists between the socio-material base and the crucial information.				Specialist discussing a-rays may be "reading-off" the indexical relationship between the brain, the shadow of the tumour and their
Imaginary	Fourth					
Inclusive	Seventh	Group being recognised includes all those in attendance.				Victory day after war, election victory party, victorious sporting clubs/nations; celebration of company results/performance.
Individualised	Second	Relying on behaviours that express the style of the individual of individualised sub-group.				
Institutional	Second	Relying on a recognisable group and/or group behaviours.				
Initiation	Third	Access to group relies on initiation.				
Irrational	Fifth					Square root of negative numbers; stratal boundaries in linguistics; complementarity; impossible thought experiments.
Irrrealis (intelligible)	Second	Unactualised but intelligible is a				
Natural (sensible)	Second	Phenomena involved rely sensory report or evidence.				
Novel	Sixth	New element in context which brings about a 'fresh start' albeit within the limits of the general practice of the institution.				
Partial	Seventh	Group being recognised is a sub-group of those in attendance.				
Personalised	Sixth	Relating to an individual as a 'person'.				
Practice	Third	Access to group relies in adopting recognised behaviours.				
Procedural	Fifth	Ceremony used to bring about the progress of an event.				Opening and closing ceremonies
Projected	Third	Concerns forecasts or predictions.				
Quasi	Third	The phenomena is spatially or temporally removed, hence sensory access is mediated, forms of sensory report.				



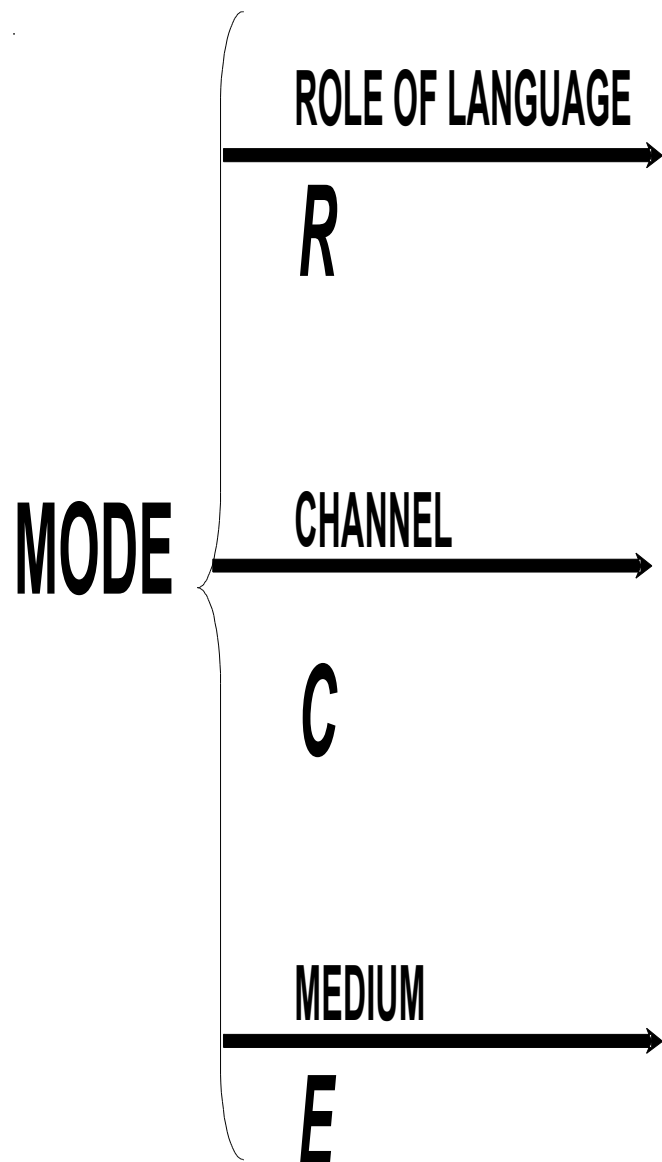


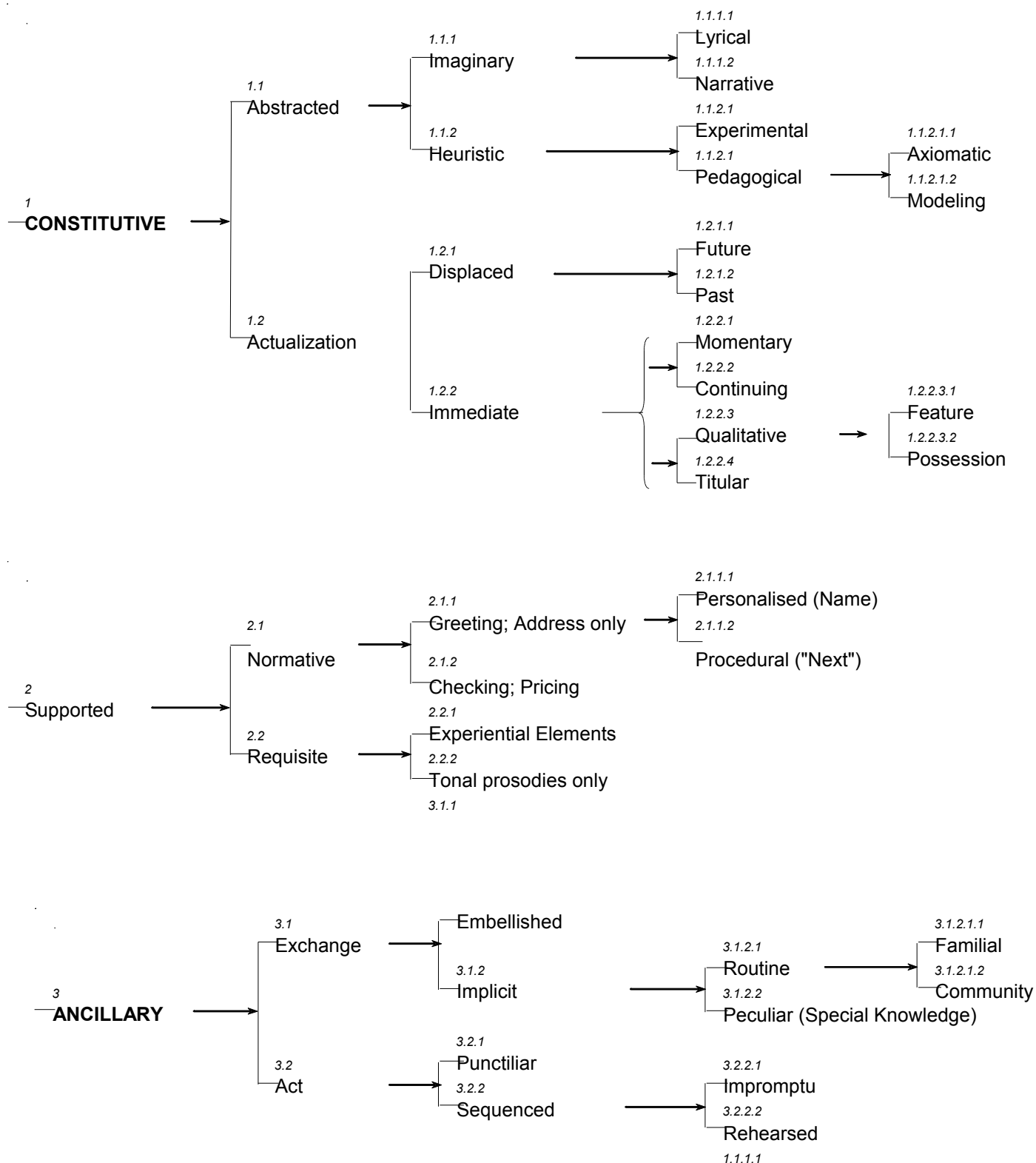
TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Obligatory (Core)	First	Context cannot be plausibly conducted without some Material Action in the very 'goings-on' of the symbolic exchange.				
Oblique (Marginal)	First	Material Action is not criterial/critical to the characterisation of the social event.				
Absent	First	Material Action is absent.				
Irrelevant	Second	Material Action has no bearing whatsoever on the interactants' sense of the goals and character of what is taking place.				
Deferred	Second	Material Action will take place in the future by agreement by the very nature of the exchange.				
Contracted (Promised)	Third	The future action is an explicit agreement of the interaction.				
Foreshadowed	Third	The future action is part of the meaning potential in play, but such action has not been promised or directly negotiated.				

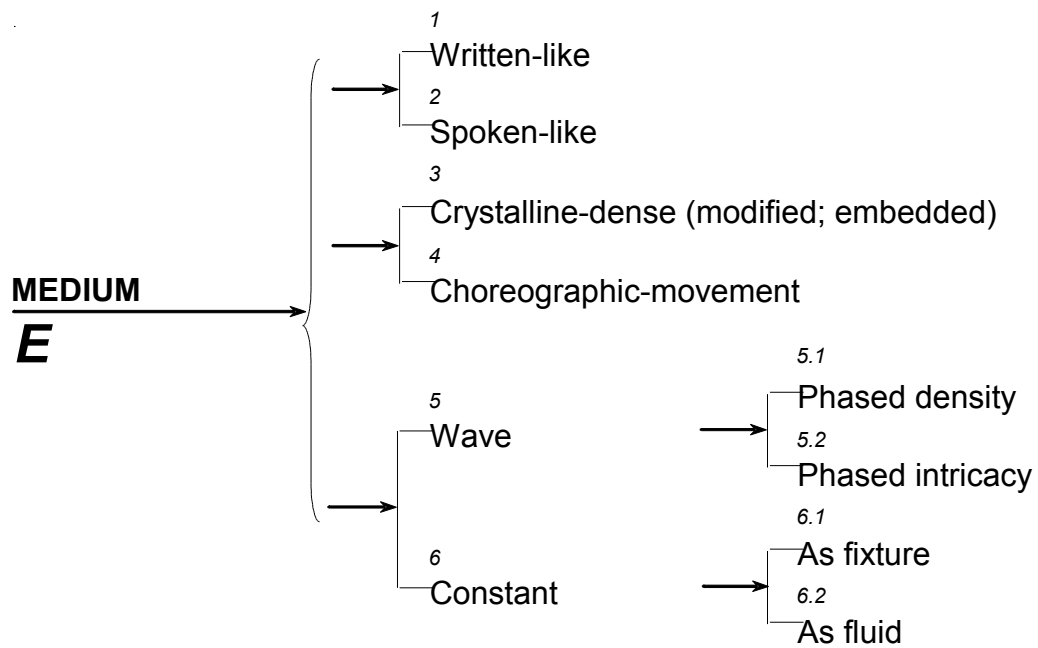
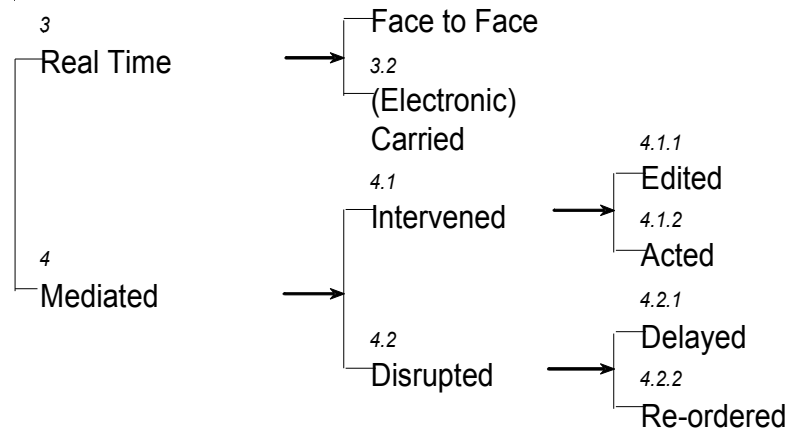
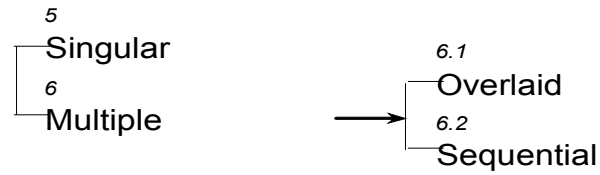
TERM	DEGREE OF DELICACY	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Unnecessary	First	Context can move forward without, or with only very minimal coded/worded messages.	Material Action: Obligatory			Situations of work, work preparation and care.
Necessary	First	Context can only unfold, move by move, through coded/worded messages (which give the direction and the staging of events)				
Guiding (Practical)	Second	The coded/worded messages serve to explain how to 'go about' a practical activity or task.				
Telling (Conceptual)	Second	The coded/worded messages relate concepts.				
Instruct	Third	Guidance is directed to the carrying out the activity or task within the context.				
Plan (See Sphere of Action)	Third	Guidance is directed to the production of a plan model schema, statement of steps ie meta-guiding (practical).				
Relation based	Third	Predominantly organised to build an interpersonal link.				
Reflection based	Third	A problem exists which draws on all the participants directly; something to be solved, discovered, interpreted, constructed planned etc. The politics of the situation - its interpersonal forms and alliances do not dominate the experiential focus of the activity.				
Discoursal	Third	A text which acts directly on the experience of the participants in the context.				
Meta-Discoursal	Third	A text which acts on another text.				
Informing	Third	Release of information is not governed by an organising pattern?				
Narrating	Third	Release of information is governed by organising pattern.				
Manage	Fourth	The task or activity is achieved by the deployment of 'thing' that already exist.				
Create	Fourth	The task or activity is achieved by creating involves creation from 'scratch'.				
Co-operative	Fourth	Does not draw attention to issues of difference or possible differences.				
Conflictual	Fourth	Differences are the object of the talk and the situation ie to 'settle the differences'.				
Legislative	Fourth	One side has the role, right or power to lay down the ground rules for future interactions.	Asymmetrical viz Tenor network.		Semantics of setting out 'how it is going to be'.	
Reproduced	Fourth	A context which reproduces a text albeit in a somewhat modified or customized form.				Editing and publishing.
Analysed	Fourth	A context for teasing out details and interpretations of another text(s).				Religious studies, law, philosophy, linguistics and mathematics.
Commenting	Fourth	Involves observation/evaluation.				
Describing	Fourth	Restricted to describing.				
Congruent (Isomorphic)	Fourth	Organising pattern/narrative sequence is isomorphic with the putative unfolding of events ie plot = fable in Russian formalist terms.				
Metaphorical (Designed)	Fourth	Narration 'hops about' in its unfolding. The situation is less predictable as choice is exercised over the release of information ie plot does not				
Recounting	Fourth	Narrative is fictional, an invention.				
Install	Fifth	Narrative relates 'actual' occurrences.				

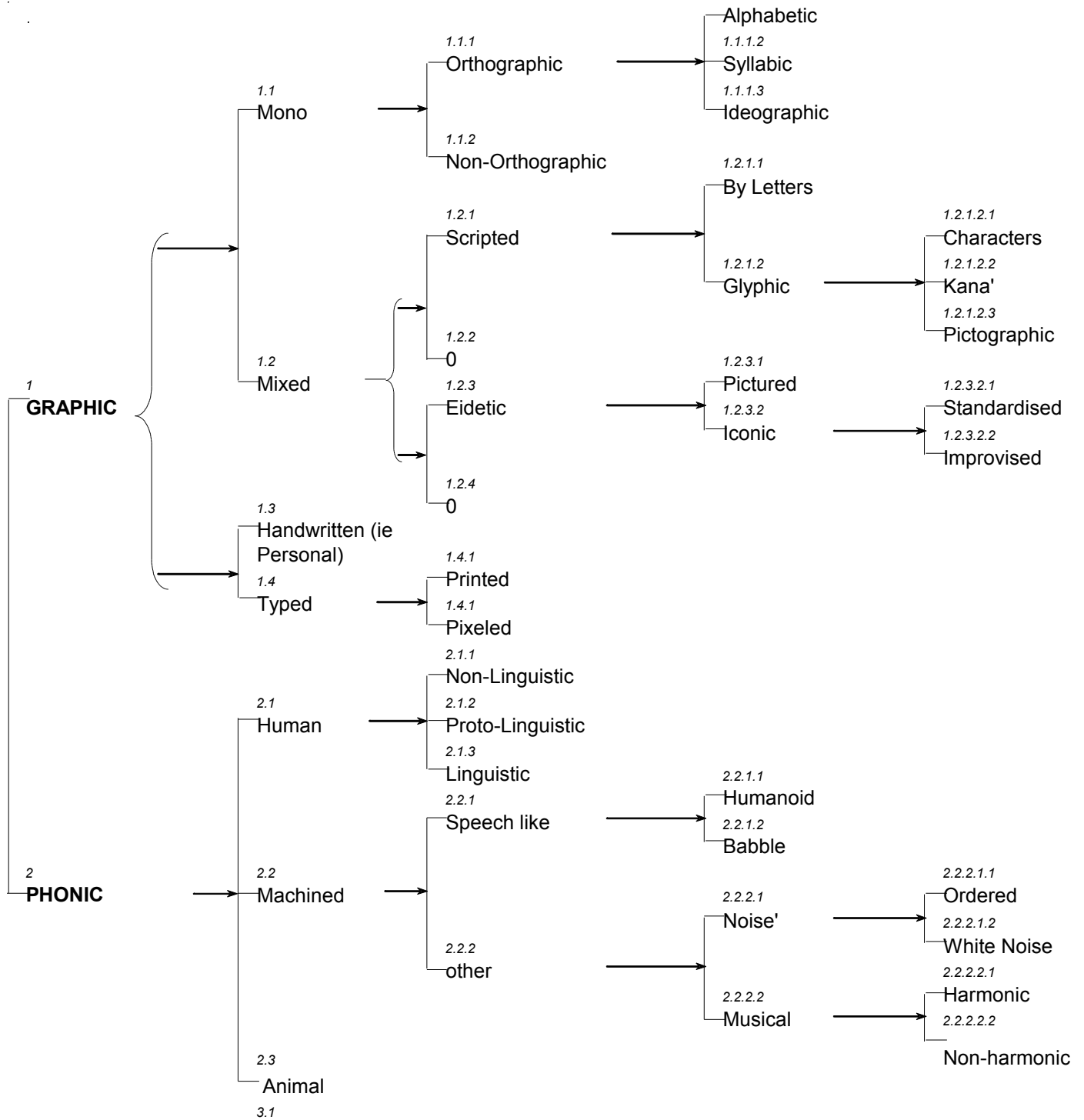
Maintain	Fifth								
Repair	Fifth								
De Novo	Fifth								
Resourced	Fifth				No pre-existing thing with which+C2 to work. Only the "blocks" or basic materials with which to work.				
Contest	Fifth				Relationships are being called into question.				
Reject	Fifth				The whole relationship, possibility of negotiation is being rejected.				
Reason	Fifth				Description is based causation.				
Class	Fifth				Description is based on membership of a class ie taxonomising.				
Event	Fifth				Description is based a process or happening.				
Generically standardised	Fifth				Invention based on a 'predictable' un-marked form.				
Generically individuated	Fifth				Invention of a marked overall form.				
Global	Fifth				Invention is dispersed across the element by generic element/phase				
Local	Fifth				Invention is not general to the unfolding of the narration but tied to particular elements only.				
Personal	Fifth				Actual occurrences are in relation to an individual.				
Communal	Fifth				Actual occurrences are in relation to a group or community.				
Specify	Sixth				The creation is of the nature of specifying/achieving a specification.				
Sort	Sixth				The creation is of the nature of sorting, classifying or comparing (rather than specification).				
Assemble	Sixth				"Blocks" need only be assembled ie task is 'lego-like'.				
Re-fashion	Sixth				"Blocks" need to be re-combined, adapted or customized.				
Check	Sixth				The point is merely to review or check.				
Revise	Sixth				Details and setting of the event are modified.				"Do we buy from a local or overseas supplier?"
Oppose	Sixth				The whole event is at issue.				Do we buy or do we not?"
Self	Sixth								
Other	Sixth								
Episode	Sixth								
Sequence	Sixth								
Immediate	Sixth								
Distant	Sixth								
Narrow focus	Sixth								
Wide focus	Sixth								
Defined	Seventh				Explicit pre-arranged product				
Obscure	Seventh				Situation proceeds (flatteringly) on the basis of and emergent goal.				

TERM	DEGREE OF INSTANTIATION	CHARACTERISTICS	RECOGNITION	PROBE	REALISATION	EXAMPLE
Immediate (Game-Win OR Auction-Buy)	First	Goals are immediate	Actions or "relevant objects" (of Firths categories) are unequivocally at issue.			
Longitudinal (Plural? Inaccessible?)	First	Long term goal or goals which may be unconscious and seemingly inaccessible.				Report concerning mental states
Overt	First	Goals available to observer.				
Unconscious	First	"Case" for goals made from behavioural evidence.				
Constant (ie stop)	First	One set of selections for Goal Orientation is sufficient to account for the context and it participants.				
Variable	First	Goals are variable by participant, by phase of context or by 'competing' interpretations eg in relation to the Unconscious.				
Defined by Activity	Second	Goals are available to the observer in the most direct and overt way				Lifesavers standing around in a conversation group at the beach.
Offered in coded forms	Second	There are material signs of the staging and goal directedness of the activity				
From outset	Second	Goal orientation is apparent from the outset.				
Emergent	Second	Goal orientation emerges later.				
Inferred	Second	Unconscious goals can be inferred.				
Inaccessible	Second	Unconscious goals cannot be inferred ie they remain inaccessible.				
Independent	Second					
Aligned	Second					
Integrated	Second					
By evidence	Third	Goal orientation emerges as the situation unfolds.				
By retrospective comment (from participants)	Third	Goal orientation emerges only from participants 'looking back'.				
By consistency	Third	Consistency of semantic drift that cannot be rationally attributed to randomness/chance.				
By outcome	Third	The outcome itself is sufficient evidence to establish that there was an Unconscious agenda involved which was unannounced in the preceding behaviour				











## A.2 APPENDIX: DATA FROM THE MET PROJECT

Transcript of a single recording of a medical emergency team call. The transcript was made using ELAN and is based on 4 videos documenting the encounter.

Participant	Time Stamp		Transcript				
	Start time	End time					
MET RN	00:00.0	0.01	00:05.7	5.71	00:05.7	5.7	Push here John, push here. Good man. He's got equal strength, GCC 14.
MET TL	00:05.7	5.69	00:06.7	6.7	00:01.0	1.01	14, very good.
MET TL	00:07.8	7.79	00:10.2	10.19	00:02.4	2.4	Hi John. Hi there, how are you going?
Patient	00:10.6	10.59	00:11.4	11.4	00:00.8	0.81	I'm fine.
MET TL	00:11.4	11.39	00:11.8	11.82	00:00.4	0.43	Right.
MET RN	00:11.5	11.48	00:13.2	13.2	00:01.7	1.72	Did you do a blood pressure and everything?
							... ICU doctors. Okay? I'm one of the ICU doctors, Intensive Care doctors.
MET TL	00:14.6	14.61	00:19.9	19.91	00:05.3	5.3	Normally it's normally high 195. It was 120 on 50.
Ward Nurse	00:15.2	15.2	00:20.3	20.31	00:05.1	5.11	They just told me to see you.
MET TL	00:20.5	20.49	00:21.9	21.89	00:01.4	1.4	120 on 50. Did you do it on both arms?
MET RN	00:20.7	20.7	00:23.0	23	00:02.3	2.3	No, just that one.
Ward Nurse	00:23.0	23	00:24.1	24.11	00:01.1	1.11	Are you feeling okay?
MET TL	00:23.9	23.9	00:25.0	25.01	00:01.1	1.11	Can I do it on this one as well please?
MET RN	00:24.5	24.5	00:26.3	26.3	00:01.8	1.8	No.
Patient	00:25.4	25.41	00:25.8	25.81	00:00.4	0.4	Okay. Are you sore anywhere?
MET TL	00:25.7	25.68	00:27.6	27.61	00:01.9	1.93	I'm sore. A bit tender here and there.
Patient	00:28.2	28.2	00:31.3	31.29	00:03.1	3.09	Whereabouts
MET TL	00:31.3	31.29	00:32.3	32.28	00:01.0	0.99	Uhhm belly.
Patient	00:32.3	32.29	00:33.4	33.39	00:01.1	1.1	He's not febrile. His BSL is good.
MET RN	00:32.9	32.87	00:35.0	35	00:02.1	2.13	Belly?
MET TL	00:33.9	33.88	00:34.5	34.5	00:00.6	0.62	Yeah.
Patient	00:34.6	34.63	00:35.2	35.19	00:00.6	0.56	Uhhm, I haven't checked the BSL yet.
Ward Nurse	00:34.9	34.9	00:36.7	36.7	00:01.8	1.8	Can I just have a feel here.
MET TL	00:35.3	35.29	00:36.9	36.89	00:01.6	1.6	I can do that.
MET RN	00:36.7	36.7	00:37.7	37.7	00:01.0	1	Here?
MET TL	00:40.9	40.89	00:41.6	41.59	00:00.7	0.7	Yeah.
Patient	00:42.1	42.09	00:42.6	42.57	00:00.5	0.48	Yeah.
MET TL	00:42.5	42.51	00:42.9	42.86	00:00.4	0.35	Alright.
MET TL	00:46.0	46.01	00:46.7	46.7	00:00.7	0.69	Can I listen to your chest?
MET TL	00:49.5	49.52	00:51.2	51.21	00:01.7	1.69	Okay, nice and deep breaths for me.
MET TL	00:52.1	52.13	00:54.2	54.21	00:02.1	2.08	

MET RN	01:04.6	64.62	01:07.5	67.5	00:02.9	2.88	I'm going to take your blood pressure on this arm darling, okay?
Patient	01:07.1	67.11	01:07.7	67.71	00:00.6	0.6	Alright.
MET RN	01:08.2	68.23	01:09.6	69.61	00:01.4	1.38	Oh, he's got a pick on.
MET TL	01:19.0	79.01	01:25.2	85.2	00:06.2	6.19	John can you squeeze my finger? Tight. Squeeze it tight.
MET TL	01:26.3	86.29	01:27.8	87.78	00:01.5	1.49	Let go. Very good.
MET TL	01:29.1	89.1	01:32.8	92.8	00:03.7	3.7	Squeeze. Very good. Can you wriggle your toes for me?
Patient	01:34.0	94	01:34.7	94.71	00:00.7	0.71	Oooh.
MET TL	01:34.6	94.62	01:35.5	95.49	00:00.9	0.87	Sorry mate.
MET TL	01:36.5	96.49	01:37.9	97.9	00:01.4	1.41	Can you wriggle your toes for me?
Patient	01:37.9	97.89	01:38.4	98.42	00:00.5	0.53	Ay?
							Wriggle your toes. Wriggle your toes for me. This leg? Very good, very good.
MET TL	01:38.4	98.41	01:43.0	103	00:04.6	4.59	Well.
MET TL	01:44.4	104.43	01:45.0	104.99	00:00.6	0.56	Has he had any, uhm, meds this morning?
MET RN	01:44.6	104.61	01:46.9	106.9	00:02.3	2.29	Uhm no we didn't. He's been bummed(?) out because he's been vomiting. They think that there's an obstruction, uhm, abdo obstruction as well.
Ward Nurse	01:47.7	107.71	01:56.0	116.03	00:08.3	8.32	Is he going to theatre?
MET RN	01:56.0	116.02	01:57.4	117.42	00:01.4	1.4	Uhm no. We've just done x-rays about 8:30 this morning waiting to be reviewed.
Ward Nurse	01:57.4	117.39	02:03.3	123.3	00:05.9	5.91	By?
MET TL	02:03.3	123.3	02:03.7	123.69	00:00.4	0.39	By the intern.
Ward Nurse	02:04.0	124.03	02:05.0	125.03	00:01.0	1	Hmm.
MET TL	02:05.1	125.11	02:05.5	125.53	00:00.4	0.42	Yeah.
Ward Nurse	02:05.6	125.63	02:06.0	126.04	00:00.4	0.41	Hey, has he got a... (inaudible)... on that side?
MET RN	02:06.2	126.22	02:07.9	127.9	00:01.7	1.68	Yep.
MET TL	02:07.9	127.9	02:08.3	128.31	00:00.4	0.41	I might do a blood pressure on that arm.
MET RN	02:08.3	128.3	02:09.6	129.61	00:01.3	1.31	No, no. This arm?
MET TL	02:09.3	129.3	02:10.4	130.42	00:01.1	1.12	We've done it on that arm. I just want to check both sides.
MET RN	02:10.6	130.6	02:12.7	132.7	00:02.1	2.1	Uhm, it's alright. What's the blood pressure there?
MET TL	02:12.7	132.71	02:15.8	135.82	00:03.1	3.11	120 on 70, wasn't it?
Ward Nurse 2	02:15.8	135.81	02:17.3	137.3	00:01.5	1.49	No, that's fine.
MET TL	02:16.8	136.8	02:17.8	137.8	00:01.0	1	What was the blood pressure again? Sorry, guys?
MET RN	02:18.0	138.01	02:19.5	139.48	00:01.5	1.48	120 over 60. 120 on 50.
Ward Nurse	02:18.7	138.7	02:21.5	141.48	00:02.8	2.78	

MET RN	02:21.3	141.29	02:23.8	143.81	00:02.5	2:52	He's usually 195 though.
MET TL	02:23.6	143.6	02:26.3	146.3	00:02.7	2.7	Oh okay. He's blood pressure is alright though.
Ward Nurse 2	02:31.1	151.1	02:32.6	152.59	00:01.5	1.49	BSL is 6.7.
MET TL	02:32.8	152.79	02:33.7	153.66	00:00.9	0.87	Okay then.
MET TL	02:36.0	156	02:38.6	158.62	00:02.6	2.62	Saturating 100%. That's good.
MET RN	02:41.2	161.17	02:42.8	162.8	00:01.6	1.63	Must've just been a transient job.
MET TL	02:42.6	162.61	02:44.5	164.51	00:01.9	1.9	Yeah. He's GCS 15 though.
MET RN	02:44.4	164.38	02:44.9	164.9	00:00.5	0.52	Yeah.
MET TL	02:44.8	164.81	02:45.7	165.68	00:00.9	0.87	He's awake now.
MET RN	02:47.2	167.19	02:53.3	173.3	00:06.1	6.11	The girls were just a bit concerned about you because you weren't as awake as you were before, but you look pretty good now.
Patient	02:54.0	174	02:55.3	175.32	00:01.3	1.32	I feel alright.
MET RN	02:55.3	175.3	02:56.0	176.03	00:00.7	0.73	Yeah.
MET TL	02:55.6	175.61	02:56.0	176.04	00:00.4	0.43	Yeah.
MET TL	02:56.8	176.8	02:58.2	178.21	00:01.4	1.41	So did you give him anything for pain?
Ward Nurse	02:58.0	178.02	03:02.5	182.52	00:04.5	4.5	When he was like this when he went down for the x-ray he was alert and then he went back down again.
MET RN	03:02.3	182.32	03:04.4	184.37	00:02.1	2.06	He has dropped before, has he?
							Well he was a bit like this this morning and then we took him down for an x-ray, and then when i've done all this again he's gone back. Like he's awake again now but...
Ward Nurse	03:04.4	184.37	03:16.0	195.99	00:11.6	11.62	Yeah.
MET RN	03:15.7	195.69	03:16.2	196.24	00:00.6	0.55	Is he... is he getting any pain relief or?
MET TL	03:17.5	197.51	03:20.7	200.7	00:03.2	3.19	Uhhm, I don't think they gave anything this morning because he was so drowsy.
Ward Nurse	03:20.7	200.7	03:26.7	206.7	00:06.0	6	Ah okay.
MET TL	03:26.7	206.69	03:27.5	207.5	00:00.8	0.81	With the Oxycontin?
MET TL	03:28.1	208.1	03:30.3	210.29	00:02.2	2.19	But he can have uhm few little meds with a sip of water occasionally.
Ward Nurse	03:29.9	209.9	03:33.7	213.69	00:03.8	3.79	Oh okay. He's on regular Oxycontin... Oxycontin.
MET TL	03:33.6	213.58	03:38.2	218.19	00:04.6	4.61	He's on Zanaflex, Oxycontin, which he hasn't had this morning.
Ward Nurse	03:35.7	215.69	03:39.5	219.5	00:03.8	3.81	Is he uhm normally confused because he's got a straight jacket on.
MET RN	03:37.0	216.99	03:41.0	221.01	00:04.0	4.02	No. Uhm, he was last night.
Ward Nurse	03:40.0	220.01	03:42.6	222.61	00:02.6	2.6	Overnight he's been confused?
MET RN	03:42.9	222.92	03:45.0	225.02	00:02.1	2.1	Overnight he pulled his sump drain out and his vac dressing out.
Ward Nurse	03:44.5	224.51	03:48.0	228.01	00:03.5	3.5	

MET RN	03:48.0	228.01	03:49.7	229.72	00:01.7	1.71	Is that because of confusion, because of pain?
Ward Nurse	03:50.0	229.99	03:52.7	232.72	00:02.7	2.73	Uhhm, as far as they told me, confusion.
MET RN	03:53.4	233.43	03:55.0	235.02	00:01.6	1.59	Is he normally confused at night?
Ward Nurse	03:55.3	235.29	04:01.0	240.99	00:05.7	5.7	Uhm no, it's a totally different personality change for him as well.
MET TL	04:00.3	240.29	04:01.1	241.09	00:00.8	0.8	Oh okay.
Intern	04:09.0	249	04:11.3	251.29	00:02.3	2.29	The EEC's are still pending from this morning.
MET TL	04:11.3	251.27	04:13.2	253.2	00:01.9	1.93	Okay. How were they yesterday?
							So in the morning... (inaudible)... platelets okay, haemoglobin 98, blah blah. Urine positive. We need to look at the urine, we have the results. White cell this morning is better. Uhm he's fine neurologically. I don't think there's any problem. Just have to keep an eye out.
							Cross you arm out darling.
MET TL	04:14.0	253.99	04:55.0	295.01	00:41.0	41.02	There we go.
MET RN	04:15.5	255.49	04:16.8	256.82	00:01.3	1.33	You don't want any bloods?
MET RN	04:18.3	258.29	04:19.3	259.3	00:01.0	1.01	Uh maybe in half an hour.
Intern	04:55.3	295.31	04:56.6	296.61	00:01.3	1.3	Ah he's gonna be for the ECC's. We can just wait for the form.
MET TL	04:57.0	296.98	04:58.4	298.39	00:01.4	1.41	UEC's.
Intern	04:59.1	299.11	05:04.0	304.02	00:04.9	4.91	Yeah, maybe I'll set up blood cultures. You know, sepsis scan, stuff like that.
MET TL	05:01.6	301.57	05:02.1	302.12	00:00.6	0.55	Yeah, sure.
MET TL	05:03.2	303.18	05:09.0	309	00:05.8	5.82	I'll just check his notes. Is he on any antibiotics or anything?
Intern	05:08.2	308.18	05:09.4	309.4	00:01.2	1.22	Who's the consultant here?
MET TL	05:11.6	311.58	05:14.4	314.41	00:02.8	2.83	Just check the form.
MET TL	05:20.2	320.22	05:21.8	321.81	00:01.6	1.59	Dr Harris. Ian Harris.
Ward Resident	05:22.2	322.2	05:23.3	323.28	00:01.1	1.08	No, but uh is he under...?... (inaudible)... or because he had a colostomy and that's...
Ward Resident	05:24.9	324.91	05:26.4	326.4	00:01.5	1.49	Is he on antibiotics?
							Yeah, I think you're right.
MET TL	05:26.5	326.49	05:31.4	331.39	00:04.9	4.9	This is James Chow (?)
Intern	05:32.1	332.09	05:33.8	333.78	00:01.7	1.69	We'll discuss progress with Doctor Wilson.
Ward Resident	05:38.0	337.97	05:39.5	339.54	00:01.6	1.57	He's off Vagil (?) and Prefezolin (?)
MET TL	05:39.4	339.41	05:41.5	341.5	00:02.1	2.09	Is he still on?
Ward Resident	05:53.2	353.2	05:55.3	355.29	00:02.1	2.09	Yeah, he's still.
Intern	06:04.6	364.61	06:07.0	366.99	00:02.4	2.38	That's post.
MET TL	06:07.3	367.34	06:08.2	368.15	00:00.8	0.81	
Intern	06:08.4	368.4	06:09.1	369.13	00:00.7	0.73	
Ward Resident	06:08.7	368.65	06:09.4	369.43	00:00.8	0.78	

Intern	06:10.2	370.2	06:17.5	377.51	00:07.3	7.31	He's still on it. He's been on Fragil (?) and Keftazol (?) and he's still getting it. He's been getting it for.... yeah.
MET TL	06:17.6	377.62	06:18.3	378.28	00:00.7	0.66	Okay.
Intern	06:18.1	378.14	06:20.1	380.08	00:01.9	1.94	Did you still want the blood cultures or?
MET TL	06:19.9	379.9	06:20.4	380.44	00:00.5	0.54	Yeah.
Intern	06:20.3	380.34	06:20.8	380.75	00:00.4	0.41	Yep.
MET TL	06:20.8	380.79	06:21.6	381.57	00:00.8	0.78	Yes please.
Medical Registrar							_____ because _____
MET TL	06:21.9	381.89	06:26.4	386.39	00:04.5	4.5	recently.
Ward Resident	06:26.0	386.01	06:28.8	388.81	00:02.8	2.8	Yeah so who's _____
Ward Resident	06:30.2	390.17	06:31.9	391.93	00:01.8	1.76	Yeah, I think it's... they stopped it.
MET TL	06:49.1	409.1	06:49.7	409.68	00:00.6	0.58	Ritesh.
Ward Resident	06:49.7	409.7	06:50.2	410.25	00:00.6	0.55	Yep.
MET TL	06:50.3	410.31	06:51.5	411.55	00:01.2	1.24	I think it has to be.
Ward Resident	06:59.5	419.5	07:01.6	421.57	00:02.1	2.07	Infectious disease right...
MET TL	07:10.0	429.99	07:11.3	431.32	00:01.3	1.33	So we think it's an infection.
MET TL	07:12.3	432.31	07:17.4	437.4	00:05.1	5.09	Uh it could be. I mean, I can't _____
MET TL	07:19.8	439.79	07:22.2	442.21	00:02.4	2.42	Chronic _____ obstruction.
MET TL	07:38.5	458.49	07:39.6	459.64	00:01.2	1.15	Doctor Vey.
Ward Resident	07:50.0	469.95	07:51.3	471.31	00:01.4	1.36	He's already been transferred.
MET TL	07:51.4	471.38	07:52.8	472.79	00:01.4	1.41	_____ is a fellow isn't he?
Ward Resident	07:52.8	472.83	07:53.7	473.71	00:00.9	0.88	Yeah, he is.
MET TL	07:54.3	474.28	07:55.1	475.1	00:00.8	0.82	Post man.
MET TL							Normal _____, so maybe we'll just have to inform the surgical registrar on call for the day.
Ward Resident	08:09.6	489.59	08:20.0	500.01	00:10.4	10.42	Hmm.
Medical Registrar	08:20.5	500.5	08:21.0	501	00:00.5	0.5	Yeah, he has pulled out the drains and everything else today.
MET TL	08:20.8	500.8	08:23.4	503.36	00:02.6	2.56	No, no, no today just let him know. Can you do that for him?
Medical Registrar	08:22.8	502.81	08:27.4	507.41	00:04.6	4.6	Yeah.
	08:27.4	507.42	08:27.8	507.84	00:00.4	0.42	Just let him know that he had a MET call for low GCS but he's fine, could be sepsis.
MET TL	08:27.9	507.89	08:34.4	514.39	00:06.5	6.5	Okay.
MET TL	08:37.0	516.98	08:37.7	517.68	00:00.7	0.7	Alright.
Ward Resident	08:37.7	517.7	08:38.1	518.09	00:00.4	0.39	Thanks.
MET TL	08:38.1	518.1	08:38.5	518.51	00:00.4	0.41	

Medical Registrar	08:38.4	518.4	08:39.1	519.11	00:00.7	0.71	Do you have numbers?
Ward Resident	08:39.0	519	08:44.7	524.74	00:05.7	5.74	Oh. Surgical Oncol is... 4874.
MET TL	08:44.6	524.58	08:45.3	525.3	00:00.7	0.72	That's a pager?
Ward Resident	08:45.4	525.42	08:46.3	526.27	00:00.9	0.85	Yeah, that's a pager.
MET TL	08:46.2	526.19	08:47.3	527.32	00:01.1	1.13	4874 was it?
Ward Resident	08:47.2	527.19	08:47.5	527.52	00:00.3	0.33	Yep.
Ward Resident	08:48.6	528.58	08:50.3	530.25	00:01.7	1.67	I think it's a trauma.
Medical Registrar	08:51.3	531.28	08:51.7	531.69	00:00.4	0.41	4, 8...
Ward Resident	08:51.7	531.7	08:53.0	532.97	00:01.3	1.27	4874
Ward Resident	09:00.9	540.89	09:02.2	542.23	00:01.3	1.34	Okay, i'm gonna...
MET TL	09:03.4	543.4	09:04.5	544.49	00:01.1	1.09	Thanks Diane.
Ward Resident	09:04.5	544.5	09:05.2	545.19	00:00.7	0.69	See you Ritesh.
MET TL	09:05.2	545.19	09:05.5	545.54	00:00.4	0.35	Bye.
MET RN	09:31.0	571.01	09:32.4	572.37	00:01.4	1.36	Ritesh, what did you want to do?
							Ah nothing, he's fine. His GCS is okay, he was adamantly stable, his ABCD is fine... well, yep.
MET TL	09:32.8	572.76	09:40.7	580.68	00:07.9	7.92	They're in charge of taking some bloods so...
MET RN	09:40.6	580.61	09:42.5	582.54	00:01.9	1.93	Yep, just some cultures and that's it.
MET TL	09:42.1	582.12	09:44.4	584.4	00:02.3	2.28	Alrighty, you happy for me to go?
MET RN	09:44.4	584.42	09:45.8	585.81	00:01.4	1.39	Yep.
MET TL	09:45.8	585.81	09:46.2	586.25	00:00.4	0.44	Yep.
MET RN	09:46.4	586.41	09:46.7	586.74	00:00.3	0.33	I'll just document it.
MET TL	09:46.7	586.73	09:48.2	588.21	00:01.5	1.48	I'll just tell them to do hourly GCS' for 4 hours and then afterwards about the second hourly.
MET RN	09:47.0	586.99	09:53.0	593.02	00:06.0	6.03	Yep, yep.
MET TL	09:50.8	590.81	09:51.9	591.92	00:01.1	1.11	That's all good and if you can put that sticker.... yep. I'll complete it later, okay?
MET TL	09:52.7	592.71	09:59.5	599.52	00:06.8	6.81	Thanks.
MET TL	10:00.3	600.32	10:00.9	600.89	00:00.6	0.57	You want to order a chest x-ray.
MET TL	13:33.7	813.72	13:35.5	815.53	00:01.8	1.81	Yes, chest x-ray.
Medical Registrar	13:35.3	815.33	13:36.2	816.2	00:00.9	0.87	I'll do that.
MET TL	13:36.0	816.02	13:36.7	816.71	00:00.7	0.69	Sorry guys, did you guys want to have a look at his chest x-ray and abdo x-ray or something?
Intern	15:39.5	939.5	15:43.0	943.04	00:03.5	3.54	Yeah.
Medical Registrar	15:42.5	942.5	15:42.8	942.84	00:00.3	0.34	

Intern	15:43.7	943.72	15:44.7	944.74	00:01.0	1.02	You've had a look already?
MET TL	15:44.7	944.69	15:49.5	949.5	00:04.8	4.81	No, no, no, we already, we uhm. I requested a chest x-ray now.
Intern	15:49.3	949.29	15:50.2	950.17	00:00.9	0.88	Oh okay.
MET TL	15:50.0	949.99	15:53.0	953.02	00:03.0	3.03	So they'll come up and do one now.
MET TL	15:53.7	953.69	15:57.4	957.41	00:03.7	3.72	We'll just have a look _____ because he was _____ yesterday.
Intern	15:57.1	957.1	15:57.4	957.44	00:00.3	0.34	Yep.
Intern	15:59.8	959.79	16:01.7	961.7	00:01.9	1.91	And just in terms of his fluids?
MET TL	16:03.7	963.7	16:05.4	965.43	00:01.7	1.73	What fluids is he on at the moment?
Intern	16:21.2	981.21	16:23.5	983.51	00:02.3	2.3	It's just a normal saline _____ bag.
Intern	17:00.4	1020.38	17:01.6	1021.6	00:01.2	1.22	He pulled out his drains.
MET TL	17:01.6	1021.64	17:02.1	1022.13	00:00.5	0.49	Yeah.
Intern	17:01.9	1021.92	17:02.5	1022.46	00:00.5	0.54	Yeah.
Intern	17:03.6	1023.6	17:05.3	1025.29	00:01.7	1.69	So the reg knows about it now.
Intern	17:06.2	1026.19	17:07.2	1027.25	00:01.1	1.06	Says the reg (?).
MET TL	20:13.3	1213.3	20:14.0	1214	00:00.7	0.7	Thanks Tay.
Intern	20:14.1	1214.11	20:14.7	1214.69	00:00.6	0.58	Thank you.
MET TL	20:27.4	1227.38	20:28.2	1228.18	00:00.8	0.8	Is he alright?
Ward Nurse	20:29.1	1229.09	20:29.6	1229.56	00:00.5	0.47	Yeah.
MET TL	20:29.6	1229.61	20:30.1	1230.12	00:00.5	0.51	Good.



