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A Typology of Conflict Resolution Strategies in E-mail Communication

Sally Diane Rossin

Ph.D. Thesis

2009

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12 OCT 2009

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Abstract

E-mail is used extensively to share ideas, discuss issues and to collaborate in the management of projects. However, it is often considered to be a lean medium of communication, epistolary in style, and lacking in both the verbal and non-verbal cues found in face-to-face communication. These limitations can predispose the message to misunderstandings between interlocutors leading to tensions and the use of aggressive tactics. Ensuing conflicts, if badly managed, can be both destructive and costly.

The main premise for this research is that conflict resolution strategies, similar to those found in interpersonal interactions, are used in e-mail communication. The purpose of this study is to identify in group projects the features inherent in the language of e-mail that show the interlocutors' use of these strategies within their written exchanges. The analysis of the data is derived from the e-mail text of three separate project teams working in European Universities.

The problem of identifying these strategies is approached from the perspective of Pragmatics. The methodology used is Discourse Analysis. The study is divided into two analytical phases; the first, employs the use of Speech Acts to analyse the written utterances; the second, utilises Sillars' Typology of Conflict Resolution Strategies as a template for identifying the types of conflict used in e-mail communication.

The results of this study confirm the use of three kinds of conflict resolution strategies in the e-mail; this allows a comparative analysis of the three groups to be undertaken. These findings are considered to have important implications within the field of Computer-Mediated Communication, particularly for the understanding of expressions of conflict within e-mail contexts as well as their consequences for sender/receiver interaction in project groups.



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Chapter 1

Introduction to the Research

A word is more than an arbitrary written or spoken sign: it is all that it carries in association as well. (Colin Cherry, 1978:72)

1.1 Introduction

This introductory chapter describes the purpose and scope of this thesis; it presents the problem statement, outlines the approach and methods that are used and gives the rationale and justification for the study that is undertaken.

Computer Science recognises and identifies a range of areas that are considered important to this research, of these computer networking and communication, and Human Computer Interaction (HCI) are but two examples. In addition, Computer Science draws on the work of other disciplines and in some cases this flow has been reciprocal. For example, important links with both the theory and research of the social sciences where issues of norms of group behaviour and psychological theories of trust, attribution and persuasion are relevant. In philosophy, speech act theory and the philosophy of language have been used, to give a semantic understanding to project group behaviour and communication language.

The assimilation and integration of communication technologies into everyday life, requires knowledge of how humans behave and interact in a range of

environments. This thesis is interested in the communication that takes place between geographically distributed individuals who are involved in managing projects through the mediation of computers. The work focuses on the content of the e-mail messages, in an attempt to define and understand the nature and characteristics of conflict strategies in e-mail communication within project groups. This provides new insights and further advances the research into 'project management', being a main topic area of study for the British Computer Society (British Computer Society, <http://www.bcs.org/>). The outcome of this research endeavours to provide a better understanding of conflict patterns within e-mail distributed groups not only for academic researchers within the field of Computer-Mediated Communication but also for practitioners working within project management computer environments.

1.2 Background

The background to the study is based on the computer-mediated communication of three distributed project groups. The e-mails generated by each project group constitute the data for analysis. All the groups share similar project management issues, and predominantly use e-mail communication to organise and manage their work. All are based in university settings. As shown in (2) in Figure 1.1, the data from each group are referred to as Software Engineering Groups A and B and Academic Writing Group C.

Computer-Mediated Communication (CMC) may be broadly characterised as communication between people through the mediation of computers in environments that are separated by time and space. Computer networking makes communications like e-mail possible and provides a fast and efficient means of conveying both simple and complex messages between users. However, the

written word presents difficulties in conveying the nuances usually found in non verbal and verbal communication. This along with the limitations imposed upon the communication by the medium of transmission may lead to less precise ways of expressing information about ourselves or situations. Imprecision can lead to misunderstandings in the judgements we make and may ultimately lead to conflict.