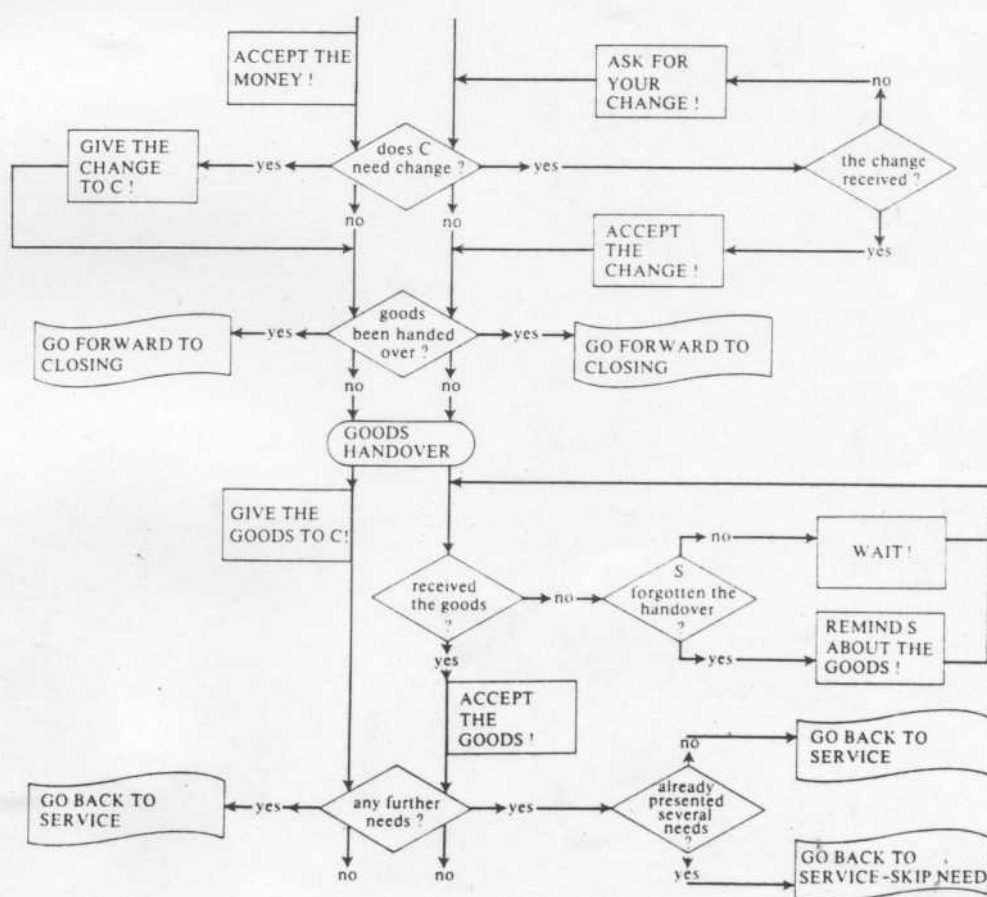
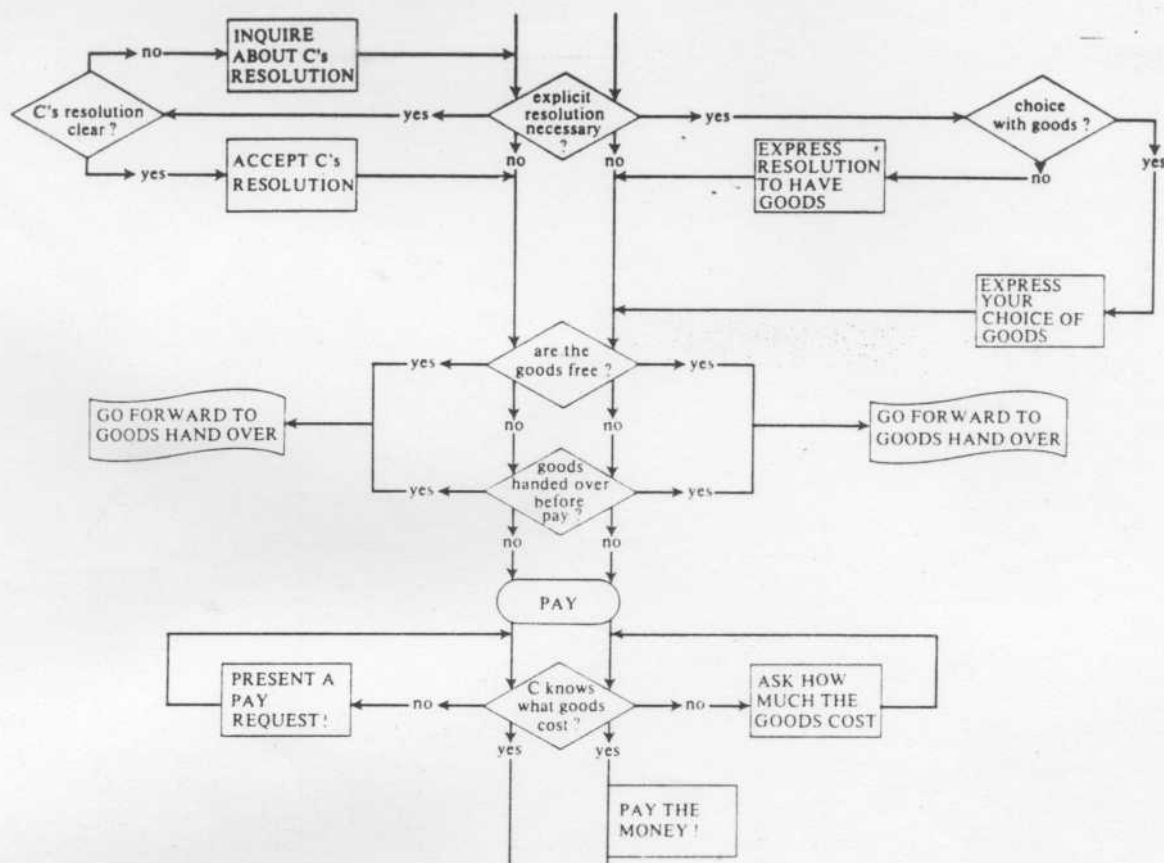
A.3 APPENDIX: VENTOLA'S FLOW CHART REPRESENTATION

Flow chart representation of context from:

Eija Ventola: **A Systemic Approach to the Semiotics of Service Encounters –The Structure of Social Interaction.** Frances Pinter (Publishers), London, 1987.







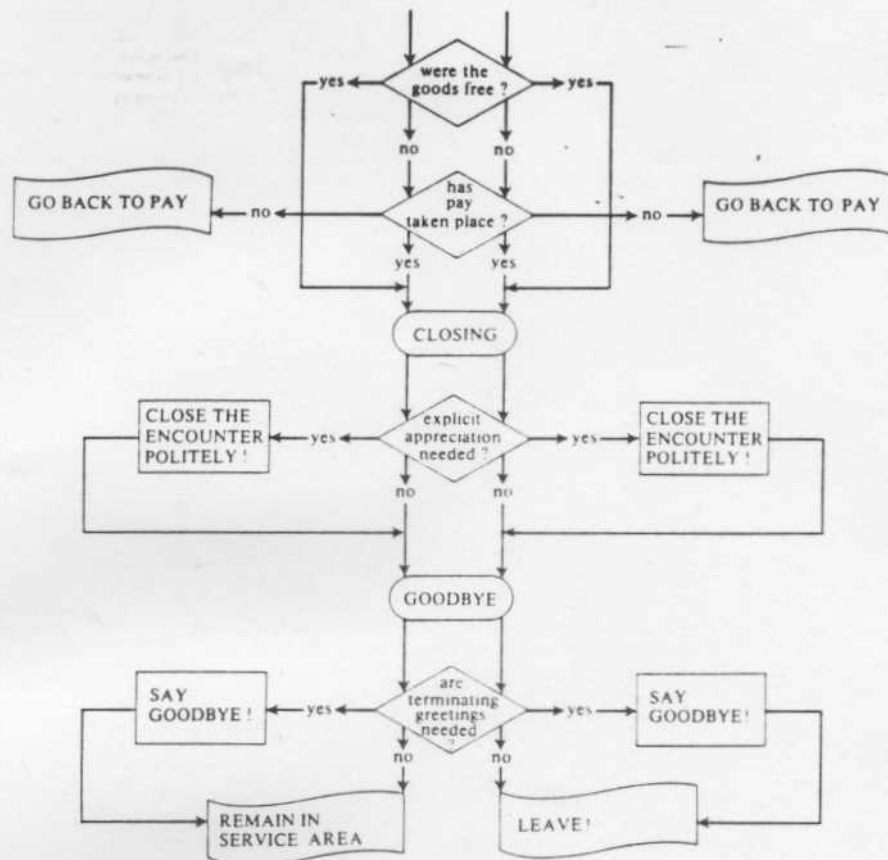


Figure 3.5 The flowchart representation of the service encounter genre (Ventola 1985a: 250–6)

## A.4 APPENDIX: PUBLICATIONS

A.4.1 *The work of concepts: context and metafunction in the systemic functional model.***Authors:**

Butt, David, and Wegener, Rebekah

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## 20 The work of concepts: context and metafunction in the systemic functional model

*David Butt and Rebekah Wegener*

### 1 From a theory of culture to a model of register

Context, when used as a technical term in human sciences, is neither transparent nor self-evident in its contribution to theory. The introduction of the notion, as a necessary level of semantic description, came out of the general movement 1890–1920 that placed the scientific study of human cultures alongside other sciences. The necessity of context became apparent to Malinowski and others, when such early anthropologists confronted the non-transferability of crucial meanings across cultures, despite the supposedly universal conditions under which human beings lived. The assumption of ‘simplicity’ amongst ‘savage races’ was also contested as the non-equivalences in translation drew researchers on into more delicate distinctions and connections within the community under investigation.

Malinowski’s (1923) ‘context of situation’ and ‘context of culture’ drew attention to the methodological imperative of establishing meaningful behaviours only as they functioned in larger frameworks of cultural values and purposes. Malinowski’s imperatives concerning context have now become the motivation of a linguistic model in which paradigmatic organisation (of co-dependent options) provides a new opportunity to describe a cultural context in its own terms. The pragmatic axiom here can be thought of as: *what one can mean is what one can do in the specific social order*. Such an axiom subsumes the methodological uncertainty of semantics – viz. Saussure’s (1974) ‘valeur’ (though at a different level of abstraction); Wittgenstein’s (1953/72) ‘patterns of life’; and Whorf’s (1956) ‘fashions of speaking’. Currently, in systemic functional linguistics (SFL), parameters and specifications at the level of context are proposed in order to show how certain meanings and particular forms, are ‘at risk’ (i.e. they are more probable selections) amidst the enormous possibilities of systemic combination in a realisational model of language (Hasan, 1985; Halliday and Hasan, 1985).

In particular, with Hasan's (1984; 1995) notion of 'contextual configuration', the systemic properties at the level of context are elaborated according to the same principles that guide the systemic mapping of the lexicogrammar and of any stratum. The contextual configuration is made up of the specific settings of field, tenor and mode, motivated by a given contextual description. These settings have to be further specified realisationally, both as a syntagmatic potential at the same level (i.e. as obligations and options of generic structure) and as nuclear and variously probable contrasts at the next level of linguistic patterning (i.e. at the semantics).

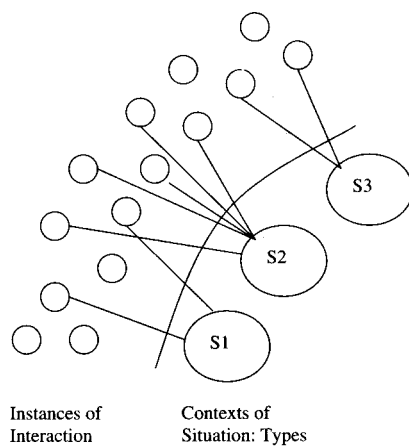
Many of the specifications at the levels of context and semantics are established, inevitably, by evidence drawn from the semantic consequences of choices in lexicogrammar and intonation. Linguistic evidence can only be drawn out by such cross stratal shuttling. So too, Saussure's line of arbitrariness, while bringing out the social convention of the relations between grammar and phonology, does not do justice to the solidarity between grammatical choices and semantic outcomes. Descriptive 'delicacy' at the upper strata of semiotic description (again following Halliday and Hasan, 1985) is only possible because the grammatical face of the text permits one to demand motivation as to '*why this expression and not that closely related one?*' It should not surprise us that the linguist's task in depicting social process relies on the same hierarchies of inference – from sociomaterial parameters at one end to the manifestation of sounds/gestures at the other – which we all need to employ in order to interpret our social experience as we are living through it. This stratal modelling goes to the core of the uses of the Greek term *pragma* – viz. *the business at hand*.

## 2 Strata and realisation

The significance of the terms 'context' and 'metafunction' in a stratal model can be appreciated when we reflect on the ways in which the responsibilities of these concepts developed in the systemic functional linguistics of Halliday.

The meaning of a theoretical concept is the work that the concept does in the theory to which it contributes. In this way, it is useful to consider the work to which Halliday puts the terms 'context' and 'metafunction'. In contributing to a realisation model of language (by contrast with a modularised, component based approach), context is a term which mediates between the inordinate instances of meaningful cultural activities and the semantic patterns which realise those cultural activities: 'context' is the concept which underpins the 'semantic varieties' by which we can characterise situation types.

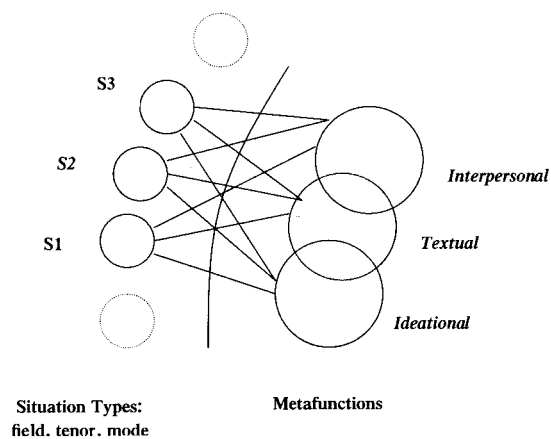




**Figure 20.1: Instances and contexts of situation**

The term context (i.e. context of situation) is the cultural unit of the semantic polyphonies (meaning varieties) which we can refer to as registers. Registers, then, are semantic types (hence ‘genres’) which realise the various transactions we perform to maintain our membership of a specific culture. Registers are motivated by cultural context.

Alternatively, when looked at from the direction of the realised, we can say that the contexts of the social order are themselves constructed, or construed, by the specific meaning potential of the register – it is through the specific resources of the language (at that point in its ‘semohistory’) that the context can be fashioned by its speakers.



**Figure 20.2: Situation types: field, tenor and mode**

The 'situation types' can be regarded parametrically as particular elaborations of choices across the combinations of field, tenor and mode. Such generalised parameters assist in separating out the specific strands of meaningful choice which give the context both its instantial distinctiveness and (more importantly, at first) its typological/generic core of tendencies and probabilities. These probabilities, in turn, can be conceptualised metafunctionally as strategies of selection from 'proximal' systems of semantic options (i.e. from those semantic options which have the closest, most interdependent semantic consequences).

So 'metafunction' mediates between situation and lexicogrammar as a way of interpreting semantic consistencies. This role is best seen as it first emerged for Halliday, namely, from the way it plays out in the lexicogrammar. In working with grammatical systems, Halliday saw that the paradigms of choice themselves tended to cluster around three or four overarching semantic responsibilities:

1. systems which established the 'interpersonal' calibrations of the cultural exchanges;
2. systems which structured the character of experience and connectedness in the situation – its 'ideational' content or order;
3. systems which enabled the deployment of interpersonal and ideational choices in the 'textual' (and contextual) matrix of the moment.

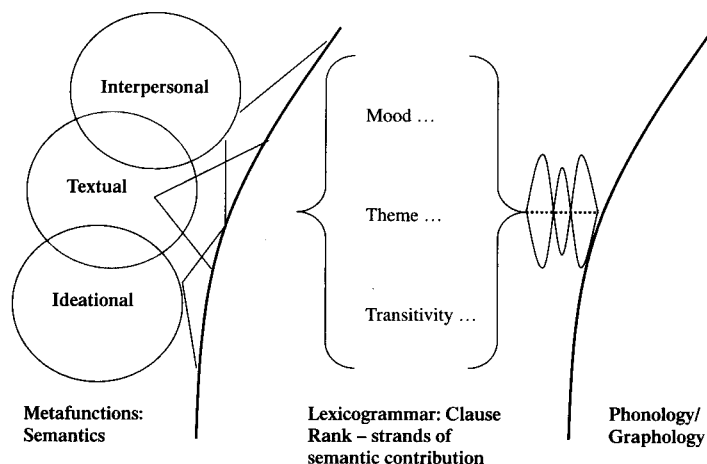


Figure 20.3: Metafunctions and semantics

When simplified for synoptic brevity, the terms can be misread as stages in a causal sequence. They are not to be read so. The different levels, by which we can discern the consistencies in meaningful behaviour, all happen together. A realisational model is a map of patterns of patterns, all of which occur together on different levels of abstraction – from social configuration to modalities of manifestation (e.g. in sound or writing). This evolved ‘happening together’ is a key to the power of languages for extending their potential as systems (or, for their speakers to so extend them). Languages are not encodings, but encodings of encodings.

### 3 Context, function and system: an ensemble relation

J. R. Firth’s work with Malinowski in London and Firth’s own fieldwork from Kenya to Afghanistan (Rebore, 2002), confirmed the significance of context and incorporated the notion into a polysystemic, relational theory of choices at many levels (like the different colours in a spectrum refracted from the apparently unified white light). Halliday (1973) integrated ‘context of situation’ into a linguistic theory that included a separate semantic stratum and a more abstract notion of function – ‘metafunction’. Context of situation became the interface between language and the sociomaterial order (or, more correctly, between language and the dimensions of the sociomaterial order that are consequential to the processes of meaning).

Work by Ellis (1966) and by Mitchell (1958/75) clarified Firthian theory and its application to an actual community (respectively). Ure (1969) brought a typological order to the linguist’s work with semantic varieties, or registers. Work by Hasan (1978; 1984; 1999), in particular, has elaborated and extended the Hallidayan approach by conceptualising the stratum with explicit motivations for the contrasts within the three major systems of field/tenor/mode and by developing the systematisation of the semantic stratum (crucial to activating the descriptive power of context, through realisation and hence, inevitably, in terms of delimitation in specific descriptions).

Other theorists, in particular Martin (1985; 1993; 1997), have extended the stratification above context to genre and on to ideology, in order to treat variation through Gleason’s (1965) notion of ‘agnation’ (albeit here, an issue of context and of the levels ‘above’ context, not of grammatical variants). There have been numerous other significant contributors to the discussion of context in the SFL paradigm – e.g. Gregory and Carroll (1978) and Ventola (1983). Their work too constitutes, in each case, a body of theoretical proposals which permits linguists and other specialists, to get on with the job of social research.

### 3.1 Orientation of this chapter

Our discussion does not try to offer a survey of significant contributions since such a discussion already exists (see for example Matthiessen, 1993; Halliday, 1973; Hasan, 1995; Ghadessey, 1998). Rather, we set out by investigating the early proposals concerning context, with some interpretive excursions into the nineteenth century. The latter assist, we believe, in our primary concern – a global evaluation of what has been achieved since 1923. In 1923, Malinowski argued for the significance of ‘context of situation’ with respect to specifically linguistic purposes. Our historical perspective also places the criticisms of functional linguistics, in the era since the mid-twentieth century, into an unusual light: in particular, it suggests to us that debate about human behaviour has been artificially, even tendentiously, polarised into a psychological/social dichotomy. Such a polarisation of thought does not appear to be in the climate of enquiry around, for example, the career of Wegener (1848–1916), one of those who created the environment which later researchers, like Boas and Malinowski, would turn into distinct fields of study.

We have brought our discussion up to the period when, we claim, the notions of context and function were elaborated along the conventions by which other strata in a linguistic theory are modelled. Our discussion ends at the point where these linguistic principles have been demonstrated in a problem driven model. We recognise the enormous work that remains in trialling and testing models against statistically grounded profiles of registers (especially those in a spoken medium).

Halliday was the figure who contributed most to the transition of the terms ‘context’ and ‘function’, that is, to their transition from concepts to dimensions of a working, linguistic model. We find that a consideration of this watershed period is helpful also in determining what is currently required in linguistics and in interdisciplinary work, for instance, for integrating the goals of anthropology on the one hand and for taking up the broad range of tools in pragmatics, on the other.

### 3.2 The ‘embarrassment’ of context

The role of context in Firthian and Hallidayan linguistics has been widely misconstrued by linguists working both outside and within the functional tradition. Langendoen (1969), in his review of the ‘London School’, treated the concept as a platitudinous sideshow to the developments in America during the 1960s. Lyons (1966) did not credit ‘context’, or Firth’s other central concepts, with making a significant contribution to semantics. Some introductions to systemic functional linguistics (e.g. Butler, 1985) appear to extract little

value from the concept of context. Other commentators, in a distant echo of Bloomfield's (1933) attitude to the study of meaning, see the concept as diffuse, unmanageable and implausible in a scientific enquiry – hence as 'transcribing infinity' (viz. Cook, 1990).

Nevertheless, specialists engaged in descriptions of language in actual communities, those engaged in problems of educational and professional registers and those modelling language in AI projects, have experienced a different form of embarrassment with respect to context, namely embarrassment at its absence from linguistics. Consequently, many researchers have maintained and elaborated some cognate term from a parallel academic tradition (for example, in anthropology, rhetoric, stylistics and typological work). In fact, the academic situation is part of the dismal paradox in which linguists appear to have relinquished their responsibility for describing meaning, passing the task over to an assortment of tools variously devised and imported from other disciplines. As pointed out by Levinson (1983: xiii), pragmatics was undertaken, *de facto*, by researchers like Malinowski and Firth and has recently acted as a corrective to the 'stark narrowness' of Chomskyan linguistics.

Malinowski's work with context showed that contexts of situation were by no means obvious or explicit from the language exchanged and that certain aspects of a culture may relate to each other in ways that were not immediately apparent, nor ultimately tractable (viz. his six attempts at explaining Kula, as mentioned in Malinowski, 1961b). His work also showed that it is possible and indeed necessary, to work with context in a systematic way in the field. In moving towards this systematicity, the idea of function is important in achieving a theory that allows linguists both to manage complexity and to move beyond description to what we would now call modelling. Malinowski presented cultures as stable synchronic systems, with the consequence that the theorisation of change became a flashpoint of debate much as it became an issue of criticism for Saussurean theory in linguistics (viz. the Russian criticisms cited by Firth, 1957 and set out in Volosinov, 1928/73).

#### 4 Context 'turned back on itself'

As a step towards putting context to work, we must use the idea of context when enquiring into its own theorisation. Niels Bohr (1961: 2) emphasised that contexts, 'the conditions under which experience is obtained' need to be interpreted as part of the researcher's theory. The importance of the epistemological context is an idea that informs investigations in areas such as artificial intelligence, stylistics, translation and other disciplines. The personal and community history of a researcher may also be a relevant part of theory and deserves serious consideration given that it is precisely what gets overlooked in

many debates pertaining to the formative influences in an academic endeavour. Thus, in trying to understand Malinowski's theory and methodology, we need to consider his history, including some concept of the structure of academia, of class and even of funding issues as part of the author's context. We might consider this briefly as a three-part history: personal history, academic history and particularising social history.

#### 4.1 Malinowski's personal context

Malinowski's life is relatively well documented. Malinowski's own belief in the importance of keeping a diary, inspired by Nietzsche, has meant that the greater part of his working life was recorded. The diary for Malinowski acted not just as a record, but also as a guide and tool for reflection. Born in Cracow, Poland, in 1884, Malinowski grew up in an environment of academic discussion. His father, a Professor of Slavonic Literature and Philology at the Jagellonian University, provided an early influence for cultural study, though his father was dead by the time Malinowski was 14 (Thornton and Skalnik, 1993).

It is significant that Malinowski did not immediately follow in his father's line of research. His formative training instead was in mathematics and physics, though by his final years he had switched primarily to the humanities; and he completed his doctoral thesis in philosophy. Though his training in physics in particular was comprehensive, by the end of his degree it could be claimed that the humanities were his focus (Paluch, 1988: 78). The influence of his year of economics training is evident in his later work; particularly that on Africa, though this influence is often overlooked in analyses of his work (see Ellen, Gellner, Kubica and Mucha, 1988). Malinowski's move to Britain produced more than a decade of functionalism in anthropology, during which time he developed strong ties with American anthropology under Boas and Sapir.

#### 4.2 Malinowski's academic context

The similar scientific backgrounds of Malinowski and Boas were also affected by the thematic, as distinct from departmental, nature of doctoral and research training in the early twentieth century. Malinowski worked not only with sciences like mathematics and physics, but also across the history of economic thought, philosophy, anthropology and psychology. Yet, what would today seem a diverse collection of studies produced coherent, mature social research. It was all part of the one fabric of enquiry and in this sense we can see the genesis of Malinowski's view:

Science begins with applications. A physicist or chemist or biologist knows this by heart. What is application in science and when does 'theory' become practical? When it first allows us a definite grip on empirical reality; in other words, as soon as a theory is true, it is also 'applied' in the sense that it is experimentally confirmed. (Malinowski, 1961: 5)

The force of this simple idea may now be much more difficult to appreciate in the current university and disciplinary structure of research specialisations. It seems to us one source of motivation for the emphasis Halliday gives to 'themes' and transdisciplinary research (1992: 60–1). More directly, it is important in construing the situation of Halliday working with Firth and with Firth's demand for actual 'speech fellowships' and statements of generalisation. Malinowski and his cohort of researchers were in the process of enacting anthropology as a science.

Today, while we may be committed to the goal of interdisciplinary research, the context of our research makes it implausible or unlikely that the interdisciplinarity will be realised in research policy, or funded accordingly. The academic environment, like any other environment, is the result of the alignment of so many features that a change to any single feature can produce a radically new environment. There may be no way that we can replicate the positive features that created Malinowski's academic environment, but it may be possible to create a similar effect by using themes in research. Themes are a coherent focus for research, a focus which can encompass disciplines and be realised in various ways in each. According to Halliday (1992: 61; 2004), the most important theme to emerge of recent times is semiotics, that is, anything considered from the point of view of the way that it 'means'. The dimensions of semantic behaviour is an idea that we will return to later in this chapter. It was certainly a primary focus for Malinowski and his contemporaries and a core reason for his development of the notion of context, where persons, relevant objects and converging aspects of the biological and physical realms can all be meaning bearing.

### 4.3 Malinowski's social context

Malinowski, Boas and Wittgenstein were preoccupied with similar problems and ultimately came to cognate answers. They shared early training in mathematics, science and other cultural patterns of Germany and Vienna. Even Wittgenstein's early notion of a logically determined space and scaffolding have parallels with Malinowski's idea that language only has a meaning due to the framework provided by a given context of situation (Gellner, 1988). Both

ideas, however, appear to draw on Nietzsche's view of heuristic constructs or mental tools (see Nietzsche, 1873, cited in Vaihinger, 1925: 341ff, and Butt, 1985; 1989, and Thornton and Skalnik, 1993). We see their ideas as relevant to much current work between applied, theoretical and pure sciences: for instance, the claims of grounded theory to be working close to the social realities of institutions (Strauss, 1987).

Another significant resonance with contemporary research relates to culture's effect on the human brain. Despite the populist influence of 'evolutionary psychology', the most remarkable changes in brain sciences pertain to the power of the brain to interact with experience, with changing (chemical) states and with itself. The human brain is, according to Edelman (1988), a complex population of neurones that has to be regarded as adaptive in the way that Darwinism treats other populations. The brain's primary characteristic, from an evolutionary point of view, may well be its potential to vary its potential (see also Halliday's description of the linguistic system's capability for increasing potential as system potential). In particular, the evolving human brain has recruited local and disparate networks of neurones in managing new forms of complexity (as demonstrated in fMRI scans: McCrone, 1999. See also Lamb, 1999 for a linguistic perspective). As populations, humans have been making and remaking their brains as they have been constantly making and remaking their cultural resources. With these issues in our minds, again Malinowski sounds like our contemporary: 'The whole functional approach is based on the principle of the plasticity of human nature and of the possibilities of cultural development' (Malinowski, 1961: 8).

## 5 The work of concepts

Richards (1939: 272), in analysing the way that anthropology developed in Britain, claimed that the academic environment and the problems faced in the field 'actually suggested fruitful problems for investigation and have led to the development of observational techniques'. These problems inspired theoretical breakthroughs grounded in actual practice. Malinowski was forced to confront a number of paradoxical difficulties in conducting his investigations. The first localised difficulty was simply translation. Malinowski's inability to translate meanings across cultures by a direct correspondence of crucial terms appears to be the first step in his revision or reinterpretation of functionality. The initial parallels with the problems of his philosophical contemporaries and a crucial contrast in the degree of idealisation, could hardly be more direct: with Russell's work in Logical Atomism and with Wittgenstein's search for Simples, both



projects which were attempting to overcome the indeterminacies of natural language in order to create a better instrument (i.e. a more reliable language) for the conduct of science.

There was also the acknowledged influence of Phillip Wegener (as mentioned above), whose views on language were strongly functional – though it is not for this that Malinowski gives him credit (Malinowski, 1923: 297). In fact, Wegener's criticism of Wundt (Malinowski's teacher for one year in Leipzig), was that he focused on the structure of language as a formalism and ignored the function of the dynamic dialogic process that was living language (Nerlich, 1990). This was made all the more paradoxical by the fact that Wundt's psychology was explicitly social and was, according to Kuper (1973), concerned with group dynamics. In Wegener, we also see a functionally motivated understanding of alignments between our experiential schemas and our expressions, with the benchmark of congruence drawn from ontogenetic process (Nerlich, 1990). This is an idea significantly developed by Halliday through his concept of congruence and with his three types of text change – phylogenesis (times of the culture); ontogenesis (times of the individual); and logogenesis (Text time: the changing semantic options in the process of unfolding in an interaction).

This is a key point of similarity between both Malinowski's theory and Halliday's linguistic framework – namely, that ontogenesis should throw light on the more abstract functionality and metastability of the adult system. Wegener's view of language change set out from a separation of language as function and as an abstract system and in the idea of mental schemas based on idealisations of known situations. Where we do not already have a schema, Wegener suggested, we impose similes and pre-existing schemas in order to help us make sense of the experience (Nerlich, 1990: Part 2). These, he said, would gradually become the congruent form. For him, meaning change and variation were the norm and he rejected assumptions of uniformity of meaning across groups. According to Nerlich (1990: Part 2), Wegener's theory of language was truly dynamic, interactional, dialogic and grounded in context. Wegener gives:

prime importance to the dialogue between speaker and hearer and their collaborative construction of meaning, taking into account the situation and the mental representations that the interlocutors have of it, as well as their reference to mental schemata and other cognitive structures (Nerlich, 1990: xii).

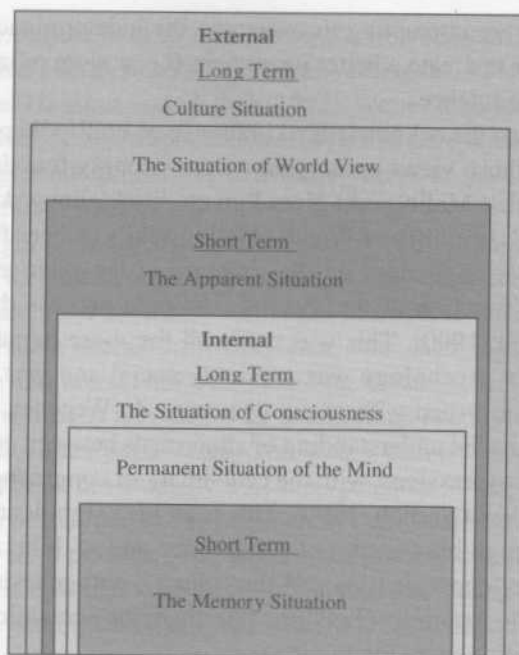


Figure 20.4: The Layers in Wegener's Typology of Context

From this background we can see how Malinowski, through his fieldwork, argues that the function that an act has within that context bestows the value and therefore the meaning of that act. Like Wegener, Malinowski worked with the idea that the meaning or value of the unit under discussion is not accessible without understanding its role as social action, rather than as a 'countersign to thought' (Malinowski, 1923).

Having begun at the problem of cultural *valeur* in translation, Malinowski moves out to the illustration of the problem (the implications of which are teased out in Hasan, 1985). In the case of the shell adornments known as Kula, the whole activity (with all its details) needed to be construed as purposeful, as goal directed; yet the activity involved routines and sub-routines (in more recent idiom) which expressed purposes that do not correspond directly to anything from European experience.

The all too narrow construal of Kula – as trade in the mercantile sense, or as an issue of the 'big man,' – made Malinowski's sense of the total process all the more important. According to Paluch:

the essence, meaning and functions of Kula, consistent with the standpoint persistently represented by Malinowski, can be worked out only from the whole cultural system, of which this institution is just a part. (Paluch, 1988: 78–9)

The approach is inherently organised around process (despite the copious notes pertaining to individual words etc.), since it was, in essence, a semantics based on 'a pattern of life' (Wittgenstein, 1953/72; Hasan, 1996: 1 and x-xx). It is also prepared for by Wegener's idea that there is a co-construction of meaning in situation, that is, that language needs to be considered and studied as social action. In fact, the subtleties of Kula cannot be brought to closure today (semiotic patterns do not offer a statute of limitations). Malnic (1998) tried to interpret the idea in her 10 years of work in the Trobriand Islands. Her interpreter, John Kasaipwalova (poet and Kwenama Clan chief), highlighted a discipline and moral order in the 'created experience between two personalities' (Malnic, 1998: 31). The work confirms and extends Malinowski's early view that the process of Kula interconnects diverse public behaviours and personal states of mind.

## 6 Boundary conditions

But Malinowski's work creates some perplexities for a systematic semantics: on the one hand, the description is grounded in a cultural process and one might argue, following his Viennese and academic alter ego Wittgenstein (Gellner, 1998), that we should not ask for further explanation of social conventions. On the other hand, the approach is hard to apply when the units of analysis do not have defined, unequivocal boundaries. While we argue here that the uncertainties in applying 'context of situation' are an epistemological limit inherent in semantics (comparable to such limits in physics, consciousness studies and life sciences e.g. Heisenberg, 1958), not everyone will be satisfied on this point. Raymond Firth (1964) alluded to the fact that Malinowski did not have the problem of selection that his students faced in other areas. Kuper (1973: 89–95) implies a feeling of slight resentment among the students, particularly those working in Africa, concerning the difficulty of applying Malinowski's method with any precision. Similarly, Paluch (1988: 78–79) argues that:

the unequivocal characterisation of the cultural context of the given facts faces the difficult problem concerning the delimitation of boundaries of that context.

A related idea was put forward by Wolf (1989: 264–5) who claimed that:

Once context of situation asserted itself as necessary to the elucidation of the meaning of words, it would be clear that, unless a people had a fixed and finite set of things to say in their daily activities, then the number of things they said and the contexts they said them in would be both infinite and indeterminate.

The infinity or boundary problem turns up again and again in the literature (see for example Hasan, 1995). But it can be addressed by introducing the theoretical 'work' contributed by the other concept of our title – metafunction. Halliday's conception of metafunction circumscribes a particular domain of meaning for any given analysis. When combined with the view of context as a system of systems of choice, analysis becomes tractable much like regionalising infinite space and time.

## 7 Social semiotic

We emphasise here the global technique of Halliday: namely, his method of delimiting the object of enquiry by setting the process of meaning against eight dimensions (see Matthiessen, this volume; and Butt, Volume 1). In addition to these metatextual dimensions, there are other orders of concepts, which provoke useful distinctions between interactions or semiotic episodes (and by doing so, extend our reasons for arguing what is to count as an 'episode'). The epistemological conundrum, then, might be managed by methods like those for delimiting and managing an infinite spatial universe – the theorist has to intervene and apply relevant dimensions (Cohen and Stewart, 2000: 200ff). We must take Saussure (1974) seriously on this issue at least: the point of view creates the object in linguistics. This is an epistemological condition that applies at all crucial scientific boundaries (Saussure had wrongly thought it was peculiar to linguistics, *ibid.*), as Hasan points out:

the power gained from abstraction is to have to define data in such a manner that it does not include everything that may be going on, for in nature there are no clear cut given, boundaries. (1995: 183–283)

A researcher often needs to invoke heuristic boundaries in order to initiate work, while, at the same time researchers using the theory must seek motivation from the datum of the ongoing social process. By such means, the choices within a theoretically defined contextual system are more likely to be meaningful both to the observer and to a participant/insider.

So, methods for defining the boundaries of a context are by no means natural, corresponding to some division that all observers must share; though by the same token, neither are they arbitrary. Moore (2003) illustrates some of the standard issues faced in the field of health services and in the specialisation of HIV/AIDS consultations. There are many principles by which the boundaries of a context might be defined and these follow established principles in linguistics and statistics; as well, there are the divisions that are observed (and 'named') by health professionals. For instance, the ensemble of settings by which we characterise particular combinations of the material and the textual constitute a

'dialectic' between context and text. In her analysis of Doctor/Patient interaction, Moore (2003: 226) distinguishes phases in a way that might be regarded as a standard approach in the SFL model (see for example Gregory's 2002 'phasal analysis'), namely, 'on the basis of Field, Tenor and Mode at the level of context and in terms of experiential, interpersonal and textual semantics' (to underpin the shifts and variation in actual instances).

The field of health services is an illuminating test of contextual proposals in that there are a plethora of potential sub-divisions – it is possible to argue for boundaries almost anywhere, depending on the professional motivation of the research task at hand (and the language stratum of greatest concern in the approach of the linguists). The level of technicality in the discourse of the patients can be surprising to those not aware of the semantic range in the social process. This is true in a number of clinical situations, including in many HIV/AIDS consultations, where the patient is more like a grammatical 'agent' than a grammatical 'patient'. Consequently, Moore (2003) points out, the boundaries between phases are best theorised as fuzzy boundaries – an idea now fully naturalised into practical sciences since the time when Malinowski's students were uneasy about their own applications of contextual theory.

Again, it is clear how Halliday and others have prepared the way for managing fuzzy categories. Rather than reject a line of research on the basis that an unequivocal unit was not falling out of the data, one can accept that fuzzy sets are characteristic (and functional) in language. They may be first apparent to linguists in the grammar (viz. transitive/ergative; tense/aspect; modality/modulation), but related fusions and conflation are in evidence on all strata – they are a derivative of humans extending the rhetorical space available in negotiation (viz. consider the productive role of 'slippage' amongst modal choices and combinations). They are multiplied as well by the difficulty of describing natural language by means of natural language, especially when there may be a syndrome of features required for a classification (as with reported speech and thought; or as in using transitive: ergative).

Given the difficulties on all levels of the description of meaning, the controversies over the parametric description of context are hardly surprising. Recent work on context modelling in Japan, as set out by Sugeno (2004), is part of a long-term project to bring the fuzzy descriptions on each of four strata (context; semantics; lexicogrammar; intonation) into predictive alignments between settings. The nub of theory here is as follows: probabilistic or fuzzy statements on each of four strata, when brought into alignment for instances of a specific context, can produce (for that specific social context) the order of prediction needed for natural language processing (as discussed in Butt, Halliday, Matthiessen, Teruya and Wu, 2004). This working relationship with

a number of specific projects is likely to be the character of some tools for context in the near future: networks will be elaborated for the purposes set by collaborators working on a set of contexts, in particular for natural language processing, for studies of professional discourse, and in the fields of education and the socialisation of children.

Such orientation to register has already been well established and resonates with the early work of Halliday, Hasan and others associated with the Bernstein projects in London in the 1960s (see Hasan, 1992; 1992b; Cloran, 1994; 1999; 2000; Williams, 1999; 2000; 2001). The power of networks can be easily appreciated as one pushes on in 'delicacy' and with specific registerial motivations – networks for field, tenor and mode, quickly run to more than a million possible feature combinations and so to a wide coverage of variability (Butt, 1999/2004). Such contrasts and combinations are ways of settling on probabilistic statements on other strata (viz. semantics, lexicogrammar and intonation). With alignment across strata (albeit a 'fuzzy' alignment between fuzzy sets on each of the strata), the possibility of realisation statements can be again considered under new conditions of work. We no longer need to be daunted by the 'infinity' principle – the field, tenor and mode networks function to exclude much of the universe of human affairs even when they can not specify one, unique structure statement (i.e. one combination of parameters, or one contextual configuration in Hasan's 1999 terms).

Context is the means for a motivated selection of a piece of interaction from an ongoing flow. It is possible to mark off any point at which the interactants change. Though the value of such a decision will vary, many text selections appear to be made on this concrete principle. For example, we can see that a doctor's consultations are bounded by time and a change of interactant, even though the majority of field, tenor and mode parameters do not change. Likewise, in the analysis of data from family therapy, the boundaries for the textual analysis are set by change in material setting and by time 'chunking.' This is despite the fact that the relevant social patterns and family relations run seamlessly across such 'divisions of convenience'.

## 8 Context

Analysis often overlooks what none of us could imagine being without. Wittgenstein emphasised such 'marginal' ideas as the unseen background to making sense (Glock, 1995). Such ideas were fundamental in learning and, particularly as the scaffolding necessary in the education of children (Vygotsky, 1978). The very fact that context is crucial in the understanding of all transac-

tions may have meant that some specialists believed it could be left outside the specialised brief of the linguist. Context was to some so ubiquitous that it was a-theoretical or platitudinous, while for others, for reasons of theory (paradoxically), it was only to be managed instantially and a-theoretically (viz. Schegloff, 1982; for a review of different approaches see van Dijk *in press*).

In many fields of enquiry, the multidimensionality of an event has been similarly daunting at various periods of historical transition; yet physicists, sociologists and other researchers moved to treat their phenomena in a parametric way. Menand (2001) gives an account of the development of concepts of social typicality in his study of the Pragmatist school of philosophy. The canonical case of this method was Boltzmann's choice to treat difficult physical phenomena in statistical terms, by treating the trend rather than stopping at the inherent limitation of predicting each instance (Mainzer, 1997). That is, of course, after stating the relevant dimensions of investigation. Such a method is clear in Phonetics and has been related to topological representations in SFL by Matthiessen and Martin (1991).

Some of the criticisms that are levelled at Malinowski's theory of context are answered by another aspect of his theory. The core idea of function can be seen to lie behind all of Malinowski's work and indeed Gellner (1988: 172–3) argues that this idea was in place and fully formed before Malinowski left Poland. Gellner (1988) further suggests that Ernst Mach, who tempered Malinowski's understanding of Nietzsche, influenced Malinowski in his work. His influence on Malinowski encompassed the possibility of seeing everything in terms of biological need. This was an idea very much debated across Europe at that time. Wegener had had a protracted argument with Wundt over this very issue (Nerliche, 1990: Part 2). This conception of function is further attributed by Leach to James; though Gellner (1988) disputes this origin. What is clear, however, is that there was no simplistic polarisation of the biological and the social/cultural in the climate of enquiry from which Malinowski drew, nor in the climate of enquiry which he helped to create.

Szymura (1988: 129–30) claims that Malinowski's theory fails to account for the difference between laying a bet by saying 'taken' and laying a bet by giving a long and detailed account of what it means to take a bet. Firth and later Halliday, Hasan and others, could readily model the difference between these instances by means of functions related to specific systems. All linguistic choices can be related to paradigms (systems) and these in turn can be characterised by their interdependence with respect to some generalised function or purpose (the more abstract 'metafunction'). In combination, context- system- metafunction provide the basis for both global and micro linguistic accounts of 'what's going on' (Hasan, 1996: 37–50).

Szymura (1988) is also critical of Malinowski for not producing a framework capable of answering Chomsky's question of:

why we are capable of producing a theoretically infinite number of sentences and understanding them ... despite the fact that the question of a practical application of most of them may never arise. (Szymura, 1988: 130)

Such a question is for Chomsky to answer, for it is his theory that narrows down the brief of linguistics to such a question. The issue, raised in the nineteenth century by von Humboldt, is one of the many legitimate questions of language study; but it does fall into the mentalism that Malinowski was trying to expunge (language is not a 'counter sign to thought'). The more that can be derived from the semantic structure of social action, the less remains to be imputed to specific innate structures in the brain. More challenging is the corollary of Szymura's question, namely that Chomsky's linguistic framework fails because it prevents many anthropological/human questions from being answered (or even investigated!).

## **9 Anthropology and linguistics**

During Malinowski's life the boundaries between linguistics, sociology and anthropology were more porous in that they were less institutionalised and there was an inevitable flow of ideas between the newly forming disciplines. In this climate, the problem of cultural change was arguably the central question, much as it may still be claimed today. Gellner (1988) suggests that Malinowski's theory of culture revolved around stability. The question arises then: how do we account for cultural change and the dynamic aspects of culture? Paluch (1988) proposes that 'Malinowski's ideas suggest treating cultural change as the formation of a new system'. Though Malinowski did not state this explicitly, the idea is present in his work (see for example his later work on Cultural Dynamics published after his death: Malinowski, 1961). In Hallidayan theory, as well as in work by Jakobson (1973) and by the Prague School (Striedter, 1989), this conundrum of dynamics has been (at least for many) addressed by the 'metastability' of a system: the very character of the system is to have a changing character (Lemke, 1992). The essence of a semiotic system, as relations of relations, is to have no fixed essence.



## 10 The 'watershed' period

The work of Malinowski and his students branches out in two directions. One branch becomes a form of anthropological description exemplified by Raymond Firth (Firth, 1961); and the other is demonstrated by the polysystemic functionalism of J. R. Firth. So, on the one hand, we have a structure of values represented by Raymond Firth's work and, on the other, we have J. R. Firth's multiple systems of value, with context then becoming the word that covers the role a unit plays within each level of description – 'serial contextualisation'. Both Firths consider context from quite different perspectives and for quite distinct goals and objects of analysis.

During the careers of J. R. Firth and Raymond Firth, Malinowski's grounded approach to semantics took form in two crucial disciplines and with a new generation of linguists working in the tradition of J. R. Firth at the School of Oriental and African Studies (see Butt, 2001), the Malinowskian insights were developed into a model of language and language variation. The chief contributors to this shift from fieldwork problems to theoretical model were those working closest to Firth and then to Halliday.

In a short, precise explication, Ellis (1966) places 'context of situation' in the overall structure of Firthian theory. Ellis is not focused on a working example, nor on the paradigmatic or syntagmatic details. Rather, he sets out the way the different levels of a neo-Firthian model are integrated as interlocking statements at different levels (of application) and at different 'angles' to interaction. His representation of the Hallidayian model of language is presented in Figure 20.5.

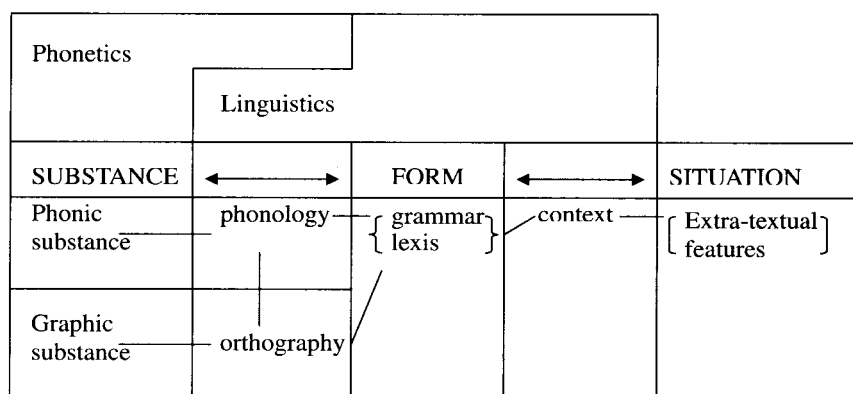


Figure 20.5: Levels of linguistic analysis. From Ellis (1966: 79).

In Mitchell's (1958/75) study of 'Buying and selling in Cyrenaica', there is an application of Firth's approach. The social situation becomes another level of description that is somewhat different in its level of abstraction from other levels (Mitchell, 1958/75), but one of the spectrum of patterns that needs to be accounted for in the study of language, much as white light consists of the different wave lengths of the colour spectrum.

Mitchell's (1958/75) method is not systemic as we understand it today; it brings out the dyadic nature of context, the distinction between persons and personalities and the difference between factors which are obligatory and criterial (i.e. 'technical') as against those ('non-technical') which may be operable in the context of buying and selling and transferable to other contexts, but which are non defining in a given instance. The setting (what Hasan, 1996/73, was to call the 'material situational setting') cannot be mistaken for the 'context of situation' on the grounds that 'presence' is not necessarily 'relevance' (thereby anticipating much later work in systemic linguistics and semantics). Following Malinowski, Mitchell pursued further distinctions like those between object bound language and locale specific language.

If the Firthian concept of a 'restricted language' (which evolved into the more abstract 'register' of SFL) has to bear greater responsibility in the development of a social linguistics, then there is clearly a need to order the types of texts, by analogy with the classifications that most sciences must undertake in order to bring method to a community of researchers. Ure (1969) addressed this problem of text types by developing a matrix which sub-classifies by functions, participants and modes of delivery. By contrast with traditional taxonomies of genre, Ure (1969) emphasised spoken discourse in line with needs of contemporary linguists.

Halliday's work both continues Firthian tradition and initiates a new period in which the systemic and sociological responsibilities in Firth's methods are integrated in terms of contexts, functions and semantic varieties. The reconciliation of Firth's 'poly-system' and Malinowski's 'context of situation' is the core of Halliday's semiotic model of language (1973; 1978). The tool value of the model (see Figure 20.6 below) includes the way it takes in descriptions from all contexts (from child language to stylistics) and allows for statistical and paradigmatic descriptions.

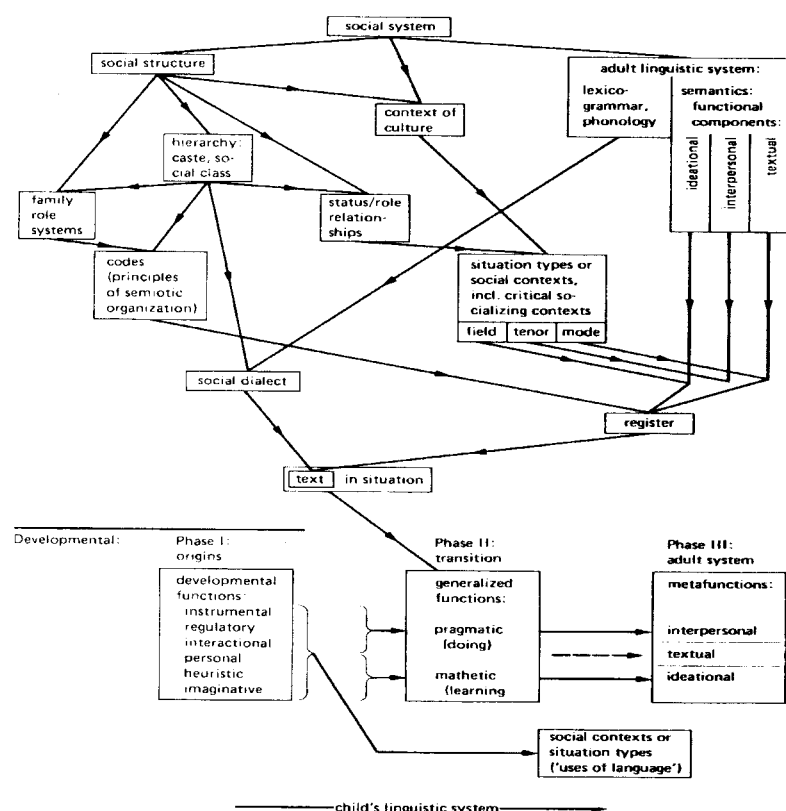


Figure 20.6: from Halliday (1978: 69). This figure first appeared in 1972 in *Proceedings of the 11th International Linguistics Conference*.

In *Towards a Sociological Semantics* (1973), Halliday sets out from the options available to English middle-class mothers in constraining the actions of a child. Notable in his overall functional theory is the way that the development of a network of semantic 'options' rests on the distinction between 'use' and 'function'/'metafunction'. Language is employed in a myriad of uses; and the consideration of myriads of such uses leads to a more generalised (though still not 'general' in a mathematical sense), more abstract statement of affinity of purpose – the movement towards generalisation being another necessary step in any account of phonological, lexicogrammatical, semantic or contextual regularities. At the grammatical 'face' of purpose, one seeks evidence of co-dependent options (as Halliday earlier found in mapping networks for lexicogrammar). Mood and modality contribute to meaning in a way that is not evident between, say, transitivity and modality. The

'interpersonal' work of mood and modality exemplify functionality inherent in the organisation of the systems of coding. This is not a case of 'bigness' (viz. the earlier 'macrofunction'), but of abstractness (hence, the introduction of 'metafunction').

The term 'sociosemantics of language development' refers to this process, whereby the original social functions of the infant's proto-language are reinterpreted, first as 'macro-functions' and then as 'meta-functions', functional components in the organisation of the semantic system. Halliday, 1978: 121.

Macro-functions are a case of generalisations from the social functions of the proto-language: but metafunctions are a grasping of the abstractions that come from experiencing the world and the separation of function from use.

An important extension to the Malinowskian legacy has been achieved – everything in a cultural context may be functional and in that sense, therefore, meaning bearing. But, Halliday is also demonstrating, through the polysystemic mapping of semantic choice, that function (albeit of an abstract kind) provides the optimum way for understanding the internal relations of a language system, not just the externalised tasks to which it is employed.

By contrast with Hymes and even Jakobson, who also developed functional accounts of language, Halliday's 'context of situation' has a place alongside other forms of linguistic statement. The statements most helpful in clarifying this place include his discussions of text and context in educational linguistics (Halliday, 1991). The trope Halliday employs is that of 'climate and weather'. When we arrive at the level of a given context, we are already 'in the culture' – hence, we do not need to *proceed* to culture. Rather we have the task of elucidating what we find 'there' in the 'typical-actual', as Firth referred to it. Halliday's own practice in this regard appears to be cautious: the investigations which he undertakes are organised around field, tenor and mode (more abstract than Firth's relevant objects; participants etc.). But the variables cited as relevant for any given account of context/text are proposed in relative proximity to the register under description (i.e. around mid points on the cline of instantiation, see discussion of this point in Hasan, 1995). Still, the contextual variables permit prediction of the choices 'at risk' in the semantics and in the lexicogrammar.

Firth's emphasis on *persona* was also taken up in the contextual work of Gregory and Carroll (1978). They suggest that:

what we say is an indication of who we are as individuals, although even as unique persons our habits are neither fixed nor stable but mirror the constant variability of environment and attitude which makes up our lives (ibid: 26).

They emphasise that language is an indication of our personality through style. The evidence of the style is in the language event, the analysis of which they divide into three: substance, form and situation. The situation is defined by the 'relevant extra textual circumstances' (ibid: 4).

### 10.1 Modelling and its realisations

Hasan puts the concepts of context and metafunction 'to work' by analogy with other fundamental terms of linguistic modelling (viz. strata, rank and constituency etc.). As mentioned at the outset, her contextual configuration (CC) is a systemic approach to the specification of similarity and contrast across contexts, with the features themselves drawn from networks of field, tenor and mode. This is to present context as if it could be represented through paradigms and realisation rules much as can be now seen in Hasan's own mappings between semantic networks and the lexicogrammar (Hasan, 1996). The contrasts of features that make up the CC have to be motivated from research experience and Hasan (1999) gives the most detailed account of the rationale for the contrasts in her *field* network.

Other problems that she has taken up in order to bring the treatment of context more in line with the accounts of systems on other strata include:

- a) how one relates generalisations about context to personal autonomy and the inherent variability of social process;
- b) how one deals with parallel contexts and other issues of boundary delimitation;
- c) how contextual regularities provide indices of sociological patterns – coding orientation, ideology, power, class and social reproduction;
- d) how contexts enact specific relations of gender and class;
- e) how the paradigmatic features of context play out as syntagmatic potential realised in Generic Structure Potential; and
- f) how semantic systems can be elaborated so that realisation statements can operate from generic element to nuclear semantic feature and on to most probable grammar.

These demonstrations of principles and a number of exemplifications that come through the child socialisation projects, make the ways forward for context studies much more linguistic in their theoretical character and much more tractable in applied research. From this framework, there need to be further empirical and statistical extensions. For instance, we need to have registerial

profiles in order to check the cross stratal specifications from context down to intonation (see Matthiessen et al. in press). As mentioned above, the 'non conformal' relations across two strata may turnout to be much more predictable when viewed across four. So too, the networks for field, tenor and mode need to be drawn up at different points along the cline of instantiation, as this may further display the direct relationship between coding orientations, registerial repertoires, recontextualisations of semantic options and social networks (the latter when viewed as 'speech fellowships'). The issue of what counts as an entry condition for networks at the level of context poses a problem for both theory and practice. Contexts need to be compared cross culturally since 'different ways of saying are different ways of meaning' (Hasan, 1996) and different ways of meaning both reflect and construct different social realities (which might be thought of as the QED of Malinowski's methods and of Bernstein's probing insights).

As with the multiperspectival theorisation of Hasan, Martin has elaborated a theory of context which is part of a global approach to the integration of context into systemic functional linguistics. Martin's proposals are a distinctive interpretation of the theory and applications of Halliday's functional linguistics. In theory, he is explicitly guided by his interpretations of Hjelmslev. In applications, his proposals draw on his collaborations, in particular those coming out of educational work in the 1980s, but also in relation to descriptions of scientific and technical 'genres'.

Martin (1992: 493–588) offers an extensive survey of the proposals and problems that have dominated his evaluation of context in linguistics. Central here are:

1. the 'work' to which he has put stratification;
2. the way semantic variation is managed under the concept of genre;
3. his commitment to both critical and positive discourse analysis.

Essentially, Martin stratifies beyond 'register' up to 'genre' and on to 'ideology'. The key concept in this stratifying is Hjelmslev's connotative semiotics – semiotic systems which act as the content plane with another semiotic system as their expression plane (as when, according to Martin the goal directed, staged activities of our culture – our genres – have language as their expression). This appears to preclude Halliday's 'weather/climate' metaphor in that cultural patterns and gaps are managed in two levels of abstraction above register (hence, the 'cline of instantiation' does not carry the same responsibility as it does in Halliday's approach). For Martin, a number of difficulties are better addressed within his schema: for example, the place of syntagmatic description (sequence and order) as Martin sees a strong contrast between synoptic and dynamic representations at the level of context.

In *Analysing Genre: functional parameters* (1997), Martin reviews his work on genre and positions it in relation to other text theories and his own developing model of 'Appraisal' – the interpersonal systems of evaluation in his discourse semantics. A point to note, however, is the resignation Martin expresses over the stratum of *ideology* – he notes that researchers have not taken up the proposal in the way that the level of genre has been pursued. On the other hand, he does float the prospect of treating generic tensions (i.e. non-congruent mappings between his stratum of genre and that of register) as a form of 'contextual metaphor'. Martin suggests that this may offer a powerful way of handling the progressivist texts which can be so baffling to teachers and learners in school environments (1997: 33). The question arises, however, whether or not 'contextual metaphor' subsumes the original motivation for the stratum of genre (i.e. above register), namely that variation and 'hybridity' needed to be gathered into a higher order of process.

## 11 In conclusion

Researchers need to judge the form and direction of current proposals on context in the light provided by theoretical notions drawn from complexity theory, fuzzy sets, probabilistic modelling, corpus linguistics, evolutionary theory and functionalism (when broadly and historically interpreted). We believe that the evidence of Malinowski's own context (from Boltzmann to Russell; from Boas to Wittgenstein; from Darwin to Frazer) suggests that nothing of this list would have surprised or daunted him. His own assiduous habits of observation and note taking demonstrated his commitment to grounding theory in the 'typical-actual' of human activities. But, we argue, the concepts of Malinowski and of J. R. Firth only become powerful, abstract tools with Halliday's theorisation of semiotic dimensions; with his distinction of use, function and metafunction; with his mapping of systems in relational networks; and with his elaboration of relations between text, context and register.

## References

- Bloomfield, L. (1933) *Language*. (Revised edition.) London: Allen and Unwin.  
 Bohr, N. (1961) *Atomic Physics and Human Knowledge*. Science Editions Inc.: New York.  
 Butler, C. (1985) The applicability of systemic theories. *Australian Review of Applied Linguistics* 8(1): 1–30.  
 Butt, D. G. (1985) *Talking and Thinking: the patterns of behaviour*. Geelong, Victoria: Deakin University Press.

- Butt, D. G. (1989) The object of language. In R. Hasan and J. R. Martin (eds) *Language Development: learning language, learning culture*. (Vol. XXVII in Advances in Discourse Processes series.) Norwood, NJ: Ablex.
- Butt, D. (2001) Firth, Halliday and the development of systemic functional theory. In S. Aurox, E. F. K. Koerner, H. Niederehe and K. Versteegh (eds) *History of the Language Sciences*. New York: Walter de Gruyter.
- Butt, D. G. (1999/2004) Parameters of context. Mimeo. Department of Linguistics, Macquarie University, Sydney.
- Butt, D. *Continuing Discourse on Language: a functional perspective*. Vol. 1. 81–116 London: Equinox.
- Butt, D., Halliday, M., Matthiessen, C. M. I. M., Teruya, K. and Wu, C. (2004) *Review Report: language centred approach to creating the brain*. RIKEN Lab for language based intelligent systems. (Available via personal request to dbutt@ling.mq.edu.au)
- Cloran, C. (1994) *Rhetorical Units and Decontextualisation: an enquiry into some relations of context, meaning and grammar*. Department of English Studies, University of Nottingham.
- Cloran, C. (1999) Instruction at home and school. In F. Christie (ed.) *Pedagogy and the Shaping of Consciousness* 31–65. London: Cassell.
- Cloran, C. (2000) Socio-semantic variation: different wordings, different meanings. In L. Unsworth (ed.) *Researching Language in Schools and Communities*. London: Cassell.
- Cohen, J. and Stewart, I. (2000) *The Collapse of Chaos. Discovering Simplicity in a Complex World*. London: Penguin Books.
- Cook, G. (1990) Transcribing infinity: problems of context presentation. *Journal of Pragmatics* 14: 1–24.
- Edelman, G. (1988) *Topobiology: an introduction to molecular embryology*. New York: Basic Books.
- Ellen, R., Gellner, E., Kubica, G. and Mucha, J. (eds) (1988) *Malinowski Between Two Worlds*. Cambridge: Cambridge University Press.
- Ellis, J. (1966) On contextual meaning. In C. E. Bazell, J. C. Catford, M. A. K. Halliday and R. H. Robins (eds) *In Memory of Firth*. London: Longman.
- Firth, J. R. (1957) *Papers in Linguistics: 1934 – 1951*. London: Oxford University Press.
- Firth, R. (1964) *Man and Culture: an evaluation of the work of Bronislaw Malinowski*. New York: Harper and Row.
- Firth, R. (1961) *Elements of Social Organisation*. (Second edition.) London: C. A. Watts and Co. Ltd.
- Gellner, E. (1988) Zeno of Cracow. In R. Ellen, E. Gellner, G. Kubica and J. Mucha (eds) *Malinowski Between Two Worlds*. Cambridge: Cambridge University Press.
- Gellner, E. (1998) *Language and Solitude: Wittgenstein, Malinowski and the Habsburg Dilemma*. Cambridge: Cambridge University Press.



- Ghadessy, M. (ed.) (1998) *Text and Context in Functional Linguistics*. Amsterdam: Benjamins.
- Gleason, H. A. (1965) *Linguistics and English Grammar*. New York: Holt, Reinhart and Winston.
- Glock, H. J. (1995) *A Wittgenstein Dictionary*. London: Blackwell.
- Gregory, M. (2002) Phasal analysis within communication linguistics: two contrastive discourses. In P. H. Fries, M. Cummings, D. Lockwood and W. Spruiell (eds) *Relations and Functions Within and Around Language*. London: Continuum.
- Gregory, M. and Carroll, S. (1978) *Language and Situation: language varieties and their social contexts*. London: Routledge and Kegan Paul.
- Halliday, M. A. K. (1973) *Language in a Social Perspective: explorations in the functions of language* 48–71. London: Edward Arnold.
- Halliday, M. A. K. (1978) *Language as Social Semiotic*. London: Edward Arnold.
- Halliday, M. A. K. (1991) The notion of context in language education. In T. Lé and McCausland (ed.) *Language Education: interaction and development*. Conference Proceedings: Vietnam.
- Halliday, M. A. K. (1992) New ways of meaning: the challenge to applied linguistics. In M. Putz (ed.) *Thirty Years of Linguistic Evolution*. Philadelphia/Amsterdam: John Benjamins Publishing Co.
- Halliday, M. A. K. and Hasan, R. (1985) *Language, Context and Text: aspects of language in a social – semiotic perspective*. Deakin University, Australia.
- Harris, R. (1988) (ed.) *Linguistic Thought in England: 1914–1945*. New York: Routledge.
- Hasan, R. (1978) Text in the systemic functional model. In W. Dressler (ed.) *Current Trends in Text Linguistics* (242) Berlin: Walter Gruyter.
- Hasan, R. (1984) What kind of a resource is language? In C. Cloran, D. Butt, and G. Williams (eds) *Ways of Saying, Ways of Meaning*. London: Cassell.
- Hasan, R. (1985) Meaning, context and text: fifty years after Malinowski. In J. D. Benson and W. S. Greaves (eds) *Systemic Perspectives on Discourse*. Norwood, NJ: Ablex.
- Hasan, R. (1992) Meaning in sociolinguistic theory. In K. Bolton and H. Kwok (eds) *Sociolinguistics Today: international perspectives*. London: Routledge.
- Hasan, R. (1992b) Rationality in everyday talk: from process to system. In J. Svartik (ed.) *Directions in Corpus Linguistics. Proceedings of Nobel Symposium, 82*. Stockholm, August 4–8 1991. Berlin and New York: De Gruyter.
- Hasan, R. (1995) The conception of context in a text. In M. Gregory and P. Fries (ed.) *Discourse in Society: systemic functional perspectives: meaning and choice in language: studies for Michael Halliday* 183–283. Norwood, NJ: Ablex.
- Hasan, R. (1996) Ways of saying, ways of meaning. In C. Cloran, D. Butt and G. Williams (eds) *Ways of Saying, Ways of Meaning*. London: Cassell.

- Hasan, R. (1999) Speaking with reference to context. In M. Ghadessy (ed.) *Text and Context in Functional Linguistics: systemic perspectives*. Amsterdam and Philadelphia: Benjamins.
- Hasan, R. (2001) Wherefore context? The place of context in the system and process of language. In R. Shaozeng, W. Guthrie and I. W. R. Fong (eds) *Grammar and Discourse Analysis*. Macau: University of Macau Publication Centre.
- Heisenberg, W. (1958) *Physics and Philosophy: the revolution in modern science*. New York: Harper and Row.
- Hutten, E. H. (1956) *The Language of Modern Physics: an introduction to the philosophy of science*. London: George Allen and Unwin Ltd.
- Jakobson, R. (1973) *Main Trends in the Science of Language*. New York. Harper and Row.
- Kuper, A. (1973) *Anthropologists and Anthropology: the British school 1922–1972*. UK: Penguin.
- Langendoen, T. (1968) *The London School of Linguistics: a study of the linguistic contributions of B. Malinowski and J. R. Firth*. Cambridge, MA: MIT Press.
- Lamb, S. (1999) *Pathways of the Brain: the neurocognitive basis of language*. Amsterdam and Philadelphia: John Benjamins.
- Lemke, J. L. (1992) Interpersonal meaning in discourse: value orientations. In M. Davies and L. Ravelli (eds) *Advances in Systemic Linguistics. Recent Theory and Practice*. London: Pinter Publishers.
- Levinson, S. (1983) *Pragmatics*. Cambridge: Cambridge University Press.
- Love, N. (1988) The linguistic thought of J. R. Firth. In Harris, Roy. (ed.) *Linguistic Thought in England: 1914–1945*. New York: Routledge.
- Lyons, J. (1966) Firth's Theory of Meaning. In C. Bazell, J. C. Catford, M. A. K. Halliday and R. H. Robins (eds) *In Memory of J. R. Firth*. London: Longmans.
- Mainzer, K. (1997) *Thinking in Complexity. The Complex Dynamics of Matter, Mind and Mankind* third Revised Edition. Berlin: Springer.
- Malinowski, B. (1923) The problem of meaning in primitive languages. In C. Ogden and I. A. Richards (eds) *The Meaning of Meaning*. London: Paul Trench and Trubner.
- Malinowski, B. (1961) *The Dynamics of Cultural Change*. Edited by V. Malinowska. USA: Murray Printing.
- Malinowski, B. (1961b) *Argonauts of the Western Pacific*. New York: Dutton.
- Malnic, J. Kula (1998) *Myth and Magic in the Trobriand Islands*. J. Malnic with J. Kasaipwalova. Wahroonga, NSW: Cowrie Books.
- Martin, J. R. (1985) Process and Text: two aspects of human semiosis. In J. D. Benson and W. S. Greaves (eds) *Systemic Perspectives on Discourse Vol. 1* 248–74. Norwood, NJ: Ablex.
- Martin, J. (1992) *English Text: system and structure*. Amsterdam: John Benjamins.

- Martin, J. (1993) A contextual theory of language. In W. Cope and M. Kalantzis (eds) *The Powers of Literacy: a genre approach to teaching literacy* 116–36. London: Falmer (Critical Perspectives on Literacy and Education); Pittsburg: University of Pittsburg Press (Pittsburg Series in Composition, Literacy and Culture).
- Martin, J. (1997) Analysing genre: functional parameters. In F. Christie and J. Martin (eds) *Genre and Institutions: social processes in the workplace and school*. London: Cassell.
- Matthiessen, C. M. I. M. (1993) Register in the round: diversity in a unified theory of register analysis. In M. Ghadessy (ed.) *Register Analysis: theory and practice*. London: Pinter.
- Matthiessen, C. M. I. M. and Martin, J. R. (1991) A response to Huddleston's review of Halliday's 'Introduction to Functional Grammar'. *Occasional Papers in Systemic Linguistics* 5: 5–74.
- Matthiessen, C. M. I. M. (this volume)
- Matthiessen, et al. (in press) Welcome to Pizza Hut. *Australian Review of Applied Linguistics*.
- McCrone, J. (1999) *Going Inside: a tour round a single moment of consciousness*. USA: Faber and Faber.
- Menand, L. (2001) *The Metaphysical Club*. New York: Farrar, Straus, Giroux.
- Mitchell, T. F. (1958/1975) The language of buying and selling in Cyrenaica: a situational statement. In T. F. Mitchell (1975) *Principles of Firthian Linguistics*. London: Longman.
- Moore, A. (2003) *The discursive construction of treatment decisions in the management of HIV disease*. Unpublished Doctoral thesis. Macquarie University, Sydney.
- Nerlich, B. (1990) *Change in Language: Whitney, Breal and Wegener*. London: Routledge.
- Paluch, A. K. (1988) Malinowski's theory of culture. In R. Ellen, E. Gellner, G. Kubica and J. Mucha (eds) *Malinowski between two Worlds*. Cambridge: Cambridge University Press.
- Rebori, V. (2002) The legacy of J. R. Firth: a report on recent research. *Historiographia Linguistica* XXIX: 1(2): 165–90.
- Richards, A. I. (1939) The development of field work methods in social anthropology. In K. C. Bartlett, M. Ginsberg, E. J. Lindgren and R. H. Thoules (eds) *The Study of Society*. UK: Kegan Paul.
- Saussure, F. (1974) *Course in General Linguistics*. London: Fontana.
- Schegloff, E. (1982) Discourse as an interactional achievement. In D. Tannen (ed.) *Analysing Discourse: text and talk*. Washington: Georgetown University Press.
- Strauss, A. L. (1987) *Qualitative Analysis for Social Scientists*. UK: Cambridge University Press.

- Striedter, J. (1989) *Literary Structure, Evolution and Value: Russian Formalism and Czech Structuralism reconsidered*. Cambridge, USA: Harvard University Press.
- Sugeno, M. (2004) A systemic functional linguistic approach to creating the brain. *Plenary Presentation. The 31st International Systemic Functional Linguistics Congress*. Doshisha University Kyoto, Japan. August 30 – September 4.
- Szymura, J. (1988) Bronislaw Malinowski's 'Ethnographic theory of language'. In R. Harris (ed.) *Linguistic Thought in England: 1914–1945*. New York: Routledge.
- Thornton, R. and Skalnik, P. (1993) *The Early Writings of Bronislaw Malinowski*. Cambridge: Cambridge University Press.
- Ure, J. (1969) Practical Register. Parts I and II. *English Language Teaching* 23(1 and 2).
- Vaihinger, H. (1925) *The Philosophy of 'As if': a system of the theoretical, practical and religious fictions of mankind*. (Translated by C. K. Ogden.) New York: Harcourt, Brace and Company.
- van Dijk, T. (in press) Text and context of parliamentary debates. To be published in P. Bayley (ed.) *Parliamentary Discourse. Language and the Institutions*. Amsterdam: Benjamins.
- Ventola, E. (1983) Contrasting schematic structures in service encounters. *Applied Linguistics* 4: 242–58.
- Volosinov, V. N. (1928/73) *Marxism and the Philosophy of Language*. (Translated by L. Matejka and I. R. Titunik.) New York: Seminar Press.
- Vygotsky, L. S. (1978) *Mind in Society: the development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Williams, G. (1999) The pedagogic device and the production of pedagogic discourse: a case example in early literacy education. In F. Christie (ed.) *Pedagogy and the Shaping of Consciousness: linguistic and social processes*. London: Cassell Academic.
- Williams, G. (2000) Children's literature, children and uses of language description. In L. Unsworth (ed.) *Researching Language in Schools and Communities*. London: Cassell.
- Williams, G. (2001) Literacy pedagogy prior to schooling: relations between social positioning and semantic variation. In A. Morais, I. Neves, B. Davies and H. Daniels (eds) *Towards a Sociology of Pedagogy: the contribution of Basil Bernstein to research*. New York: Peter Lang.
- Wittgenstein, L. (1953/72) *Philosophical Investigations* (Translated by G. Anscombe.) Oxford, UK: Basil Blackwell.
- Whorf, B. L. (1956) *Language, Thought and Reality. Selected writings of Benjamin Lee Whorf*. Edited by J. B. Carroll. Massachusetts, USA: The MIT Press.
- Wolf, G. (1989) Malinowski's 'context of situation'. *Language and Communication* 9(4): 259–67.

A.4.2 *Making Use of Abstract Concepts – Systemic-Functional Linguistics and Ambient Intelligence.*

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# Making Use of Abstract Concepts—Systemic-Functional Linguistics and Ambient Intelligence

Jörg Cassens and Rebekah Wegener

**Abstract** One of the challenges for ambient intelligence is to embed technical artefacts into human work processes in such a way that they support the sense making processes of human actors instead of placing new burdens upon them. This successful integration requires an operational model of context. Such a model of context is particularly important for disambiguating abstract concepts that have no clear grounding in the material setting of the work process. This paper examines some of the strengths and current limitations in a systemic functional model of context and concludes by suggesting that the notions of instantiation and stratification can be usefully employed.

## 1 Introduction

The exhibition of intelligent seeming behaviour is necessary for an artefact to be considered intelligent. Intelligent seeming behaviour is generally considered to be behaviour that is contextually appropriate. An ability to accurately read context is important for any animal if it is to survive, but it is especially important to social animals and of these perhaps humans have made the most out of being able to read context, where such an ability is tightly linked to reasoning and cognition [1].

The necessity of exhibiting some kind of intelligent behaviour has lead to the developments jointly labelled as *ambient intelligence* [2]. But to successfully create intelligent artefacts, the socio-technical processes and their changes through the use of mediating artefacts have to be examined more closely. This paper focuses on

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how a social-semiotic theory of language, in which context is seen as integral to understanding communication, can be usefully employed in ambient intelligence. Ambient intelligence and its requirements from semiotics is further discussed in section 2 below.

Semiotics, or the study of sign systems, is here examined using a systemic functional model (see section 3). Systemic functional linguistics is a social semiotic theory of language which treats all behaviour as meaning bearing. This includes the behaviour of non-human participants and is oriented to the shared rather than the unique aspects of sign systems. The relationship between semiotics and ambient intelligence is outlined in section 4 below. In this paper we discuss how a systemic functional approach to semiotics is valuable in defining abstract concepts, see section 5. Abstract concepts, or concepts which have no direct referent in the material setting, are an important part of the mental tool set for humans. They allow us to transcend the here and now by providing us with a shorthand for complex events or complex sets of ideas. Despite this benefit, they do represent a challenge for modelling within ambient intelligence. Because they lack a clear material referent, abstract concepts are difficult to disambiguate and respond appropriately to. We propose that a systemic functional model of context will be beneficial in understanding abstract concepts.

We conclude this paper by pointing to future work in this area. For example, while we have focused on devices designed to interact closely with a single user, humans typically interact in groups, so it will be necessary to consider the impact of this for environments where not all users share the same meaning system.

## 2 Ambient Intelligence

In understanding human cognition and reasoning, disciplines such as neuroscience, psychology, sociology, linguistics, and philosophy have had to take a stance on context as a concept. Setting aside the more mechanistic views taken on reasoning, which typically need not consider context at all, positions on context tend to fall into two broad domains: those who see context as vast and unable to be coded and those who view some form of generality and coding as being possible.

For social and practical reasons, historically, AI has drawn heavily from formal logic. For example, one of the benefits of such models was that they were comparably easy to implement. Formal logic is concerned with the explicit representation of knowledge and places great emphasis on the need to codify all facts that could be of importance. This focus on knowledge as an objective truth can be traced back to e.g. the logic of Aristotle who believed that at least a particular subset of knowledge had an objective existence (Episteme) [3]. This view contrasts with that of, for example, Polanyi, who argues that no such objective truth exists and all knowledge is at some point personal and hidden (tacit) [4].

The total denial of the existence of an objective truth is problematic, since consequently there can exist no criterion to value any representation of knowledge. We

can contrast this with the view of Kant, who regards the accordance of the cognition with its object as being presupposed in the definition of truth [5, p. 52]. Going further, he makes clear that a purely formal and universal criterion of truth cannot exist. He foregrounds the dialectic relation between the formal logic and the objects to which this logic may be applied and which are given through intuition. Such a dialectic approach overcomes the conceptual difficulties outlined above, but the consequences for computational models are not easily accounted for.

Context does not fit very well with the strict logical view on how to model the world. However, an extremely personal and unique account of context serves little purpose in attempting generality. Context is, after all, a shared and very elusive type of knowledge. Despite the fact that humans can quite easily read context, context is hard to quantify in any formal way, and it is difficult to establish the type of knowledge that is useful in any given situation. Ekbja and Maguitman argue that this has led to context being largely ignored by the AI community [6]. Neither the relativist nor the formal logic approach to context has been very useful at producing accounts of context which resonate with the AI community, and, except for some earlier work on context and AI, Ekbja and Maguitman's observation still holds. Systemic-functional linguistics as described in the following section employs a dialectic view on context, and therefore avoids the pitfalls of the formal logic as well as the relativistic approaches.

### 3 Semiotics

Understanding meaning making and meaning making systems is the domain of Semiotics. Semiotics is commonly understood to be the study of sign systems and we here make use of systemic functional linguistics which is a social semiotic [7]. Semiotics itself has a long history and its use in computer science is not new, even if not extensive. However, it is not our intention in this paper to review the body of work surrounding semiotics though we are mindful of the impact of this work on the field today, in particular the work of Saussure [8], Peirce [9] and Voloshinov [10]. For a comprehensive account of semiotics as it is applied to computing we recommend works such as Gudwin and Queiroz [11] (in particular Bøgh Andersen and Brynskov [12] and Clarke et al. [13]) as well as de Souza [14]. The intelligent artefacts that we consider in this paper are an integral part of social interaction. They change the sense making process on the side of the human users as well as their own functioning as signs (contextualised by the users). Ideally, the artefact should be able to adapt to its use and user, and the means for this adaptation will have to be laid out by the designers.

In this research, we have used the social semiotics outlined by Halliday (see for example [15] and [16]). Halliday combines the strengths of the approaches of Saussure, Pierce, and Voloshinov. He brings together the tradition of relational thinking from Saussure, the understanding that different modalities have consequences for



the structure of meanings from Pierce, and from Voloshinov, the insistence that the sign is social.

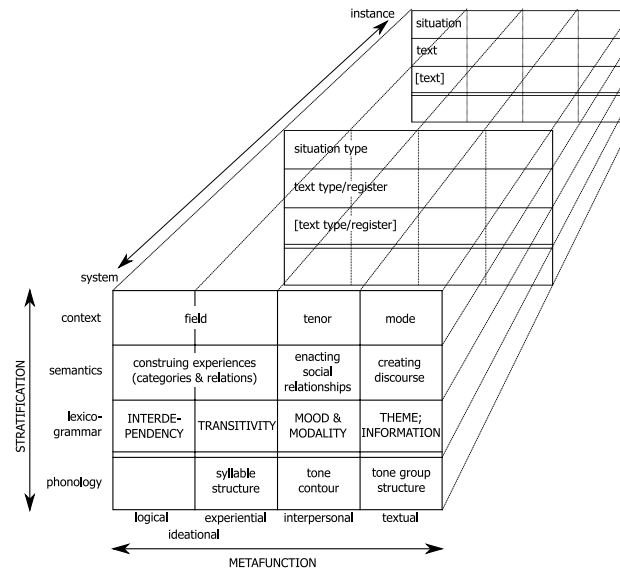
Halliday's Systemic Functional Theory of language (SFL) is a social semiotic theory that sets out from the assumption that humans are social beings that are inclined to interact [15]. In this paper we examine the value of the SFL notion of context, which views context as all the features of a social process relevant to meaning making. These features are organised into 3 core parameters of context: Field, Tenor and Mode, where **field** is "*the nature of the social activity...*", **tenor** is "*the nature of social relations...*", and **mode** is "*the nature of contact...*" [17]. Context, in SFL is one of four linguistic levels (see below), which are related realizationally rather than causally, meaning that patterns on one level both construe and construct patterns on another level. Halliday manages the complexity of language by modelling it as a multidimensional system. The most crucial dimensions of this multidimensional system for our purposes are: stratification and instantiation. We examine how these key notions of SFL make this model of context valuable for AI. Focusing in particular on the notion of instantiation.

**Stratification:** Halliday uses a stratified model of language that incorporates the levels of the expression plane (including sound systems – phonetics and phonology, gesture, pixels etc.), lexicogrammar (lexis/grammar – or wording and structure), semantics (the meaning system) and context (culture and situation – elements of the social structure as they pertain to meaning). Description on each stratum is functionally organised into systems.

**Instantiation:** Halliday uses a tripartite representation of language, which has language as system, language as behaviour and language as knowledge. Language as system encapsulates the abstract structure of language. This accounts for the regularised (though changeable) patternings that we see in language. It is this regularity that makes prediction and a certain degree of formalism (at least of a functional nature) possible. Language as behaviour looks at the activity of language, while language as knowledge looks at the way in which we know language. But we do not do these things independently. We do not know language as a set of abstract rules. Rather we know language in the sense of knowing how to use it, in the sense of knowing how to communicate with others [15]. In practice these things occur together. When we try to build a device, it is language behaviour and knowledge that we face, yet it is the seemingly inaccessible system that we need to encode in order to produce intelligent seeming behaviours and knowledge in the device.

The concept that encapsulates this problem is what Halliday calls the cline of instantiation. This is a way of looking at the relationship between System (which at the level of context means the culture) and Instance (which at the level of context means the situation that we are in). This is represented in figure 1. Here we see in the foreground the system view of language, and its grounding in the instance.

The formalization of a level of context as part of a polysystemic representation of language has long been emphasized in the work of systemic functional linguists, especially Halliday and Hasan [18]. It is the dialectic approach of systemic functional linguistics which avoids the problem of vastness and that of uniqueness.



**Fig. 1** The dimensions of language – Halliday and Matthiessen

Instances that share a similar function, e.g. instances of ward rounds in hospitals, typically share a similar structure. Halliday refers to these situation types as registers and they represent a functional variety of language [16]. The value of register is that we do not have to describe everything. Register can be thought of as an aperture on the culture. So, we are not faced with the full complexity of the culture. This does not mean that we do not keep the culture in mind. Any picture of a part of the system necessarily has the full system behind it. With register we set out from the instance, but keep in mind that each instance is a take on the system. Our notion of what constitutes an instance is shaped by our understanding of the culture/system. So, although Halliday represents the relationship between system and instance as a cline of instantiation, it is probably best understood as a dialectic since the two are never actually possible without each other. Register does not so much sit between system and instance, as it is a take on system and instance at the one time. It is the culture brought to bear on the instance of the social process.

For ambient intelligence, this means that we are not faced with the unhelpful uniqueness of each instance, because we are viewing it through the system and therefore foregrounding the shared aspects. Neither are we confronted with the seemingly impossible task of transcribing the infinity of culture, because we are viewing the culture through the aperture of the instance.

## 4 Semiotics in Ambient Intelligence

In this section, we will give our basic understanding of how semiotics can be used to understand the peculiarities of user interaction with ambient intelligent systems. The basic concept of the chosen interpretation of semiotics is the sign, a triadic relation of a signifier, a signified, and object. We look at the process of sense-making, where a representation (*signifier*) and its mental image (*signified*) refer to an entity (*object*) (the meaning of a sign is not contained within a symbol, it needs its interpretation).

On the background of semiotics, meaningful human communication is a sign process. It is a process of exchanging and interpreting symbols referring to objects. The user of a computer systems sees his interaction with this system on this background. When typing a letter, he does not send mere symbols, but signs to the computer, and the feedback from the machine, the pixels on the screen, are interpreted as signs: to the user, the computer is a “semiotic machine”. The question that arises is whether a computer is actually itself taking part in the sense making process.

On one hand, following for example Kant, human understanding has as a necessary constituent the ability to conceptualise perceived phenomena through an active, discursive process of making sense of the intuitive perception [5, p. 58]. Following this understanding, computer systems are only processing signals, lacking the necessary interpreting capabilities humans have. They only manipulate symbols without conceptualising them.

On the other hand, we can take a pragmaticist approach, following for example Peirce and Dewey, and focus not on whether the machine is itself a sense maker, but on how its use changes the ongoing socio-technical process, and whether it can mediate the sense making process. From this point of view, the computer can be a sense making agent if its actions are appropriate in terms of the user’s expectations.

Both approaches lead to a change in the issues we deal with when constructing an ambient intelligent system. The problem is transformed from one where the issue is to build a machine which itself realises a sense making process to one in which the issue is to build a computer that its actions are appropriate for the situation it is in and which exhibits sufficient sign processing behaviour.

We argue that, in order to make a pervasive, ambient intelligent system that behaves intelligently in a situation, it must be able to execute actions that make a difference to the overall sense making process in a given context. This differs from the interaction with traditional systems in which case the sense-making falls wholly on the side of the human user: You do not expect a text processor to understand your letter, but you expect an ambient intelligent system to display behaviour suggesting that it understands relevant parts of the situation you are in. When interacting with ambient intelligent systems, the user should be facilitated to subscribe to the sense making abilities of the artefacts. We consider the ability of the system to deal with concepts which have no direct material reference to be important to achieve this goal.

## 5 Abstract Concepts

Abstraction, or the ability to create a more general category from a set of specifics by whatever principle, is arguably one of the most useful mental tools that humans possess [19]. Indeed [20] suggests that the abstract categories that form part of our everyday life and language, are typically below conscious attention and only become apparent through linguistic analysis.

Such abstraction, though important to human intelligence, presents a challenge for modelling in ambient intelligence. Consider the meanings of the word ‘Emergency’. Emergency has numerous meanings depending on the context in which it occurs. For the purposes of our discussion we will here limit ourselves to the hospital environment. In the hospital environment, ‘emergency’ has specific meanings that are distinct from the meanings in other contexts. Not only are there hospital specific meanings (culture specific), but the meaning varies according to the situation as well (situation specific). Within the hospital domain the term emergency may be understood to have two distinct meanings. Firstly, the term may mean the emergency department of the hospital. This is a concrete concept with a direct material referent of a place: the emergency department of the hospital. Drawing on the notion of stratification, we can see that this concept is typically realized in the lexicogrammar<sup>1</sup> by use of the specific deictic (e.g. ‘the emergency department’), and by the possibility of using it as a circumstance location spatial (e.g. ‘in the emergency department’).

Secondly, the term may mean an emergency. This meaning of the term is an abstract concept with no direct referent in the material setting, referring instead to a state. This term is realized in the lexicogrammar by use of a non-specific deictic (e.g. ‘an emergency’) and may, if used in the past tense, use the specific deictic accompanied by a circumstance of location either spatial or temporal (e.g. ‘the emergency in F ward’ or ‘the emergency this morning’). Note that here it is not the emergency that is the circumstance, but either time or location.

Our focus in this paper is on the second of these meanings. This meaning, an emergency, may be understood to refer to a complex set of actions and relations that constitute an interruption to the normal flow of a social process. This interruption may be:

- **Culture based:** deriving from the function of the broader hospital culture, or,
- **Context based:** deriving from variation within the structure of the social process itself.

It is this relation between culture based and context based meanings that is explored below.

To function intelligently in context, artefacts must be able to recognise ‘emergency’ and respond appropriately. They may need, for example, to “be quiet” while the doctor deals with an ‘emergency’ or they may need to “provide new information” needed by the doctor in an ‘emergency’. To account for these complexities,

<sup>1</sup> This makes use of the relationship between patterns on different levels of language. For details, see section 3

a rich, but targeted, description of the culture is needed. To do this we will use the notions of register and generic structure potential [21] and a contextual model of language.

In order to establish what emergency means in this context we need to see its place in the system. That means we need to understand how it fits within the hospital culture. Understanding the richness of the culture is part of adequately embedding a device into that culture. Not doing so runs the risk of producing an artefact unsuited to its purpose and thus unintelligent. Part of what makes something (appear) intelligent is the ability to read and respond to the context. Context here is not just the immediate setting of the artefacts, (the context of situation), but the culture of which that setting is a part. Ward rounds then must be seen from the perspective of how they fit into the hospital culture. Within the function of the hospital, which is the restoration of health, the function of ward rounds is to monitor health. Because it has a ‘monitoring’ function within the hospital culture, it will be possible for the ward round to be interrupted by ‘emergencies’ from the wider hospital, since the function of the hospital overrides that of the ward round in terms of urgency.

By understanding the function of the ward round, and its contextual configuration, it is possible to state a generic structure potential for a ward round. A generic structure potential is a statement of the likely structure of a context. A generic structure however does not mean that there will not be variation. The notion of a ward round for example, is itself a functional abstraction<sup>2</sup> of all the behaviours, relations, and communications that go into completing a ward round. We are able to recognise from experience that certain behaviours by different participants, combined with certain roles and relations (e.g. ward doctor, ward nurse, patient, specialist) combined with the exchange of certain types of information (receiving information, requesting information, giving information) together constitute a ward round. None of these behaviours, relations or communications on their own constitutes a ward round, the ward round is identified by all of these things together.

Understanding the function both of the hospital within society and the ward round within that environment, facilitates the construction of a picture of the generic structure of a ward round and its place within the broader hospital culture. This enables a better understanding of the likely meaning of abstract concepts such as ‘emergency’. Based on these conceptions of the ward round context, it is possible to posit the existence of two broad categories of emergency: those constituting an interruption to the ward round (when the hospital culture impinges on the ward round) and those constituting a change to the ward round (when there is internal variation in the ward round context). Because the first involves changes to the **field** (a new topic, ward, and focus), **tenor** (very different participants and role relations), it is likely to require a “new information response”. This is because the field, tenor and mode settings have changed so much that it is now a new context and will thus require different information to suit this new context. The second will not involve changes to the **mode** or **tenor**, and only minor changes to the **field**. Thus it is likely to require a “be quiet and await query” response. This is because this is not a new context, it

<sup>2</sup> Here used to refer to the means by which abstraction is made, i.e. by considering the function of the behaviour.

is simply variation within the structure of the ward round. By utilising the notion of register to limit what we have to consider in the culture, and the concept of generic structure potential to model a typical view of the situation based on our study of the instances, we are able to better understand the context of the ward round and how to model abstract concepts for this context.

## 6 Conclusion and further work

In this paper we have considered one of several ways that semiotics can be made fruitful in ambient intelligence. This research has suggested many areas of future investigation. In this project we have focused on the individual, but the sign making process is a negotiated process. It is not simply one meaning that has to be considered. In any exchange there are always at least two meanings, and more typically more than two. Multiparticipant communication represents a challenge to modelling. We have to keep in mind that others may share our conceptualisations and meanings only to a certain extent. When ambient intelligent systems link different people this is an important thing to remember. The closer a person is in our social network the more likely they are to share our meanings, while the further out in our social network the less likely they are to share meanings. In the hospital environment, ambient intelligent devices can belong to different groups of users. Should we model them in a way that the assistant of a nurse is more likely to share concepts with the assistant of another nurse than that of a physician?

Ambient intelligent systems will have to deal with these kinds of challenges. Another point to consider is where in the network the system itself sits. What is the relation of the system to its user? To other pervasive devices? To their users? We are effectively dealing with a case of dialectal variation. Certain users may find some signs transparent and others not, while other users may find the exact opposite. If ambient intelligent systems are used to link people how do they best utilise signs to do this? This issue becomes very important when health care professionals from different cultural and language backgrounds have to interact.

Another issue we would like to explore further is the extent to which it is possible to relate a semiotic approach to ambient intelligent systems design to other socio-technical theories already in use in the field of ambient intelligence. A promising candidate is for example activity theory. Bødker and Andersen have outlined some properties of a socio-technical approach taking advantage of ideas from both theoretical frameworks [22], and we would like to extend this to cover specific aspects of SFL and Cultural-Historical Activity Theory (CHAT). This will potentially extend the number of projects from which we can borrow findings, meaning a richer description of the hospital environment.

Another point we have not fully explored yet is the relation of concepts from SFL with specific methods from the field of artificial intelligence. For example, the notion of genres in SFL seems to be a likely candidate for knowledge poor lazy learning mechanisms, while the descriptive power of register might be exploitable

in knowledge intensive or ontology based approaches. A promising candidate to combine these aspects is knowledge-intensive case-based reasoning.