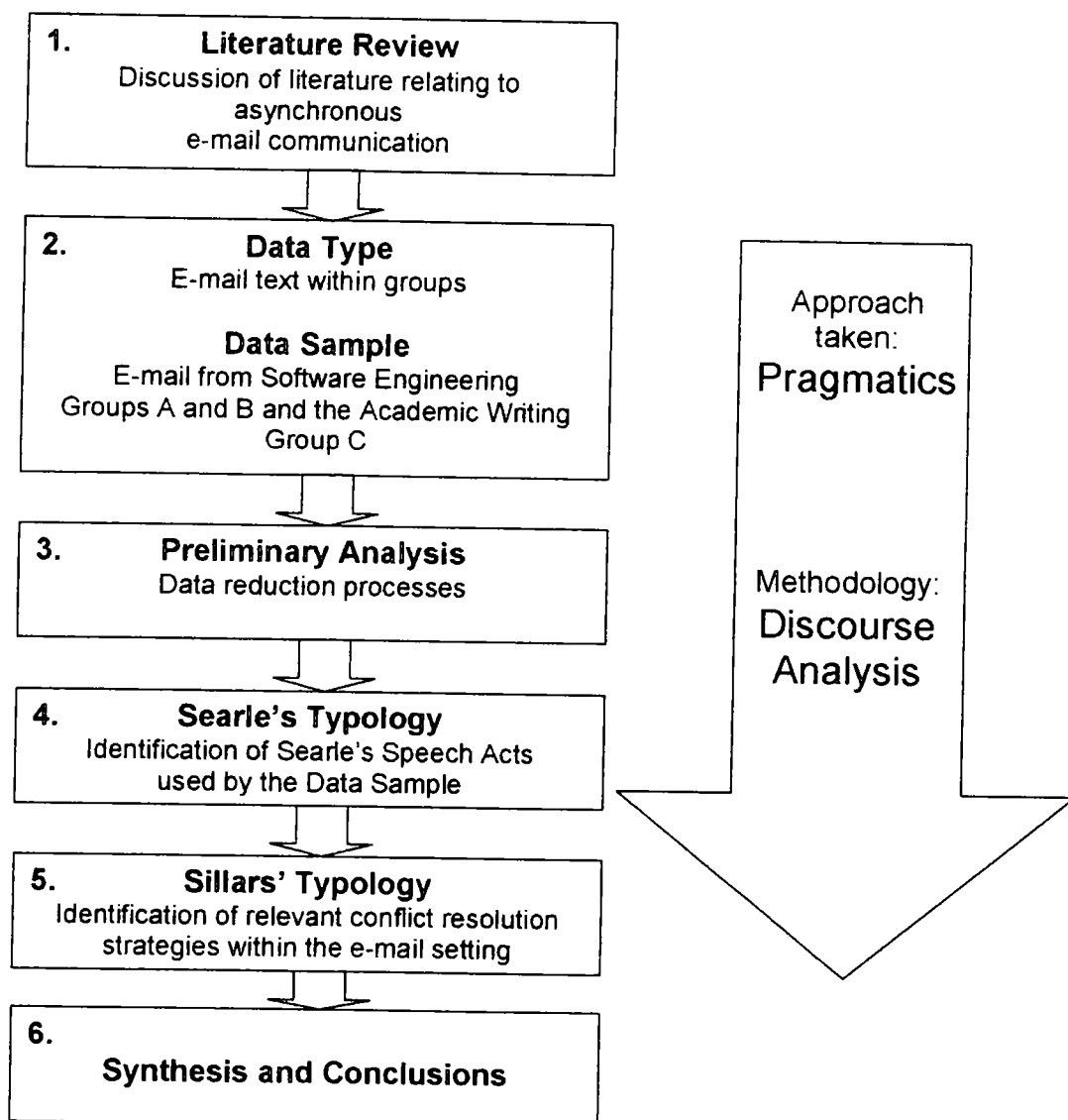


Figure 1.1 Overview of the Research

The literature on CMC is extensive and covers an eclectic range of themes and concepts. Early research agendas investigated the inherent differences between computer-mediated communication (such as e-mail) and non-mediated (face-to-face communication). These agendas emphasise the problems and consequences that the reduced cues of CMC have on mediated interpersonal communications and relationships.

Seminal theories, for example, the Social Presence Theory Short, Williams and Christie (1976); the Information Media Richness Model Daft and Lengel (1986), outline the dominant perspectives. The development in software applications and the reciprocal influence of group communication and cooperation in fields such as Computer Supported Cooperative Work (CSCW) are important for understanding the problems surrounding cooperation and communication in group work. In particular, the language/action perspective Winograd (1987-88) provides interesting insights into natural language use.

1.3 The Problem Statement.

The basis for the main problem statement as described in this thesis is e-mail communication and the recognition of conflict resolution strategies conveyed by the use of speech acts in the text.