## References

1. Leake, D.B.: Goal-based explanation evaluation. In: *Goal-Driven Learning*. MIT Press, Cambridge (1995) 251–285
2. Ducatel, K., Bogdanowicz, M., Scapolo, F., Leijten, J., Burgelman, J.C.: ISTAG scenarios for ambient intelligence in 2010. Technical report, IST Advisory Group (2001)
3. Aristotle: *Analytica Posteriora*. Akademie (1998)
4. Polanyi, M.: *Personal Knowledge: Towards a Post-critical Philosophy*. N.Y.: Harper & Row (1964)
5. Kant, I.: *Kritik der reinen Vernunft* (2. Auflage). Akademie (1787)
6. Ekbis, H.R., Maguitman, A.G.: Context and relevance: A pragmatic approach. *Lecture Notes in Computer Science* **2116** (2001) 156–169
7. Hodge, R., Kress, G.: *Social Semiotics*. Cornell, UK (1988)
8. Saussure, F.d.: *Course in General Linguistics*. McGraw-Hill (1966)
9. Peirce, C.S.: New elements (kaina stoicheia). In Eisele, C., ed.: *The New Elements of Mathematics by Charles S. Peirce*. Volume 4, *Mathematical Philosophy*. (1904) 235–263
10. Voloshinov, V.N.: *Marxism and the Philosophy of language*. Seminar Press, New York (1973)
11. Gudwin, R., Queiroz, J.: *Semiotics and Intelligent Systems Development*. IGI Publishing, Hershey, PA, USA (2006)
12. Andersen, P.B., Brynskov, M.: The semiotics of smart appliances and pervasive computing. [11] 211–255
13. Clarke, R., Ghose, A., Krishna, A.: Systemic semiotics as a basis for an agent oriented conceptual modeling methodology. [11] 256–285
14. de Souza, C.S.: *The Semiotic Engineering of Human-Computer Interaction (Acting with Technology)*. The MIT Press (2005) QA76.9.H85 .D465 2005.
15. Halliday, M.A.: *Language as a Social Semiotic: the social interpretation of language and meaning*. University Park Press (1978)
16. Halliday, M.A., Matthiessen, C.M.: *An Introduction to Functional Grammar*, Third edition. Arnold, London, UK (2004)
17. Hasan, R.: Speaking with reference to context. In Ghadessy, M., ed.: *Text and Context in Functional Linguistics*. John Benjamins, Amsterdam (1999)
18. Halliday, M.A., Hasan, R.: *Language, Context, and Text: aspects of language in a social-semiotic perspective*. Deakin University Press, Geelong, Australia (1985)
19. Butt, D.: Multimodal representations of remote past and projected futures: from human origins to genetic counselling. In Amano, M.C., ed.: *Multimodality: towards the most efficient communications by humans*. 21<sup>st</sup> century COE Program International Conference Series NO. 6, Graduate school of letters, Nagoya University (2006)
20. Whorf, B.L.: *Language, Thought and Reality* (ed. J. Carroll). MIT Press, Cambridge, MA (1956)
21. Hasan, R.: Situation and the definition of genre. In Grimshaw, A., ed.: *What's going on here? Complementary Analysis of Professional Talk: volume 2 of the multiple analysis project*. Ablex, Norwood N.J. (1994)
22. Bødker, S., Andersen, P.B.: Complex mediation. *Journal of Human Computer Interaction* **20** (2005) 353–402

A.4.3 *Start making sense: Systemic functional linguistics and ambient intelligence*

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# Start Making Sense

## Systemic-Functional Linguistics and Ambient Intelligence

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*ABSTRACT. An operational model of context is particularly important for the successful integration of new technical artefacts into complex processes. One of the challenges for ambient intelligence is to embed technical artefacts into human work processes in such a way that they support the sense making processes of human actors instead of placing new burdens upon them. This paper examines some of the strengths and current limitations of a systemic functional model of context. We propose that the dimensions that are relevant to modeling are those that have the most consequences for meaning. This is explored in a hypothetical hospital scenario.*

*RÉSUMÉ. Un modèle opérationnel du contexte est particulièrement important pour une intégration réussie de nouveaux artefacts techniques dans des processus complexes. Un des challenges importants de l'intelligence diffuse est de permettre l'immersion des artefacts techniques dans les processus de travail humains de sorte que ces processus participent efficacement aux processus de production de sens des acteurs humains plutôt qu'être une source de surcharge cognitive. Ce papier examine certains des points forts et des limitations usuelles d'un modèle fonctionnel systémique du contexte. Nous suggérons que les dimensions pertinentes à modéliser sont celles qui sont le plus pertinentes pour la signification. Nous explorons cette idée sur un scénario d'hôpital hypothétique.*

*KEYWORDS: context modeling, semiotics, systemic-functional linguistics*

*MOTS-CLÉS : Modélisation du contexte, Sémiotique, Linguistique fonctionnelle systémique*

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## 1. Introduction

In order for an artefact to be considered intelligent, it is necessary that it exhibits intelligent behaviour. Typically what is meant by intelligent behaviour is behaviour that is contextually appropriate. In order to be able to respond appropriately to context it is necessary to be able to read and reason about context. Such an ability is tightly linked to reasoning and cognition (Leake, 1995). The development of intelligent behaviour in artefacts has come to be known as *ambient intelligence* (Ducatel *et al.*, 2001).

The successful creation of intelligent artefacts is enhanced by close examination of the socio-technical processes and their changes (through the use of mediating artefacts). This paper focuses on how a social-semiotic theory of language, in which context is seen as integral to understanding communication, can be usefully employed to create ambient intelligence – both in architectural aspects and in intelligent response aspects. Ambient intelligence and its requirements from semiotics are further discussed in section 2 below.

Semiotics<sup>1</sup>, which is anything viewed from the perspective of how it generates meaning (see section 4 below), can be helpful in understanding the use of artefacts and their role in a sense-making process. In this paper we use Systemic Functional Linguistics (SFL), which is a social semiotic approach. The relationship between semiotics and ambient intelligence is outlined in section 3 below. We discuss two ways in which semiotics can be useful, namely: in modelling multimodality<sup>2</sup> and in defining abstract concepts<sup>3</sup>. These will be discussed in section 5 below.

In exploring these issues, we draw on examples from the hospital domain. We refer to several existing projects, one of which is working towards the development of personal digital assistants (PDAs) for medical staff at a hospital. This project involves building devices that are capable of recognising information needed in a hospital environment and providing it. The other projects that we draw on for registerial knowledge of the hospital domain look at Medical Emergency Teams (MET), systemic safety in surgical care and treatment consultations with cancer patients<sup>4</sup>. What unifies these examples is the necessity for being able to recognize context and to respond appropriately. This leads to two questions: how do we identify a context? And how do we

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1. Semeion, originally peculiar to medicine and referring to inference on the basis of some outward manifestation of state (or signs). Hence the doctor does not require the patient to provide a diagnosis, but a set of signs (symptoms), which they, as the medical professional, interpret. It is this idea that is, according to Eco (1984), carried into our modern understanding of semiotics.

2. Literally, many ways of meaning. Referring here to the interaction between verbal and non-verbal meaning.

3. Here we refer to concepts that have no clear material basis and are thus accessible primarily through our linguistic system.

4. Please note that these projects are not discussed in this paper, but the contextual information gathered for these projects is drawn on to anticipate the likely behaviour in a ward round.

know what to do in a context? These questions and the hospital domain are further discussed in section 5 of the paper.

The hospital environment represented in these projects presents an ideal opportunity for examining the importance of semiotics, particularly the contextual concepts of *register* and *genre* as outlined by Halliday (1978) and Halliday *et al.* (1985). The significance of these ideas for understanding multimodality and abstract concepts is also discussed in section 5 of the paper. We conclude this paper by pointing to the potential for future work in this area. For example, while we have focused on devices designed to interact closely with a single user, humans typically interact in groups. Future research might consider the impact of this for environments where not all users share the same meaning system.

## 2. Ambient Intelligence

At the core of any ambient intelligent system lies its ability to take account of its environment, be aware of persons in this environment, and respond intelligently to their user's needs and behaviours. Kofod-Petersen *et al.* (2006) and Yau *et al.* (2002) have identified three main aspects necessary to realise the abilities of an ambient intelligent system: first, the initial act of *perceiving* the world that the system inhabits; second, being aware of the environment and reasoning about ongoing situations, (traditionally labelled *context awareness*); and third, exhibit appropriate behaviour in ongoing situations (often called being *context sensitive*).

What constitutes a context is typically defined by the activity taking place. In this paper, we are considering how intelligent devices can be integrated in the overall sense-making process during these activities. That is, we consider the communication processes between the different actors involved, whether human or artificial.

Intelligent computing devices, as additional actors, are construed against the backdrop of an existing social context. At the same time, like human actors, they bring their own history and abilities into this social context, thus re-construing the whole socio-technical process. If intelligent devices are to be useful in a given social context, we have to understand the interdependencies of these relations, and the ways in which intelligent devices can change and be integrated into the existing communication processes.

These devices will not simply observe, but will have to actively interact with other actors. The behaviour of the artefacts will change the situation, and these changes have to be meaningful and useful for the human actors if the integration of technical artefacts is to be successful. Therefore, we argue that for an ambient intelligent system to function, it must be able to reason about its own, as well as other's ongoing activities and communications. Ambient intelligence requires more than mere reactive systems. Deliberation and reasoning must play an important part, and this means understanding meaning making systems and how they are utilised in context.

### 3. Semiotics in Ambient Intelligence

Interaction is a process of exchanging and interpreting symbols referring to objects. The users of a computer system see their interaction with the system against this background. When typing a letter, a user does not send mere symbols, but signs to the computer, and the feedback from the machine, the pixels on the screen, is interpreted as signs: to the user, the computer is a semiotic machine. The question that arises is whether a computer is actually itself taking part in the sense-making process.

For philosophers such as Kant, human understanding has as a necessary constituent the ability to conceptualise perceived phenomena through an active, discursive process of making sense of the intuitive perception (Kant, 1787, p. 58). This poses problems for computer systems, which are signal processors and lack the necessary interpreting capabilities of humans. They manipulate symbols without conceptualising them. However, it can be argued that even mere signal processing units can appear as sign processors to the human if they sufficiently mimic human behaviour.

The pragmatist approach, by contrast, of Peirce and Dewey, avoids this question altogether by focusing not on whether the machine is itself a sense-maker, but on how the machines' use changes the ongoing socio-technical process. And whether it can mediate the sense-making process. From this perspective, the computer can be a sense-making agent if its actions are appropriate in terms of the user's expectations.

Both approaches change the issues we deal with when constructing an ambient intelligent system. The problem is transformed from one where the issue is to build a machine which itself realizes a sense making process to one in which the issue is to build a computer that displays actions appropriate to the context it is in and that exhibits sufficient sign processing behaviour.

We argue that, in order to make an ambient intelligent system that behaves intelligently in a context, it must be able to execute actions that make a difference to the overall sense making process in a given context.<sup>5</sup>

One important challenge here is posed by the features that allow the system to display its abilities. This can be described as a communication problem: the system has to interpret the actions of the user and perceived contextual information in a meaningful way and present results that make sense for the user. This process of sense-making is highly interactive: if an unclear situation occurs, an intelligent partner in a communication process asks (meaningful) questions and is able to explain its own actions. Therefore, it is desirable that the artefacts mimic some abilities usually ascribed to humans (e.g. explanatory capabilities). Contextually appropriate explanatory abilities are essentially a meaning-making phenomenon. This means that semiotics should

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5. Which differs from the interaction with traditional systems in which case the sense-making falls wholly on the side of the human user: You do not expect a text processor to understand your letter, but you expect an ambient intelligent system to display behaviour as if it understands relevant parts of the context you are in.

be well positioned to assist in understanding how such abilities can be introduced to artefacts.

#### 4. Semiotics

The intelligent artefacts that we consider in this paper are an integral part of social interaction. They change the sense-making process on the side of the human users as well as their own functioning as signs. Ideally, the artefact should be able to adapt to its use and user, and the means for this adaptation will have to be laid out by the designers through a process of understanding the semiosis. This is the domain of semiotics.

Semiotics is the study of sign systems. This means that in semiotics, we consider anything from the point of view of how it makes meaning (Hodge *et al.*, 1988). This includes, but is not exclusive to the material situational setting or what we might think of as the physical environment of the activity that is taking place. It is not our intention in this paper to review the body of work surrounding semiotics, though we are mindful of the impact of this work on the field today, in particular the work of Saussure (1966), Peirce (1904) and Voloshinov (1973). For a comprehensive account of semiotics as it is applied to computing we recommend works such as Gudwin *et al.* (2006) (in particular Andersen *et al.* (2006) and Clarke *et al.* (2006)) as well as de Souza (2005).

In this research, we have used the social semiotics outlined by Halliday (see for example Halliday (1978) and Halliday *et al.* (2004)). Halliday combines the strengths of the approaches of Saussure, Peirce, and Voloshinov. He brings together the tradition of relational thinking from Saussure, the understanding that different modalities have consequences for the structure of meanings from Peirce, and from Voloshinov, the insistence that the sign is social.

Halliday's Systemic Functional Theory of language (SFL) is a social semiotic theory that sets out from the assumption that humans are social beings that are inclined to interact (Halliday, 1978). In this paper we examine the value of the SFL notion of context, which views context as all the features of a social process relevant to making meaning. These features are organised into three core parameters of context: Field, Tenor and Mode, where **field** is "*the nature of the social activity...*", **tenor** is "*the nature of social relations...*", and **mode** is "*the nature of contact...*" (Hasan, 1999). Context, in SFL, is one of four linguistic levels (see below), which are related realizationally<sup>6</sup> rather than causally, meaning that patterns on one level both construe and construct patterns on another level. Halliday manages the complexity of language by modelling it as a multidimensional system. The most crucial dimensions of this multidimensional system for our purposes are: stratification and instantiation. We examine how these key notions of SFL make this model of context valuable for ambient intelligence.

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6. Realization is a dialectical relation of construal and construction. It is quite distinct from a rank scale relation or a causal relation.

**Stratification:** Halliday uses a stratified model of language that incorporates the levels of the expression plane (including sound systems – phonetics and phonology, gesture, pixels etc), lexicogrammar (lexis/grammar – or wording and structure), semantics (the meaning system) and context (culture and situation – elements of the social structure as they pertain to meaning). Description on each stratum is functionally organised into systems. All levels can be represented as networks of options with the networks rendering any degree of complexity by combining five primitives:

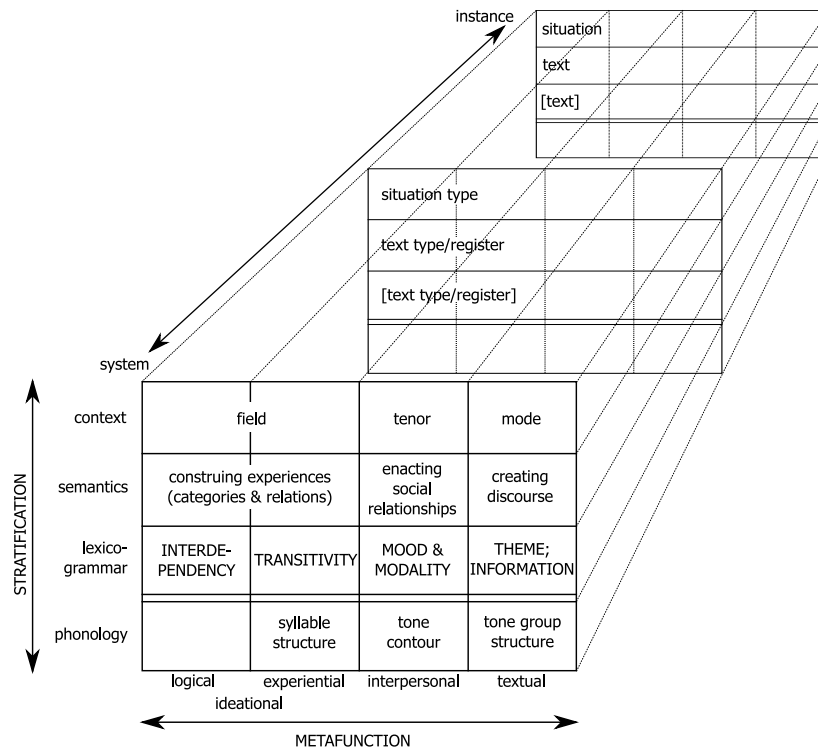
- **or:** option between X or Y
- **and:** option between X and Y
- **only if:** only if x and y
- **both:** both X and Y
- **iteration:** re-enter the system and choose over.

By building in values for probabilities we arrive at a weighted description that is customised to the ‘typical-actual’ of a given situation type (or register, see below). Individual situations, roles, or participants can be profiled by their pathways through the networks and/or by the ensemble of options across the levels that are most typically invoked (Halliday *et al.*, 2004).

**Instantiation:** Halliday uses a tripartite representation of language, which has language as system, language as behaviour and language as knowledge. Language as system encapsulates the abstract structure of language. This accounts for the regularised (though changeable) patterning that we see in language. It is this regularity that makes prediction and a certain degree of formalism (at least of a functional nature) possible. Language as behaviour looks at the activity of language, while language as knowledge looks at the way in which we know language. But these are not independent. We do not know language as a set of abstract rules. Rather we know language in the sense of knowing how to use it, in the sense of knowing how to communicate with others (Halliday, 1978). In practice these things occur together. When we try to build a device, we are faced with language behaviour and knowledge; yet to produce intelligent seeming behaviours and knowledge in the device it is the seemingly inaccessible system that we need to encode.

The concept that encapsulates this problem is what Halliday calls the cline of instantiation. This is a way of looking at the relationship between System (which at the level of context means the culture) and Instance (which at the level of context means the situation that we are in). This is represented in figure 1. Here we see in the foreground the system view of language, and its grounding in the instance.

Instances that share a similar function, e.g. instances of ward rounds in hospitals, typically share a similar structure. Halliday refers to these situation types as *registers* and they represent a functional variety of language (Halliday *et al.*, 2004). The value of register is that we do not have to describe everything. Register can be thought of as an aperture on the culture. Thus, we are not faced with the full complexity of the culture. This does not mean that we do not keep the culture in mind. Any picture of



**Figure 1.** *The dimensions of language – Halliday and Matthiessen*

a part of the system necessarily has the full system behind it. With register we set out from the instance, but keep in mind that each instance is a snap shot of the system. Our understanding of the culture/system shapes our notion of what constitutes an instance. So, although Halliday represents the relationship between system and instance as a cline of instantiation, it is probably best understood as dialectic in relationship since the two are never actually possible without each other. Register does not so much sit between system and instance, as it is a take on system and instance at the one time. It is the culture brought to bear on the instance of the social process.

For ambient intelligence, this means that we are not faced with the unhelpful uniqueness of each instance, because we are viewing it through the system and therefore foregrounding the shared aspects. Neither are we confronted with the seemingly impossible task of transcribing the infinity of culture, because we are viewing the culture through the aperture of the instance.

Our elaboration of the linguistic theory is detailed since we are, as we shall see, looking at ensemble effects. Hence, it is not just one or two areas of the theory that are relevant. All aspects work together to produce the results. Previously we stated that

for a device to be considered intelligent it must be able to recognise what context it is in and be able to respond appropriately. So we are faced with the challenge of building devices that are capable of recognising the context in which they function, not by client rule definition, but by sensing the environment and making logical assumptions on the basis of this information. The challenge here is twofold. Firstly, how do we identify a context? And given that we are able to identify a context, how do we know what behaviour is appropriate in that context?

The identification of a context will not be on the basis of a single feature alone, rather, it will be an ensemble of features. Not all of these features will be equally valuable in this determination of the context and the establishment of contextually appropriate behaviour. The features will be weighted for their significance. So for example the physical setting may be heavily weighted in some contexts but not others. Likewise, not all forms of behaviour are equally likely. There is a probabilistic distribution of likely behaviour in any given context (Hasan, 1996).

## 5. Exemplum: Hospitals as a site of complexity in signs

Hospitals are an important institutional setting with many layers of complexity. The different kinds of transactions around hospitals produce a large range of registers/sub-registers or styles of talk and writing which vary according to the social action being achieved. In an environment which seems so dominated by material and physical outcomes, a semiotic approach to context prioritises the fact that hospitals are a network of intense symbolic traffic.

To bring out these dimensions of the context as they pertain to the single register of 'ward rounds' we begin with a study by Cassens *et al.* (2006) which itself exemplifies a systematic, ethnographic enquiry, though not prioritising the semantic and semiotic values of the environment<sup>7</sup>. The data in Cassens *et al.* (2006) was collected in the cardiology and gastroenterology wards at St. Olavs Hospital in Trondheim, Norway. A medical student used a specially designed form to capture the following aspects:

- **Location:** The room where the situation occurred
- **User:** The user of the system
- **Role:** The role of the user
- **Present:** Other persons present
- **Role:** The role of each of the persons present
- **Patient:** The ID of the patient in question
- **Time:** The time of day
- **Source:** Information sources and targets

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7. Recall here that 'semantic' can be used to specify meaning through wording. 'Semiotic' encompasses meanings from any source including wordings, diagrams, gesture, location, or even our ability to infer the purpose of a location from the configuration of furniture.



- **I/O:** The direction of the information flow
- **Information:** Type of information

The situations represented in the cardiology ward are presented in the Table 1 (from (Cassens *et al.*, 2006)).

**Table 1.** *Distribution of observed data for cardiology*

Situation	AL7	AL9	AL14	OL9	$\sum$
Situation	AL7	AL9	AL14	OL9	Sum
Pre pre ward	5				5
Pre ward round	7	22	11	26	66
Ward round	7	21	11	26	65
Examination		8	2	9	19
Post work		8	9	13	30
Pre discharge			2	4	6
Heart meeting		1		1	2
Discharge meeting				4	4

Eight different types of situations have been identified in the data set. Four different physicians were observed, where three were assistant physicians (AL7, AL9, and AL14) and one was a consultant physician (OL9). Beside these, several nurses, patients, and relatives were present in different situations. Of these situations, we focus on how the ward round situation might look from a semiotic perspective. We are primarily concerned with methodological issues in this paper and do not address the more technical aspects of collecting and fusing sensory information.

### 5.1. Multimodality

When we enter a new context, we establish that it is a new context by taking account of the environment. We consider the space we are in, the activities going on, the people that are involved and how they interact with each other as well as the different modes of communication being used.

In SFL, all these categories are turned towards their semantic consequences. While location may have a bearing on the context, location alone does not define the activity going on. For example, consider the hospital ward scenario. Here, the notion of a ‘ward’ spills out into hallways and other available spaces. A doctor may conduct part of a ward round in a hallway if beds are positioned in the hallway, or, more typically, in a wardroom. This difference in setting will have implications for the way the activity might play out.

The baseline “material situational setting” needs to be distinguished from the social process or context because the social process (‘ward round’) is not halted by taking place in a hallway. Context is much more than the setting alone. It is the semantic con-

sequence that is important. Understanding of a context, then, is multimodal. This multimodality enhances the probability of accurately predicting a context. Multimodality, or meaning making through many different modes, is a feature of human communication. When humans communicate, there is a redundancy in the signal process. Human actors working together to solve a specific goal communicate their intentions and understanding of the situation by different means. In addition to verbal communication, they will use a variety of ancillary modes, such as gesture, manuals, books, diagrams or computerised media. These redundancies are a feature of realizational systems. Meaning in such systems is distributed throughout the system. An intelligent seeming artefact will need to replicate this redundancy in both the recognition of and response to context.

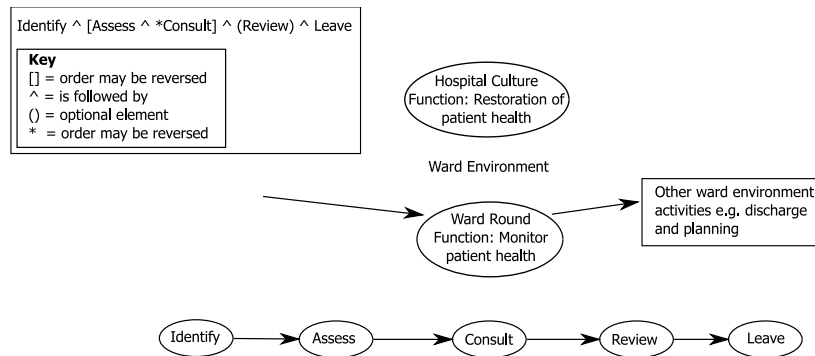
If the setting alone does not define the context, then we need to consider other aspects of the context. If a patient examination is taking place in a hallway, the setting does not support the activity of examination in the same way that a wardroom might. A hallway for example, is designed to promote the flow of traffic and is not coded for conducting a patient examination. It is much more likely that a ward round examination will be interrupted when it takes place in a hallway than when it takes place in a wardroom simply because a hallway has a flow of traffic. Here negotiation of context is pushed onto other aspects of the context such as the activity taking place, the relation of the people involved and the role of language in the activity.

## **5.2. *Establishing a Generic Structure Potential***

Research suggests that if the material setting is an institutional setting it is possible to state a Generic Structure Potential (GSP) (Hasan, 1996). Institutional settings are here defined as situations that are multiply (multimodally) coded for context, that have convergent coding and where language is typically ancillary to the task at hand (an activity driven context). The GSP is an abstraction that represents the “total range of textual structures available within a genre” (Hasan, 1996).

The ward round can be considered an institutional context that is defined by the culture prior to any specific instance that might take place. This means that it should be possible to state the GSP for this situation and show the way in which instances vary in their take-up of this structure. As Hasan (1996, p. 52) suggests, “the factors which motivate the structure are opaque” but they can be said to be generally functional with respect to the culture. Although it would typically be made on the basis of examination of many instances, the cultural motivation for the structure of a ward round and its resultant structure is represented in figure 2.

This statement of the structure or sequence of a context is useful in understanding what behaviour is likely at each phase of the context. It allows us to be better able to predict, since meaning will be specific to the culture, the situation and the phase of the situation. The value of this is explored in the section below by looking at how



**Figure 2.** *The Generic Structure Potential for a ward round*

the abstract concept of emergency might vary in its meaning and hence, the response required.

### 5.3. Abstract Concepts

Abstraction, or the ability to create a more general category from a set of specifics is arguably one of the most useful mental tools that humans possess (Butt, 2006). Useful though this capacity is, it presents an interesting challenge for ambient intelligence. When confronted with an abstract category, it is not necessarily immediately apparent for human users by what means abstraction has been made. Indeed Whorf (1956) suggests that abstract categories such as these and the many others that form part of our everyday life and language, are typically below conscious attention and only become apparent through linguistic analysis. How then can artefacts have an understanding of what these abstract concepts<sup>8</sup> ‘mean’?

Consider the example of the hospital ward. In the hospital environment, ‘emergency’ has a specific meaning that is distinct from the meaning in other contexts. Not only is there a hospital specific meaning (culture specific), but the meaning varies according to the situation as well (situation specific). To function intelligently in context, artefacts must be able to recognise ‘emergency’ and respond appropriately. They may need, for example, to “be quiet” while the doctor deals with an ‘emergency’ or they may need to “provide new information” needed by the doctor in an ‘emergency’.

To account for these complexities, a rich, but targeted, description of the culture is needed. To do this we will use the notions of register and generic structure potential (Hasan, 1994) and a contextual model of language. In order to establish what

8. Recall that abstract concepts refers here to concepts that have no direct foundation in the material setting.

emergency means in this context we need to see its place in the system. That means we need to understand how it fits in the hospital culture. Understanding the richness of the culture is part of adequately embedding a device into that culture. Not doing so runs the risk of producing an artefact unsuited to its purpose. Part of what makes something (appear) intelligent is the ability to read and respond to the context. Context here is not just the immediate setting of the artefacts, or the context of situation, but the culture of which that setting is a part.

Consider the meaning of 'emergency' for a ward round. The notion of a ward round is itself a functional abstraction<sup>9</sup> of all the behaviours, relations, and communications that go into completing a ward round. We are able to recognise from experience that certain behaviours by different participants, combined with certain roles and relations (e.g. ward doctor, ward nurse, patient, specialist) combined with the exchange of certain types of information (receiving information, requesting information, giving information) together constitute a ward round. None of these behaviours, relations or communications on their own constitutes a ward round, indeed, they are each necessary parts of other hospital functions as well. The ward round is identified by all of these things together. By studying many instances we arrive at a 'typical', or a generic structure potential for a ward round. A generic structure does not mean that there will not be variation.

In order to make artefacts capable of dealing with change, ward rounds must also be seen from the perspective of how they fit into the hospital culture. They are a part of the function of the hospital, which can be said to be the restoration of health. The function of ward rounds in the hospital culture is to monitor health. Because it has a 'monitoring' function within the hospital culture, the ward round will be able to be interrupted by 'emergencies' from the wider hospital.

By building up a picture not only of what a ward round is, but also of how it fits into the broader hospital culture, we are better able to see its function, and thus what the meaning of 'emergency' is likely to be in this situation. There are two broad categories of emergency: those constituting an interruption to the ward round (when the hospital culture impinges on the ward round) and those constituting a change to the ward round (when there is internal variation in the ward round context). Because the first involves changes to the **field** (a new topic, ward, and focus), **tenor** (very different participants and role relations), it is likely to require a "new information response". This is because the field, tenor and mode settings have changed so much that it is now a new context and will thus require different information to suit this new context. The second will not involve changes to the **mode** or **tenor**, and only minor changes to the **field**. Thus it is likely to require a "be quiet and await query" response. This is because this is not a new context, it is simply variation within the structure of the ward round.

This distinction can be made clearer if we consider the semiotic profile of the ward round as it is partially illustrated in figure 3. While engaged in a ward round, as with

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9. Here used to refer to the means by which abstraction is made, i.e. by considering the function of the behaviour.

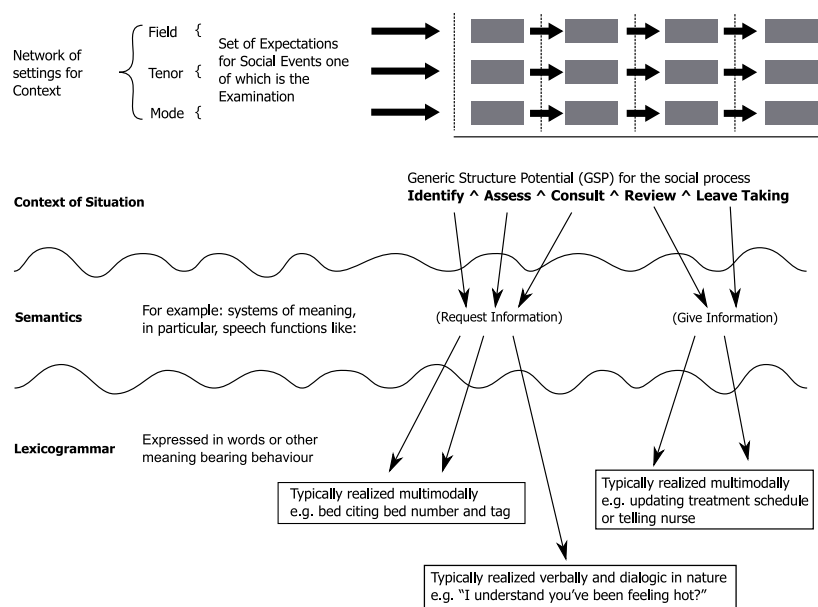
any other hospital activity, information will be received from the wider hospital culture. Much of this information will be ignored or at least filtered out, for example hospital public address systems or patient alarms or bells. Personal pagers however will generally be attended to. If there is a pager call stating that ward 3 room 2 bed 1 is in cardiac arrest, this will constitute an emergency. This meaning of emergency will not share any of the elements of structure with a ward round apart from identify (something that is clear from the pager message). Signs indicating emergencies of this kind will come from outside the immediate environment and hence typically through a mediated mode. The response required here from the device is to seek new information because every part of the context is changing except the user of the device.

By contrast, if during the assess or consult phase it is noticed that vital statistics are abnormal (reading numeric signs and interpreting them), that the patient is not responding to discourse (reading bodily indexical signs), and that they are reported as being critical by other staff or even family members (reading symbolic signs) this will constitute an emergency. Even though the physical event may be the same, a patient going into cardiac arrest, the response required is quite different. In this case, the participants remain the same, the general structure remains the same (although it will have an extra element – administer treatment) and the mode of communication is the same. This will cause variation to the structure of the ward round, but it will not change it dramatically. Sensing this as an emergency may be much more difficult for a device, but it is important that it be able to as the response is quite different. If we look down to the semantics, the meanings will very quickly change to a mix of requesting information and requesting goods and services. Goods and services is not something that the device will be able to provide. It is designed to convey information, not to revive a patient. Hence, the required response is to await specific queries from medical staff.

We can see then, that contexts can be described in terms of chain and choice since every element in the chain bestows different values or choices. When chain and choice are aligned across the different levels (strata) of context, semantics, lexis and grammar (lexicogrammar). This produces a semiotic profile.

In this cross stratal profile, meaningful patterns of chaining (sequence) and of choice (element) can be established on a number of levels: context, semantics, lexicogrammar and expression (phonology/graphology). It is crucial that patterns of different levels of abstraction are not conflated, but are viewed as linked by realization. This brings out the fact that a parameter in the context can be signalled by a number of utterances in words and grammar because, despite the differences in the wording, the utterances all have similar semantic “values” for that context. What is crucial is the value that something holds in the unfolding of an activity.

A semiotic model permits us to select and narrow down the task to the specific conditions of a context and its meaning requirements (its register), while still achieving a very high degree of discriminations in its detail. This comes about because of the stratification and the networks (or maps of choices), which allow the model to focus on the typical pathways those sequences of choices that reflect the probabilities



**Figure 3.** *A semiotic profile for a ward round*

defining the register. Variation in language is principled and systemic. A semiotic approach tries to be as explicit as possible about the relevant systems and the probabilities with which certain patterns of choice can be associated with particular points in the unfolding of the context.

## 6. Conclusion and further work

In this paper we have considered two of several ways that semiotics can be made fruitful in ambient intelligence. We have discussed how the notion of multimodality of signs can be utilised to define several channels through which information can be delivered to the user. We have further outlined how the notion of abstract concepts and the use of the analytical tool of register can help us to avoid an Althusserian trap of the last instance (Althusser, 1962) in our modelling efforts.

Systemic Functional Linguistics offers a unified approach to many of the issues in ambient intelligence. The value of SFL is its stratification of the language system and its relation of this system to the instance through instantiation. Stratification means that patterning is allocated to different levels. This is important because it makes explicit the relationship between different types of patterning. When we hear or see something as inappropriate, aggressive, moving or pleasing we are relating patterning across lexicogrammar, semantics and context. This is useful because it allows us

to establish exactly what constitutes contextually appropriate behaviour in any given context.

The SFL notion of instantiation, particularly as it informs concepts such as register allows us to consider what is shared between contexts while keeping in mind that each instance is a unique take on the system. For this notion to be truly valuable, we suggest the creation of a shared database of metadata in the form of linguistic analysis. This would provide researchers with the potential to search for the typical patternings of contexts which match their own and find the probability of certain meanings or wordings in a given context. This is important because it foregrounds the predictive nature of social interaction. Being able to predict (to a greater or lesser degree) the typical behaviour in a context is useful for producing contextually appropriate behaviour in artefacts. Here we have only laid out the process by which such prediction is made, not the final results that would be produced in such a study. To do this we would need to see actual examples of the context.

### 6.1. *Future Investigation*

While we have focused on the individual, it should be remembered that the sign making process is a negotiated process, and as such, it is not simply one actor who has to be considered. In any exchange there are always at least two actors and typically more than two. Multiparticipant communication represents a challenge to modelling since others may share our conceptualisations and meanings only to a certain extent. The closer a person is in our social network the more likely they are to share our meanings, while the further out in our social network the less likely they are to share meanings. In the hospital environment, ambient intelligent devices can belong to and link different groups of users.

It may prove beneficial to consider whether we should assume similarity on the basis of institutional role, (and hence model the assistant of a nurse as more likely to share concepts with the assistant of another nurse than that of a physician) or whether we need to consider the effect of social distance as well (where staff who work together on a regular basis might have more in common regardless of role). It might be useful here to consider the relation of the system to its user and to other pervasive devices and to their users. If ambient intelligent systems are used to link people then we need to consider how they can best utilise signs to do this. This issue becomes very important when health care professionals from different cultural and language backgrounds have to interact.

Another issue we would like to explore further is the extent to which it is possible to relate a semiotic approach to other socio-technical theories already in use in the field of ambient intelligence such as activity theory. Bødker *et al.* (2005) have outlined some properties of a socio-technical approach taking advantage of ideas from both theoretical frameworks, and we would like to extend this to cover specific aspects of SFL and Cultural-Historical Activity Theory (CHAT). Similarly, we would like to consider

the relation of concepts from SFL with specific methods from the field of artificial intelligence. It would appear on initial observation that the notion of generic structure potential in SFL might be useful for knowledge poor lazy learning mechanisms, while the descriptive power of register might be exploitable in knowledge intensive or ontology based approaches. Knowledge-intensive case-based reasoning may prove beneficial in combining these aspects.

## 6.2. Acknowledgements

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## 7. References

- Althusser L., "Contradiction and Overdetermination", *For Marx*, Penguin Press, 1962.
- Andersen P. B., Brynskov M., "The Semiotics of Smart Appliances and Pervasive Computing", in *Semiotics and Intelligent Systems Development* (Gudwin *et al.*, 2006), p. 211-255, 2006.
- Bødker S., Andersen P. B., "Complex Mediation", *Journal of Human Computer Interaction*, vol. 20, n° 4, p. 353-402, 2005.
- Butt D., "Multimodal Representations of Remote Past and Projected Futures: from human origins to genetic counselling", in M.-C. Amano (ed.), *Multimodality: towards the most efficient communications by humans. 21<sup>st</sup> century COE Program International Conference Series NO. 6*, Graduate school of letters, Nagoya University, 2006.
- Cassens J., Kofod-Petersen A., "Using Activity Theory to Model Context Awareness: a Qualitative Case Study", in G. C. J. Sutcliffe, R. G. Goebel (eds), *Proceedings of the 19<sup>th</sup> International Florida Artificial Intelligence Research Society Conference*, AAAI Press, Melbourne Beach, p. 619-624, 2006.
- Clarke R., Ghose A., Krishna A., "Systemic Semiotics as a Basis for an Agent Oriented Conceptual Modeling Methodology", in *Semiotics and Intelligent Systems Development* (Gudwin *et al.*, 2006), p. 256-285, 2006.
- de Souza C. S., *The Semiotic Engineering of Human-Computer Interaction (Acting with Technology)*, The MIT Press, 2005. QA76.9.H85 .D465 2005.
- Ducatel K., Bogdanowicz M., Scapolo F., Leijten J., Burgelman J.-C., ISTAG Scenarios for Ambient Intelligence in 2010, Technical report, IST Advisory Group, 2001.
- Eco U., *Semiotics and the philosophy of language*, Indiana University Press, 1984.
- Gudwin R., Queiroz J., *Semiotics and Intelligent Systems Development*, IGI Publishing, Hershey, PA, USA, 2006.
- Halliday M. A., *Language as a Social Semiotic: the social interpretation of language and meaning*, University Park Press, 1978.
- Halliday M. A., Hasan R., *Language, Context, and Text: aspects of language in a social-semiotic perspective*, Deakin University Press, Geelong, Australia, 1985.



- Halliday M. A., Matthiessen C. M., *An Introduction to Functional Grammar, Third edition*, Arnold, London, UK, 2004.
- Hasan R., “Situation and the definition of genre”, in A. Grimshaw (ed.), *What’s going on here? Complementary Analysis of Professional Talk: volume 2 of the multiple analysis project*, Ablex, Norwood N.J., 1994.
- Hasan R., “The nursery tale as a genre”, in C. Cloran, D. G. Butt, G. Williams (eds), *Ways of Saying, Ways of Meaning: Selected papers of Ruqaiya Hasan*, Cassell, London, 1996.
- Hasan R., “Speaking with Reference to context”, in M. Ghadessy (ed.), *Text and Context in Functional Linguistics*, John Benjamins, Amsterdam, 1999.
- Hodge R., Kress G., *Social Semiotics*, Cornell, UK, 1988.
- Kant I., *Kritik der reinen Vernunft (2. Auflage)*, Akademie, 1787.
- Kofod-Petersen A., Aamodt A., “Contextualised Ambient Intelligence through Case-Based Reasoning”, in T. R. Roth-Berghofer, M. H. Göker, H. A. Güvenir (eds), *Proceedings of the Eighth European Conference on Case-Based Reasoning (ECCBR 2006)*, vol. 4106 of *Lecture Notes in Computer Science*, Springer, Berlin, p. 211-225, September, 2006.
- Leake D. B., “Goal-Based Explanation Evaluation”, *Goal-Driven Learning*, MIT Press, Cambridge, p. 251-285, 1995.
- Peirce C. S., “New Elements (Kaina Stoicheia)”, in C. Eisele (ed.), *The New Elements of Mathematics by Charles S. Peirce*, vol. 4, Mathematical Philosophy, p. 235-263, 1904.
- Saussure F. d., *Course in General Linguistics*, McGraw-Hill, 1966.
- Voloshinov V. N., *Marxism and the Philosophy of language*, Seminar Press, New York, 1973.
- Whorf B. L., *Language, Thought and Reality (ed. J. Carroll)*, MIT Press, Cambridge, MA, 1956.
- Yau S. S., Wang Y., Karim F., “Development of Situation-Aware Application Software for Ubiquitous Computing Environments”, *29<sup>th</sup> Annual International Computer Software and Applications Conference (COMPSAC’02)*, vol. 1, IEEE Computer Society, Edinburgh, Scotland, p. 107-112, July, 2002.

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# Closed Doors – Modelling Intention in Behavioural Interfaces

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## Abstract

Truly smart systems need to interface with the behaviour of human and non human actors in their surroundings. Systems with such interfaces could prove beneficial in supporting those with non standard communication practices, the elderly living alone, people with disabilities, and many others. While the benefits are clear, the means of achieving true behavioural interfaces are yet unclear. In this paper we outline how semiotics helps us to understand behaviour. We show how such an approach may be put to use in modelling the intention to walk through a door. We begin by outlining the semiotic approach and then discuss the behaviours which need to be described to model intention. We also discuss how this varies according to context and suggest the potential for a more general model of behaviour.

## 1 Introduction

The emergence of research areas such as *ubiquitous computing* [1], *pervasive computing* [2], *ambient intelligence* [3], and most recently *everywhere computing* [4]<sup>1</sup> has given artificial intelligence methods and techniques a renaissance. While the goal of such areas of study is often to build intelligent artefacts that approximate human behaviour, the underlying processes which characterise human behaviour are often ignored. Instead, many ambient intelligence scenarios assume a lot of common-sense reasoning and elaborate problem-solving where the particularities are either ignored or just assumed as a black-box.

To realise the abilities of an ambient intelligent system, three main areas of responsibility can be identified [5]: first, the initial responsibility of perceiving the world that the system inhabits; second, the responsibility of being aware of the environment and reason about ongoing situations, which traditionally has been labelled as *context-awareness*; and third, exhibit appropriate behaviour in ongoing situations by being *context-sensitive* [5, 6].

The ability of being context-aware, and in a broader sense, *situation-aware* [7], is arguably the most important aspect of these systems. Without an assessment of

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<sup>1</sup>Although all these terms can be viewed as synonyms, a particular term typically indicates a particular perspective, e.g., a physically distributed system perspective vs. a functional-oriented service perspective. The term ambient intelligence will be used consistently throughout this text.

an ongoing situation the ability to assist in implicit or explicit problem-solving by an ambient intelligent system is hardly possible.

As ambient intelligent systems are characterised by being able to perceive their environments, be aware of the presence of people and other agents, interpret their own role in that context, and respond intelligently to one or more agents' needs [8], the intentions of human partners in ambient systems are of utmost importance. However, very often human behaviour is left out of the equation and reduced to a single correlation that is taken to be a causality. For example, with automatic doors, being within a certain defined proximity to a door is taken to imply the intention of going through the door. While this is often a good approximation and will work well in most instances, it does not explain the relationship between the behaviour and the intention. Understanding human behaviour is important for creating intelligent artefacts that are able to understand behaviour across contexts.

Interpretation of human intention is by no means an easy task. Interpretation is based on the reading and understanding of human behaviour and includes gesture and facial expression. However, these are highly complex and meaning here often emerges from an ensemble of a great many different elements. Not only does assessing human intention include many technical challenges with regard to sensing human behaviour, it also poses interesting challenges when modelling. Modelling behaviour of this complexity relies on establishing some crucial boundary conditions and parameters. The work presented here approaches modelling of human behaviour by employing a semiotics perspective, in particular a Systemic Functional Linguistic approach to semiotics.

## **2 Motivation: modelling space and behaviour as meaningful by using semiotics**

Humans can be considered to be social beings who are inclined to interact. As such, most people, regardless of intellectual ability will acquire some form of symbolic-linguistic communication [9, p. 411]. As Bateson [10, p. 244] asserts, all biological systems are capable of adaptive change, which takes many forms according to the size and complexity of the system under consideration. It may be that the prime means of communication in humans, as in other primates, is behaviour, and in the absence of verbal communication, individuals will adapt and find new ways to communicate in a given context, often relying more heavily on behaviour.

In situations where verbal communication is not possible behaviours will often be read as meaning bearing and made to carry a significantly greater portion of the meaning load<sup>2</sup>. Situations where this is more likely include group homes for people with disabilities, communicating with people with a disability who exhibit challenging behaviour, and independent living for the aged, although many other situations meet these criteria. Behaviours such as our daily routines, movements, gestures, facial expressions and posture may all carry crucial information that can help provide a safer living environment and facilitate communication.

Communication is here defined broadly as the making of meaning within a social context. Clearly in contexts where natural language is not an option or is ineffectual, individuals will use other resources to convey meaning. This is particularly the

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<sup>2</sup>Meaning load here refers to the amount of work a modality has to do in a context e.g. the written mode in a book carries the entire meaning load compared with a lecture where the written mode carries a much lighter load.

case for individuals with severe intellectual disabilities and poor language ability. All behaviour has a semantic orientation and although behaviours differ in their consequences and intent, they all carry meaning. As such, they can be studied using approaches such as Systemic Functional Linguistics [11, 12, 13] which, by already including behaviour as a potential meaning making option, can combine behaviour with other modes of communicating such as verbal or signed language, space, architecture and written text to name but a few<sup>3</sup>.

## Semiotic foundations: Systemic Functional Linguistics

Systemic functional linguistics is a social semiotic approach to meaning making that sets out from the assumption that all behaviour is potentially meaning bearing and can be treated as communicative [14]. Taking a functional perspective on language, SFL arranges the resources of language around three broad functions or metafunctions: experiential, interpersonal and textual. We focus here on the interpersonal resources of behaviour because we are interested in how we use behaviour to engage others. It also has a stratified approach to language and thus divides description into layers of abstraction including the expression plane (phonetics), phonology, lexicogrammar, semantics and context. Context in this approach can be defined as what is necessary to understand what is going on and has been treated as a triple of *Field*, *Tenor* and *Mode* [13]. *Field* refers to what is going on, *Tenor* to who is involved and how they are related and *Mode* to the organisation of the interaction [13].

If we think of semantics as meaning potential or “what the person can mean” [14, p.72], then it is possible to see behaviour as semantic since there is a set of behaviours that are at the disposal of the individual within a particular context. While this patterning is specific to the individual and the social context, there is a limit to how truly individual it can be in most social contexts if the intention is to share meaning. After all, to share meaning you must share the code. This means that it should be possible to model the meaning potential available in a particular context.

Because communicating is multimodal, the internal state of an individual's intention will not always be signalled entirely by behaviour in any given social context. Signs occur with other signs and behaviours work together in patterns to create meaning in a specific context in much the same way that the rhetorical device of metonymy<sup>4</sup> works in a text [13, p. 10]. The task in modelling intention in any situational setting is to find the behaviours or patterns of behaviours which carry the most significant meaning in the context.

Firkins [15] sets out some of the challenges for an analyst treating behaviour as meaning bearing. Firstly, behaviour needs to be seen as part of the interaction that is occurring (a dialogue). Secondly, analysis needs to build on the assumption that the interaction will be multimodal with the relative contributions of linguistic and behavioural forms of expression being context dependent. Thirdly, the boundary conditions for analysis need to be defined, suggesting that the interaction must have some form of cohesion which binds it together. Finally, analysis needs to consider the behaviour as being goal directed and therefore aimed at impacting on other

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<sup>3</sup>Although the theory leaves space for the integration of these modalities this does not imply that the modalities themselves have been theorised or that their integration is without problems.

<sup>4</sup>Calling something not by its own name, but by the name of something associated.

participants involved in the interaction.

While it is difficult to find theoretical accounts which have succeeded in addressing all these concerns, several useful models have emerged which provide a strong basis for developing analysis of behaviour. One such model is established by Martinec [16]. Martinec suggests that behaviour has many of the same functional foundations as language and can thus be treated in much the same way. The value of this is that it can then be mapped into a more complete model of semiosis which includes other modalities providing a common metalanguage or ontology between different modes of communication.

In researching behaviour during surgery, Moore [17] adapted Martinec's [16] model to account for some of the variability that occurs in such settings. He suggests that certain measures of body alignment and proximity, together with visual target, can be taken to realise certain interpersonal meanings, specifically, various levels of engagement. These meanings Moore suggests, are context dependent and the values which signal meanings in one context will not necessarily be the ones which signal the same meanings in another context. However, variation does not mean that there is random variation, on the contrary, the contextual variability is highly predictable and it is this predictability that makes it useful for the current study.

## Modelling behaviour in Context

How behaviour creates meaning and how we assign meanings to behavioural acts of expression is significantly related to situation and context. Meaning is constituted in the interaction between the behavioural sign and its function within a context. The context is not simply the environment of use; it contains the factors essential to the interpretation of meaning. Essentially each social context potentially presents opportunities for interactants to use both language and behaviour to create meaning. It is therefore important to see expressive action as part of context and not as the product or effect of context. The behaviour sign only has meaning through its interaction with context. We can only assign meaning to behaviour through its interaction with the context in which it is embedded. If we are to find meaning in behaviour we primarily look to the dynamic relationship between the unfolding interaction and the context. Context goes beyond simply the immediate antecedents of the behaviour or the consequence.

We assign meaning to behaviour through observing closely the *Field*, *Tenor* and *Mode* of the behaviour in interaction. Hasan [18] argues that these elements of context are applicable for all interactions and cannot be ignored by the Interactants.

Schegloff [19] suggests for each enquiry into interaction, we need to consider what represents relevant social context. In other words, what serves as context – whose orientation to context is the consequential and warrantable one for an analysis of meaning? Schegloff also asks a series of important questions relevant to the use of situation as a background to the interpretation of meaning, the connection between the sign and its interpretive situation [20]. Principally, how should we formulate context or setting that will allow:

1. to connect to the theme or social structure,
2. that will do so in a way that takes into account not only the demonstratable orientation of the participants

3. but will also allow us to make a direct ‘procedural’ connection between the context so formulated and what actually happens in the interaction and
4. to eliminate aspects that do not actually inform the production and grasp the details of its conduct [20, p. 112].

According to Schegloff we need to show the characterisation of setting or context in which the interaction is occurring and to demonstrate how this is relevant for the parties. By showing how that aspect is demonstrably relevant to the parties we are able to see how it may therefore be procedurally consequential to the interpretation of meaning. What aspects of context and situation adds to an understanding of how the interaction proceeded in the way it did and came to have the trajectory that it ended up having [20].

### 3 Modelling intention: automatic sliding doors

When you watch Star Trek you will notice that the doors on the Enterprise are automatic and open whenever somebody wants to go through them. The scene which caught our attention showed the first Officer, William Riker, walking towards the door but turn in response to a question from Captain Picard and then stand and talk within a proximity that would otherwise have triggered the doors to open. Even though the first officer was “near to the doors”, they did not open until after the conversation had ended and Riker showed some intention of going through the door. The crucial point to note here is “intention to go through the door”. The doors do not open and close simply on the basis of proximity as is typically the case. There is an important difference between activating simply because “he is near the door” and activating because “he is near the door and wishing to go through it”.

Intention is something which is dynamic and emergent from interaction rather than a static and predetermined feature of interaction, thus, intention can be considered context sensitive. Because of this, we have not attempted to model intention as a general or context free concept, rather, we have modeled it as dependent on the context. As such, we are modelling intention to walk through a door rather than intention in general. We suggest that the model of intention set out here may be generalisable to contextually similar situations such as waiting for a bus or train or engaging in an interaction or sales encounter.

The test case of automatic sliding doors was chosen specifically because of its rather restricted behavioural set and because the link between behaviour, intention and outcome is much clearer and simpler than in other typical, but more complex situations. The doors either open appropriately or they do not. Despite the possible energy saving benefits of having doors respond to intention, we are in no way suggesting that automatic doors should respond to intention. On the contrary, the volume of people using automatic doors based on proximity daily without much of a problem suggests that using proximity is a good approximation of intention to go through a door. In fact, it might very well be argued that standing in a doorway to have a conversation is a dis-preferred choice and one which doors opening might discourage. This response could even be construed as the physical space interacting with humans to shape their behaviour.

Intention to walk through a door has been chosen as a means of testing the viability of coding behaviour in such a way that it means something for machines as

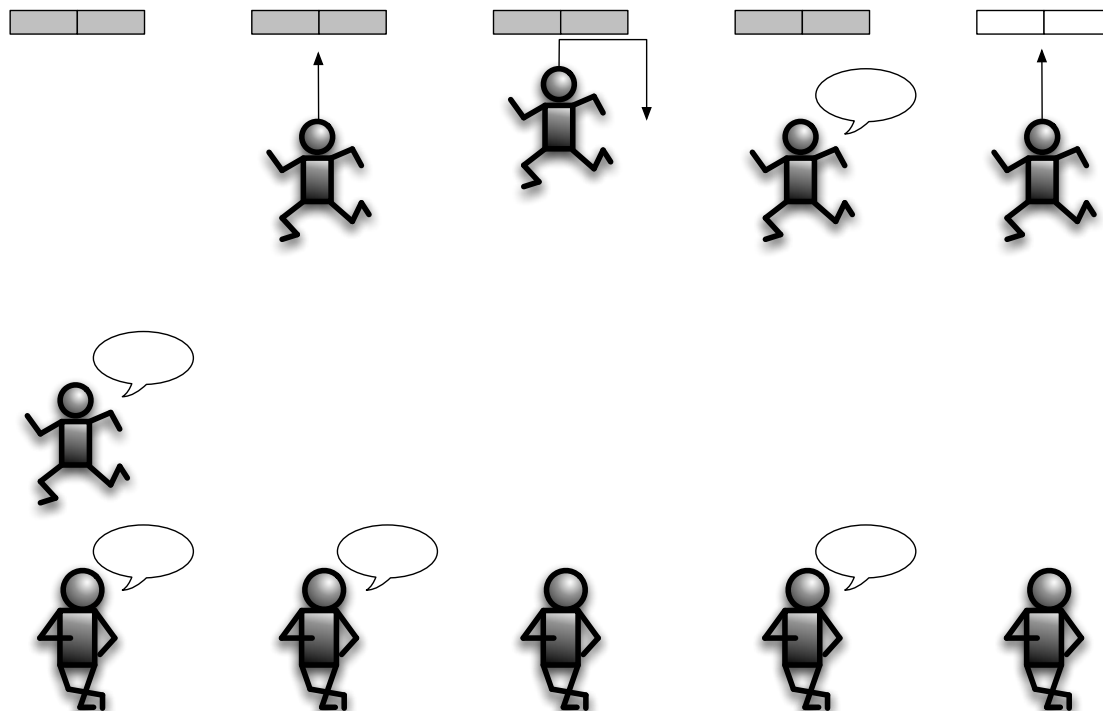


Figure 1: Riker, Picard and a door

well as humans. Compared to other forms of human behaviour the behaviours associated with showing intention to walk through a door are relatively coarse grained and emerge from very few behavioural features which allow us to test the model without having to control too many elements. In the section below we compare the behaviour of people walking through a door with that of people standing near a door and talking or waiting in order to distinguish the behaviours which signal intention to walk through a door.

Drawing on Moore's [17] adaptation of Martinec [16] work, we have focused on the representation of *body alignment*, *proximity* and *visual target*. These three features of human behaviour have been associated with the interpersonal function of communication. That is, they are said to be associated with representing our relation to others. Of the three, *body alignment* and visual target typically vary together, however, particularly when people are moving they will vary independently (as we often see when people look at something else while walking). It is for this reason that they are coded separately so that meanings that might be made through visual target alone are accessible. Because there is an unstable relationship between body angle and visual target, particularly in this context, we have discarded visual target as a useful measure and focused on body alignment and proximity. To this we have added a further measure of dynamism.

Body alignment is made up of a number of different measures and is made relative to the origin of interest – in this case, the doors. The point of origin to which measurements are made relative can of course vary depending on what it is that we are coding for and this is also the case for proximity. When walking through a door a person's body angle is measured relative to the door while those standing talking in front of a door are measured relative to each other and to the door.



Measurements for body alignment used in this study take the angle of shoulder and hips to the point of origin. Shoulders and hips are used because each alone can vary, particularly when people are in motion, however the combined measurement gives a good indication of the average alignment of the person to the origin. When showing intention to walk through a door people have their shoulders and hips aligned approximately square to the door while those engaged in conversation or waiting typically stand with shoulders and hips perpendicular to the door and in the case of conversation, square or obtuse to their conversation partner. One of the options for waiting or talking is to have shoulders and hips square to the door as they would be for walking through the door but to have visual target away from door, so that the back to the door. This is one situation where visual target can be used to discriminate. However, the value of making this discrimination is outweighed by the other situations where it is unhelpful. This also shows why body alignment alone can not display intention to walk through the door since front to door or back to door are not distinguished in such cases<sup>5</sup>.

To distinguish between front to door and back to door we can use the measure of proximity and motion. This measure takes the proximity of the person or object at two points and establishes whether they are static or dynamic and if dynamic in what direction. This allows us to discriminate between people walking away from the door and towards the door and those standing with their back to the door.

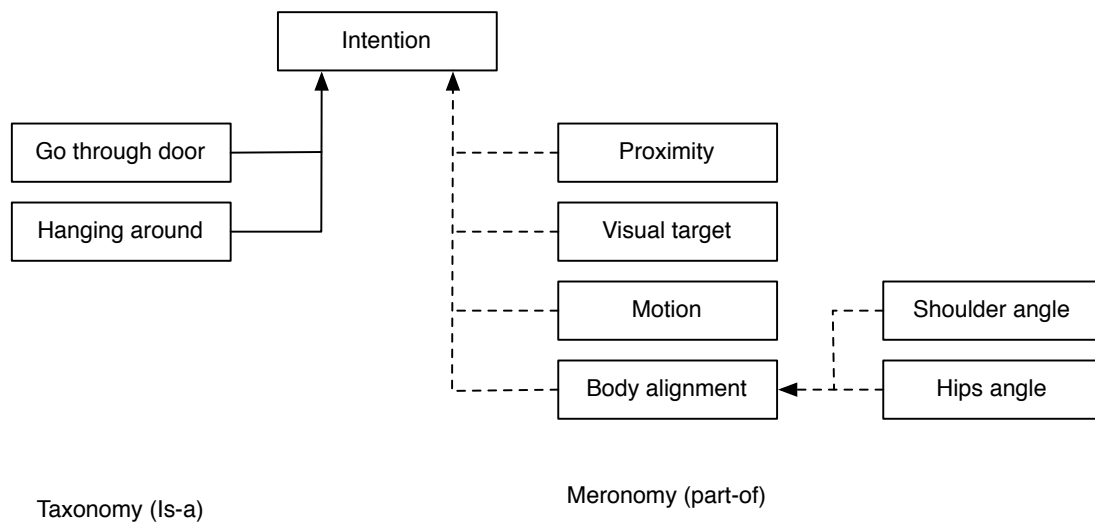


Figure 2: Intentions and behavioural features

While the meaning of “intending to walk through a door” is very simple it is clear that already the features necessary to distinguish between possibilities in this context are quite large although at this point still manageable. It demonstrates that the intention is displayed as emerging from the features “motion towards” and “body alignment square to door (or other object of interest)” but with visual target able to vary and thus not likely to be a reliable measure of intention on its own.

<sup>5</sup>There is actually a distinction between the two in terms of the relative angles of the shoulders and hips given that people walk with slightly angled shoulders and hips and these angles are reversed between front and back, however the difficulty involved in this calculation is greater than using another measure to differentiate.

These signs are all signs that humans are able to read. We are all familiar with watching people's hips and shoulders to avoid collision when walking in the street and in fact this very principle has been the subject of a number of prominent studies such as Goffman's studies of behaviour [21]. Consider also the recent collection by Ingold and Lee Vergunst [22]. These features are also those used by people waiting for a bus to indicate intention to board as opposed to waiting, conversing or walking by. We have used shoulders and hips here since there is some cultural variability in the salience of these in signalling intention.

## 4 Conclusion and future directions

In this paper we have outlined our underlying communicative approach to modelling behaviour for machine readability. The theoretical approach to semiotics that we have taken allows us to combine all forms of communication within the one approach and to assess how they interact in different contexts. This should prove useful for development of an algorithmic form at a later stage.

Martinec [16] has produced a model of interpersonal engagement that has precise and robust measurements for variability in body alignment and proximity for contexts such as waiting or casually chatting. Moore [17] has shown that the particular values and even the behavioural measures themselves can vary from one social context to another but that this variability is predictable and even useful since it helps us to move beyond context specific descriptions to see what contexts share. In future work we aim to describe the variability in measures for intention to walk through a door and to make these measurements machine readable such that they are useful for opening a door.

The engineering challenges of making these features machine readable are subject of future work, however some of the implications can already be seen. Because what we are attempting to model here is a situation where someone changes his mind and subsequently holds a conversation at a distance that would trigger a normal door to open, lead time required to read intention needs to be longer. This means that the sensor for proximity needs to be set to a greater distance. This also allows more time for the calibration of the different measurements that are required.

When coding of these measures are done by humans very rough approximations are used, particularly if we make these readings while walking on the street or moving in a space. By machine these measurements can be very precise and response triggers would need to be set within ranges. When analysing video material of human behaviour, coding is typically done post production and measurement points are added to the video by hand by the coder. These points are then compared. This same process needs to be done automatically and this requires the ability to identify shoulders and hips on an image. The challenge then is to set response types for different combinations of these features. Beyond the local challenges of coding behaviour is the wider challenge of taking understanding of these behavioural patterns to other contexts. If we are able to use our understanding of body alignments used to signal intention to walk through a door to predict behaviour in other situations such as waiting for a bus or waiting to be served in a queue, then we may have some evidence for the cross contextual generalisability of the approach to understanding behaviour.

## References

- [1] Mark Weiser. The computer for the 21st century. *Scientific American*, pages 94–104, September 1991.
- [2] Uwe Hansmann, Lothar Merk, Martin S. Nicklous, and Thomas Stober. *Pervasive Computing: The Mobile World*. Springer Professional Computing, 2003.
- [3] K. Ducatel, M. Bogdanowicz, F. Scapolo, J. Leijten, and J-C. Burgelman. ISTAG scenarios for ambient intelligence in 2010. Technical report, IST Advisory Group, 2001.
- [4] Adam Greenfield. *Everyware: The Dawning Age of Ubiquitous Computing (Voices That Matter)*. New Riders Publishing, 2006.
- [5] Anders Kofod-Petersen and Agnar Aamodt. Contextualised ambient intelligence through case-based reasoning. In T. R. Roth-Berghofer, Mehmet H. Göker, and H. Altay Güvenir, editors, *Proceedings of the Eighth European Conference on Case-Based Reasoning (ECCBR 2006)*, volume 4106 of *Lecture Notes in Computer Science*, pages 211–225, Ölüdeniz, Turkey, September 2006. Springer Verlag.
- [6] Stephen S. Yau, Yu Wang, and Fariaz Karim. Development of situation-aware application software for ubiquitous computing environments. In *29th Annual International Computer Software and Applications Conference (COMPSAC'02)*, volume 1, pages 107–112, Edinburgh, Scotland, July 2002. IEEE Computer Society.
- [7] Mica R. Endsley, Betty Bolté, and Debra G. Jones. *Designing for Situation Awareness: An Approach to User-Centered Design*. Taylor & Francis, 2003.
- [8] E. H. L. Aarts and J. L. Encarnação, editors. *True Visions: The Emergence of Ambient Intelligence*. Springer, 2006.
- [9] T. Deacon. *The Symbolic Species. The Co-evolution of Language and the Human Brain*. Penguin, 1997.
- [10] G. Bateson. A theory of play and fantasy. In *Steps to an Ecology of Mind, Collected Essays in Anthropology, Psychiatry and Epistemology*. Paladin, 1972.
- [11] M. A. K. Halliday. *Explorations in the Function of Language*. Edward Arnold, 1973.
- [12] M. A. K. Halliday and R. Hasan. *Language, Context and Text: Aspects of Language in a socio-semiotic perspective*. Deakin University Press, 1985.
- [13] Michael A.K. Halliday and Ruqaiya Hasan. *Language, Context, and Text: aspects of language in a socio-semiotic perspective*. Deakin University Press, Geelong, Australia, 1985.
- [14] M. A. K. Halliday. Text as semantic choice in social contexts. In T. A. van Dijk and J. S. Petofi, editors, *Grammars and Descriptions*. Walter de Gruyter, 1979.

- [15] A. Firkins. The semantics of challenging behavior. In *Australian Group on Severe Communication Impairment Conference*, Adelaide, 2001.
- [16] R. Martinec. Interpersonal resources in action. *Semiotica*, (135):117–145, 2001.
- [17] A. Moore. Surgical teams in action: a contextually sensitive approach to modelling body alignment and interpersonal engagement. In A. Baldry and E. Montagna, editors, *Interdisciplinary Perspectives on Multimodality: Theory and Practice*, Campobasso, Italy, 2008. Palladino.
- [18] R. Hasan. Dynamic view of context in language. In C. Cloran, D. Butt, and G. Williams, editors, *Ways of Saying Ways of Speaking*, Open Linguistic Series. Casell, 1996.
- [19] Emanuel A. Schegloff. Whose text? whose context? *Discourse & Society*, 8(2):165–187, 1997.
- [20] Emanuel A. Schegloff. On talk and its institutional occasions. In P. Drew and J. Heritage, editors, *Talk at Work. Interaction in Institutional Settings*, pages 101–134. Cambridge University Press, 1992.
- [21] Erving Goffman. *The Presentation of Self in Everyday Life*. University of Edinburgh Social Sciences Research Centre. Anchor Books edition 1959, 1956.
- [22] Tim Ingold and Jo Lee Vergunst, editors. *Ways of walking: ethnography and practice on foot*. Ashgate Publishing, 2008.

- A.4.5 *'It's like a poke on facebook': emergent semantics in location aware social network services.*

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## Chapter 32

# Like a Poke on Facebook Emergent Semantics in Location-Aware Social Network Services

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### ABSTRACT

*Location-aware social network services are set to be the next generation of social networking services. These services typically allow users to send and receive messages and icons. Iconic signs, which look like what they represent, may be said to have a commonly understood meaning attached to them. However, this is fluid, leaving them open to variation in meaning. More precise meanings are free to emerge within specific contexts and within particular social networks. Within this chapter the authors explore the semantics that emerge for three icons used within a location-aware social network service. Using Systemic Functional Linguistics (SFL), focus is given to the dominant speech function attached to each icon and the resultant meanings that emerge within social networks of the systems users. This study allows the authors to better understand how users interact with each other in smart spaces and utilise location information in social network services. By understanding how icons are used to engage others and how the meanings attached to these icons develop, the authors are better placed to create systems that fit naturally and beneficially into the users' context.*

### INTRODUCTION

Social network services have received a tremendous amount of attention in recent years. Internet-based services such as Facebook, MySpace and LinkedIn

have recently emerged and quickly become an integrated part of many people's lives. Most of these services connect people to other people through the use of more or less stable profiles, which each user has to fill in and maintain. In addition, recently people's position has been an important parameter.

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Either explicitly stated by the user in services such as Twitter or Facebook, or directly sensed through location-based services such as Google's Latitude. These location-aware social network services are predicted to be the next generation of social network services.

Social network systems that link people to people and people to geographical places are referred to as P3 systems (Jones & Grandhi, 2005). P3 systems are divided into two different types: people-centered and place-centered. People-centered systems typically use absolute user location or proximity. Place-centered systems typically employ either physical or virtual places as their representation. A simple example of a people-centered system is one where a user has a contact list, and the contacts show up in different colors, such as green, yellow and red, depending on proximity.

One of the features on many digital communication channels is the use of iconic signs. The most notable of these are 'emoticons' which are typically 'smilies' or graphic representations of facial expression. Icons in digital communication are used to reflect the sender's mood or tone of communication. Yet, icons are also used as a means of conveying information about one's availability. The most obvious example of the former is the ironic-smiley (;-)), and for the latter is the availability traffic light known from instant messaging. As an example, Skog (2009) reports on a survey among 560 Norwegian users of Facebook aged between 15 and 30 years. She demonstrates that 90% use emoticons when communicating.

The work presented here investigates the use of iconic signs to mediate social interaction and interpersonal relationships. This case study revolves around the FindMyFriends project, which is a place-centred location-aware social-network service. The use of iconic signs in FindMyFriends is investigated by using the SFL notions of speech function and context to examine the language structures and emergent semantics of interaction in smart spaces. Systemic Functional Linguistics

(SFL) has a stratal representation of language comprising context, semantics, lexicogrammar and expression, where each of these both constructs and construes each other (Halliday & Matthiessen, 2004). Meaning then is represented both as a strata of language and as emergent from patterns of realisation across all strata making it a complex systems solution to meaning making.

Importantly for the current purposes, Systemic Functional Linguistics (SFL) is also a social semiotic theory that sets out from the assumption that humans are social beings that are inclined to interact (Halliday, 1978). We can think of semiotics as a perspective, looking at anything from the point of view of how it generates meaning (Halliday, 1978; Eco, 1984). This results in viewing all behaviour, and indeed all artefacts and even the environment itself, as potentially meaning bearing (Fawcett, 1992). However, as Hasan suggests, "despite overlaps, what can be said through the verbal code is not coextensive with what can be said through the gazing code or the gesture code or the code of dress" (Hasan, 1980). Each code carries distinct representational capacities. While language has the capacity to transcend the present, gesture or gaze need some sort of temporal proximity even if this is mediated by technology. It can be argued that these codes, and in particular gaze, are heavily oriented towards interpersonal meanings (Hasan, 1980). To see the significance of gesture to interpersonal meaning making, it is only necessary to consider the attempts at iconic representation of gesture in the form of emoticons.

Variation in semantic potential is not new; after all, Bernstein's (1971) studies showed that individuals do not share the same meaning potential. Not having equal access to the full range of meanings in a code is distinct however from the code itself having a limited potential. Individuals may not have the same access to the code, but the code has the same potential whether we access it or not. In the situation of multimodality, the codes themselves do not have the same potential. This

*Table 1. Speech functions and responses from Halliday and Matthiessen (2004, pp. 108)*

Role in Exchange	Commodity Exchanged	Initiation	Response	
			Expected	Discretionary
Give	Goods and Services	Offer	Acceptance	Rejection
Demand		Command	Undertaking	Refusal
Give	Information	Statement	Acknowledgement	Contradiction
Demand		Question	Answer	Disclaimer

comes out clearly in Hasan's (2001) discussion of decontextualised language.

### Context: an SFL Model of Context

The social system of which we are all a part has a particularly useful quality for research: "it is, typically, presented in highly context specific doses" (Halliday, 1974; Halliday, 1978). This means that we do not have to deal with the entire social system in order to understand the impact of the social system on meaning. What we have to manage is a description of language in context.

In general, the SFL notion of context views context as all the features of a social process relevant to meaning making. These features are traditionally organized into three core dimensions of context: Field, Tenor and Mode, where *field* is "the nature of the social activity...", *tenor* is "the nature of social relations...", and *mode* is "the nature of contact..." (Hasan, 1999). While making use of both field and mode, in this study we have focused on tenor and its associated semantic notion of speech function.

### Speech Function in SFL

Meaning is our central concern in this study and we are interested in the tasks to which users put the a (in this case three icons) to which they have access. Here we are interested in what Halliday and Matthiessen (2004) refer to as language as exchange or the interpersonal metafunction. The interpersonal metafunction is "language as a mode

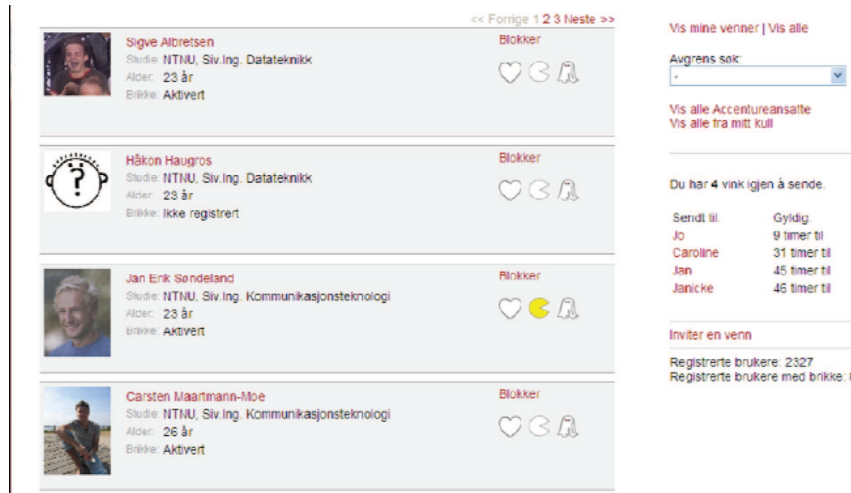
of action" (Halliday and Matthiessen, 1999). We can think of this as meaning as exchange where the "principal grammatical system is that of MOOD" (Halliday and Matthiessen, 2004). Social network applications are primarily about exchange and the linguistic system that is most relevant to their success is the semantic system of speech function. Hasan (1996) has elaborated the networks of speech function further however here we focus on Halliday and Matthiessen's (2004) representation of the basic categories (see Table 1).

Because digital communication is moving towards multiple device and application integration and towards a more multimodal approach, new ways of investigating this interaction need to be explored along with the interaction itself. These two aspects: the digital communication and our means of investigating it are intimately connected. As digital communication becomes more integrated and multimodal it becomes less accessible but tells us more by providing a better understanding of how people use such technology to interact and some insight into the challenges of analysis of icon based interaction via location-aware social network services.

## BACKGROUND AND EXPERIMENT

FindMyFriends represents a convergence of online social network services and location-awareness. In the context of P3 systems it can be regarded as a place-centered system. This service, which was developed by Accenture, IBM and Sonitor, was

Figure 1. Overview of friends list on website showing icons that could be used as avatars (picture from Accenture)



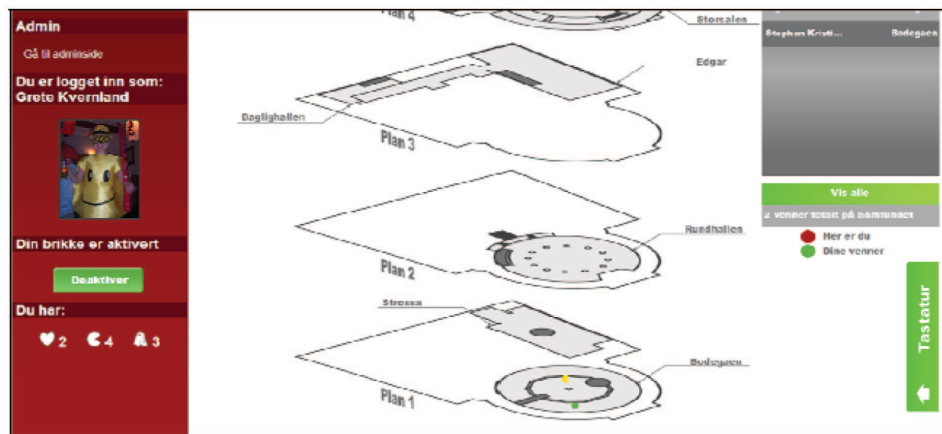
installed and used at the primary festival location during the biennial student festival - UKA 2007 in Trondheim, Norway.

UKA is Norway's largest student festival. Originating in 1917, the 2007 UKA was a three-week festival from October 4th to 28th and was located in Samfundet, a student building, constructed in 1929 and containing ten main rooms, including several pubs and a concert hall. Locating friends

and colleagues within Samfundet can be very difficult and the idea of FindMyFriends was to equip participants with ultrasound beacons allowing them to be located within Samfundet.

The 2769 participants who decided to use the system, could register a profile on the FindMyFriends website after which they could start to connect to each other (see Figure 1). Participants received an ultrasound beacon, which had to be

Figure 2. The map from the terminal showing position of the user and friends (picture from Accenture)



### Like a Poke on Facebook Emergent Semantics

activated before use and was linked to their profile allowing them to locate and be located by those on their friend list through any device used for accessing the web. In addition to the website, several terminals were distributed throughout the building. By presenting the beacon to the terminal it was possible for the user to log in and read or send messages and icons (heart, Pacman and ghost) as well as locate their friends on a map (Figure 2) and view statistics for each room (Figure 3). Users were free to send any icon to any friend. Despite their association with the game Pacman, the three specific icons had no prior meaning explicitly attached to them.

Activity was logged and recorded for analysis and at the end of UKA participants were invited via email to take part in a survey regarding the use of FindMyFriends. Of the 2769 participants, 207 took part in the survey.

Of the 2769 users registered only 1661 actually activated their beacons. Of the users with activated beacons 36.9% were female, 61.3% were male and 1.75% did not register their gender. Students can attend the festival as either visitors or volunteers.

Volunteers were also permitted to act as visitors when off-duty. Volunteers accounted for 33.6% of the users and visitors for 66.4%. All 2769 users received the invitation to fill in the survey. Of these 207 answered. Of these who answered the questionnaire, 37.2% were female and 62.8% male. These numbers do match the distribution of all the users, with only a 0.4 points difference. Further, 32.4% were volunteers and 67.7% visitors. Again, this matches the overall distribution with only a 1.2 points difference (see Figure 4).

These figures are a good indication that the participants who answered the questionnaire are a representative selection of the actual user mass. The confidence interval with a 95% confidence level is 6.55. Thus, we can be 95% certain that the results are within  $\pm 6.55$  percent accuracy. Like other data from this study, the results of the survey were coded for gender, age and other key variables. Because of the relatively small sample size, however, for the purposes of examining meaning, we have averaged across these variables. Further study of this data set will likely make fuller use of these variables.

Figure 3. The statistics screen used for showing single/non-single users, preferred music and staff to student ratio per room (picture from Accenture)

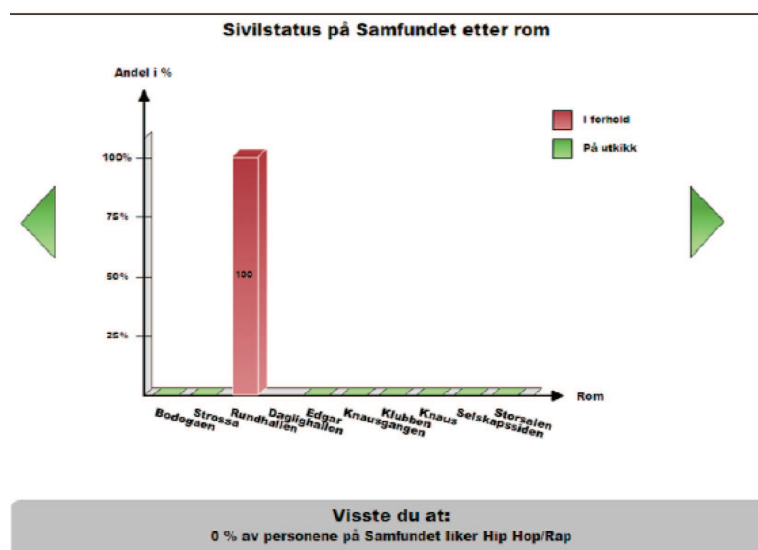
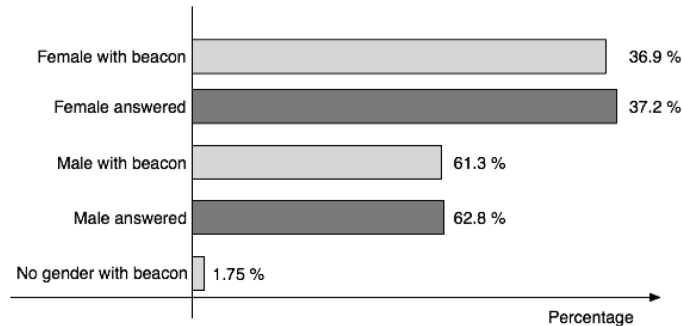


Figure 4. Gender of FindMyFriends' users and respondents



## METHODOLOGY

### Analysis

The decision to analyse the data linguistically was not made until after the data had been collected and measures of central tendency carried out on the results of the study and subsequent survey. As such, the study was not designed to capture information specifically for a linguistic analysis. Because of its inclusion of all forms of behaviour as potentially meaning bearing and because it allocates and relates patterning to different levels of language, a Systemic Functional Linguistic framework (henceforth SFL) was used to examine how icons were used within FindMyFriends to engage others. Focus was given to a contextual analysis using the SFL parameters of field, tenor and mode, with particular attention given to the parameter of tenor due to the prior significance of this in electronic communication (Taiwo, 2007). The metafunctionally associated<sup>1</sup> semantic notion of speech function was also considered.

This analysis did not extend to the level of lexicogrammar for two reasons. Firstly, the data was not conducive to a grammatical analysis since although many users responded to the survey question “What do you think the meaning of the heart/Pacman/ghost is?” with what amounts to a language translation of the icon meaning, many did not and the variability of their responses can be

seen below. Secondly, while icons most definitely have meaning (and hence a semantic stratum), this meaning is not necessarily lexicogrammatically arranged.

### Method

As with many studies, this study involved combining information from a number of different sources. As such the first step was to use the notion of context to sort out the value of the different bits of information. This was done by considering the contextual configuration (field, tenor and mode settings) of the different contexts from which the data came. This was then used to consider how the data might be applied to understanding the emergent semantics of the icons. The understanding of the different contexts for the information sources was then used to build a picture of the context of use for the icons although this was, by necessity, general not instance based.

Because the data extracted from this study was iconic in nature, the results of the survey were used to gain partial access to the purpose or intent of users. Participants were asked to consider how they used each icon during the study and to report on this usage pattern. Thus, the result was a subjective statement of the intended meaning behind icon use. So, while the behaviour that we are interested in is multi-modal in nature, our access to this behaviour, in this study, is subjective and reflective.

It is difficult to examine speech function when what is under examination is subjective and reflective since, as Martin (1992) points out, speech function is about dialogue, and we typically establish speech function by considering the response that a move in the discourse receives. This is the case because the semantics, or the meaning behind a move, becomes more obvious when we can see how people respond to that move. In this study we do not have the following move to the stated intended meaning behind an icon's use. We are reliant then on how participants report their use of an icon and the speech function that they attribute to it. On the other hand, the questionnaire was filled in after the system was used and on the basis of several interactions, so is therefore likely to reflect a stabilized individual view on meaning. Like other aspects of meaning, speech function is sensitive to contextual variation and in particular to variations in tenor or the interpersonal relations of participants.

By combining participants statement of meaning for the icon with their reported behaviour and general statistics of actual behaviour (not participant identifiable) we were able to establish an estimation of the multimodal dialogue that took place with icon use in FindMyFriends. This gave a better indication of the emergent semantics for the icons.

## RESULTS

The results of the analysis outlined above are reported in four stages. Firstly, there is a discus-

sion of context including a review of the different contexts of the data and a statement of the potential configuration of the context of icon use (Table 2). Secondly, consideration is given to the different ways that users reference existing technology and the ways they appear to use this to arrive at meanings. Thirdly, the variability in the response to the one question from the questionnaire is presented with examples from the data to give some indication of the variation in the data (Table 3). Finally, the speech function attached to each icon is reported (Figure 6).

### Context

The context of the current research may be considered at a number of layers. Firstly, there is the context in which the participants were sending the icons to each other. Secondly, there is the context in which the participants were recording their recollections of their icon use during the experiment, and thirdly the context of our reading their responses to the survey and these are not the only contexts that we might consider.

Taking the second of these contexts, the context of filling out the survey, we can see that this alone is quite a complex context. Although we can recognise survey taking as a context that we are familiar with in our society, the situation for each participant is quite different. They have for example different relations with the researchers, different motivations and different physical conditions under which they completed the survey. On top of these differences, when completing the survey, participants are drawing on an average of

*Table 2. Contextual descriptions*

<b>Context of icon exchange</b>	<i>Field</i>	Material action obligatory, action with symbols necessary, relating
	<i>Tenor</i>	Social hierarchy non-hierarchic, chosen peer-group; social distance minimal
	<i>Mode</i>	Role of language ancillary, channel graphic pictographic, real time electronic
<b>Context of the survey</b>	<i>Field</i>	Material action absent irrelevant, action with symbols necessary, reporting
	<i>Tenor</i>	Social hierarchy hierarchic, legally defined, repercussive; social distance maximal
	<i>Mode</i>	Role of language obligatory; channel graphic written, mediated edited



*Table 3. Variety of response type with examples from data*

Stimulus question: "What do you think the meaning of the heart/Pacman/ghost is?"			
Responses			
Classification	Category	Subcategory	Example from Data
Similarity or meta-phor	It's like...	Action	e.g. "it's like sneaking up on someone"
		Function	e.g. "it's like a poke on Facebook"
Potential	Could be...	Modality	e.g. "could be to flirt with someone"
		Desire	e.g. "you want to make contact"
Direct speech	"..."	Minor	e.g. "Boo!"
		Major: declarative	e.g. "You don't know who I am but I know who you are!"
		Major: interrogative	e.g. "Where are you?"
Justification	I used it...	Reason	e.g. "just for fun/to scare"
		Statement (always negative)	e.g. "I didn't use the functionality"
		Categorize	e.g. "a funny joke"
		Uncertainty	e.g. "I don't know"
Impact	I am... you are...	Self	e.g. "I am mysterious"
		Other	e.g. "You are ugly"
		Ambiguous	e.g. "psychotic bed sheet fetish"
Target group	Who...	Set membership	e.g. "An old boyfriend or girlfriend"
Reflection	I think...	Mental projection	e.g. "I thought that it meant..."
		Argument	e.g. "I feel that it has much the same meaning as the pacman because..."

all of their uses of the icons during the trial period rather than a reference to a single icon exchange. This means that their meaning for the icon is an average. This is the case with all survey-based research and we will return to this issue below, but let us consider for a moment the first context.

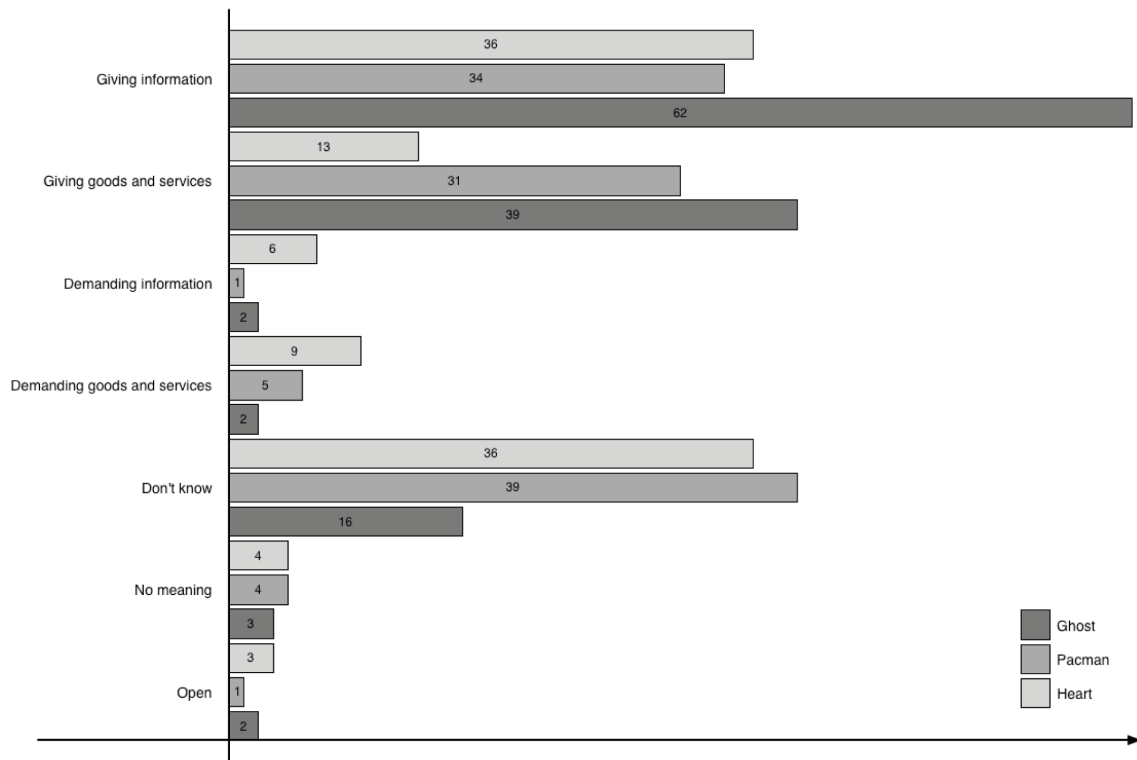
The field of discourse might be said to be casual conversation, the tenor peer to peer and the mode electronic. Drawing on Hasan's (1999) networks for context and Butt's (2004) extension of these, we can look a little closer at the context of the interaction. Rather than provide a full contextual analysis, the crucial parameters of difference are listed in Table 3.

## Context of the Technology: Using Context to Predict User Behavior

It is the perpetual problem of human computer interaction (and indeed innovation more generally) that it is difficult to establish how users will engage with new technology, in particular those that do not have a historical reference point. Junglas (2007) argues that location-aware (or in his word location-based) systems are a disruptive technology, and in that sense present this exact problem. Users lack a reference point for judging the usefulness of such a system, thus traditional methods cannot predict market uptake. The main approach to assess market uptake is to expose potential users to the technology, typically in experimental environments.

The FindMyFriends project represents just such an exposure trial, and the responses to the

*Figure 6. Speech function across heart, Pacman and ghost*



survey indicate strongly that participants draw on their experience with other technology. The technology that participants appeared to see as most relevant in the current case was social networking applications such as Facebook. Many participants saw the icons as a form of poke but others appear to have treated them as being more like a status feed or micro blogging application. Of course there is a great deal of variation in the way that people use status feeds and a great deal of variation in the meaning of a poke as well as the desired response.

Although Junglas (2007) argues that location aware systems represent disruptive technology because they do not have a prior reference for them, this appears to be only partially true. Users faced with new technology, as we see here, reference the contextually closest known technology, which in this case is Facebook. We can predict the

technology that is most likely to form the reference point by identifying the known technology that shares the most contextual settings with the new technology. The settings that are not shared represent the areas of the new technology that are least likely to be used to full potential and in this case it is the locational aspects. Yet even here we see that users reference an even older situation that underpins modern social networking technology such as Facebook – that of the social network itself. Users reported in the semi-structured interview that they were more than happy to have their close friends know where they were but that they wanted some control over privacy. This is much the same way that people tend to feel about small towns and by studying how people behave in situations where family and friends monitors them it is possible to predict how they will respond to location aware technology.



This use of reference points carries over into the meanings that get attached to the icons not just the users' behavior. All icons used in this study came from the game Pacman and we could reasonably expect that the meanings attached to these icons from the game would carry over to the context that we discuss here (McDougall et al., 2005). In fact we do see this to a certain extent, however the impact is not evenly distributed. While the game impacts heavily on the attributed meaning for the Pacman, the impact of the game on the meaning for the ghost and heart is much less apparent. For the heart and ghost, the broader cultural understanding of a heart impacts much more, while the ghost is very open in its meaning and again seems to take on some of the cultural meanings attached to a ghost rather than those from the game. As we can see in Figure 5, the game was influential in establishing meaning for the Pacman but not the other icons. Here the dominant meaning was something similar to "I'm going to eat you".

The variation in cultural meanings attached to the ghost icon can be seen reflected in the variety

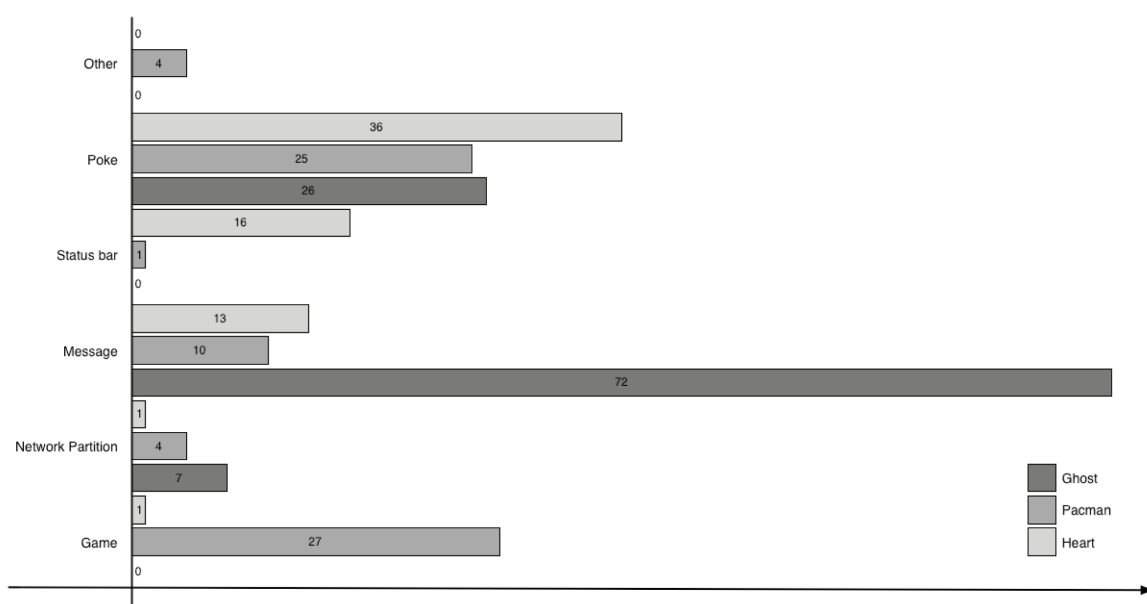
of uses to which the ghost is put. More so than either of the other icons, the ghost is used to both demand and give goods and services and information. The ghost was used to mean anything from 'don't disturb me!', 'boo!', 'guess who', 'let's meet', 'where are you?' and 'hi'.

### The Context of Self-Report: Reporting on Meaning

Different forms of data provide different views on a context and they are all helpful in building a picture of discourse in context. This is particularly the case when we cross reference the information. While the multiplication of data is useful it also creates an interesting problem in that it becomes necessary to distinguish between these different types of data.

Often as is the case in this research, the texts that have been produced as a result of an event are numerous and accessible for analysis while the initiating event is not recorded and is thus not accessible to the analyst. Any one of these texts may be treated as our primary text, however,

Figure 5. Taking cues from familiar technology



depending on what our research question is, our relation to the initial event is going to be very different. Understanding how the data fits within a social process needs to be the first step in analysis since the location of the data is crucial if we want to understand the purpose and the function of the text in society.