The main premise for this research is the supposition that conflict resolution strategies similar to those found in interpersonal conflict can also be found in intermediated forms of communication such as e-mail and that analysis of the text will help to disclose the use of these strategies. The problem as outlined is one of analysis and classification of the features in the text that define conflict, and the categorisation of the features into strategies.

These issues are approached from three perspectives: firstly that which accounts for the different communicative functions of language and draws from speech act theory by perceiving speech as a series of actions and reactions. Secondly, by viewing the e-mail text as a written dialogue between interlocutors that conveys the performance of the acts, and the context in which they are performed. Thirdly, by drawing comparisons between Sillars' typology of interpersonal conflict resolution strategies and the conflicts as depicted in the e-mail text.

Because e-mail communication consists of a series of asynchronous message exchanges in the form of written texts, the contrasting characteristics between synchronous and asynchronous forms of CMC pose different research problems. In the former, communication takes place simultaneously, as might be found in chat rooms, in such cases exchanges between interlocutors can be analysed as a continuous and interactive exchange of words, not dissimilar to ordinary instances of conversation; add to this video and almost the whole panoply of communication cues is available. In contrast, asynchronous forms of CMC such as e-mail, exhibit considerable and variable time lag responses.

The asynchronous nature and the written manner of e-mail likens it to the epistolary style of the letter, and messages often display similar stylistic insertions such as greetings and sign-offs. Unlike conversation the written word makes it more difficult for receivers of the message to have control over what is being sent, to know and understand the circumstances in which it is being composed, or to know what revisions it might have gone through. In this void of temporal and spatial contexts meanings may become less clear and the intentions of others more difficult to define. As a result, e-mail communication can exhibit a range of negative communicative consequences from misinterpretation, anger, uninhibited exchanges, and feelings of isolation or depersonalization; Friedman and Currall (2003), Rice and Love (1987) and Short, Williams and Christie (1976). These sorts of effects are attributed to the inability

of the electronic media to transmit the gestures, tones of voice, facial expressions, shifts of gaze, and other non-verbal acts that regulate interactions in face-to-face communication.

There is a wealth of research focusing on the structural characteristics of e-mail communication and conflict; for example, Friedman and Currall (2003). Studies have shown that the structural properties of asynchronous communication are more likely to contribute to the escalation of conflict compared to face-to-face or telephone conversations (Daft and Lengel, 1986). Evidence also suggests that, once conflict takes place in e-mail, escalation is likely to occur and the conflict becomes more difficult to resolve (Rubin et al, 1994). Keisler (1997), shows that computer-mediated groups take longer to reach consensus than do face-to-face groups, and that the lack of social cues may enhance aggression. Aspects such as these are considered to impose high understanding costs which make the communication equivocal, and open to misunderstandings which may in turn lead to conflict. In these circumstances conflict can be difficult to resolve, and as a result damaging to the groups cohesiveness and motivation; it may even destroy an individual's sense of worth, and make a group less productive.

Despite these perceived limitations of e-mail communication, CMC has the advantages of removing the traditional constraints of time and place thereby allowing flexible work arrangements, and distributed work activities to play a more prominent role both at work and socially. As a consequence of these advantages it becomes increasingly important to understand the nature of mediated forms of communication and the applications this knowledge has for communication and the use of related technologies that have an active and influential influence on the everyday aspects of our lives.

1.4 Approach and Methods

This is a qualitative piece of research that is attempting to define conflict resolution strategies in the naturally occurring text of e-mail messages. The approach and choice of methods used relate to the empirical nature of the study and the large quantity of textual data for analysis.

Discourse Analysis is the chosen methodology, and this needs to be explained in the context of the data and methods of analysis. The methods used for analysing the corpora of emails centres upon pragmatic approach to language use, based on the assumption that the text represents a written discourse interpreted as a process of interaction between senders and receivers. For the purposes of this study the interpretation of these interactions is guided through the analysis of speech acts in the text, and attributions as perceived in the contexts of the message content.

The processes that are used to sort the data allow for its reduction into manageable units of text for analysis. The overall process for this falls into two broad sections. The first is used for reducing, segmenting, and classifying the data as depicted by (3) in Figure 1.1; the second phase analyses the text in two parts: firstly by using Searle's typology to catalogue the type of speech acts used in the text (4), and secondly by using Sillars' typology of conflict resolutions as a template for the recognition and categorisation of similar strategies communicated in the e-mails (5).