Because we are using language turned back on itself, we can think about the context of our data as well as the context of the event since these are the texts with which we are dealing. We are using context here as a means of sorting out our data. Each text has its own context as well as a distinct relation to the primary context. This relation is reflected in the contextual description and shapes the values of this text as evidence. This contextual description of the data then allows us to sort data on the basis of contextual similarity before we look at the particular social process, which has been recorded. Thus we have at least two layers of contextual information before we begin to analyze something in context.

Texts may be divided into those that flow institutionally from the primary context and those that are observational and optional such as research. Two potential types of data include observational texts, where the data is a recording by one means or another of the social process of the primary context, or, reported texts, where the data is a report on the social process of the primary context from one point of view or another.

Report texts may not be reporting on the primary social process directly, but on the participant's reactions or responses, feelings or thoughts. As with all report texts, it is possible for them to look forward as well as backwards, hence, they may include projection into the future or commentary on the here and now as well as reflection. It is important to remember that of course any one of these texts may become the primary social process depending on the perspective one takes on the text. The current research takes the form of report and while the use of the icons involved tenor relations that were peer-to-peer, equal and

non-hierarchic, the report texts analyzed in the survey have a hierarchic tenor relation that was not equal and varied according to position and education.

In analyzing this survey insight was also gained into how people report intent. Halliday and Matthiessen (2004), in discussing aspects of projection, suggest that there are various ways that reports, facts and ideas are projected. Because the survey at the point at which it discusses meaning is free text and open, participants in this study reported on their own behavior in various ways. These differences illuminate both the ways in which participants viewed the icons and the Find-MyFriends system as well as the ways in which people report on meaning making behavior. These variations are set out in Table 3.

In any exchange, meaning is open for negotiation and we can see this in the responses to the survey, just as the icons themselves were open for negotiating meaning as can be seen in Table 3. The variability in this response is discussed in the section below.

The findings suggest that the use of icons in smart spaces is strongly linked to tenor variation. The summary of findings across the three icons is set out in Figure 6. This includes the speech functions of giving information or goods and services or demanding information or goods and services as well as respondents who stated that there was no meaning to the icons, that they didn't know what the meaning was or that meaning was open.

Icons were most frequently sent to serve the speech function of giving information. This was particularly true for hearts, which also had a very low 'don't know' response and were more likely to be sent to people not in a user's friend list. Hearts were much less likely to be seen as demanding goods and services or information as compared to ghosts. Ghosts were also seen as more open in meaning and more likely to record a 'don't know' response. They were also less likely to be used overall. Although all icons came from the game pacman, it was only the Pacman icon that showed

a strong connection in meaning to the game with a very common meaning being *"I want to/am going to eat you!"*.

Participant responses suggest that they understood these to be realised by a statement and when not realising a minor clause to be in declarative mood. Most frequently responses were minor clauses which were seen to be a kind of poke approximating *'boo!'* for ghost, *'hey you!'* for Pacman and *'hi there!'* for heart, although heart most frequently was seen to mean something like *'I love you'*. All icons were seen as an opportunity for flirting although the strongest connection with this potential was the heart, which has obvious romantic associations from its wider cultural use.

Use of icons appears from the data to be almost exclusively move initiating, however, response with icon was also possible and appears to have been the desired response in some cases e.g. *"Hmm, if you give it to somebody you are interested in then it is a bit funny and exiting if you get one"*. The expected response was usually acknowledgement of some kind but the realisation of the acknowledgement varied. Participants could of course ignore the icon and not respond, they could respond with an icon in return either the same or different, they could respond with another modality by either calling the person (provided they have their number) or by seeking them out in person, which is exactly what a location-aware system can facilitate. In the current study, users sought people out in person after locating them through the FindMyFriends system 55% of the time.

Some participants wanted to use the icons as a status message just to let friends know they were there and whether they were available or not, much as one might use the instant messaging traffic lights icons. Interestingly this appears to be much more the case for the ghost than for any of the other icons. Others used the icons to send

their friends a message, while others used them to get their friend's attention and appeared to expect a physical response such as meeting.

Findings here appear consistent across both the heart and pacman icon with greater variation existing for the ghost icon. This variation may be seen to relate strongly to variations in tenor. The distribution of the icons varied throughout the social network of the user, with users showing a strong discrepancy in who they sent each of the icons to. While icons were only ever sent to friends – making them network internal – use and understanding of the heart, Pacman and ghost showed variation on the basis of social distance amongst other key tenor markers.

While bearing a strong resemblance to common emoticons, the icons were often not used to convey an emotional state; rather they were used to distinguish between levels of closeness in the participant's social network. Participants most often sent hearts only to very close friends, the pacman to friends and ghosts to anyone.

The semantics which emerges here is a social network dependent semantic, with the general meaning of *'hi there'* taking on a more specific meaning for each interaction. Hence while there was potential to use the icons as emoticons, the meaning in the current research appears to have followed the purpose of the devices as tools for locating. Thus, the icons were primarily used to attract attention rather than to share a mental state, although this is not always the case and appears to vary across the icons. This tendency suggests that meaning will be shaped by the function of the device and guided by users' prior experience with technology they perceive to be similar in function.

## **IMPLICATIONS AND FUTURE DIRECTIONS**

Understanding icons from a semiotic point of view gives designers more insight when designing systems. Much research has gone into the study of icons, however this research has typically focused on visual design aspects (see for example Chang (1987)). Typically, icons have already had a function and distinct meaning attached to them with a clearly defined purpose. The current research has examined the use of icons from a semiotic point of view by focusing on the use of the icons in context and the users' understanding of the meaning of these icons. Future work may be well positioned to capitalize on the multimodal work of researchers such as Bateman, Denlin and Henschel (2004). The icons in this study did not have a meaning or purpose assigned to them prior to the study. It was left for the users to create a meaning and purpose for the icons. In this sense, the semantics can be seen to emerge from the context and social network of the users.

In discussing the study of online social networks, Garton, Haythornthwaite and Wellman (1997) suggest that social network partitioning is a function of what gets sent to whom. This classic application of social network theory suggests that the analyst can gain access to the users' network by examining the exchanges that take place. In the case of most social network applications, and certainly in the case studied here, the users' network is already partitioned and on display. It appears from our analysis that variability in meaning of the icons emerges from an already partitioned network. This can be explained at least in part by the high degree of codal sharing and tight social network structures amongst the users. The more dense and multiplex the social network and the more history network members have in common, the more likely the members are to share meanings in common. Thus the meaning of an icon will vary between different members of a social network.

As Hasan (1980) suggests, the functional nature of a code predisposes it to certain meanings. The function of the icons appears to predispose them to meanings that gravitate to an offer of some kind, whether that is making a proposal or offering some form of information. The very simple meaning of "hi there" appears to become more and more specific in meaning depending on who the icon was sent to and as the users become more familiar with the tool. This is similar to the patterning that we see in communication more generally. Humans as a species are inclined to interact (Halliday, 1978) and will make use of whatever communication tools are available. The fewer tools we have available to us to make meaning through the more work we make the tool do.

In this case the restricted tool set of three icons gets made to do a lot more work than it might otherwise do. Further study of this data set and others like it may allow us to develop a better understanding of icon use. It may also be possible to use Hasan's (1996) semantic networks to design more contextually sensitive and network sensitive icons. However, it appears from our findings that there may be a trade off here in that more variability in the meaning of an icon the more uses to which it can be put but it is less likely to be used at least in the short term (e.g. the ghost). Against this, less variability in meaning appears to lead to fewer uses to which the icon is put, but more uptake of the icon at least in the short term (e.g. the heart).

When icons are used in a technical setting they seem to implicitly carry some history from other similar technical settings, as the case of the FindMyFriends' icons, which some of the users reported using in similar ways as they would use pokes in Facebook. Further, as the icons clearly are used as a technological contraption to separate a social network it could be argued that they actually function as mediating artifacts. From the perspective of Activity Theory (Leont'ev, 1978; Bødker, 1991) it is possible to fit icons into the role of mediators. Following the idea that the

meaning that users ascribe to icons is emergent, yet clearly affected by history, the cultural-historical extension to Activity Theory (Vygotsky, 1978; Engeström, 1987) combined with a semiotic understanding appears to be a promising perspective when dealing with message-icons in software. However, this is currently unexplored and requires more research to clarify.

The understanding of icons from a combined perspective of semiotics and Activity Theory is even more important when we are dealing with the extension of location-aware systems, known as ambient intelligence (Ducatel et al., 2001). In ambient intelligent systems icons might appear in the physical world and refer to information in the virtual world. So by physically tagging the real world it is possible to convey meaning to a user by allowing the user's mobile device to read this tag. Current examples include RFID tags, barcodes and Cyberstickers (Rahlff, 2005). A conceivable extension to this is to tag the physical world with icons that make sense for both machines and humans; much like the well known Hobo signs (Richards, 1974). The same insight is equally important in the opposite case, where signs in the virtual world refer to information or goods in the physical world. This is particularly important where users of a location aware social network service may use icons to make things happen in their environment. Further study of this potential will lead to systems that are better suited to their users' needs and desires.

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## REFERENCES

- Bateman, J. A., Denlin, J., & Henschel, R. (2004). Multimodality and empiricism: Preparing for a corpus-based approach to the study of multimodal meaning-making. In Ventola, E., Charles, C., & Kaltenbacher, M. (Eds.), *Perspective on multimodality* (pp. 65–87). Salzburg, Germany: University of Salzburg.
- Bernstein, B. (1971). *Class, codes and control: Vol. 1. Theoretical studies towards a sociology of language*. Boston: Routledge & Kegan Paul.
- Bødker, S. (1991). Activity theory as a challenge to systems design. In Nissen, H.-E., Klein, H.-K., & Hirschheim, R. A. (Eds.), *Information systems research: Contemporary approaches and emergent traditions* (pp. 551–564). Amsterdam: Elsevier.
- Butt, D. G. B. (2004). *Parameters of context*. Sydney, Australia: Department of Linguistics Macquarie University.
- Chang, S.-K. (1987). Icon semantics: - a formal approach to icon system design. *International Journal of Pattern Recognition and Artificial Intelligence*, 1(1), 103–120. doi:10.1142/S0218001487000084
- Ducatel, K., Bogdanowicz, M., Scapolo, F., Leijten, J., & Burgelman, J.-C. (2001). *ISTAG scenarios for ambient intelligence in 2010 (Tech. Rep.)*. Seville, Spain: IST Advisory Group.
- Eco, U. (1979). *A theory of semiotics*. Bloomington, IN: Indiana University Press.
- Engeström, Y. (1987). *Learning by expanding. an activity theoretical approach to developmental research*. Helsinki, Finland: Orienta-Konsultit Oy.
- Fawcett, R. P. (1992). Book reviews: A theory of computer semiotics: Semiotic approaches to construction and assessment of computer systems. *Computational Linguistics*, 18(4).



- Garton, L., Haythornthwaite, C., & Wellman, B. (1997). Studying on-line social networks. *Journal of Computer-Mediated Communication*, 3(1).
- Halliday, M. A. K. (1974). Dialogue with Herman Parret. In Parret, H. (Ed.), *Discussing language*. The Hague, The Netherlands: Mouton.
- Halliday, M. A. K. (1978). *Language as a social semiotic: Social interpretation of language and meaning*. London: Hodder Arnold.
- Halliday, M. A. K., & Hasan, R. (1985). *Language, context, and text: Aspects of language in a social-semiotic perspective*. Victoria, Australia: Deakin University Press.
- Halliday, M. A. K., & Matthiessen, C. M. I. M. (1999). *Construing experience through meaning: A language-based approach to cognition*. London: Cassell.
- Halliday, M. A. K., & Matthiessen, C. M. I. M. (2004). *An introduction to functional grammar* (3rd ed.). London: Hodder Arnold Publication.
- Hasan, R. (1980). What's going on, a dynamic view of context in language. In Copeland, J. E., & Davis, P. (Eds.), *The seven lacus forum: 1980* (pp. 106–121). Columbia, SC: Hornbeam Press.
- Hasan, R. (1996). Semantic networks: a tool for the analysis of meaning. In Cloran, C., Butt, D., & Williams, G. (Eds.), *Ways of saying: Ways of meaning. selected papers of Ruqaiya Hasan*. London: Cassell.
- Hasan, R. (1998). Speaking with reference to context. In Ghadessy, M. (Ed.), *Text and context in functional linguistics* (pp. 219–328). Amsterdam, The Netherlands: John Benjamins Publishing Company.
- Hasan, R. (2001). The ontogenesis of decontextualized language: some achievements of classification and framing. In Morais, A., Neves, I., Davies, B., & Daniels, H. (Eds.), *Towards a sociology of pedagogy* (Vol. 23, pp. 47–80). Berlin, Germany: Peter Lang Publishing Group.
- Jones, Q., & Grandhi, S. A. (2005). P3 systems: Putting the place back into social networks. *IEEE Internet Computing*, (9): 38–46. doi:10.1109/MIC.2005.105
- Junglas, I. (2007). On the usefulness and ease of use of location-based services: insight into the information system innovator's dilemma. *International Journal of Mobile Communications*, 5(4), 389–408. doi:10.1504/IJMC.2007.012787
- Leont'ev, A. N. (1978). *Activity, consciousness, and personality*. Upper Saddle River, NJ: Prentice-Hall.
- Martin, J. (1992). *English text: system and structure*. Philadelphia: John Benjamins.
- McDougall, S., Forsythe, A., & Stares, L. (2005). Icon use by different language groups: Changes in icon perception in accordance with cue utility. In Costabile, M. F., & Patern'o, F. (Eds.), *Human-computer interaction - INTERACT 2005* (Vol. 3585, pp. 1083–1086). Berlin: Springer Verlag. doi:10.1007/11555261\_110
- Rahlff, O.-W. (2005). Cybstickers - simple shared ubiquitous annotations for all. In Gellersen, H., Kindberg, T., O'Hara, K., & Perderon, T. (Eds.), *Designing for physically integrated interaction (UbiPhysics 2005)*. Palo Alto, CA: Hewlett Packard.
- Richards, S. (1974). *Hobo signs*. New York: Berlenmir House.
- Skog, B. (2009). Språket på Facebook. *Språknytt*, (1).
- Taiwo, R. (2007). Tenor in electronic media Christian discourse in Nigeria. *The International Journal of Language Society and Culture*, (20).
- Vygotsky, L. S. (1978). *Mind in society: Development of higher psychological processes*. Boston: Harvard University Press.

## KEY TERMS AND DEFINITIONS

**Activity-Theory:** Originating in the work of Vygotsky, L and Leont'ev, A., Activity theory is a descriptive tool for theorizing a social process. It unifies consciousness and activity and importantly for research on intelligent devices, locates artifacts within social processes.

**Context:** Context is taken in this chapter to refer to all aspects of a social process that have an impact on meaning and shape the outcome of a social process. This ranges from the material situational setting through to the topic, the modality and the relationships between the social actors.

**Disruptive-Technology:** Disruptive technology refers to new technology that has no clear antecedent in existing technology. This makes predicting how users will respond to the technology difficult and can cause problems for implementing safeguards. The introduction of disruptive technology can cause major shifts in social functioning.

**Emergent-Semantics:** Emergent semantics is an evolutionary view of semantics that treats meaning as an ensemble relationship. Meaning is seen to emerge from collective use in context and is thus dependent on variability in social networks and context. It is decentralized and self-organizing.

**Iconic-Signs:** Signs are objects that signal something and may be made to carry meaning in some way. In this case iconic signs is referring to signs that look like what they are meant to represent.

**Location-Awareness:** Location awareness is the ability of a device to share another person or

object's physical location. This may be precise or imprecise and can relate to either the user or the place.

**P3-Systems:** P3 systems are social network systems that link people to people and people to geographical places and can be divided into people centred and placed centred approaches. People-centred systems typically use absolute user location or proximity. Place-centred systems typically employ either physical or virtual places as their representation.

**Social-Network:** Social network refers to both the services/systems that link people to people and the description of groups of people by means of studying their connectedness.

**Systemic-Functional-Linguistics:** Systemic functional linguistics is a social semiotic perspective on language that views all behavior as meaning bearing. It is a stratified approach that is organized around functionally organized realizational systems. It has developed from the early work of Halliday, M.

## ENDNOTE

- <sup>1</sup> The association between patterning at different levels of language is linked to the stratified approach that SFL takes and these groupings are metafunctionally arranged. Thus we have chosen to focus on the interpersonal metafunction at the level of semantics and context.

A.4.6 *Halliday's model of register revisited and explored*

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## Halliday's model of register revisited and explored

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### Abstract

*Halliday's description of register as 'a variety of language, corresponding to a variety of situation', with situation interpreted 'by means of a conceptual framework using the terms "field", "tenor" and "mode"' (Halliday, 1985/89: 29, 38) is revisited to reflect on the theoretical work the term 'register' does within the SFL paradigm. In doing so, we recognize that the concepts of a linguistic theory are 'ineffable' (Halliday, 2002 [1988]); i.e. that 'providing definitions of a theoretical term ... requires that it be positioned vis-à-vis other concepts in the theory' (Hasan, 2004: 16). It follows that changing the position of 'register' in the theory changes the nature of the concept. So while alternative uses of the term 'register' – such as in Martin's genre model (e.g. 1992) and Halliday's model – may advance a shared programme for language description and explanation as a route to social change, they must be seen as more than terminological variants. One consequence of the productivity of Martin's approach has been that the Hallidayan line of register theory has not had sufficient critical explication. This paper therefore begins with a brief review of the register concept. It then exemplifies the term, as postulated by Halliday, with a registerial analysis of surgical interaction, drawing on Hasan's context modelling (e.g. Hasan 1995, 2004, 2009a), and adopting what Matthiessen (1993) calls a 'metafunctional slice' with 'multistratal coverage'. By accounting for choice at different strata, we seek to 'relate wording to context via meaning which acts as the interface between the two' (Hasan 2009a: 182).*

KEYWORDS: REGISTER; CONTEXT; SYSTEMIC FUNCTIONAL LINGUISTICS; MEDICAL DIS-COURSE; PROBABILISTIC MODELLING

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## Introduction

The concept of register is central to Halliday's model of language. It is central not only in the sense of being important to the theory, but central also in the sense of 'at the centre of' the theory. The case we make here is that register holds the dimensions of Halliday's systemic functional theory together, and we begin the paper by exploring the place of register with respect to Halliday's dimensions. In doing so, we recognize that defining a theoretical term, as Hasan argues, 'requires that it be positioned *vis-à-vis* other concepts in the theory' (Hasan, 2004: 16). In other words, the concepts are 'ineffable' (Halliday, 2002 [1988]). Since Halliday has made the case that language is multidimensional (e.g. Halliday, 2003), to understand 'register' in Halliday's terms is to understand its relationship to such dimensions.

Our starting point might initially strike the reader as a well worn path. Matthiessen's 1993 paper 'Register in the round', for instance, addressed the notion of register from a similar perspective. His paper, now nearly 20 years old, called for different standpoints on the description of register, as a means of bringing theory and description together. These standpoints were derived from the basic principles of Halliday's theory of language, which we discuss below. Matthiessen's paper provided a list of 'register' descriptions, the wording of which Matthiessen described as 'fairly non-technical'. His list includes 'the language of exposition', 'the language of geography', 'the language of casual dinner table conversation', 'the language of news reporting', 'the language of business communication', etc. As Matthiessen (1993: 274) wrote at the time:

It would be an important contribution to describe the overall semiotic space in which these 'registers' are located relative to one another – to provide a general account of field, tenor and mode and to specify the values for each variety listed above. This would introduce greater precision in register analysis and might very well invite us to re-interpret some of the varieties that have been identified in the past. As already noted, there is a certain danger that we simply take over categories based on folk genres.

There are surprisingly few instances of the kind of work Matthiessen was calling for in his paper, i.e. descriptive work genuinely based in the notion of register as elaborated by Halliday. (Matthiessen *et al.*, 2005 is one such instance; Hasan's work on context (e.g. Hasan, 1985/89, 1995, 1999), text structure and texture (e.g. Hasan, 1985/89) and semantics (e.g. Hasan, 2009b) has presupposed Halliday's model.) The success of Martin's model (see Martin, 2009 for an inventory of this genre research) has meant, to some degree, an obscuring of the theoretical distinction between Halliday's notion of register, and Martin's use of his own terms 'genre' and 'register'.<sup>1</sup> In our view this is one the reason for a relative lack of critical explication and application of register along Halliday's line of development.

In this paper we do not want to detract from the achievements of distinct approaches in SFL, nor do we want to reiterate all the differences in approach themselves. We do however want to motivate the need to make what might otherwise seem like either uncontentious or over-vehement claims. It is not that one must take Halliday's view but it is important that one continue to engage with it, given that Halliday himself continues to hold it. In the section below, we briefly outline our perspective of Halliday's view. Since our aim is to move on to demonstrate 'register alone' (Martin, 1999), the reader is directed to Martin (1999) and Hasan (1995) for focused accounts of the different genre and register concepts and their implications for SFL. Hasan concludes her paper on these topics as follows:

My own view is that the stratification of genre and register [as posited by Martin and colleagues], the collapsing of the social and the verbal, at both these planes, which in turn entails a questionable view of language, has a highly deleterious effect: It moves the whole issue of text structure and its activation from active, feeling, reacting participants co-engaged in some interaction to given forms of talk that represent the ways things are done in our culture, as if the culture is unchanging and as if the participants are simply pre-programmed. (Hasan, 1995: 283)

In a sense we *are* largely programmed by our societies into given ways of doing culture. But societies and cultures change. Halliday's model of language, as set out in Figure 1, shows the openness of language to the eco-social environment, and, therefore, to the dynamics of social change. Halliday's notion of register is, in our view, particularly well geared to describing language variation and consistency without making such language variation isomorphic with social variation. As a central conceptual tool that does not stratify the relation of genre and register, Halliday's notion of register helps us recognize – or at least frame and test – the idea that recognized social situations might sometimes be the same register, or identify and evaluate the register differences in what are normally counted as 'the same' social activities: it is a model well suited to calibrating the shuffling and reshuffling of cultural space-time and its boundaries.

Our paper therefore now turns to (a) our brief review of Halliday's register concept and how its central place in the theory gives it its descriptive power; and (b) an exemplification of Halliday's concept, by way of a registerial analysis that draws on Hasan's parametric approach to context modelling (e.g. Hasan 1995, 1999, 2004, 2009a; Butt, 2003) and Matthiessen's 'metafunctional slice' with 'multistratal coverage': i.e. we consider a small extract of talk within a surgery setting from the perspective of Halliday's interpersonal metafunction. We then finish the paper by looking forward to the possibilities of (and constraints on) bringing this kind of multistratal approach into larger scale, computational accounts of register.

### The concept of 'register', according to Halliday

The development of the concept of register reflects a need to explain variation according to use, and arises from a concern with the importance of language in action. Halliday notes it was Reid (1956) who first used the term 'register' to capture the notion of 'text variety' (Halliday, 2007 [1975]: 181], although the idea of looking at the importance of situation on language was in use much earlier – for instance by proto-pragmatists such as Wegener (see Nerliche, 1990) who considered both the 'user' and 'use' in his concept of situation. Although it seems obvious that people speak differently in different situations, systematic analysis of variation according to what might be considered contextual features such as setting, addressee, subject and formality is relatively recent. Both Firth (1950) and Hymes (1969) developed accounts of the elements of context relevant to the act of speaking. The concept was developed by Ure (e.g. Ure, 1969; Ure and Ellis, 1972), and interpreted in Halliday *et al.* 2007 [1964: 181] 'within Hill's (1958) "institutional linguistic" framework' where the concepts of 'field', 'mode' and 'style of discourse' were introduced. Later, Halliday adopted the term 'tenor' from Spencer and Gregory (1964). Matthiessen *et al.*'s recent 'typology of registers' (e.g. 2008) draws directly on Ure's work. The notion of register has helped shape many approaches to language, including the Birmingham school (e.g. Sinclair and Coulthard, 1975) and corpus linguistics (e.g. Biber, 1995), although register is understood among these schools in markedly different ways. Halliday first made use of the term 'register' in a paper titled 'The users and uses of language'.<sup>2</sup> In differentiating his approach from the general move of stating that language varies according to situation type, Halliday (1978: 32) suggests that what 'register does is to attempt to uncover the general principles which govern this variation, so that we can begin to understand what situational factors determine what linguistic features'.

Register is defined by Halliday as a semantic configuration (e.g. Halliday, 2002 [1977], 1985/89). As such, this stratal designation reveals something about both what Halliday means by register, and how Halliday conceptualizes the semantic stratum: register is a semantic phenomenon in the sense that 'register is the clustering of semantic features according to situation type' (Halliday, 1978: 68, 111, 123). As Figure 1 shows, the semantic stratum is, for Halliday, where language interfaces with the eco-social environment. At this interface, register is 'the necessary mediating concept that enables us to establish the continuity between a text and its sociosemiotic environment' (Halliday, 2002 [1977]: 58; see Bowcher, forthcoming).

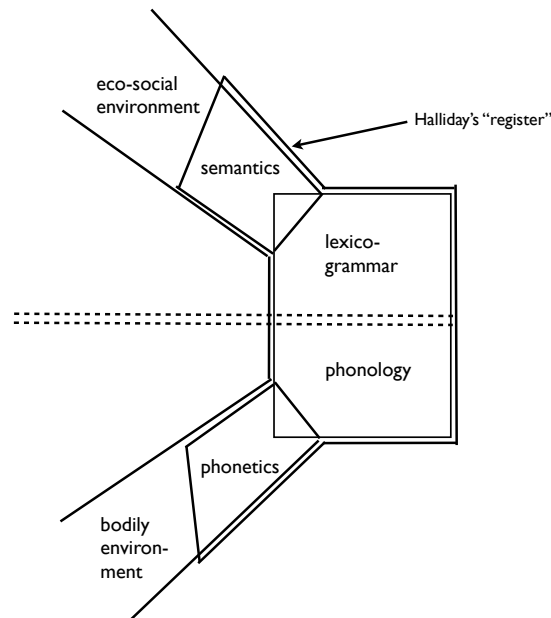


Figure 1: Language in relation to its bodily and eco-social environment (Reproduced from Halliday, 2003: 13)

### How 'register' in Halliday's view positions other concepts

The choice of the definite article in Halliday's description of register as 'the mediating concept' implies that register has a central place in relating language to social context. It does so by virtue of its theoretical position in relation to the 'various assumptions about language' with which Halliday has worked over his career (2003: 1). In a recent paper, he notes that he did not start out from these assumptions, but rather that they 'emerged as the byproduct of those engagements [with language] as I struggled with particular problems' (Halliday, 2003: 1). Such assumptions have the status of theoretical categories; as such they 'are not subject to direct verification' (Halliday, 2003 [1992]: 201). These categories have a place in the theory by virtue of their descriptive power. They should not be 'endowed with a spurious reality of their own' (Halliday, 2003 [1992]: 200).

That language has 'stratificational complexity' (Halliday, 2003: 5) is one of these assumptions. As we have just noted, register is, from this perspective, located at the semantic stratum. Stratification implicates 'realizational complexity' (Halliday, 2003: 5). Thus, a 'setting of probabilities in the semantics', as

Halliday has defined register, will mean certain selections and co-selections of features at the lexicogrammatical stratum, which in turn includes specifying some phonological features, since the realization of grammatical selections necessarily involves choices in intonation, in Halliday's account. Thus, while Halliday conceptualizes register as a configuration of meanings, he also shows register as cutting across all strata (Halliday, 2005 [1995]: 253ff). Halliday (2002 [1977]: 58) explicates the realization relation of register to context of situation as follows:

The patterns of determination that we find between the context of situation and the text are a general characteristic of the whole complex that is formed by a text and its environment. We shall not expect to be able to show that the options embodied in one or another particular sentence are determined by the field, tenor and mode of the situation. The principle is that each of these elements in the semiotic structure of the situation activates the corresponding component in the semantic system, creating in the process a semantic configuration, a group of favoured and foregrounded options from the total meaning potential that is typically associated with the situation type in question. This semantic configuration is what we understand by the *register*. (emphasis in original)

The implication is that (a) register is a function of all settings in the context, and that (b) it is in the activation by the contextual parameters of the corresponding components in the semantic system (the ideational, the interpersonal, and the textual metafunctions) that register comes into being. Given recent proposals about a rank scale in the semantics (Matthiessen, 1993: 23–31; Hasan, 1996; Cloran, 1994; Butt, 2003), we perhaps need to conceive of register as a higher order semantic configuration, realized in semantic units of various sizes, and potentially varying as registers vary (Matthiessen, 1993: 23–31); although proposals such as Halliday and Matthiessen (1999)'s 'figure', Matthiessen's (2004) system of RELATIONAL EXPANSION, Hasan's message semantics (e.g. 1996, 2009 [1992]), Cloran's Rhetorical Units (1994), and Butt's semantic cycles (2003), all claim to be generalizable across registers of any kind. Halliday (2005 [1995]: 255) argues that while we cannot as yet model the whole semantic system, we can 'specify its internal organization'. This, he suggests, is analogous to the function-rank matrix (see Table 1) but 'with its own distinct categories – a 'rank scale' of structural units such as, possibly, text, subtext, semantic paragraph, sequence, figure, element; and metafunctional regions defined in topological fashion, construing the activity patterns and ideological motifs of the culture (clusters relating to technology, to social hierarchy, to the sphere of activities of daily life, and so on)'.

The realization relation is bidirectional. Realization is a two-way relation (Halliday, 2002 [1992]; Hasan, 1995, 2010). As Hasan has recently noted:

Realization works somewhat differently in the two directions. In the encoding view, it is an **activation** of some possible choice at the next lower level: thus *in the production of an utterance, context activates meaning, meaning activates wording*. By contrast, in the reception of the utterance, realization is **construal** of the relevant choice at the higher level: thus *in decoding an utterance, the choice in wording construes meaning, the choice in meaning construes context*. (Hasan, 2010: 12).

Halliday's function-rank matrix (see Table 1) is a detailed claim about the realizational relation between the stratum of lexicogrammar and that of the 'components' of the semantic system mentioned above. These components are the semantic analogue of the variables of the context (i.e. of field, tenor and mode). Thus, Halliday proposes there are meanings of the 'ideational', 'interpersonal' and 'textual' kinds; these components realize the features of the context, and in turn are realized by grammatical systems (in combination). The function/rank matrix is an hypothesis about (a) the proximity of lexicogrammatical systems within each metafunction; and (b) the relation of these systems to his assumption about the metafunctional organization of language.

The unit of text is the scale on which these systems configure. The text is an instance of a register, register itself being a midpoint along Halliday's 'cline of instantiation' (e.g. Halliday, 2002 [1992]). Halliday's cline resolved Saussure's unnecessary bifurcation of *langue* and *parole*: '*langue* and *parole* are simply different observational positions' (Halliday, 2005 [1995]: 248). As with stratification/realization relations, Halliday also accords the concept of register a central place with respect to the cline of instantiation:

I think that the critical intermediate concept, for our purposes, is that of register, which enables us to model contextual variation in language. Seen from the instantial end of the cline [of instantiation – authors], a register appears as a cluster of similar texts, a text type; whereas seen from the systemic end, a register appears as a sub-system. (Halliday, 2005 [1995]: 248)

We turn now to an illustration of this central concept being 'put to work'.

### Operationalizing register

Given the key role the concept of register plays in describing the relationship of language to its eco-social environment from an SFL perspective, the capacity to operationalize the term must be a function of the state of play in modelling context. Hasan (2009a) argues that, like other strata, it is possible to model context paradigmatically, through the tool which has been used to model other strata, namely, the system network (Hasan, 1999, 2004, 2009a). She critiques standard SFL applications of the terms 'field', 'tenor' and 'mode' as vague, lacking 'checkable' criteria, and relying on 'common sense' (Hasan,

Table 1: Function – Rank matrix (Halliday, 2009)

metafunction			ideational				interpersonal	textual	
rank	[class]		logical		experiential				(cohesive)
clause		complexes (clause-			TRANSITIVITY		MOOD MODALITY POLARITY	THEME CULMINATION VOICE	COHESIVE RELATIONS
phrase	[pre-positional]	phrase-			MINOR TRANSITIVITY		MINOR MOOD (adjunct type)	CONJUNCTION	
group	[verbal]	group-	INTER-DEPENDENCY (parataxis/ hypotaxis) &	TENSE	EVENT TYPE ASPECT (nonfinite)		FINITENESS	VOICE DEICTICITY	
	[nominal]			MODIFICATION	THING TYPE CLASSIFICATION		PERSON ATTITUDE	DETERMINATION	SUBSTITUTION/ELLIPSIS CONJUNCTION
	[adverbial]		LOGICAL-SEMANTIC RELATION (expansion/ projection)	MODIFICATION			COMMENT (adjunct type)	CONJUNCTION	
word		word)		DERIVATION	(DENOTATION)		(CONNOTA-TION)		
information unit		info. unit complex		ACCENTUATION			KEY	INFORMATION	
		complexes		simples					



2009a: 179–180). System networks for contextualization remain ‘at a nascent stage’ (Hasan, 2009a: 181) but these ‘contextualization systems have the distinction that instead of taxonomizing realized meanings, they actually systemize the realization-activating contextual features and attempt to relate context to wording via meaning, which acts as the interface between the two’ (Hasan, 2009a: 181–182).

A related but distinct approach to operationalizing register can be seen in the way that Matthiessen and colleagues have pursued Halliday’s goal of understanding ‘what situational factors determine what linguistic features’. Drawing in particular on the work of Ure (1969), Matthiessen *et al.*’s development of a typology of registers is a move towards this understanding. The typology in its current form combines field (divided into ‘semiotic processes’ and ‘social processes’; with ‘semiotic processes’ further specified as ‘expounding’, ‘reporting’, ‘recreating’, ‘sharing’, ‘recommending’, ‘enabling’ and ‘exploring’) with mode (with ‘medium’ specified as either ‘spoken’ or ‘written’ and ‘turn’ specified as either ‘dialogic’ or ‘monologic’). The authors note the absence of tenor in this model, but argue that in ‘the area of typology we discuss here, there is a strong association between field and tenor in certain respects’ (Matthiessen *et al.*, 2008: 190).

The typology of registers foregrounds a continuum between types of semiotic process. It builds complexity into the model by specifying a large array of contexts of language in use, showing where these uses interface with each other, and relating all this variation back to a central ‘core’ of variation, if you will. An important implication here is that the ‘co-selection of options’ across the metafunctions at context level is pre-ordained. In the network approach, complexity is built in a different way: it is the features which are specified and arrayed, not the configurations. From a theoretical perspective, the network approach depicts field, tenor and mode as essentially orthogonal<sup>3</sup> variables, and although there is debate about the extent to which there is ‘mutual prehension’ (Hasan, 1999: 245) between metafunctions, in practice many plausible different co-selections are available, both within and across metafunctions

### **Capturing register at work in surgery interaction – networks all the way down?**

In the pursuit of operationalizing register, one key challenge is finding principled ways of selecting and co-ordinating analyses, since a comprehensive account of all systems, strata and ranks is impossible for anything other than very small corpora and/or very small texts (Matthiessen, 1993). Hasan’s and Butt’s proposals for modelling context paradigmatically constitute a significant advance here, because they make it possible to conduct multistratal analyses

by integrating network-based descriptions at the levels of context, semantics and lexicogrammar.

Our illustration in this section takes an 'interpersonal slice' (cf. Matthiessen's 'metafunctional slice', 1993: 276), and tests the possibility of calibrating Butt's tenor network (2003)<sup>4</sup> with Hasan's network for Commands (2009 [1992]) to model the context of surgical interaction (Matthiessen's 'metafunctional slice' with 'multistratal coverage'). We chose the interpersonal metafunction for our 'slice' because, first, it seemed to us that interpersonal 'situational factors' (tenor) in surgery teamwork bring a very particular kind of pressure to bear on the 'linguistic factors' observed in surgical interaction (after Halliday, 1978). In other words we expected that interpersonal choices and structures might constitute something like Halliday's 'prototypical syndrome of features' that characterize a register, for the context of surgical interaction. In particular, we were interested in those features through which team members enact, mitigate and negotiate control of each other's actions in a complex and highly repercussive environment. Our focus on speech function was a way of testing the plausibility of using semantic-level categories in register analysis, rather than skipping directly from the context directly to lexicogrammatical features, since Halliday suggests that register is brought into being when contextual features such as tenor activate 'the corresponding component in the semantic system'. A further reason was that the system of SPEECH FUNCTION has been significantly developed in Hasan's work on message semantics, both with respect to delicacy and realization, as outlined below (see Hasan *et al.*, 2007; Hasan, 2009b).

Data for our example are drawn from a project on 'Systemic Safety in Surgical Interaction' (Cartmill, *et al.*, 2007; Moore *et al.*, 2010; Moore, in press).<sup>5</sup> This research constitutes an important element that had hitherto been missing from work on medical safety, which had almost entirely focused on identifying 'root causes' of adverse events, including 'communication factors' (e.g. Wilson *et al.*, 1999). Very little attention had been given to the question of how it is that, in most cases, skilful surgical interaction (not just deft handiwork) manages risk and avoids error, on a day-to-day, minute-by-minute basis. As Hasan points out (2006: 40) 'linguistics has its work cut out for it: its job is to demystify the production of linguistic meanings', although we often need to mystify it first, since 'the world of meanings is experienced by social subjects as "already there"'. Our project undertook a map of such 'typical-actual' interaction in surgery. See also Smith (2008) and Moore (in press) for accounts of this material which build in analyses of body alignment, and intonation, respectively.

### The 'taking over' episode

Turning now to the example data, Table 2 displays a transcript of talk between team members during colorectal surgery. The episode begins with growing

tension about how quickly things are proceeding. Here the senior surgical trainee (the Registrar, with 10+ years of medical training/experience) is doing the surgery. The Specialist (a professorial-level surgeon) is in a supervisory role, but is also ‘assisting’ the Registrar. The rising tension puts on notice (first implicitly then explicitly) the question of swapping roles, and having the specialist perform the operation. Although there is no space to discuss field or mode in detail, note that roles relating to both material action and pedagogical action are simultaneously activated, with their short and long-term goals, and their settings along the cline between constitutive and ancillary roles for language. These two kinds of action can be thought of as first order and second order field (Halliday, 2002 [1977]) and the tenor settings in our discussion relate to these two orders of field. An expanded discussion of the field of surgery practice – with its ubiquitous junior students, senior trainees and visiting observers – could also profitably refer to Bernstein’s notion of pedagogic discourse, especially in terms of the relationship between instructional and regulative discourses (see e.g. Bernstein, 1996), and how these elements configure differently in surgery from the way they structure other pedagogic contexts (see e.g. Christie, 2000).

Table 2: Extract from surgical data – the ‘taking over’ episode

Msg	Spkr	Text	SF
1	S	Is it coming?	Q
2	R	It is. Hmm.	S
3		Jenny, I’m just gonna move you in deeper	C
4		Grab that	C
5		er ah ((exerting considerable force))	-
6		there, just there ((sotto voce))	-
7		((looks to up and out to middle distance))	-
8		Oh no, yeah, I can feel it.	S
9	S	Are your fingers down bel- below it?	Q
10	R	Almost like a suction effect at the moment in the pelvis	S
11		My fingers are below it.	S
12	S	Ok well pull on em hard.	C
13		Pull up on that band.	C
14		Nah this is	-
15	R	Nup	-

Msg	Spkr	Text	SF
16	S	... faffing, isn't it	Q
17	R	It is faffing	S
18	S	Oh that's not the word, um.	S
19		It's all very stiff in there, just from his previous disease.	S
20		Let's just go straight down the middle of the front	C
21		and see what we run into.	C
22		Can you get a little small sponge thanks N or a medium sponge.	C
23		So we've just had a	S
24		roll it into a ball, into a roll,	C
25		so we've been frustrated	S
26		and we've been – what? – repelled (yep)	S
27		so we're just gonna try another (way)	C
28		so just roll that down	C
29		that might be too much actually	S
30		and get down there,	C
31		pull on that bit	C
32		and i'll see if J and i can show you that	O
33		J can you – you help me	C
34		we'll both hold a second	C
35		you need to get more than one finger down there	C
36		so - so that you've got a little bit of a front	S
37		And an angle ((12 secs silence))	S
38		Let me move the retractor	C
		((11 messages omitted))	
49	R	Sorry, I'm in the way, aren't I?	Q
50	S	No.	S
51		I just can't stand it any more	S
52	R	I'm actually getting somewhere now	S
53	S	No but you're doing – you're doing fine	S
54	R	You wanna take over, don't you.	Q
55	S	No, no	S
56	R	Yes you do	S

Msg	Spkr	Text	SF
57	S	No. I absolutely don't want to take over.	S
58	R	You do, I feel.	S
59	S	Well? No I don't, I don't	S
60	R	I didn't say I was going to let you	S

Table note: In Column 2 the speaker is shown as S = Surgeon; R = Registrar; Message (after Hasan, 2009[1992], 1996) numbers are displayed in the left hand column. In the right hand the Speech Function of each message is shown as Q = Question; S = Statement; C = Command; O = Offer; messages which show no selection are punctuative messages (cf minor clauses). Shading indicates phases; the darkest shade indicates the earliest phase; the lightest indicates the latest phase (analysis of phase broadly follows Gregory e.g. 2002), discussed below in relation to variation in tenor.

How do the specialist and the senior trainee keep their complex and shifting roles in play, and manage the eventual handover without damage either to the patient, or to the quality of the pedagogic relationship which underpins surgical training programmes? The answer lies, in part, in the participants' mastery of registerial principles, particularly regarding the interpersonal function. In other words they are relating context to meaning via wording, and agreeing sufficiently about it to pursue an organized but changing joint activity (see Hasan, 2000). As the table above shows, Commands occur very frequently in this text (16/50 messages are Commands). Although they are not as frequent as Statements (there are 23 Statements, five Questions, one Offer and five punctuative messages) it would seem producing and 'hearing' Commands appropriately is a central plank of the team's expertise in relating context, meaning and wording, and that the need to be able to do so says something important about surgery as a social activity. In order to tease out and test this observation, we first identify some features from Butt's tenor network (see Figure 2). These features, we argue, have a central role in activating the observed selections in the interpersonal semantics, which will be described in the subsequent section (see Figure 3).

### Identifying the relevant parameters of tenor

Before commenting on the tenor selections, a very brief word about Butt's model is in order. Whereas Halliday's original conception of tenor was 'the cluster of socially meaningful participant relationships, both permanent attributes ... and relationships that are specific to the situation, including the speech roles' (Halliday, 1978: 143) and his early tenor descriptions were labels such as 'doctor/patient' or 'parent/child', Hasan modelled tenor as three distinct features, namely AGENTIVE ROLE, SOCIAL HIERARCHY and SOCIAL DISTANCE (Hasan, 1979, 1985/89). Hasan's descriptions of SOCIAL

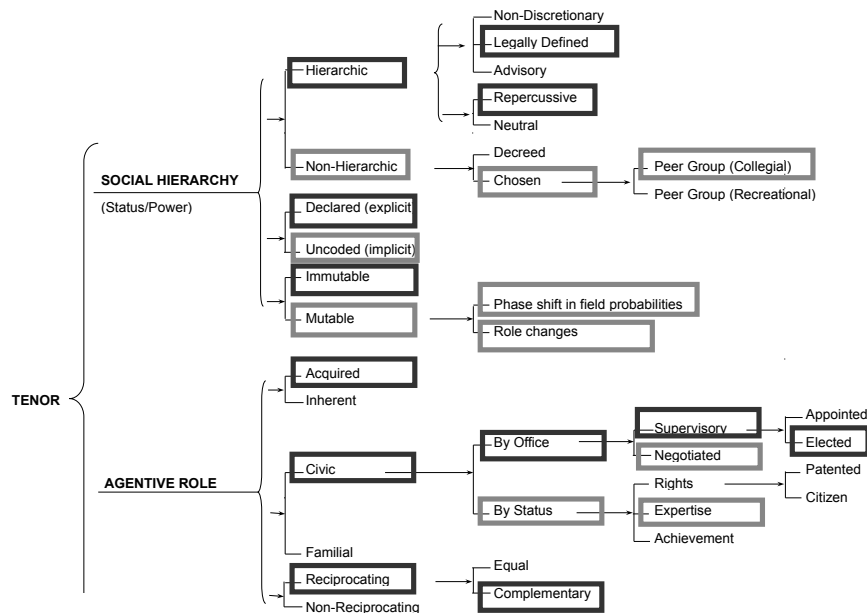


Figure 2: Selections in SOCIAL HIERARCHY and AGENTIVE ROLE in 'Taking over' text (After Butt, 2003. See note 7 for explanation of shaded boxes.)

DISTANCE and SOCIAL HIERARCHY became inherently comparative, although AGENTIVE ROLE remained similar to Halliday's 'label' approach (see Hasan, 1985/89). In Butt's (2003) model, tenor has been modelled as parallel systems in a network, and the contrasts are outlined and illustrated in Figure 2.<sup>6</sup> The value of this approach is that potential contrasts between co-selections of field, tenor, and mode become numerous, and the analyst can map the character of a particular instance (or set of instances) as a particular configuration of choices across all these 'domains of contrast' and compare it against any other instance, broader dataset/corpus, or idealized variety.<sup>7</sup>

In the 'Taking over' episode above, the 'hot spots' in the network are arguably the dimensions of AGENTIVE ROLE and SOCIAL HIERARCHY. Within AGENTIVE ROLE, the instance above selects [reciprocating],<sup>8</sup> since 'the relation is bi-directional, i.e. the participants/actants ... act on each other' (Butt, 2003: 15). That is, in order to teach/train/mentor the (surgical) teacher needs a (surgical) trainee; likewise the assistant surgeon role only exists with respect to a principal surgeon. Going further in delicacy within the choice of [reciprocating], this instance selects [complementary] rather

than [equal] agentive roles, since the teacher's role and the learner's role are not the same. Compare this with the roles of, say, two debaters: the debaters have [reciprocal] roles, but the roles are [equal] (even though the quality of their arguments may not be!)

Within SOCIAL HIERARCHY, our instance selects [immutable] for teacher-student role, but [mutable] for the surgeon-assistant role relations. This can be seen in a change in actant status between the Specialist and the Registrar that finally occurs at message 91. The hierarchical differences are [declared] i.e. made explicit to all within the discourse community, by spatial and linguistic patterning. All of these selections (and more) are features of the 'relevant context' (Hasan, 2009a) because they motivate the kind of semiotic behaviour that occurs in the surgical instance and how it will be interpreted. In other words they activate and contextualize patterns on lower strata.

### Identifying 'activated selections' in the semantics

We now turn to the semantic level descriptions. As outlined above, our passage has been analysed in terms of Hasan's network for Commands (Hasan, 2009[1992]; see also Hasan, 1996, 2006 for general discussions of semantic networks. The command network is part of a set of networks that covers the four speech functions, which Hasan called the system of ROLE ALLOCATION. See Hasan, 1996). Hasan's Command network extends the delicacy available for undertaking analyses of speech function. For our example of register analysis in surgery, we use only the first two 'levels of delicacy' within Command out of five levels of delicacy set out by Hasan, since significant patterning in the register in question occurs at this relatively indelicate level, according to our results. See Hasan (2009 [1992], 2009b) for (slightly different) versions of the full network.