The theoretical aspect of the study explores the background to the positional stance of spoken communication compared to that of the written word. Particular reference is made to how the written language conveys meaning in the context of the e-mail communication by focusing down on the dichotomy between the 'rich' communication of face-to-face encounters, and what is defined by some

authorities as the 'lean' communication of e-mail, as in terms of its capacity to process rich information (Daft and Lengel, 1986). It goes on to explore the structural features of e-mail that contribute to the type of situations that make conflicts more likely (Clark and Brennan, 1991). Moving away from these structural aspects, it focuses on how meaning may be conveyed through what is termed in the thesis as the 'written dialogue' Central to this analysis is Speech Act Theory and Attribution Theory. Speech Act Theory postulates that the meaning of linguistic expressions can be explained in terms of the rules governing their use in performing various kinds of speech acts and that their use as conveyed by the utterances denote the actions or performances of the communicators. Attribution theory assists with the recognition of the types of conflict resolution strategies found in the e-mail text and utilized by the groups. The theoretical aspects of both these theories are used as 'templates' to elicit the meaning conveyed in the e-mails and ultimately to assist with the recognition and categorisation of the conflict resolution strategies in the text.

Whilst this study recognises the lean characteristics in relation to the use of the medium, it also acknowledges the way that language is used to convey complex ideas and emotions. Therefore, it sets out to explore the characteristics of e-mail beyond its structural limitations. It perceives the text as a written dialogue between interlocutors that is capable of expressing conflict resolution strategies that may exhibit similarities to those used in interpersonal communication.

The perspective used for defining the conflict resolution strategies in e-mail communication are considered to adopt an original approach to the way in which the texts are analysed and interpreted. As a process of analysis, the methods elicit themes and contexts from the data which are important for picturing the overall contents of e-mail. Although written messages are not dialogue in the strict sense of a conversational exchange, the interactive nature of e-mail pushes the boundaries of written communication into a form of written dialogue, which is

both fluid and dynamic. It is the written dialogue between interlocutors which allows the speech acts to be analysed and contextualised within the dialogical events in which they occur.

1.5 Organization of the Thesis

The thesis is arranged into eight chapters. This chapter provides an introduction to the background of the research, its delimitations and key assumptions. It gives an overview of the approaches and methods used, discusses the research problem followed by a justification for the study.

Chapter 2 draws on the literature which evaluates the background issues pertaining to this study. It is divided into two major sections; the first of which overviews and situates Computer-Mediated Communication (CMC) in a theoretical framework. It also reviews the seminal theories and issues which influence the arguments put forward in this thesis. The second part looks at the issues raised by Computer Supported Co-operative Work (CSCW) citing perspectives within this area that have guided the views taken on group work, cooperation, pathologies and conflict. Most importantly, it cites the use of the language action perspective used in the coordination and control of responses in CSCW.

Chapter 3 reviews the literature of e-mail communication - its limitations, structure and issues of conflict escalation. It also considers the e-mail text as a 'written dialogue' and conflict as consequence of certain types of attribution.

Chapter 4 presents the links between the themes raised within the literature review and the two main theories of Speech Acts and Attribution Theory which formulate the templates for the analysis and interpretation of the text.

Chapter 5 explains the approach, design and empirical background to the study and the methods used to analyse the data. It describes the nature of the research and details the characteristics of the project groups involved, and the treatment of the data.

Chapter 6 describes the methods used to analyse the data, it depicts the treatment, preparation, and coding procedures. It shows the part played by Speech Acts and gives examples from the text. It describes the changes made to Sillars' typology the processes of analysis and comparisons made between the criteria in the typology and examples of text.

Chapter 7 deals with the interpretations and synthesis of the findings. It begins by providing an overview of the research reiterating the important themes, concepts and methods used in the preceding chapter to show their linkages, interpretations and value. The data is then presented as a series tables and charts showing the distribution and pattern of the speech acts and the strategies used in each of the data sets. The chapter concludes with an appraisal of the research methods used: in particular, it assesses the reliability and consistency of the approach to the data analysis as a template for the classification of speech act and conflict resolution strategies.

Chapter 8 concludes by establishing what the research has shown and its relevance to the central question posed by this thesis. It states what the research has achieved and the contributions it might possibly make to further research and wider debates in the area of Computer-Mediated Communication.

This is followed by appendices, glossary of terms and references.

Chapter 2

Computer-Mediated Communication & Computer Supported Co-operative Work: A Review

The literature for this chapter falls into two major sections, Computer-Mediated Communication (CMC), and Computer Supported Co-operative Work (CSCW).

Section 2.1 presents the historical background of CMC and overviews the literature dealing with those elements of CMC that are considered to be most apposite to this study. It then discusses issues from four seminal approaches which are significant for developing the ideas and arguments in this thesis. The first three approaches highlight those aspects of CMC that feature the limitations of the medium, and the implication that its inability to convey social cues, presence, and identity, make it a lean and restricted medium for interpersonal forms of communication. These three approaches are contrasted against the fourth, which examines the processes of interpersonal action within the constraints of channels and time.

Section 2.2 deals with the contributions made by Computer Supported Co-operative Work (CSCW), and the developments in software design that have contributed to our understanding of how people interact, communicate and work in distributed environments, It explores those issues that are relevant to understanding the composition and functions of distributed groups, beginning with the literature that is historically pertinent to understanding group processes. It then turns its attention to more contemporary developments,

with particular consideration being paid to systems and software developments that use speech act protocols in collaborative design.

2.1 Computer-Mediated Communication

The following section sets out to achieve two things; firstly to situate CMC as part of a discourse environment, and secondly to define its parameters subject to various historic developments.

Mc Quail (2005) defines CMC as any communicative transaction which occurs through the use of two or more networked computers. Traditionally the term was used more specifically to refer to communications via computer-mediated formats such as e-mail, chat rooms and instant messaging. However, as the integration and assimilation of various technologies has taken place possibilities for varying the emphasis on the type of communication between sender and receiver has changed. An example of this shift in emphasis can be seen in the use of SKYP, where text, voice and visual images are used in real time. This example along with others in this section are cited to show how boundaries transactions, interactions and communication can be moved by the assimilation of and use of other technologies to create subtle changes to the interpersonal communication.

The first e-mail program was produced in 1971 by Roy Tomlinson and could be said to be the inception of the concept of Computer-Mediated Communication. This was followed in 1973 by David Wooley's creation of PLATO Notes, which constituted an early type of Bulletin Board Service (BBS). This system allowed users to post e-mails to a central "board" where they were arranged in sequence according to topic. The first BBS, went on line in 1978, and provided the public with one of the earliest forms of online community, enabling public users to develop online interpersonal relations and to share topics of interest with other users of the system.

The late 1970s heralded the beginning of the Usenet, a BBS style system but with no central server, nor central system owner. This interactive collaborative online system meant that users could subscribe to different channels hierarchically arranged by topic. It allowed users to post to channels and view all the postings according to a thread “... a collection of messages with a common subject” (Rudy 1996: 207). Emerging Usenet communities started to adopt conventions, idiosyncratic to its communication to overcome its lack of socio-emotional cues. Many of these conventions are now in common parlance and include emoticons, (an electronic form of pictograph) for conveying a wide range of emotions.

Further developments saw the creation of Multi User-Domain/Dungeon’ (MUD), multi-player computer games that combine role-playing games and social chat. Original games appeared in 1977 on the PLATO system. The first known MUD was created by Roy Trubshaw and Richard Bartle in 1978. Many of these games are based on the dice-rolling games of Dungeon and Dragons (D&D) and have a fantasy setting. A type of MUD, known as a MOO (object oriented) is used in the construction of text- based adventure games and virtual conferencing systems, as well as being used extensively in distance education.

In 1997 a variation of CMC nearer to that of e-mail and known as Blogs or Weblogs came into being. The term ‘weblog’ was coined by Jorn Barger in 1997. The site consisted of number of eclectic links to news articles and websites. A Blog is essentially an online diary or journal, a place to post ideas, opinions and accounts of day to day happenings, or focus on online developments. The verb ‘to blog’, refers to the act of posting entries to a blog. The term ‘blogosphere’ is used to define all the links between all of the topics that are written about. The main page consists of entries and posts arranged in reverse chronological order. Each entry is composed of a short chunk of text, and may also contain photographs, and video and audio recordings, often with links to other related websites. Blogs allow readers to leave their own comments upon a subject thus making the medium more interactive than a traditional website.