The challenge for register techniques at this level of the analysis is to answer questions such as: What are the semantic options that are typically taken up in the register in question, under which contextual pressures and why? How do the semantic selections and co-selections construe the contextual configuration of surgery, in one instance, as it unfolds and shifts logogenetically? How do the semantic selections and co-selections of some members and some teams differ, and what does this indicate about their status, expertise and career potential? How do these selections assist us to understand and model what the situation demands? We cannot answer these questions in the scope of the paper, but for the purpose of illustration, we explore how the interpersonal semantic selection 'command', and the selection of specific types of commands, uttered by different members of the team, actively construes the complex and shifting tenor roles within the surgical team.

### Speech function types as 'favoured and foregrounded' options

Figure 3 displays both the systems of choice available once the features [demand] and [goods and services] which together construe the speech function 'command' are selected at message level, and the distribution of command types occurring in our example text. The shaded boxes indicate those grammatical features which realize the semantic options in the network, according to Hasan's model. Beside some options, small grey boxes show S for Specialist or R for Registrar, indicating options taken up in at least one message, and by whom. The roman numerals in the grey boxes show in which phase of the episode the option is selected.

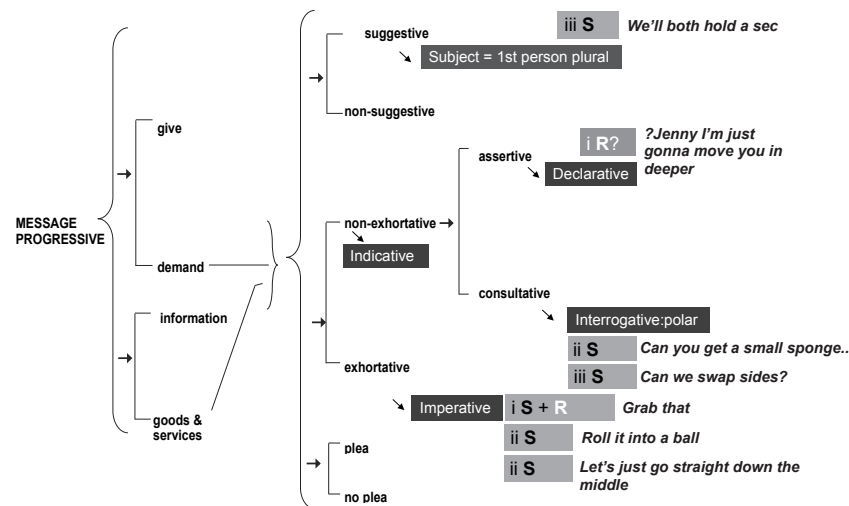


Figure 3: Semantic network for speech function 'Command', showing options taken up in the 'Taking over' episode (after Hasan, 2009 [1992]; some further options in delicacy not displayed).

As the network shows, a Command can have the semantic feature [suggestive], in which case it will be realized crucially (although not in isolation) by preselecting the first person plural as the Subject of the clause which realizes the Command as message. An example of a [suggestive] command from our data is *We'll both hold a second*. Another is *Let's just go straight down the middle of the front*. The contextual value of this semantic feature is that it presents the command as a directive, but construes the proposed activity as a joint enterprise. In the synoptic context of our example, a [suggestive] Command arguably serves to construe the tenor dimension of Agentive Roles as [recip-



roccating]. From a more dynamic perspective, the [suggestive] command with its plural first person Subject can be seen as a way of holding the reciprocal role relations constant for now; it is a way of saying that the action needs to change but the agentive roles remain ‘us as we are’. In contrast to [suggestive] commands, wherever the Subject of the clause realizing the command is second person, implied second person, or first person singular, the Command is said to be [non-suggestive]. An example would be *Roll it into a ball*. The contextual value of this choice [nonsuggestive; exhortative] is the construal of the command more as advice and possibly even criticism, and less as joint enterprise.

The other major ‘cut’ in Hasan’s description of Commands which is relevant to our illustration is the choice between [exhortative] and [non-exhortative] commands, which basically follows the distinction at lexicogrammatical level between imperative and indicative mood respectively. Following on from that, there is an option for non-exhortative commands to be either [assertive] or [consultative], where [assertive] commands preselect declarative mood (with some further stipulations, such as modal Finite); and where [consultative] selects interrogative: polar as mood (but not interrogative more generally).

Not only does the first step into the system offer three sets of freely combinable options, two of these systems offer further delicacy of description, yielding quite an array of different interpersonal positionings in making a command. Our example above of the command *We’ll both hold on a second* is not only [suggestive] but also shows the feature [non-exhortative]. Within the feature [non-exhortative] two further options are opened up: [assertive] versus [consultative]. Our example is an instance of the [assertive] type. On the other hand, a Command such as *Can we swap sides?* combines two ‘softening’ features, if you like – namely [consultative] and [suggestive]. Where commands are [non-suggestive] and [assertive] a further distinction between addressee-oriented (*You need to get more than one finger down there*) and speaker-oriented (*I’d like fresh gloves*) applies, as realized by the choice of Subject person.

### Favoured semantic options construe tenor and phase

Turning to the distribution of Command types within our example episode, Figure 3 shows that the Registrar uses a smaller number and variety of Commands than the Specialist. The Registrar uses Commands which are [exhortative; non-suggestive; non-consultative] e.g. *Grab that*. She also uses a form with the junior medical student for which Hasan does not appear to have a category, in *Jenny, I’m just gonna move you in deeper*, but which is clearly also [non-suggestive; non-consultative] (we come back to this further below).

The Specialist's choice of Command type seems to be related to the phase of the episode, a point which recalls Firth's interest in the interaction of spoken language with the context of situation, and 'the way each moment both narrows down and opens up the options available at the next' (Halliday, 2005 [2002]: 178). When the context is relatively stable (phase 1: messages 1-14) the Specialist selects Commands with the features [non-suggestive; exhortative] e.g. *Pull up on 'em hard*, directed to the Registrar. As the contextual configuration becomes more unstable (message 15ff), the Surgeon's commands polarize into [assertive: addressee oriented] – *You need to get more than one finger below it* and, on the other hand, [consultative] and/or [suggestive] – *Can we swap sides?* In the moments when actants are carefully re-negotiating their roles, the specialist, in whom ultimate authority and responsibility resides, uses types of commands which treat the Registrar 'as if she has the right to demur' (Hasan, 2009 [1992]: 293). The Registrar does not use these kinds of Commands at all, and stops making Commands at phase 2. Our interpretation of the patterns shown in Figure 3 is that they are motivated, in part but very strongly, by the patterns displayed in Figure 2. In other words, the Contextual Configuration (but in particular the mutable, complex agentive relations identified above) appears to mediate message type and delicacy within type, by speaker and addressee. A fuller analysis displays other patterns which are coherent with these semantic tendencies (Moore, in press).

### Register expands meaning potential in several ways

It is axiomatic in register studies that contextual settings constrain meaning potential and the episode presented here is no exception. Commands are arguably more frequent in this context than in English overall, or in many other contexts. In addition, the selection of options within the Command system is quite restricted, as Figure 3 suggests. However, it also seems that the phenomenon of register can, in some sense, expand the meaning potential of an instance (not just of the system of language overall, as Matthiessen (1993) cogently argues) since the set of lexicogrammatical features which count as realizing a command appears to be expanded by the contextual configuration here.

Our evidence for this claim is that in Message 3 we saw that *I'm just gonna move you in deeper* is construed as a Command.<sup>9</sup> Messages realized by declarative clauses are normally construed as Statements unless they have either second person Subject plus modal Finite (*You need to move in deeper*), or the speaker is construed as first person Senser in a projecting alpha-clause, with second person Subject/Actor in the beta-clause (*I'd like/I want you to move in deeper*). In our example, instead, the speaker is first person Subject/Actor in a

Material Clause with Addressee as Goal. However, it is not difficult to supply the semantic analogy between these grammatical configurations, since each implies the speaker's preference regarding the addressee's state or envisaged action.

Arguably then, the contextual configuration(s) of surgery predispose participants to interpreting messages as Commands: in other words it is harder in surgery than in other contexts to hear a message as anything other than a Command, and there is more semiotic material available for making and varying Commands. This point illustrates Halliday's claim, noted earlier, that one of the reasons grammatical choices may mean differently is the probabilities of such choices in the general system, versus their take up in a given register. Note also that in identifying this message as a Command we are, as always, shunting between the view from 'below' (citing a lexicogrammatical realization that is agnate to more typical realizations of Commands); the view from 'above' (noting that the configuration of agentive roles, goals, and types of action increases the probability of Commands occurring); and the view from 'round about' where, among other things, we form and test our categories by considering the likely response to such utterances: if Jenny doesn't move in, we would predict a repeated or perhaps a more congruent wording of the Command.

### Challenges and prospects in register analysis

Before closing this example, there are a number of shortcomings and challenges we will pursue at length elsewhere but want to mention here. First we want to forestall some possible misinterpretations from our pragmatic use of one incomplete text analysis. Presenting only tenor and interpersonal semantics does not mean that a full register analysis could be done without considering experiential or textual patterning. It is also important to note that although we value the 'slice' through one metafunction as an efficient way of providing a multistratal view, it is not our view that only interpersonal systems in the grammar or semantics are involved in realizing interpersonal values in higher strata, or that interpersonal features such as mood, modality, speech function and others (tense, polarity, etc.) are never involved in construing field and mode (see Hasan, 1995, on this point). Providing only one small text (segment) should also be taken within the context of our purpose in this paper. Our explication of this text is presented by way of illustrating the ways in which we feel the analytical categories of context, semantics, lexicogrammar (and intonation) need to be made to speak to each other. The relations we have posited between the contextual features of tenor and the semantic features of speech function seem plausible for our text. But our claims can only

have a tentative status until they can be tested across many more instances, and more registers.

A workable quantitative framework is sorely needed for testing questions such as whether there is a consistent relationship between the contextual parameters and the semantic parameters we found in the 'Taking over' episode. At the moment, register studies are still divided, in our view, between approaches which prioritize complex models of language but can't quantitatively test their hypotheses yet (like the work displayed here), and those which prioritize sampling strategies and automated coding and therefore can only handle more parsimonious models of language, although computational register profiles based on co-selection of lexicogrammatical categories are gaining ground. As information is assembled, combined and compared across registers, and across quantitative and manual approaches to register, it becomes more plausible to make a representative sample of English that appropriately encompasses variation at the strata and ranks of interest, rather than attending quantitatively only to crude indices of the variables that matter (see e.g. Teich (2003) for discussions of these issues, and Halliday (2005 [2002])).

Looking further out, to register typology, a quantitative framework is also needed for answering questions about the extent to which contextual configurations like those in surgery apply the same pressure on interpersonal semantics as other 'apprenticing' contexts that share a similar complex material and pedagogical field, along with similar tenor. Would our surgery context prove to be a different register from mentoring a motor mechanic, if we take unique stratal alignments between context, semantics and wording to be the measure of 'a' register? Perhaps the particularly repercussive nature of surgical work, along with the kind of cultural capital, time investment, and eventual collegiality (but also the professional/institutional allegiances and clefts between medical, nursing and other groups) that are involved in becoming a surgeon, all work together to make it necessary or functional for members to have a complex repertoire of conveying instructions to each other in surgery that is not as elaborated in 'blue collar' industries. The most important thing to note here is that this is an empirical question. It is impossible to test claims about consistent relations between register and other discourse categories if register is treated as a 'natural kind' that corresponds to folk categories of situation, which is why a parametric approach at all levels holds considerable promise, despite the challenges.

### Concluding remarks

Putting concepts such as register to work is crucial to developing the concept, since 'theory and description develop in interaction' (Matthiessen, 1993: 224), and the challenges that arise through description, as we have seen

above, feed into the further development of theory and hence into future methods for application. The meaning of the variations seen above can only be interpreted by reference to the context of a situation; and the variation selected by register can only be understood with reference to system potential. This fact underlies Matthiessen's (1993) call for a 'two-pronged approach' to register studies.

Just as we can look at context in 'variable degrees of delicacy so we can give whole families, subfamilies or single registers contextual values depending on the degree of delicacy we select within context' (Matthiessen, 1993: 236), so it might be possible to give contextual variables from the perspective of different individuals, groups of individuals or even technology. This is particularly important when using the context networks as outlined by Hasan (1999) and Butt (2003).

Despite the challenges inherent in register studies, in this paper we have illustrated something of the theoretical and instrumental value of Halliday's notion of register. One of the values of the notion is that we do not have to describe everything or deal with the full complexity of the culture. This does not mean that we do not keep the culture in mind. Any picture of a part of the system necessarily has the full system behind it. Register is perhaps best understood as a dialectic – between system and instance – since the two are never actually possible without each other. It does not so much sit between system and instance, as it is a take on system and instance at the one time. It is the culture brought to bear on the instance of the social process. This means that we are not faced with the unhelpful uniqueness of each instance, because we are viewing it through the system and therefore foregrounding the shared aspects. Neither are we confronted with the seemingly impossible task of transcribing the infinity of culture because we are viewing the culture through the aperture of the instance. The robustness of Halliday's account of register – robust in the sense that the term's relation to each other term in the theory is explicit – resolves the problem for linguists (as set out in Halliday, 2003) of 'the nature of a semiotic fact'. It does so by creating a means of bridging the gap between theory and observation.

## Notes

1. Martin has sometimes downplayed the distinction between his and Halliday's model. He suggests in *English Text* that 'there is nothing substantive' in the distinctions between claims about the realization of text structure in his and Hasan's models (1992: 505), although in other places he highlights specific differences – see e.g. his point about 'rejecting [Halliday's] association of genre with mode' (Martin 1999: 31) and foregrounds the opportunities for an expanding 'metatheoretical space'. By the same token a recent paper by Martin (2009) identifies Halliday's model of social context as having 'led to the development of genre analysis, particularly in Australia' (2009: 154). The claim is referenced in relation to both his and Hasan's

work – implying that the term ‘genre’ by the two scholars can be essentially equated. Further evidence for our claim that Halliday’s conceptualization of register has been obscured can be found in Bateman’s recent work on multimodality and genre, in which he claims that Hasan’s early work shows ‘clearly’ the view of genre as “staged, goal-oriented social processes” that has subsequently become a cornerstone of approaches to genre in general’ (Bateman, 2008: 186). His history of work on genre includes reference to ‘the final move to genre within the SFL account’ (2008: 184), made on the basis, according to Bateman, of the problematic “homogeneous” view of text’ which register apparently offers, a view that he suggests is countered by bringing in Martin’s notion of ‘genre’. It is worth noting here that Halliday has not adopted Martin’s alternative proposal.

2. This paper was published with McIntosh and Stevens, but it was in the main written by Halliday – see footnote to the paper, published in *Language and Society*, Volume 10 on Halliday’s Collected Works. 2007 [1964]: 37.

3. By orthogonal here we mean that the primary systems field, tenor and mode (and to a lesser extent the domains of contrast within each) are considered to be *potentially* independent or uncorrelated. Hasan (1995, 1999) discusses the type and degree of interdependence that appears to exist between different contextual features, and their relation to register; more discussion is needed in our view. However, one benefit of an ‘orthogonal’ network approach is that it can reveal historical and cultural differences in which contextual features can co-occur in a culture, and which configurations construe ‘non-contexts’.

4. Butt’s mimeo on ‘Parameters of Context’ includes field, tenor and mode networks which have been adapted and extended from Hasan’s expanded network for Field (Hasan, 1999) and her earlier work on these parameters.

5. This project was supported by an ARC Discovery Project, CIs D. G. Butt and J. M. Cartmill, named A. P. A. Moore. Data included 60 hours of videotaped routine surgical interaction.

6. Hasan’s three tenor features were refashioned in Butt (2003) into three interacting, parallel systems in a network, working along similar lines to Hasan’s model (1999) for Field, with an additional fourth system, Network Morphology, as a way of bringing social networks into the Tenor frame, giving approximately 100 selectable features just for tenor. A better indication of how much territory is encompassed by these networks may be a measure of ‘degrees of freedom’ but it is difficult to ascertain these in a hierarchical model, e.g. it is not clear whether the most delicate options should have the same weight as ‘earlier’ nodes in the network.

7. Additional delicacy can be built in by the analyst, and multiple passes through the system are ‘allowed’. In the Tenor diagram, the grey boxing shows a first pass which relates primarily to the institutional demands of the context of situation (complementarity of roles in the operating suite, the [declared; immutable; hierarchical] status of professor to a junior staff member/trainee, etc. The paler grey boxing indicates a second pass through the system, showing choices that pertain to the emerging professional solidarity between the two primary interactions as colorectal surgeons (e.g. emerging mutability of the hierarchy, collegial basis of the hierarchy, etc.).

8. The square brackets denote this term is a selection from a system network.

9. This is treated as a Command because in response to this utterance, Jenny adjusts her posture and utters a compliance token ‘mm-hmm’. The alternative view would be to treat ‘I’ll move you in’ as a Statement, and the ‘mm-hmm’ alone could of course realize merely an acknowledgement in a statement, so this token does not in itself count as evidence of a response to a command. Jenny does not wait to be adjusted but responds as one would expect a student to respond to a command, by performing the action represented. This, plus our expectation of disruption were the student to treat the registrar’s utterance unequivocally as

a Statement, pushes us towards interpreting it as a Command. Of course speech functions, as instances, often remain fuzzily interpreted without disrupting discourse flow – see e.g. Matthiessen *et al.* (2005).

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### References

- Bateman, J. (2008) *Multimodality and Genre: A Foundation for the Systematic Analysis of Multimodal Documents*. London: Palgrave Macmillan.
- Bernstein, B. (1996) *Pedagogy, Symbolic Control and Identity: Theory, Research, Critique*. London and Washington DC: Taylor and Francis.
- Biber, D. (1995) *Dimensions of Register Variation*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511519871
- Bowcher, W. (forthcoming) The history and theoretical development of context of situation in Systemic Functional Linguistics. In C. Chang (ed.) *Functional Studies of Context*. Beijing: Foreign Language Teaching and Research Press.
- Butt, D. G. (2003) *Parameters of Context: On Establishing the Similarities and Differences Between Contexts*. Unpublished monograph, Macquarie University.
- Cartmill, J. A., Moore, A. R., Butt, D. G. and Squire, L. (2007) Surgical teamwork: Systemic Functional Linguistics and the analysis of verbal and non-verbal meaning in surgery. *ANZ Journal of Surgery* 77 (S1): A103–A108. doi:10.1111/j.1445-2197.2007.04129\_10.x
- Christie, F. (2000) The language of classroom interaction and learning. In L. Unsworth (ed.) *Researching Language in Schools and Communities*, 184–203. London: Cassell.
- Cloran, C. (1994) *Rhetorical Units and Decontextualisation: An Enquiry into some Relations*



- of Context, Meaning and Grammar*. Monographs in Systemic Linguistics, No. 6. Nottingham: School of English Studies, Nottingham University.
- Firth, J. R. (1950) Personality and language in society. Reprinted in J. R. Firth *Papers in Linguistics 1934-1951*. London: Oxford University Press, 1959.
- Gregory, M. (2002) Phasal analysis within communication linguistics: two contrastive discourses. In P. Fries, M. Cummings, D. Lockwood and W. Sprueill (eds) *Relations and Functions within and around Language*, 316-345. London: Continuum.
- Halliday, M. A. K. (1978) *Language as a Social Semiotic: The Social Interpretation of Language and Meaning*. London: Edward Arnold.
- Halliday, M. A. K. (1985/89) Part A. In M. A. K. Halliday and R. Hasan, *Language, Context, and Text: Aspects of Language in a Social-Semiotic Perspective*. Oxford/Geelong: OUP/Deakin University Press.
- Halliday, M. A. K. (2002 [1977]) Text as semantic choice in social contexts. In J. J. Webster (ed.) *Linguistic Studies of Text and Discourse. Volume 2 in the Collected Works of M. A. K. Halliday*, 23-81. London and New York: Continuum.
- Halliday, M. A. K. (2002 [1988]) On the ineffability of grammatical categories. In J. J. Webster (ed.) *On Grammar. Volume 1 in Collected Works of M. A. K. Halliday*, 291-322. London and New York: Continuum.
- Halliday, M. A. K. ([2002] 1992) How do you mean? In J. J. Webster (ed.) *On Grammar. Volume 1 in Collected Works of M. A. K. Halliday*, 352-368. London and New York: Continuum.
- Halliday, M. A. K. (2003[1992]) Systemic grammar and the concept of a 'science of language'. In J. J. Webster (ed.) *On Language and Linguistics. Volume 3 in Collected Works of M. A. K. Halliday*, 199-212. London and New York: Continuum.
- Halliday, M. A. K. (2003) Introduction: On the 'architecture' of human language. In J. J. Webster (ed.) *On Linguistics and Language. Volume 3 in Collected Works of M. A. K. Halliday*, 1-29. London and New York: Continuum.
- Halliday, M. A. K. (2005 [1995]) Computing meanings: Some reflections on past experience and present prospects. In J. J. Webster (ed.) *Computational and Quantitative Studies. Volume 6 in the Collected Works of M. A. K. Halliday*, 239-267. London and New York: Continuum.
- Halliday, M. A. K. (2005 [2002]) The spoken language corpus: A foundation for grammatical theory. In J. J. Webster (ed.) *Computational and Quantitative Studies. Volume 6 in the Collected Works of M. A. K. Halliday*, 157-189. London and New York: Continuum.
- Halliday, M. A. K. (2007 [1975]) Language as social semiotic. In J. J. Webster (ed.) *Language and Society. Volume 10 in the Collected Works of M. A. K. Halliday*, 169-201. London and New York: Continuum.
- Halliday, M. A. K. (2009) Methods - techniques - problems. In M. A. K. Halliday and J. J. Webster (eds) *Continuum Companion to Systemic Functional Linguistics*, 59-86. London and New York: Continuum.



- Halliday, M. A. K. and Matthiessen, C. M. I. M. (1999) *Construing Experience through Meaning: A Language Based Approach to Cognition*. London, New York: Cassell.
- Halliday, M. A. K., McIntosh, A. and Stevens, P. (2007 [1964]) The users and uses of language. In Webster, J. J. (ed.) *Language and Society. Volume 10 in the Collected Works of M. A. K. Halliday*, 5–37. London and New York: Continuum.
- Hasan, R. (1979) On the notion of text. In J. Petöfi (ed.) *Text Versus Sentence: Basic Questions of Text Linguistics*. Papers in Text Linguistics 20. Hamburg: Buske. Cited in Hasan (1999).
- Hasan, R. (1985/89) Part B. *Language, Context, and Text: Aspects of Language in a Social-semiotic Perspective*. Oxford/Geelong: OUP/Deakin University Press.
- Hasan, R. (1995) The conception of context in text. In P. H. Fries and M. J. Gregory (eds) *Discourse in Society: Systemic Functional Perspectives. Meaning and Choice in Language: Studies for Michael Halliday*, 183–283. Advances in Discourse Processes Vol. L. Norwood, NJ: Ablex.
- Hasan, R. (1996) Semantic networks: a tool for the analysis of meaning. In C. Cloran, D. Butt and G. Williams (eds) *Ways of Saying, Ways of Meaning: Selected Papers of Ruqaiya Hasan*, 104–130. London: Cassell.
- Hasan, R. (1999) Speaking with reference to context. In M. Ghadessy (ed.) *Text and Context in Functional Linguistics: Systemic Perspectives*, 219–328. Amsterdam: John Benjamins.
- Hasan, R. (2000) The uses of talk. In S. Sarangi and M. Coulthard (eds) *Discourse and Social Life*. Edinburgh Gate: Pearson Educational.
- Hasan, R. (2004) Analysing discursive variation. In L. Young and C. Harrison (eds) *Systemic Functional Linguistics and Critical Discourse Analysis: Studies in Social Change*, 15–52. London and New York: Continuum.
- Hasan, R. (2006) Introduction: a working model of language. In R. Hasan, C. M. I. M. Matthiessen and J. J. Webster (eds) *Continuing Discourse on Language: A Functional Perspective Vol. 1*, 37–52. London: Equinox.
- Hasan, R. (2009 [1992]) Meaning in Sociolinguistic Theory. In J. J. Webster (ed.) *Semantic Variation: Meaning in Society and in Sociolinguistics. Volume 2 in the Collected Works of Ruqaiya Hasan*. London: Equinox.
- Hasan, R. (2009a) The place of context in a Systemic Functional Model. In M. A. K. Halliday and J. J. Webster (eds) *Continuum Companion to Systemic Functional Linguistics*, 166–189. London and New York: Continuum.
- Hasan, R. (2009b) *Semantic Variation: Meaning in Society and in Sociolinguistics. The Collected Works of Ruqaiya Hasan Vol. 2*. Edited by J. J. Webster. London: Equinox.
- Hasan, R. (2010) The meaning of ‘not’ is not in ‘not’. In A. Mahboob and N. Knight (eds) *Applicable Linguistics*, 267–306. London and New York: Continuum.
- Hasan, R., Cloran, C., Williams, G. and Lukin, A. (2007) Semantic networks: The description of linguistic meaning in SFL. In R. Hasan, C. M. I. M. Matthiessen and J. J. Webster (eds) *Continuing Discourse on Language: A Functional Perspective Vol. 2*, 297–738. London: Equinox.

- Hymes, D. H. (1969) Linguistic theory and the functions of speech. In *International Days of Sociolinguistics* (no editor). Rome: Luigi Sturzo Institute.
- Martin, J. R. (1992) *English Text: System and Structure*. Amsterdam: John Benjamins.
- Martin, J. R. (1999) Modelling context: a crooked path of progress in contextual linguistics. In Mohsen Ghadessy (ed.) *Text and Context in Functional Linguistics*, 25–61. Amsterdam: John Benjamins.
- Martin, J. R. (2009) Discourse Studies. In M. A. K. Halliday and J. J. Webster (eds) *Continuum Companion to Systemic Functional Linguistics*, 154–165. London and New York: Continuum.
- Matthiessen, C. M. I. M. (1993) Register in the round: diversity in a unified theory of register analysis. In Mohsen Ghadessy (ed.) *Register Analysis: Theory and Practice*. London: Pinter.
- Matthiessen, C. M. I. M. (2004) *The Semantic System of RELATIONAL EXPANSION: Rhetorical Structure Theory Revised*. Unpublished manuscript. Department of Linguistics, Macquarie University, Sydney, Australia.
- Matthiessen, C. M. I. M., Teruya, K. and Wu, C. (2008) Multilingual studies as a multi-dimensional space of interconnected language studies. In J. J. Webster (ed.) *Meaning in Context: Implementing Intelligent Applications of Language Studies*, 146–220. London and New York: Continuum.
- Matthiessen, C. M. I. M., Lukin, A., Butt, D., Clereigh, C. and Nesbitt, C. (2005) A case study of multistratal analysis. *Australian Review of Applied Linguistics*. Series S (19): 123–150.
- Moore, A. (in press) Surgical teams in action: a contextually sensitive approach to modelling body alignment and interpersonal engagement. In A. Baldry and E. Montagna (eds) *Interdisciplinary Perspectives on Multimodality: Theory and Practice*. Campobasso, Italy: Palladino.
- Moore, A., Butt, D. G., Cartmill, J. and Ellis-Clarke, J. (2010) Linguistic analysis of verbal and non-verbal communication in the operating room. *ANZ Journal of Surgery*. Online version 21 Oct. 2010 doi: 10.1111/j.1445-2197.2010.05531.x
- Nerliche, B. (1990) *Change in Language: Whitney, Bréal, Wegener*. London: Routledge.
- Reid, T. B. W. (1956) Linguistics, structuralism, philology. *Archivum Linguisticum* 8.
- Sinclair, J. and Coulthard, M. (1975) *Towards an Analysis of Discourse*. Oxford: Oxford University Press.
- Smith, B. A. (2008) *Intonational Systems and Register: A Multidimensional Exploration*. Unpublished PhD thesis. Macquarie University.
- Spencer, J. and Gregory, M. (1964) An approach to the study of style. In N. Enkvist, Spencer, J. and Gregory, M. *Linguistics and Style*. London: Oxford University Press.
- Teich, E. (2003) *Cross-Linguistic Variation in System and Text. A Methodology for the Investigation of Translations and Comparable Texts*. Berlin, New York: Mouton de Gruyter.

- Ure, J. (1969) *Practical Registers* (Parts I and 2). *English. Language Teaching*, Volume XXIII, Number 2. Oxford University Press.
- Ure, J. and Ellis, J. (1972) Register in descriptive linguistics and linguistic sociology. In Ocare Uribe Villegas (ed.) *Las concepciones y problemas actuales de la sociolingüística*. Mexico: University of Mexico Press.
- Wilson, R. M., Harrison, B. T., Gibberd, R. W. and Hamilton, J. D. (1999) An analysis of the causes of adverse events from the Quality in Australian Health Care Study. *Medical Journal of Australia* 170: 411-415.

A.4.7 *The impact of the medical emergency team on the resuscitation practice of critical care nurses*

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# The impact of the medical emergency team on the resuscitation practice of critical care nurses

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**Background:** Medical Emergency Teams (MET)/rapid response are replacing Cardiac Arrest teams in acute hospitals. There is a lack of knowledge about how Critical Care Nurses (CCNs), rostered on MET construct their responsibilities/roles.

**Objective:** Assess MET nurse activities at different hospitals.

**Methods:** The authors used visual ethnography; selecting Systemic Functional Grammar as our methodological framework. The Generic Systemic Potential was used to guide the coding of visual and inferential meaning of the activities of MET nurses. CCNs coded over 6 h of videoed MET calls, sampled across three hospitals, Sydney, Australia.

**Results:** The first layer of coding contained 1042 discreet tasks. They were sorted into 15 Areas of Practice (AOPs) and then allocated to aspects of performance (psychomotor and cognitive). The AOPs 'Assisting with Procedure' through to 'Monitoring Vital Signs' reflect psychomotor skills which account for almost half (48%) of the AOPs at site 1 and three-quarters at sites 2 (70%) and 3 (78%). Eight generic responsibilities/roles were identified. 'Ongoing Assessment,' 'Re-evaluating Risk' and 'Prioritising Interventions' were the most prominent. The patterns differed by hospital: 'Re-evaluating Risk' was prominent for sites 1 and 2 but less so for site 3.

**Conclusion:** 'Ongoing Assessment' and 'Re-evaluating Risk' occupied almost half of the MET nurses time, whereas 'Establishing Patient Acuity, the key activity in CA teams, occupied only 4%. These findings provide evidence of the roles of CCNs in the MET and suggest that education and training of MET nurses should support these roles.

## INTRODUCTION

Medical Emergency Teams (MET) and Outreach teams are replacing Cardiac Arrest (CA) teams in acute hospitals.<sup>1–6</sup> The overall aim is the early identification and intervention of at-risk patients.<sup>1–6</sup> The MET is staffed by critical care nurses (CCNs) and

intensivists.<sup>1 7 8</sup> It may be described as an itinerant team of ICU clinicians providing care outside the walls of ICUs.<sup>9</sup> The reasons for MET calls are many and varied, and range from relatively minor to life-threatening situations.<sup>6–10</sup> Historically, research into resuscitation and trauma has focused on correct implementation of protocols. Little attention has been given to aspects of the clinical performance of resuscitation practitioners, particularly CCNs and how they use their experiential knowledge within MET.<sup>10 11</sup>

## BACKGROUND

The 'Novice to Expert' concept suggests that postgraduate nurses have two different ways of knowing: theoretical and experiential.<sup>11</sup> The latter was the topic for our study, based on the concept that a MET call is an exemplar of the need to apply experiential knowledge in response to the contingent nature of nursing practice.<sup>11</sup>

In 1984, Benner introduced the concept: 'the trademarks of expert practice is its contingent nature; action is taken depending on the particular rather than the typical situation at hand.'<sup>11</sup> She contended that: 'we cannot afford to ignore knowledge gained from clinical experience by viewing it only from simplified models or from idealised, decontextualised views of practice.'<sup>11</sup> She identified a need to understand 'how the context and meanings inherent in clinical situations influence the performance of the expert.'<sup>11</sup> A few studies have applied Benner's concept to explore the performance of specialist nurses.<sup>12</sup>

We aimed to explore knowledge and meanings in the performance of MET nurses, based on the visual and inferential meaning of observed clinical practice.

## METHODS

### Methodological framework

Systemic Functional Grammar (SFL) was the framework for our study, a social semiotic approach which views all behaviour as potentially meaningful.<sup>13</sup> Within SFL, all behaviour and the environment surrounding it can be examined from the perspective of how it creates meaning.<sup>13</sup> Instances which share a similar function within the culture, for example MET calls, are likely to share a similar structure, termed the Generic Structure Potential (GSP).<sup>14</sup> Research suggests that it is possible to state a GSP.<sup>14</sup> A GSP does not exclude variation, but this variation will relate in a specific way to the function of that context in the culture. Hence, it is a useful tool for gaining an understanding of the roles/responsibilities of participants (MET nurses) in a context (MET calls).

### Sampling

Purposive sampling was used to capture 26 MET calls, sampled across a Tertiary Referral Centre (site 1), a Major Metropolitan Hospital (site 2) and a General Metropolitan hospital (site 3) in a Sydney South West Area Health Service, between June and December 2006. MET calls were filmed over 8 weeks, covering all shifts, including weekends, to allow for temporal variation in the structure of care. One camera focussed on the MET nurse during the MET call.

### Analysis

The videos were analysed by two researchers and 18 CCNs with an average experience of 11 years in Critical Care and 8 years in the MET system. Analysis was based on Benner's premise that such professional groups 'share a large stock of intersubjective meanings that all participants understand on an explicit level.'<sup>11</sup> This provided access to the experiential knowledge of MET nurses.<sup>11</sup> This reflexive approach to coding was a key analytical strategy to ensure relevance and credibility of our findings.

Visual and inferential meaning of the actions of the MET nurses were annotated separately for each video. Differences in counts and proportions were used to summarise and describe the data. Differences do not represent statistical differences but profile the differences in the patterns of clinical practice, in response to the context of each MET call.

Data were coded in three orders of abstraction based on GSP.<sup>14</sup> The first order was at the more concrete level of narrow task-orientated assessment. The second and third orders of abstraction make explicit the pressures that model the choices MET nurses make in the context of MET calls, and local culture. Context means the myriad of factors that are in operation during a MET call and may cause the MET nurse to act in a particular way

as the MET call unfolds. Participants only coding MET calls videoed in their hospital ensured that knowledge of cultural insiders are brought to the analysis. Data management and analysis (orders of abstraction) are described in [appendix 1](#).

## RESULTS

Videos totalled 10 for site 1, 6 for site 2 and 4 for site 3, representing a total recording time of 6 h and 41 min over an 8-week period. The number of videos reflected the relative frequency of MET calls for each hospital.

### First Order of abstraction (tasks)

The number of tasks were: 526 for site 1, 293 for site 2 and 223 for site 3. The typicality and the intensity of some of the tasks were different for each of the three hospitals. The number of tasks also reflected the number of METs per hospital. Overseeing MET was the most prominent task for site 1; documenting was the most prominent for site 2; and cardiac monitoring was the most prominent for site 3.

### Second Order of abstraction

Fifteen Areas of Practice (AOPs) were established as a result of sorting all tasks from Stage 1 analysis ([appendix 2](#)). Data were arranged into three subsets: one predominantly based on psychomotor skills, one based on cognitive skills and one where neither appeared to dominate.<sup>15 16</sup>

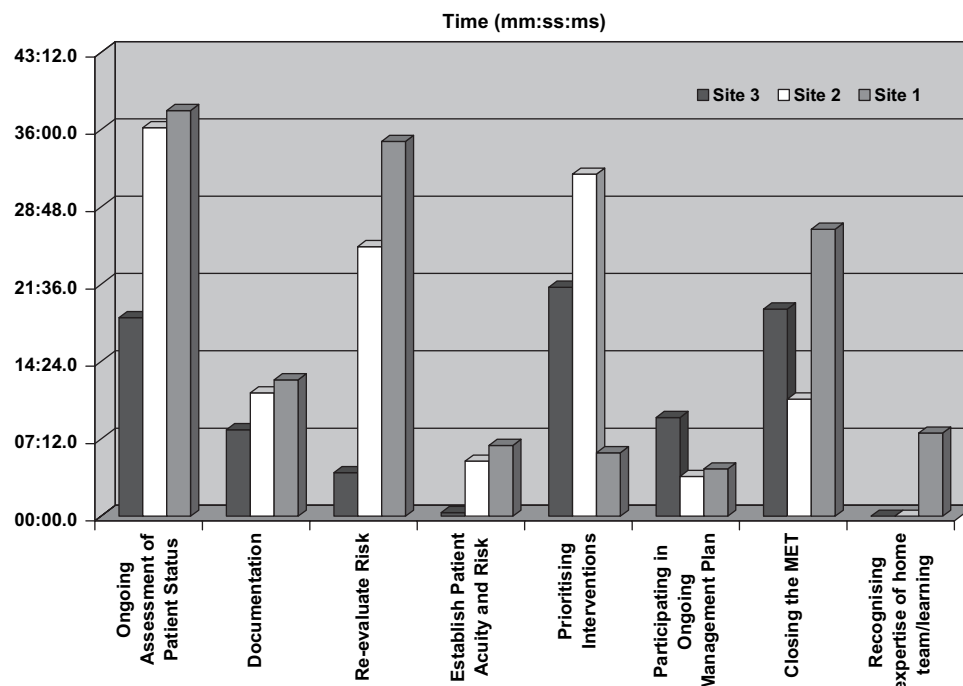
The subset 'Assisting with Procedure' through to 'Monitoring Vital Signs (VS)' constitutes psychomotor-based skills. They accounted for half of the AOPs at site 1 (48%) and three-quarters at sites 2 (70%) and 3 (78%). Most of the MET nurses' time was spent on 'Gathering Information' (cognitive and psychomotor) at site 1; for site 2 it was 'Monitoring VS' (psychomotor); and for site 3 it was 'Performing a Procedure' (psychomotor).

### 3rd Order of abstraction (responsibilities/roles)

Eight generic responsibilities/roles were identified ([figure 1](#)). The eight roles all MET nurses employed were 'Ongoing Assessment' (27%), 'Re-evaluating Risk' (19%), 'Prioritising Interventions' (17%), 'Documentation' (9%), 'Participating in Management Plan' (5%), 'Establish Patient Acuity/Risk' (4%) and 'Recognise the Expertise of Home Team' (2%). Overall 'Ongoing Assessment,' 'Re-evaluating Risk' and 'Prioritising Interventions' were the most prominent responsibilities/roles. The way MET nurses sequenced these responsibilities/roles varied with each of the MET calls, moderated by the specific context of an MET call.

The pattern differed by hospital: the role 'Re-evaluating Risk' was prominent for site 1 and site 2 but far less

**Figure 1** Patterns of responsibility/roles of Medical Emergency Team nurses for all three hospitals.



so for site 3. For 'Prioritising Interventions,' this pattern was almost reversed: this role was prominent for site 2 and site 3 but much less so for site 1 (figure 1).

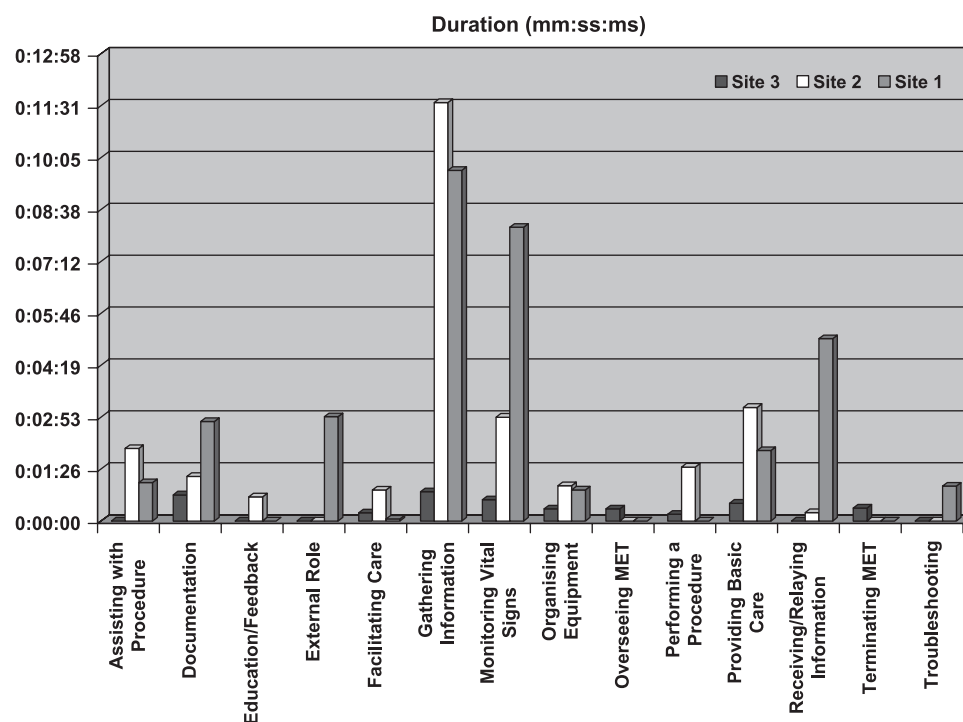
'Performing a Procedure' was the AOP most commonly used by all hospitals for the role 'Prioritising Interventions.' 'Providing basic care' was most common for site 1. For the role 'Ongoing Assessment,' MET nurses from site 3 most commonly used 'Monitoring VS,' whereas MET nurses from site 1 utilised 'Gathering Information.' 'Gathering information' and 'Monitoring

VS' were used most often at all three hospitals for the role 'Re-evaluating risk' (figure 2).

## DISCUSSION

MET nurses allocated half of their time (46%) to two of their eight roles, 'Ongoing Assessment' (27%) and 'Re-evaluating Risk' (19%), and only 4% to 'Establishing Acuity/Risk.' The latter role constitutes core activity for conventional Cardiac Arrest teams. Thus, our findings

**Figure 2** Areas of practice re-evaluating risk.





suggest that the context of MET calls has reshaped resuscitation practice for MET nurses; they provide evidence for the concept proposed by Dr Benner: 'the context and meanings inherent in clinical situations influence the performance of the expert.'<sup>11</sup>

The patterns of the eight roles varied by hospital; 'Re-evaluating Risk' was more prominent for site 1 (figure 1). This finding is consistent with the concept of the GSP: role variations at the hospital level relate in a specific way to the function of MET calls in the context of the culture of each hospital.<sup>14</sup>

Layering the annotations in three orders of abstraction meant that analysis moved from the parts back to the whole.<sup>13</sup> We were able to explore in detail the expert performance embedded in the clinical practice of MET nurses. To describe AOP, we used the Domains of learning proposed by Bloom.<sup>15 16</sup> We created three categories based on the psychomotor and cognitive aspects of performance (appendix 2). There was a need to understand technical skills and problem-solving strategies, rather than compile lists of nursing tasks.<sup>13 14</sup> For the 'Re-evaluating Risk' role, the AOP 'Gathering Information,' a blend of psychomotor and cognitive practice, was most prominent. Another important AOP within this role, 'Monitoring VS,' was almost exclusively psychomotor based. Thus, the details of the second layer of analysis indicate that while applying a range of routine skills, for example, monitoring VS, the MET nurses engaged in high-level clinical problem solving as defined in the Competency Standards for specialist CCNs.<sup>12</sup>

In their role, 'Re-evaluating Risk,' MET nurses evaluated and responded to changing situations. This involves not only stabilising the vital signs of patients, but an assessment of the fit between levels of care and the needs of patients. Skills associated with oxygen therapy, 12-lead ECG, intravenous fluid administration, critical thinking and decision-making are centre stage in monitoring at-risk patients.<sup>17 18</sup>

The pattern of AOPs within the 'Re-evaluating Risk' role was different for each hospital, reflecting the impact of the context of culture on performance. The most striking difference was for the AOP, 'Receiving/relaying information,' a cognitively based skill: for site 1 the proportion was 15%, for site 2 it was 1%, and for site 3 it was not applied at all. The other prominent AOP, 'Gathering information,' a combined psychomotor and cognitive AOP, also varied by hospital: it constituted almost half of the role at site 2 and only 19% at site 3. When observing the context of MET calls at site 3, it was apparent that 'Gathering information' was predominantly undertaken by the MET doctor. This phenomenon as well as the nature of the MET calls might explain the need for MET nurses to engage in more psychomotor-based skills at site 3. It is important to emphasise

that site 3 MET nurses constructed a response tailored to their context. Their psychomotor-based response did not diminish their capacity for critical thinking and decision-making in managing patient risk.<sup>17 18</sup>

We selected SFL and GSP<sup>13 14</sup> as our analytical guide; and co-opted the CCNs as researchers. This framework provided new knowledge about how CCNs adapt their performance during MET calls. It provides evidence that the MET system has redefined resuscitation practice compared with CA teams.

The impact of hospital culture on clinical performance during an MET response was an important finding. It highlights the importance of understanding local culture when developing education and professional support for MET nurses. Proficiency in advanced resuscitation skills was not sufficient to sustain the performance of MET nurses in our study, as they responded to the clinical demands presented by a broad range of clinical problems. As expert clinicians, they were influenced by the context and meanings inherent in three different hospital cultures.<sup>13 14 18</sup> This was borne out by the commonality and the differences displayed in their construction of responsibilities/roles. Overseeing MET being the most prominent task for MET nurses in site 1 reflected the supervisory role these nurses play because of the availability of resources to support MET in comparison with other sites. It was only MET nurses at site 1 who took on an 'External role' (ie, answering phone calls about beds during MET); they also had the opportunity to 'Learn from home teams' (ie, cardiologist troubleshooting a pacemaker problem) in the specialised environment of site 1. Hence, our study provides information about how MET nurses contextualise expert performance.<sup>11 18</sup>

## CONCLUSION

This study provides new knowledge on the role of MET nurses. 'Ongoing Assessment' and 'Re-evaluating Risk' occupied almost half of the MET nurses time, whereas 'Establishing Patient Acuity,' the key activity in CA teams occupied only 4%. Education and training of MET nurses should support these roles.