The continuing development of CMC technologies has seen a sophisticated extension of this type of interaction in developments such as Second Life (SL), an Internet virtual world developed by Linden Research. Virtual worlds are mentioned here to emphasize those characteristics of the communication that effectively free those involved to interact with each other without the need to be physically present. Distributed project groups as highlighted in this study are characterised by their temporal-spatial relationships and because of the nature of their communication (written text), encounter issues of meaning and understanding. Therefore, such examples as these, places the work in a context that emphasises the difference between face-to-face encounters and various forms of CMC, and the problems that may be encountered when leaner forms of communication such as e-mail are used.

Second Life first came to the forefront of attention in 2006. It is considered as an interactive game, but lacks the characteristics or rules that govern game play such as points, scores, winners and losers. Downloadable client programs enable users, known as '*Residents*' to interact with each other through motional avatars. In these virtual settings residents can interact with their environment by exploring, meeting other residents, socializing and participating in group activities. It is even possible to create and trade items, '*virtual property*', and buy services from one another using virtual currency known as the Lyndon dollar.

All of these approaches have placed emphasis on CMC as a medium that is interactive, characterised by elements of cooperation, collaboration and coordination, which allow and encourages geographically distributed individuals to interact without the need for physical presence, and at time intervals that can be either synchronous or asynchronous. Although these have proved to be valuable and advantageous assets for communicators, research into the use of the medium has tended to focus on the dichotomies that exist between face-to-face and computer-mediated forms of communication. The consequences of this have been to highlight many of those features of CMC considered to contribute to the perceived limitations of

the medium, such as its reduced bandwidth, diminished social cues, and lack of social presence.

2.1.1 CMC Research Agendas: an Overview

Early empirical research into CMC in the late 1970s and early 1980s explores group interaction and highlights the task-oriented nature of the messages (Hiltz, 1975; Rice et al, 1987; Seigel et al, 1986). The research agendas afforded by e-mail, Bulletin Board Services, and other forms of computer-mediated communication were examined. Concerns such as the effects of CMC on organizational functioning, efficiency and hierarchical relationships along with the nature of group interaction in these environments, and organizational and human relations influenced the research programmes of both CMC and CSCW.

Research in the '*cues filtered out perspective*' (Culnan et al, 1987) also dominated early research and continues to highlight the disadvantages of the use of electronic media, and raises doubts as to its ability to facilitate '*supportive interaction*' of users, (Kerr et al, 1982: 131). The prevailing consensus considers the medium devoid of non-verbal and social cues that can be found in face-to-face communication and therefore lacks 'social presence' (Short et al, 1976), and 'social identity' (Spears et al 1994); as a consequence CMC is considered to be an emotionally cold and anonymous medium of communication. These notions are also expressed through the medium's leanness and '*reduced bandwidth.*' The concept of leanness stems from the perspective of Information Richness Theory (IRT) (Daft et al, 1986) which perceives electronic mail as incapable of supporting the levels of communication richness. E-mail in particular is considered to be the leanest form of communication compared to the rich communication environment of face-to-face. Therefore information leanness is the converse of information richness which (Daft et al, 1986:560) define:

“... as the ability of information to change understanding within a time interval. Communication transactions that can overcome different time frames of reference or clarify ambiguous issues to change understanding in a timely manner are considered rich. Communications that require a long time to enable understanding or cannot overcome different perspectives are lower in richness....”

Other research has centred on the effects that the lack of cues have on people's behaviour and their responses to others. Cottrell et al (1968) claims weak social context cues lead to people's feelings of anonymity, producing self centred and unregulated behaviour. Diener et al (1976) observe that behaviour is likely to become more extreme and impulsive and less socially differentiated. Dutton (1996). Sproull et al (1986), and Seigal et al (1986) consider the lack of social cues to increase the likelihood of anti-normative and uninhibited behaviours, to depersonalise the users of CMC, making them less inhibited and more hostile in their communications. This is often exemplified in e-mail by behaviour that manifests itself through the use of aggressive and profane language commonly referred to as 'flaming.' Findings such as these have been widely reported, reviewed and accepted. For example, early experiments of group conferencing were judged, due to the reduced bandwidth, as less friendly, lacking in emotion, less personal and more serious, business-like and task oriented (Heimstra, 1982). Rice et al (1987:88) in their summary of the literature suggest that CMC's lack of audio visual cues is perceived as:

“... impersonal and lacking in normative reinforcement, so their will be less socioemotional content exchanged.”