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## REFERENCES

1. Lee A, Bishop G, Hillman K, *et al*. The Medical Emergency Team. *Anaesth Intensive Care* 1995;23:183–6.
2. Hodgetts TJ, Kenward G, Vlachonikolis IG, *et al*. The identification of risk factors for cardiac arrest and formulation of activation criteria to alert a medical emergency team. *Resuscitation* 2002;54:125–31.
3. Buist MD, Jarmolowski E, Burton PR, *et al*. Recognising clinical instability in hospital patients before cardiac arrest or unplanned admission to intensive care. A pilot study in a tertiary-care hospital. *Med J Aust* 1999;171:22–5.
4. Goldhill DR, Worthington L, Mulcahy A, *et al*. The patient-at-risk team: identifying and managing seriously ill ward patients. *Anaesthesia* 1999;54:853–60.
5. Daly FFS, Sidney KL, Fatovich DM. The Medical Emergency Team (MET): a model for the district general hospital. *Aust N Z J Med* 1998;28:795–8.
6. Parr MJA, Hadfield JH, Flabouris A, *et al*. The Medical Emergency Team: 12 month analysis of reasons for activation, immediate outcome and not-for-resuscitation orders. *Resuscitation* 2001;50:39–44.
7. Salamonson Y, Kariyawasam A, van Heere B, *et al*. The evolutionary process of Medical Emergency Team (MET) implementation: reduction in unanticipated ICU transfers. *Resuscitation* 2001;49:135–41.
8. Bellomo RMD, Goldsmith DRN, Uchino SMD, *et al*. Prospective controlled trial of effect of medical emergency team on postoperative morbidity and mortality rates. *Crit Care Med* 2004;32:916–21.
9. Hillman K. Critical care without walls. *Curr Opin Crit Care* 2002;8:594–9.
10. Kenward G, Castle N, Hodgetts T, *et al*. Evaluation of a Medical Emergency Team one year after implementation. *Resuscitation* 2004;61:257–63.
11. Benner P. *From Novice to Expert: Excellence and Power in Clinical Nursing Practice. Commemorative Edition*. Englewood Cliffs, NJ: Prentice-Hall, 2000:6, 218, 229, 235, 268.
12. Dunn SV, Lawson D, Robertson S, *et al*. The development of competency standards for specialist critical care nurses. *J Adv Nurs* 2000;31:339–46.
13. Halliday MAK, Matthiessen CMIM. *An Introduction to Functional Grammar*. 3rd edn. London: A Hodder Arnold Publication, 2004.
14. Hasan R. Contexts for meaning. In: Alatis JE, ed. *Georgetown University Round Table on Languages and Linguistics (GURT) 1992: Language, Communication, and Social Meaning*. Washington, DC: Georgetown University Press, 1993:79–103.
15. Ferguson LM. Writing learning objectives. *J Nurs Staff Dev* 1998;14:87–94.
16. Bloom BS. *Taxonomy of Educational Objectives, the Classification of Educational Goals—Handbook I: Cognitive Domain*. New York: Longman, 1956.
17. Bucknall T. The clinical landscape of critical care: nurses' decision making. *J Adv Nurs* 2003;43:310–19.
18. Ericsson KA, Whyte IVJ, Ward P. Expert performance in nursing: Reviewing research on expertise in nursing within the framework of the expert-performance approach. *Adv Nurs Sci* 2007;30:58–71.
19. Helwigg BE. *Linguistic Annotator (ELAN) Manual: Max Planck Institute for Psycholinguistics*. The Netherlands: Max Planck Institute for Psycholinguistics, 2006.
20. Blank-Reid CA, Kaplan LJ. Video recording trauma resuscitations: a guide to system set-up, personnel concerns, and legal issues. *J Trauma Nurs* 1996;3:9–12.

## APPENDIX 1

## Data management and analysis

## Data management

- Videotapes were converted into a format compatible with the ELAN software<sup>19</sup> used for coding and managing the data. The measures applied to safeguard privacy and confidentiality have been published elsewhere.<sup>20</sup>
- The study was approved by the local Human Research Ethics Committee with all participants providing written, informed consent.

## Orders of abstraction

- For each video, the smallest units of meaning of the actions of the Medical Emergency Team (MET) nurse ('measure BP') were annotated separately and then cross-referenced between two researchers. Thereafter, all annotating and analysis was group-based. In the second round of coding, participants sorted the tasks annotated during Stage 1 into Areas of Practice.<sup>15 16</sup> This represented a more abstract level of coding the data, where situational and clinical aspects were incorporated. At the third round, changes (tropes) in the responsibilities/roles of the MET nurse were identified as the MET call unfolded. This stage reflects the highest order of abstraction, the context of culture of MET, and includes information about the expert practice embedded in the resuscitation practice of MET nurses. Layering the annotations in three orders of abstraction created a framework whereby analysis moved from the parts back to the whole.

## APPENDIX 2

## Areas of practice

Areas of practice (second-order analysis)		Tasks
Psychomotor skills	Monitoring vital signs	Physically check vital signs (eg, blood pressure, pulse, respiration, temperature and oxygen saturation; set up monitoring equipment and report results), request and relay vital signs
	Performing a procedure	Perform procedures to stabilise the patient (eg, performing 12-lead ECG, blood glucose level and oxygen therapy)
	Troubleshooting	Fix malfunctioning equipment (eg, alarms and intravenous access)
	Assisting with procedure	Assist with any procedure (eg, blood collection, 12-lead ECG, fluid administration)
	Organising equipment	Locate, set up and disconnect equipment
	Providing basic care	Observe Occupational Health and Safety Guidelines, protect patient privacy, reassurance and housekeeping
Cognitive Skills	Documentation	Scribing role
	Overseeing MET	Observing the MET scene, without verbalising but assessing and evaluating the process
	Receiving/relaying information	Act as a conduit for relevant information relevant to the MET process (eg, patient history, reason for MET call)
	Education/feedback	Imparting knowledge to another individual such as staff or patient
Cognitive and Psychomotor Skills	Handover	Relay information to establish continuity of care
	Gathering information other than vital signs	Glean information other than vital signs, reviewing notes and procure laboratory results
	Facilitating care	Oversee the completion of tasks (eg, delegate blood glucose level (BGL), coordinate administration of medication and identify the need for procedures)
	Terminating MET	Packing up the MET trolley with the intent to leave or verbalising the need to close MET
MET, Medical Emergency Team.		

## BIBLIOGRAPHY

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- Akman, V. and Bazzanella, C., (Eds.) (2003). On Context, *Journal of Pragmatics*, special issue, 35.
- Althusser, L. (1968/70). *Reading Capital*. Librairie François Maspero, Paris, 1968; (Tran.) Ben Brewster. London: New Left Books.
- Anderson, S. R. and Lightfoot, D. W. (2002). *The language organ: Linguistics as cognitive physiology*. Cambridge: Cambridge University Press.
- Baker, A. (2004). Simplicity, *Stanford Encyclopedia of Philosophy*, <http://129.11.3.26/entries/simplicity/>.
- Banks, M. (1998). Visual Anthropology: Image, Object and Interpretation. In J. Prosser (Ed.), *Image based research: a source book for qualitative researchers*. pp. 9-23, London: Routledge.
- Bateman, J. A. (2008) Systemic functional linguistics and the notion of linguistic structure: unanswered questions, new possibilities. In J. J. Webster (Ed.), *Meaning in context: strategies for implementing intelligent applications of language studies*, pp. 24-58, Equinox.
- Bernstein, B. (1971). *Class, codes, and control, vol. 1: theoretical studies towards a sociology of language*. London: Routledge and Kegan Paul Ltd.
- Bernstein, B. (1990). *Class, codes and control, vol. 4: the structuring of pedagogic discourse*. London, Routledge.
- Berry (1977). *An introduction to systemic linguistics 2: levels and links*. London: B.T. Batsford Ltd.
- Bloomfield, L. (1933). *Language*. Revised edition. London: Allen and Unwin
- Boissevain, J. (1974). *Friends of friends: Networks, manipulators, and coalitions*. Oxford: Blackwell.
- Bowcher, W. (1999). Investigating institutionalization in context. In M. Ghadessy (Ed.), *Text and Context in Functional Linguistics*. pp. 141-176. Amsterdam: John Benjamins.
- Butler, C. (1985a). *Statistics in linguistics*. Oxford: Blackwell.
- Butler, C. (1985b). The Applicability of Systemic Theories. *Australian Review of Applied Linguistics*, 1985, 8, 1, June, 1-30.

- Butler, C. (1989). Systemic linguistics: unity, diversity and change. *Word*, Vol. 40, Number 1-2, pp. 1-35.
- Butler, C. (2003). *Structure and Function: A Guide to Three Major Structural-Functional Theories. Part 2: From clause to discourse and beyond*. Amsterdam and Philadelphia: John Benjamins.
- Butt, D. (1985). *Talking and thinking: the patterns of behaviour*. Deakin University Press: Geelong, Victoria and new edition: Oxford: Oxford University Press.
- Butt, D. (1989). The Object of Language. In R. Hasan, and J. R. Martin (Eds.), *Language Development: Learning Language, Learning Culture*, Vol XXVII in Advances in Discourse Processes Series, Norwood, NJ: Ablex.
- Butt, D. (1996). Theories, maps and Descriptions. In R. Hasan, C. Cloran and D. Butt (Eds.), *Current Issues in Linguistic Theory 121: Functional Descriptions Theory in Practice*. Amsterdam and Philadelphia: John Benjamins Publishing Company.
- Butt, D. (1999/2004). *Parameters of Context*. Mimeo Sydney: Department of Linguistics, Macquarie University.
- Butt, D. (2000). Modelling behaviour semantically. In D. Butt and C. M. I. M. Matthiessen (Eds.), *The Meaning Potential of Language: Mapping meaning systemically*. Sydney: Department of Linguistics, Macquarie University.
- Butt, D. (2001). Firth, Halliday and the development of systemic functional theory. In S. Auroux, E. F. K. Koerner, H. Niederehe, and K. Versteegh (Eds.), *History of the Language Sciences*. New York: Walter de Gruyter.
- Butt, D., Moore, A., Astolfi, J., Borg, P., Langley, K. and Ross, E. (2002). *A theory of Assent*. A working paper of the project: Enhancing Interaction in Group Homes.
- Butt, D., Halliday, M., Matthiessen, C., Teruya, K. and Wu, C. (2004). *Review Report: language centred approach to creating the brain*. RIKEN Laboratory for language Based intelligent systems. (available via personal request – [dbutt@ling.mq.edu.au](mailto:dbutt@ling.mq.edu.au))
- Butt, D. (2008). Method and imagination in Halliday's science of linguistics. In R. Hasan, C. M. I. M. Matthiessen and J. Webster (Eds.), *Continuing Discourse on Language vol. 1*. London: Equinox.
- Butt, D. and Wegener, R. (2008). The work of concepts: context and metafunction in the systemic functional model. In R. Hasan, C. M. I. M. Matthiessen and J. Webster (Eds.), *Continuing Discourse on Language: a functional Perspective (Vol. 2)*. London: Equinox.

- Butt, D. (2009). Technique and empire in the poetry of Ee Tiang Hong. *World Englishes* Volume 28, Issue 3, pages 365-393, September 2009.
- Callon, M. and Latour, B. (1981). Unscrewing the big Leviathan: how actors macro-structure reality and how sociologists help them to do it. In K. Knorr Cetina and A. Cicourel (Eds.), *Advances in Social theory and methodology: towards and integration of macro- and micro-sociologies*. London: Routledge and Kegan Paul.
- Cameron, D. (1990). Demythologizing sociolinguistics: Why language does not reflect society. In J. Joseph and T. Taylor (Eds.), *Ideologies of language* (pp. 79-93). London: Routledge.
- Cassens, J. and Wegener, R. (2008). Making Use of Abstract Concepts – Systemic-Functional Linguistics and Ambient Intelligence. In Max Bramer (Ed.), *Artificial Intelligence in Theory and Practice II – IFIP 20th World Computer Congress, IFIP AI Stream*, volume 276 of IFIP, pages 205-214, Milano, Italy. Springer.
- Ceci, S. J. and Bruck, M (1993). Suggestibility of the child witness: a historical review and synthesis. *Psychological Bulletin*. 1993, 113:403-439.
- Cerulo, K. A. (1997). Identity Construction: new issues, new directions. *Annual Review of Sociology*. 23: 385-404.
- Chao, K. R. (1994). Beyond parental control and authoritarian parenting style. *Journal of personality and social psychology*. 1994, 79:224-237.
- Chen, J., Flabouris, A., Bellomo, R., Hillman, K., Finfer, S. and The MERIT Study Investigators for the Simpson Centre and the ANZICS Clinical Trials Group (2008). The Medical Emergency Team System and Not-for-Resuscitation Orders: Results from the MERIT Study. *Resuscitation*, Volume 79, Issue 3 , Pp. 391-397, December 2008.
- Chomsky, N. (1972). *Language and mind*. New York: Harcourt Brace Jovanovich.
- Chomsky, N. (1974). *Introduction to 'The logical structure of linguistic theory'*. Trier: Linguistic Agency University at Trier (Reihe A, 36).
- Chomsky, N. (1975). *Reflections on language*. New York: Pantheon Books.
- Chomsky, N. (1981). *Lectures on Government and Binding: The Pisa Lectures*. Holland: Foris Publications. Reprint. 7th Edition. Berlin and New York: Mouton de Gruyter.

- Cloran, C. (1994). *Rhetorical Units and Decontextualisation: An Enquiry into Some Relations of Context, Meaning and Grammar*. Nottingham: Department of English Studies, University of Nottingham.
- Cloran, C. (1999). Instruction at home and school. In F. Christie (Ed.), *Pedagogy and the shaping of consciousness*. London: Cassell, pp. 31-65.
- Cloran, C. (2000). Socio-semantic variation: Different wordings, different meanings. In L. Unsworth (Ed.), *Researching language in schools and communities*. London: Cassell.
- Cohen, J. and Stewart I., (2000). *The collapse of Chaos. Discovering Simplicity in a Complex World*. London: Penguin Books.
- Collier, J. Jr. (1967). *Visual Anthropology: Photography as a Research Method*. New York, NY: Holt, Rinehart and Winston, Inc.
- Cook, G. (1990). Transcribing Infinity: problems of context presentation. *Journal of Pragmatics* 14 (1990) 1-24.
- Cretikos, M. A., Chen, J., Killman, K. M., Bellomo, R., Finfer, S. R., Flabouris, A. and the MERIT study investigators. (2007). The effectiveness of implementation of the medical emergency team (MET) system and factors associated with use during the MERIT study. *Critical Care Resuscitation*. 2007 Jun; 9(2):206-12.
- Cummings, M., Lockwood, D. and Spruiell, W. (Eds.) (2002) *Relations and Functions Within and Around Language*, London and New York. NY: Continuum, Open Linguistics series.
- Cuthbertson, B. H. and Smith, G. B. (2007). A warning on early warning scores! *British Journal of Anaesthesia* (2007) 98:704-6.
- Darnell, R. (1990). *Edward Sapir: Linguist, Anthropologist, Humanist*. Berkeley: University of California Press.
- De Beaugrande, R. (1991). *Linguistic Theory: the discourse of fundamental works*. London: Longman.
- Devita, M. A., Bellomo, R., Hillman, K., Kellum, J., Rotondi, A., Teres, D., Auerbach, A., Chen, W. J., Duncan, K., Kenward, G., Bell, M., Buist, M., Chen, J., Bion, J., Kirby, A., Lighthall, G., Ovreveit, J., Braithwaite, R. S., Gosbee, J., Milbrandt, E., Peberdy, M., Savitz, L., Young, L., Harvey, M., Galhotra, S. (2006). Findings of the first consensus conference on medical emergency teams. *Critical Care Medicine*. 2006; 34(9):2463-2478.
- DeVita, M. A., Hillman, K. and Bellomo, R. (2006). (Eds.). *Medical Emergency Teams: implementation and outcome measurement*. USA: Springer Science and Business.

- Duckitt, R. W., Buxton-Thomas, R., Walker, J., Cheek, E., Bewick, V., Venn, R. and Forni, L. G. (2007). Worthing physiological scoring system: derivation and validation of a physiological early warning system for medical admissions. An observational, population-based single-centre study. *British Journal of Anaesthesia* (2007) 98(6):769-774
- Dunn, M., Greenhill, S. J., Levinson, S. C. and Gray, R. D. (2011). Evolved structure of language shows lineage-specific trends in word-order universals. *Nature* (2011), vol. 473, pp. 79-82.
- Duranti, A. (1992). Rethinking context: an introduction. In Duranti, A. and Goodwin, C. (Eds.), *Rethinking Context: Language as an Interactive Phenomenon*. Cambridge: Cambridge University Press.
- Duranti, A. (1996) *Linguistic anthropology*. Cambridge: Cambridge University Press.
- Eco, U. (1984). *Semiotics and the philosophy of language*, Basingstoke, London: Macmillan.
- Edelman, G. (1988). *Topobiology: an introduction to molecular embryology*. New York: Basic Books.
- Ellen, R., Gellner, E., Kubica, G. and Mucha, J. (Eds.) (1988). *Malinowski between two worlds*. Cambridge: Cambridge University Press.
- Ellis, J. (1966). On Contextual Meaning. In C. E. Bazell, J. C. Catford, M. A. K. Halliday and R.H. Robins. *In Memory of Firth*. London: Longman.
- Everson, S. (1994). *Companions to Ancient Thought Language*. Cambridge: Cambridge University Press.
- Fawcett, R. P. (1988) Language generation as choice in social interaction. In M. Zock and G. Sabah (Eds.), *Advances in natural language generation*, vol. 2, pp. 27-49, London: Pinter Publishers.
- Fawcett, R. P. (1988) The English personal pronouns: an exercise in linguistic theory. In J. D. Benson, M. J. Cummings and W. S. Greaves (Eds.), *Linguistics in a systemic perspective*, pp. 185-220, Amsterdam: Benjamins.
- Fawcett, R. P. (1988) What makes a 'good' system network good? – four pairs of concepts for such evaluations. In J. D. Benson, and W. S. Greaves, (Eds.), *Systemic functional approaches to discourse: Selected Papers from the 12th International Systemic Workshop*, pp. 1-28, Norwood, NJ: Ablex.

- Fawcett, R. P. (1990) The COMMUNAL project: two years old and going well. In: *Network: news, views and reviews in systemic linguistics and related areas*, Vol. 13, pp. 35-39.
- Fawcett, R. P. (1990) The computer generation of Speech with discoursally and semantically motivated intonation. In K. McKeeown, J. Moore and S. Nirenburg (Eds.), *Fifth International Workshop on Natural Language Generation*, 3-6 June 1990.
- Firth, J. R. (1957). *A synopsis of linguistic theory*. Oxford: Philological Society.
- Firth, J. R. (1957). *Papers in Linguistics: 1934-1951*. London: Oxford University Press.
- Firth, R. (1961). *Elements of Social Organization*. 2nd Ed. London: C.A. Watts and Co. Ltd.
- Firth, R. (1964). *Man and Culture: an evaluation of the work of Bronislaw Malinowski*. New York: Harper and Row.
- Foley J. (1991). Vygotsky, Bernstein and Halliday: Towards a Unified Theory of L1 and L2 Learning Language, *Culture and Curriculum*, 4(1), pp. 17-40, 1991.
- Frazer, J. G. (1922). *The Golden Bough*. New York: Macmillan.
- Freedman, D. A. (2009). *Statistical Models: Theory and Practice (Second ed.)*. Cambridge University Press.
- Gellner, E. (1988). Zeno of Cracow. In R. Ellen, E. Gellner, G. Kubica and J. Mucha (Eds.) *Malinowski between two worlds*. Cambridge University Press: Cambridge.
- Gellner, E. (1998). *Language and Solitude: Wittgenstein, Malinowski and the Habsburg Dilemma*. Cambridge: Cambridge University Press.
- Ghadessy, M. (Ed.) (1999). *Text and Context in Functional Linguistics*. Amsterdam: Benjamins.
- Giroux, H. (1981). *Ideology, Culture and the Process of Schooling*. London and Philadelphia: Temple University Press.
- Gleason, H. A. (1965) *Linguistics and English Grammar*. New York: Holt, Reinhart and Winston.
- Glock, H.J. (1995). *A Wittgenstein Dictionary*. London: Blackwell.
- Goffman, E. (1959). *The Presentation of Self in Everyday Life*, reprint London: Penguin Books, 1990.



- Gold, S. J. (1989). Ethical issues in visual field work. In Blank, G., McCarthy, J. and Brent, E. *New Technology in Sociology: practical applications in research and work*. New Brunswick: Transaction Publishers.
- Gregory, M. (2002). Phasal analysis within Communication Linguistics: Two contrastive discourses. In P. Fries, M. Cummings, D. Lockwood and W. Spruiell (Eds.), *Relations and functions within and around language* (pp. 316-345). London: Continuum.
- Gregory, M. and Carroll, S. (1978). *Language and situation: language varieties and their social contexts*. London: Routledge and Kegan Paul.
- Grimshaw, A. D. and the Multiple Analysis Project. (1994). *What's going on here: complimentary studies of professional talk*. Norwood, NJ: Ablex: University of Virginia.
- Gumperz, J. and Hymes, D. (1964). *The Ethnography of Communication*. American Anthropological Association.
- Halliday, M. A. K. (1961). Categories of the theory of grammar. *Word*, 17(3), pp. 241-292, 1961
- Halliday, M. A. K. (1970). Language Structure and Language Function. In J. Lyons, (Ed.) *New Horizons in Linguistics*. Harmondsworth: Penguin Books. p140-165.
- Halliday, M. A. K. (1973). *Language in a Social Perspective: Explorations in the Functions of Language*, London: Edward Arnold. pp.48-71.
- Halliday, M. A. K. (1974). In H. Parret, (1974). *Discussing Language*. The Hague: Mouton.
- Halliday, M. A. K. (1975). *Learning how to mean*. London: Edward Arnold.
- Halliday, M. A. K. and Hasan, R. (1976). *Cohesion in English*, London: Longman.
- Halliday, M. A. K. (1977). Text as Semantic Choice in Social Context. In T.A. van Dyck and J. Petofi (Eds.), *Grammars and Descriptions*, Berlin: de Gruyter.
- Halliday, M. A. K. (1978). *Language as Social Semiotic: The social interpretation of language and meaning*. London: Edward Arnold.
- Halliday, M. A. K. (1979). One child's protolanguage. In M. Bullock (Ed.), *Before speech: The beginning of interpersonal communication*. Cambridge: Cambridge University Press, pp. 171-190.

- Halliday, M. A. K. (1985). *An Introduction to Functional Grammar*, London: Edward Arnold.
- Halliday, M. A. K. and Hasan, R. (1985). *Language, Context, and Text: Aspects of Language in a Social – semiotic perspective*, Victoria, Australia: Deakin University.
- Halliday, M. A. K. (1991). Corpus linguistics and probabilistic grammar English corpus linguistics: studies in honour of Jan Svartvik, pp. 30-44, New York and London: Longman.
- Halliday, M. A. K. (1992). New ways of meaning: the challenge to applied linguistics. In M. Putz (Ed.), *Thirty Years of Linguistic Evolution*, Philadelphia/Amsterdam: John Benjamins Publishing Co.
- Halliday, M. A. K. (1994). *An Introduction to Functional Grammar*. London: Edward Arnold.
- Halliday, M. A. K. (1994b). So you say 'pass' ... thank you three muchly. In A. D. Grimshaw (Ed.), *What's Going On Here: Complementary studies of professional talk*. Norwood, NJ: Ablex.
- Halliday, M. A. K. (1999). "The notion of "context" in language education". In M. Ghadessy (Ed.), *Text and Context in Functional Linguistics*, pp. 1-24.
- Halliday, M. A. K. and Matthiessen, C. M. I. M. (1999). *Construing experience through meaning: a language-based approach to cognition*. London: Cassell.
- Halliday, M. A. K. (2002). Computing meanings: some reflections on past experience and present prospects. In G. Huang and Z. Wang (Eds.), *Discourse and language Functions*. Shanghai: Foreign Language Teaching and Research Press, pp. 3-25.
- Halliday, M. A. K. and Martin, J. R. (1993). *Writing Science: literacy and discursive power*. London: Falmer (Critical perspectives on literacy and education).
- Halliday, M. A. K. and Matthiessen, C. M. I. M. (2004). *An Introduction to Functional Grammar*, Third edition. London: Edward Arnold.
- Hanson, N. R. (1958). *Patterns of Discovery*. Cambridge: Cambridge University Press.
- Harris, M. (1976). History and Significance of the Emic/Etic Distinction, *Annual Review of Anthropology* 5: 329-350.
- Harris, R. (1988). (Ed.). *Linguistic Thought in England: 1914-1945* New York: Routledge.

- Hasan, R. (1978). Text in the systemic functional model. In W. Dressler (Ed.), *Current trends in text linguistics* (242). Berlin: Walter Gruyter.
- Hasan, R. (1980). What's going on: a dynamic view of context. *The Seventh LACUS forum*, pp. 106-121, Columbia, SC: Hornbeam Press.
- Hasan, R. (1984). What kind of a Resource is Language? In C. Cloran, D. Butt, and G. Williams (Eds.) *Ways of Saying; Ways of Meaning*. London: Cassell.
- Hasan, R. (1984b). Coherence and Cohesive Harmony. In J. Flood (Ed.), *Understanding Reading Comprehension*, Newark, DE.: International Reading Association.
- Hasan, R. (1984c). The Structure of the Nursery Tale. In L. Coveri, (Ed.), *Linguistica Testuale*, Rome: Bulzoni.
- Hasan, R. (1984d). *The nursery tale as a genre*. Nottingham Linguistics Circular, 13, 71-102.
- Hasan, R. (1985). Meaning, Context and Text: Fifty years after Malinowski. In J. D. Benson and W. S. Greaves, (Eds.) *Systemic Perspectives on Discourse*. Norwood, NJ: Ablex.
- Hasan, R. (1985b). *Linguistics, Language, and Verbal Art*, Victoria: Deakin University Press.
- Hasan, R. (1986). The ontogenesis of ideology: An interpretation of mother child talk. In Threadgold, Grosz and Kress (Eds.) *Semiotics, Ideology, Language*. Sydney Studies in Society and Culture 3. SASSC. Sydney University.
- Hasan, R. (1992). Meaning in Sociolinguistic theory. In K. Bolton, and H. Kwok, (Eds.) *Sociolinguistics Today: International Perspectives*. London: Routledge.
- Hasan, R. (1992b). Rationality in Everyday Talk: From Process to System. In J. Svartik, (Ed.) *Directions in Corpus Linguistics*. Proceedings of Nobel Symposium, 82, Stockholm, 4-8 August, 1991 Berlin and New York: De Gruyter.
- Hasan, R. (1993). Contexts for meaning. In J. E. Alatis (Ed.), *Georgetown University Round Table on Language and Linguistics 1992: Language, communication and social meaning* (pp. 79-103). Washington, DC: Georgetown University Press.
- Hasan, R. (1995). The conception of context in text. In P. H. Fries and M. Gregory (Eds.), *Discourse in Society: Systemic Functional Perspectives, Meaning and Choice in Language: Studies for Michael Halliday*. pp. 183-283 Norwood, NJ: Ablex.

- Hasan, R. and Fries, P. H. (1995). Reflections on Subject and Theme: an introduction. In R. Hasan and P. H. Fries (Eds.), *On Subject and Theme: a discourse functional perspective*, p. xiii-xlv, Amsterdam and Philadelphia: John Benjamins.
- Hasan, R. (1996a). Ways of Saying; Ways of Meaning. In C. Cloran, D. Butt, and G. Williams, (Eds.) *Ways of Saying; Ways of Meaning*. pp. 191-242 London: Cassell.
- Hasan, R. (1996b). The nursery tale as a genre. In C. Cloran, D. G. Butt G. Williams (Eds.), *Ways of Saying, Ways of Meaning: Selected papers of Ruqaiya Hasan*. pp. 51-72 London: Cassell.
- Hasan, R. (1996c). What's going on: a dynamic view of context in language. In C. Cloran, D. G. Butt G. Williams (Eds.), *Ways of Saying, Ways of Meaning: Selected papers of Ruqaiya Hasan*. pp. 37-50 London: Cassell.
- Hasan, R. (1996d). Semantic Networks: A tool for the analysis of meaning. In C. Cloran, D. G. Butt G. Williams (Eds.), *Ways of Saying, Ways of Meaning: Selected papers of Ruqaiya Hasan*. pp. 104-132 London: Cassell.
- Hasan, R. (1999). Speaking with Reference to Context. In M. Ghadessy (Ed.) *Text and Context in Functional Linguistics: systemic perspectives*. Amsterdam: John Benjamins. (219-328).
- Hasan, R. (2001). Wherefore context? The place of context in the system and process of language. In R. Shaozeng, W. Guthrie, and I. W. R. Fong, (Eds.) *Grammar and Discourse Analysis*. Macau: University of Macau Publication Centre.
- Hasan, R. (2003). *Language Society and Consciousness* (Vol. 1). London: Equinox.
- Hasan, R. (2004a). Analysing discursive variation. In L. Young and C. Harrison (Eds.). *Systemic Functional Linguistics and Critical Discourse Analysis: studies in social change*. London: Continuum, pp. 15-52.
- Hasan, R. (2004b). The World in Words: Semiotic Mediation, Tenor and Ideology. In G. Williams and A. Lukin (Eds.). *The Development of Language: Functional Perspectives on Species and Individuals* London: Continuum, pp. 158-181.
- Hasan, R. (2009). The Place of Context in a Systemic Functional Model. In M. A. K. Halliday and J. Webster (Eds.), *Continuum Companion to Systemic Functional Linguistics* (pp. 166-189). London and New York: Continuum.
- Headland, T., Pike, K., and Harris, M. (Eds.) (1990). *Emics and Etics: The Insider/Outsider Debate*, Newbury. Park, CA: Sage Publications.

- Heisenberg, W. (1958). *Physics and Philosophy the revolution in modern science*. New York: Harper and Row.
- Hillman, K. (2005). Medical Emergency Teams, *The Health Report*, ABC Broadcasting Australia, Archives. <http://www.abc.net.au/rn/healthreport/stories/2005/1396034.htm>.
- Howell, D. (1997). *Statistical methods for Psychology*. USA: Wadsworth Publishing.
- Hudson, R. (1971). *English Complex Sentences: An Introduction to Systemic Grammar*, Amsterdam: North-Holland.
- Hutten, E.H. (1956). *The language of Modern Physics: An Introduction to the Philosophy of Science*. London: George Allen and Unwin Ltd.
- Hymes, D. (1962). The Ethnography of Speaking. In T. Gladwin, and W. C. Sturtevant, (Eds.), *Anthropology and Human Behavior*, The Anthropology Society of Washington, (Washington), pp. 13-53.
- Jakobson, R. (1973). *Main Trends in the Science of Language*, London: Allen and Unwin.
- Jones, D., Egi, M. , Bellomo R. and Goldsmith, D. (2007). Effect of the medical emergency team on long-term mortality following major surgery. *Critical Care* 2007;11:R12. 57.
- Katz, J. J. and Fodor, J. A. (1963). The structure of a semantic theory. *Language*, Vol. 39. No. 2. (Apr-Jun. 1963). pp. 170-210.
- Kerridge, R., (2000). The medical emergency team: no evidence to justify not implementing change. Given the lack of evidence on the effect of the MET system, what should we do? *Medical Journal of Australia* 2000; 173: 228-229.
- Kipps, C. M., Nestor, P. J., Acosta-Cabronero, R., Arnold, R. and Hodge, J. R. (2009). Understanding social dysfunction in the behavioural variant of frontotemporal dementia: the role of emotion and sarcasm processing. *Brain: a journal of neurology*. 2009; 132; 592-603.
- Klein, E. (1971). *A Comprehensive Etymological Dictionary of the English Language*, Amsterdam: Elsevier Scientific Publishing Co.
- Klir, G. (1967). *Cybernetic Modelling*, London: Iliffe.
- Klir, G. (1969). *An Approach to General Systems Theory*, New York: Van Nostrand Reinhold.

- Kofod-Petersen, A. and Wegener, R. (2010). 'It's like a poke on facebook': emergent semantics in location aware social network services. In R. Tawaio (Ed.) *Handbook of Research on Discourse Behaviour and Digital Communication*. (Accepted 2009, released 2010).
- Kress, G. (1985). *Linguistic processes in sociocultural practice*. Geelong, Victoria, Australia: Deakin University Press.
- Kress, G. and Hodge, R. (1979). *Language as ideology*. London: Routledge and Kegan Paul.
- Kuper, A. (1973). *Anthropologists and Anthropology: the British School 1922-1972* UK: Penguin.
- Lakoff, G. and Johnson, M. (1980). *Metaphors We Live By*. Chicago: University of Chicago Press.
- Lamb, S. (1966). *Outline of Stratificational Grammar*. Washington DC: Georgetown University Press.
- Lamb, S. (1999). *Pathways of the Brain: the neurocognitive basis of language*. Amsterdam and Philadelphia: John Benjamins.
- Langendoen, T. (1968). *The London School of Linguistics: A Study of the Linguistic Contributions of B. Malinowski and J. R. Firth*. Cambridge, MA: MIT Press.
- Langendoen, T. (1969). *The Study of Syntax: The Generative-Transformational Approach to the Structure of American English*. New York, NY: Holt, Rinehart and Winston.
- Larrain, J. (1983). *Marxism and Ideology*. London: Macmillan.
- Lassen, I. (2003). *Accessibility and acceptability in technical manuals: a survey of Style and Grammatical Metaphor*. Amsterdam/Philadelphia: John Benjamins.
- Leach, E. (1957). The epistemological background of Malinowski's Empiricism. In R. Firth (Ed.). *Man and Culture: an evaluation of the work of Bronislaw Malinowski*. (pp. 119-138). London: Routledge and Kegan Paul.
- Lemke, J. (1984). *The formal analysis of instruction and Action, context and meaning*. Semiotics and Education, Victoria University (Toronto Semiotics Circle Monographs, Working Papers and Prepublications).
- Lemke, J. (1992). Interpersonal Meaning in Discourse: Value Orientations. In M. Davies, and L. Ravelli, (Eds.), *Advances in Systemic Linguistics. Recent Theory and Practice*, London: Pinter Publishers.

- Lemke, J. (1995). *Textual Politics Discourse and Social Dynamics*. London: Taylor and Francis.
- Lemke, J. (1997). Cognition, Context and Learning. In D. Kirshner and J.A. Whitson (Eds.) *Situated Cognition: social, semiotic and psychological perspectives*. New Jersey: Lawrence Erlbaum and Associates.
- Lepschy, (1970). *A survey of structural linguistics*. London: Faber and Faber.
- Levinson, S. (1983). *Pragmatics*. Cambridge: Cambridge University Press.
- Lewin, B. A., Fine, J., Young, L., (2001) *Expository discourse: a genre based approach to social science research texts – a critical review of genre analysis*. London: Continuum.
- Loux, M. J. (2006). *Metaphysics: a contemporary introduction*. New York: Routledge.
- Love, N. (1988). The Linguistic Thought of J. R. Firth. In Harris, Roy. (Ed.). *Linguistic Thought in England: 1914-1945* New York: Routledge.
- Love, N. (2009). Science, language and linguistic culture. *Language and Communication*. Vol. 29, Issue 1, January 2009, Pages 26-46.
- Lucey, T. (1991). *Management Information Systems*, 6th Edition, London: DP Publications.
- Lukin, A. (2008). *Modelling the Context of Media*. Talk given at the weekly Friday afternoon meeting at Sydney University.
- Lyons, J. (1964). *Structural Semantics*. Oxford: Oxford University Press.
- Lyons, J. (1968). *Introduction to Theoretical Linguistics*. London: Cambridge University Press.
- Mainzer, K. (1997). *Thinking in Complexity. The Complex Dynamics of Matter, Mind and Mankind* 3rd Revised Edition Berlin: Springer.
- Malinowski, B. (1923). The Problem of Meaning in Primitive Languages. In C. Ogden, and A. I. Richards, (Eds.) *The Meaning of Meaning*. London: Paul Trench and Trubner.
- Malinowski, B. (1961). *Argonauts of the Western Pacific*. New York: Dutton.
- Malinowski, B. (1961b). *The Dynamics of Cultural Change*, (Ed.) Malinowska, V. USA: Murray Printing.

- Malnic, J. (1998). *Kula. Myth and Magic in the Trobriand Islands*. BNo. 0-646-34617-2. First Edition. Sydney: Cowrie Books.
- Martin, J. (1985). Process and Text: Two Aspects of Human Semiosis. In J. D. Benson, and W. S. Greaves, (Eds.) *Systemic Perspectives on Discourse*, Volume 1. Norwood, NJ: Ablex: 248-274.
- Martin, J. (1992). *English text: system and structure*. Amsterdam: John Benjamins.
- Martin, J. (1993). *A contextual theory of language The Powers of Literacy: a genre approach to teaching literacy*, (Critical Perspectives on Literacy and Education), pp. 116-136, Falmer.
- Martin, J. (1997). Analysing genre: functional parameters. In F. Christie, and J. Martin, (Eds.) *Genre and Institutions: social processes in the workplace and school*, London: Cassell.
- Martin, J. (2006). Genre, ideology and intertextuality: a systemic functional perspective. *Linguistics and the Human Sciences* (Special Issue on Genre edited by J. Bateman). 2.2. 2006. 275-298. [reprinted in SFL Theory 2010. 458-483].
- Marx, K. (1867/1976). *Capital, Vol. 1*, trans. B. Fowkes. London: Penguin.
- Matthiessen, C. M. I. M. and Martin J. R. (1991) A response to Huddleston's review of Halliday's Introduction to Functional Grammar. *Occasional Papers in Systemic Linguistics* 5. 1991. 5-74.
- Matthiessen, C. M. I. M. (1993) Register in the round: diversity in a unified theory of register analysis. In M. Ghadessy (Ed.) *Register Analysis: Theory and Practice*. London: Pinter.
- Matthiessen, C. M. I. M. (1993). The object of study in cognitive science in relation to its construal and enactment in language. *Cultural Dynamics* 6.1.
- Matthiessen, C. M. I. M. and Nesbitt, C. (1996). On the idea of theory-neutral descriptions Functional descriptions – theory in practice, *Current Issues in Linguistic Theory*, pp. 39-85, Amsterdam: John Benjamins.
- Matthiessen et al. (in press). Welcome to Pizza Hut. *Australian Review of Applied Linguistics*.
- McCrone, J. (1999). *Going Inside: A Tour Round a Single Moment of Consciousness*. USA: Faber and Faber.
- Meares, R. (2002). (Ed.) *The Self in Conversation*. Australia: AN-ZAP.



- Menand, L. (2001). *The Metaphysical Club*. New York: Farrar, Straus, Giroux.
- Mitchell, T.F. (1958/1975). The Language of buying and selling in Cyrenaica: a situational statement. In T.F. Mitchell, (1975). *Principles of Firthian Linguistics*. London: Longman.
- Moore, A. (2003). *The discursive construction of treatment decisions in the management of HIV disease*. Sydney: Macquarie University.
- Moore, A. and Wegener, R. (2010). *Report on the language of Consumer Medicines Information Leaflets*. Draft project report – please do not cite.
- Moore, A. (in press) Surgical teams in action: a contextually sensitive approach to modelling body alignment and interpersonal engagement. In A. Baldry and E. Montagna (Eds.), *Interdisciplinary Perspectives on Multimodality: Theory and Practice*, Campobasso, Italy: Palladino.
- Morgan, R. J. M. and Wright, M. M. (2007). In defence of early warning scores. *British Journal of Anaesthesia*, November 1, 2007; 99(5): 747-748.
- Nardi, B. (1996). *Context and consciousness*. Cambridge: MIT press.
- Nerlich, B. (1990). *Change in Language: Whitney, Breal and Wegener*. London: Routledge.
- Nerlich and Clarke, (1996). *Language, Action and Context: the early history of pragmatics in Europe and America*. Amsterdam: John Benjamins.
- Nietzsche, 1873, cited in Vaihinger, 1925 and Butt, 1985/1989; and Thornton and Skalnik, 1993.
- O'Donnell, M. (1999) "Context in Dynamic Modelling". In M. Ghadessy (Ed.) *Text And Context In Functional Linguistics*. Benjamins: Holland. Pp. 63-99.
- O'Donnell, M. and Bateman, J. (2005) SFL in Computational Contexts: a Contemporary History. In J. Webster, R. Hasan, C. M. I. M. Matthiessen (Eds.), *Continuing Discourse on Language: A Functional Perspective*. Equinox: London. Pp 343-382.
- Paluch, A. K. (1988) 'Malinowski's theory of culture'. In R.F. Ellen, E. Gellner, G. Kubica and J. Mucha (Eds.) *Malinowski between two worlds*. Cambridge: Cambridge University Press.
- Parkin, D. (Ed.) (1982). *Semantic Anthropology*. London/New York: Academic Press.

- Parret, H. (1974). *Discussing Language*. The Hague, Netherlands: Mouton.
- Pike, K. L. (Ed.) (1954/1967). *Language in Relation to a Unified Theory of Structure of Human Behavior* (2nd ed.), The Hague, Netherlands: Mouton.
- Prosser, J. (Ed.). (1998). *Image-based research: A sourcebook for qualitative researchers*. Bristol, PA: Falmer Press.
- Rebore, V. (2002). The Legacy of J. R. Firth A report on recent research. *Historiographia Linguistica* XXIX: 1/2. 165-190. Amsterdam: John Benjamins.
- Richards, A. I. (1939). 'The Development of Field work methods in Social Anthropology'. In K. C. Bartlett, M. Ginsberg, E. J. Lindgren and R. H. Thoules, (Eds.) *The Study of Society*, London: Kegan Paul.
- Robert, C. (2001). Model choice – motives and uses. In C. Robert, *The Bayesian choice: from decision-theoretic foundations to computational implementation*, p. 347. New York, NY: Springer.
- Santiano, N., Young, L. Baramy, L. S., Cabrera, R., May, E., Wegener, R., Butt, D. and Parr, M., Clinical Analysis Group (2011). The impact of the medical emergency team on the resuscitation practice of critical care nurses *BMJ Qual Saf* 2011;20:115-120 Published Online First: 6 January 2011.
- Sapir, E. (1949). *Selected writings of Edward Sapir in language, culture and personality*. Edited by David G. Mandelbaum. Berkeley: University of California Press.
- Sapir, E. (1928/1999). The Unconscious Patterning of Behaviour in Society. In R. Darnell and J. Irvine (Eds.), *The Collected Works of Edward Sapir*. The Hague: Mouton de Gruyter.
- Saussure, F. (1974). *Course in General Linguistics*. London: Fontana.
- Schegloff, E. (1982). Discourse as an Interactional Achievement. In D. Tannen, (Ed.) *Analysing Discourse: Text and Talk*. Washington: Georgetown University Press.
- Schegloff, E. (2000). On Granularity. *Annual Review of Sociology*. 26: 715-720.
- Schervish, M. (1995). *Theory of Statistics*. New York: Springer.
- Schiffrin, D. (1994). *Approaches to Discourse*. Oxford University Press:Oxford.
- Seliger, M. (1977). *The Marxist conception of Ideology*. Cambridge: Cambridge University Press.

- Shotter, J. (1995). In conversation: joint action, shared intentionality, and ethics. *Psychology and Theory* 5: 49-73.
- Simon, C. P. and Blume, L. (1994). *Mathematics for Economists*, New York: Norton.
- Sober, E. (1994). Let's Razor Occam's Razor, pp. 73-93, in D. Knowles (Ed.), *Explanation and Its Limits*, Cambridge: Cambridge University Press.
- Steinberg, D. D. and Jakobovits, L. A. (1971). (Eds.) *Semantics: An Interdisciplinary Reader in Philosophy, Linguistics, and Psychology*. New York: Cambridge University Press.
- Steiner, E. (1983). *Die Entwicklung des Britischen Kontextualismus*, Heidelberg: Groos.
- Strauss, A. L. (1987). *Qualitative analysis for social scientists*. Cambridge: Cambridge University Press.
- Striedter, J. (1989). *Literary Structure, Evolution, and Value: Russian Formalism and Czech Structuralism Reconsidered*. Cambridge USA: Harvard University Press.
- Sugeno, M. (2004). *A Systemic Functional Linguistic Approach to Creating the Brain*. Plenary Presentation, The 31st International Systemic Functional Linguistics Congress, August 30th – September 4th 2004, Doshisha University Kyoto, Japan.
- Szymura, J. (1988). 'Bronislaw Malinowski's 'Ethnographic theory of language'', In R. Harris (Ed.), *Linguistic Thought in England: 1914-1945* New York: Routledge.
- Thornton, R. and Skalnik, P. (1993). *The Early Writings of Bronislaw Malinowski*. Cambridge: Cambridge University Press.
- Tilly, C. (1998). *Durable Inequality*. Berkeley: University of California Press.
- Tuckwell, K. (2007). Original lecture presented to Ling 109, Macquarie University
- Ure, J. (1969). *Practical Register. Parts I and II*. *English Language Teaching*, 23, 1 and 2.
- Vaihinger, H. (1925). *The philosophy of 'as if': a system of the theoretical, practical and religious fictions of mankind translated by C.K. Ogden*. New York: Harcourt, Brace and Company.
- van Dijk, T. (2005). Contextual knowledge management in discourse production. A CDA perspective published in R. Wodak and P. Chilton (Eds.), *A New Agenda in (Critical) Discourse Analysis*. (pp. 71-100) Amsterdam: Benjamins, 2005.

- van Dijk, T. (2005). Contextualization in parliamentary discourse. Aznar, Iraq and the pragmatics of lying. Congress on oral discourse, Almería (Spain), November 23-25, 2005. in Teun A. van Dijk, *Discourse and Power*, New York: Palgrave Macmillan, 2008 pp. 237-261.
- van Dijk, T. (2006). Discourse, context and cognition. *Discourse Studies*, 8(1), 159-177, 2006.
- van Dijk, T. (2008). *Discourse and Context: a sociocognitive approach*. Cambridge: Cambridge University Press, 2008.
- van Dijk, T. (in press). "Text and context of parliamentary debates." To be published in P. Bayley (Ed.), *Parliamentary Discourse. Language and the Institutions*. Amsterdam: Benjamins.
- Ventola, E. (1983). Contrasting schematic structures in service encounter. *Applied Linguistics* 4:242-258.
- Ventola, E. (1987). *The Structure of Social Interaction: A Systemic Approach to the Semiotics of Service Encounters*. London: Frances Pinter.
- Ventola, E. (2000). *Discourse and community: doing functional linguistics*. Tübingen: Gunther Narr Verlag.
- Voloshinov, V.N. (1973). *Marxism and the Philosophy of Language* (trans. Ladislav Matejka and I R Titunik). New York: Seminar Press.
- Vygotsky, L.S. (1978). *Mind in Society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Waddington, C. H. (1977). *Tools for Thought*. London: Jonathan Cape Ltd.
- Wegener, R., Cassens, J. and Butt, D. (2008). Start making sense: Systemic functional linguistics and ambient intelligence. *Revue d'Intelligence Artificielle*, special issue on Modelling and Reasoning on Context, 22(5):629-645, October 2008.
- Whorf, B. L. (1956). In J. B. Carroll (Ed.), *Language Thought and Reality Selected writings of Benjamin Lee Whorf*. Massachusetts USA: The MIT Press.
- Wittgenstein, L. (1972). *Philosophical Investigations* (G. Basil Anscombe, Trans.) Oxford UK: Blackwell. (Original work published 1953).
- Wolf, G. (1989). Malinowski's context of situation. *Language and Communication*, Vol.9, No. 4, pp. 259-267, 1989, Great Britain.

## DECLARATION

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I certify that the work in this thesis entitled "Parameters of context: from theory to model and application" has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree to any other university or institution other than Macquarie University. I also certify that the thesis is an original piece of research and it has been written by me. Any help and assistance that I have received in my research work and the preparation of the thesis itself have been appropriately acknowledged. In addition, I certify that all information sources and literature are indicated in the thesis.

*Sydney, October 2011*

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