In addition Keisler (1997) found that participants in CMC groups evaluated each other lower than those in face-to-face groups. Other studies have looked at the quality of decision making (Gale et al, 1995; Hollingshead, 1996). Savicki et al (1996) support the increased quality of decision making. Hiltz et al (1986) on the other hand found that participants were less likely to reach agreement in CMC environments. Siegel et al (1986), for example, found that

CMC groups reached consensus in decision making less often and took longer than face-to-face groups to make decisions. These findings seem to reinforce the difficulty of a lean medium to change understanding within a time interval and in a timely manner.

Compared to the above, lean forms of communication including e-mail, require longer time intervals to enable understanding or overcome different frames of reference, and they process fewer cues, restrict feedback and are therefore not as appropriate for resolving equivocal issues.

Experiments have also demonstrated that task orientation in CMC is also affected by external factors, these include the complexity of the task, environmental uncertainty, and the need for communication across geographically distributed locations, (Steinfeld, 1986). The capacity of CMC to accommodate these variables appears to alter the emphasis placed on the different types of communication cues by emphasising certain characteristics of the medium at the expense of others. Clarke and Brennan (1991) in their work give a detailed description of the disparities that exist across a range of communication media.

Despite these negative findings CMC also exhibits positive social outcomes through its capacity to support communication capabilities that are not found in face-to-face forms of communication. These include the medium's capacity to assimilate and integrate other forms of electronic technologies. For example, in asynchronous forms of communication such as e-mail, still or moving images may augment the text; or sound and video images may be relayed synchronously in '*real time*' enabling conferencing to take place. Thus, whilst the interaction in the former is considered '*lean*,' and analogous to writing a letter; the interactions of the latter are made similar to the 'rich' environment of face-to-face forms of communication.

Walther (1996) on the other hand, emphasises the socio-emotional aspects of CMC interaction in both synchronous and asynchronous settings. His findings tend to fly in the face of earlier research, and show that CMC groups

exhibit greater intimacy and social-orientation than face-to-face groups. Some research even indicates that CMC environments have exceeded the level of affection and social-emotion of parallel face-to-face interaction. This phenomenon is called 'hyperpersonal' communication (Vergoth, 1995; Walther, 1996). Smilowitz et. al (1998) found that CMC environments seemed to reduce the effects of social pressures to conform to majority judgements, and that participants tended to be more critical and more willing to assess information they were receiving compared with face-to-face encounters.

Walther (1994) also found that CMC users developed impressions of others gradually over time, exhibiting a linear increase in impression development which eventually reached a level similar to that of face-to-face groups. In addition, it is thought that CMC users can manipulate both verbal and non-verbal cues to form images of one another.

According to Baym (1995), humour can be accomplished in CMC environments, and can be important for creating social meaning. Moreover, since humour depends on group norms and knowledge, it also provides a different way for CMC participants to solve problems within the group and to produce unique identities and express individuality to create group cohesion and identity. There is also a growing body of research that shows more supportive and varied relations among CMC interlocutors, for example, Feldman (1987), Ord (1989), and Weedman (1991). Several studies describe working relationships forming from coincidental information exchanges; for instance, Johansen et al (1978). Beals (1991) quantifies these more receptive relational patterns.

2.1.2 Seminal Theories

The domination of the cues-filtered-out perspective has resulted in a number of seminal theories. The three that are considered most important for

advancing the arguments and the direction this thesis takes are; Media Information Richness (Daft et al, 1984); the Social Presence Theory (SPT) (Short et al, 1976); Social Identity Theory (SIDE) (Spears et al, 1992). Each of these theories elucidates the perceived limitations of CMC in terms of its reduced bandwidth, social cues and presence; and the influence these have on the understanding of social interaction in CMC. The study then turns its attention to the social emotion-oriented model, primarily based on Walther (1994) Social Information Processing Theory (SIP). This theory is considered to be an alternative perspective, to the task oriented approach and takes into account CMC's ability to compensate for its limitations by the development and influence of textual and linguistic behaviours over a period of time.

2.1.2.1 Information Richness Theory (IRT)

According to Daft and Lengel (1984), Information Richness Theory (IRT) refers to richness or leanness as a fundamental objective of communication medias and that the use of these media can be substantiated by their intrinsic property, i.e. the extent to which the medium is perceived as being rich or lean by the communicators.

The main emphasis of this theory is placed on how the amount of information communicated differs with respect to a medium's richness. Daft et al (1987) classify media richness hierarchically using five classifications, face-to-face; telephone; addressed documents characteristic of e-mail, such as a memo, note or letter; and unaddressed documents such as reports, and numeric documents such as spreadsheets. The richness of each media is calculated according to feedback, multiple cues, language variety and personal presence. The theory assumes that resolving ambiguity and reducing uncertainty are the primary goals of communication. Because communication media differ in the rate of understanding they can achieve in a specific time (with rich media carrying more information), they are not capable of resolving uncertainty and ambiguity well. The more restricted the medium's capacity,

the less uncertainty and equivocality it is able to manage. It follows then, that the richness of the media should be matched to the task so as to prevent over-simplification or complication. It can therefore be argued that to conduct a complex project using e-mail as the primary medium may increase both the ambiguity and the equivocality of the communication. Therefore, IRT proposes that individuals would choose media higher in richness for tasks that are more equivocal or ambiguous. Daft et al (1986: 560), in their original work, illustrate the theoretical position of IRT by defining its capability to change understanding within a time interval and its capacity to overcome different frames of reference, or clarify ambiguous issues to change understanding in a timely manner.

Compared to the above, lean forms of communication which include e-mail, require longer time intervals to enable understanding or overcome different frames of reference, and they process fewer cues, restrict feedback and are therefore not as appropriate for resolving equivocal issues.

The information richness theory is usually placed in an organizational context but over the years it has moved away from this with greater emphasis now being focused more specifically on the media choices made by individuals and the messages they exchange. Markus (1994: 523) states that:

"Information richness theory remains an individual-level rational choice explanation of behaviour."

Empirical studies in IRT have in the past, been mostly conducted from a positivist approach of the natural science model. As such this perspective emphasises objective, experimental and deductive methods. Thus experiments have tended to focus on the behavioural aspects of individuals in laboratory experiments removed from the organizational contexts in which the technologies are used. As a result tests conducted in IRT have tended to produce unfavourable findings for Computer-Mediated Communications as mediums that enhance the interpersonal aspects of communication (See Orlikowski et al, 1991).

Markus (1994) in her field observations of the behaviours of managers produced a convincing empirical refutation of IRT. Her findings which are based on both quantitative and qualitative evidence revealed inconsistencies in the managers' media use, and behaviour that was inconsistent with IRT. For example she found that senior managers in particular used electronic mail more intensively than predicted by IRT. Findings such as these lend support to the perception of e-mail as a well integrated form of communication which is seamlessly inter-dispersed with other forms of organisational communication, extending the range of communication and decision making options, (Huber, 1990) and satisfying demands for storage, documentation, and retrieval (Yates, 1989).

Advocates of social definition theories, such as Structuration, and the Social Construction of Technology, are in direct contrast to those advocating individual rational choice explanations to behaviour, and emphasize the social determinants of behaviour. Other social definition theories include the 'Social Influence Model' (Fulk et al, 1991). These propose that the properties of any medium vary from one individual to another and from one social context to another. Also a person's use of one medium rather than another for communication transactions is subject to not only the influence of that person's own rationality, but also the influence of other individuals, group norms, and extra rational factors.

Other studies are also unsupportive of IRT's postulates. For example, no empirical support has been found for IRT's prediction that individuals will prefer to communicate via voicemail rather than e-mail in situations requiring the exchange of information to resolve equivocality; and to the contrary, e-mail was preferred (El-Shinnawy and Markus, 1997). Evidence has also been presented as to how managerial communication using e-mail is still capable of being rich, despite the fact that it exhibits all the lean media characteristics such as lack of immediate feedback, filtered cues, and lack of social presence (Lee, 1994).

Similarly, Contractor and Eisenberg (1990:145) target the information richness theory premise that 'each medium has an objective social presence'. In their 'emergent perspective' they include the proposition by Markus and Robey (1988 :19) that:

"...the uses and consequences of information technology, such as communication media, emerge unpredictably from complex social interactions."

Yates and Orlikowski (1992) target the failure of IRT to account for the factor of communication genre. According to their Genre Theory, the same medium can carry messages employing different genres, just as the same genre can be carried in different media. For example, e-mail can carry messages taking the form of business letters, memoranda, informal personal notes and, also, what Markus (1991) calls 'mosaic messages' and 'shotgun messages', each of which Yates and Orlikowski would consider a different genre. The significance is that, depending on the genre that the message employs, the communication can be rich regardless of whether the medium itself is what the information richness theory would consider to be rich. Common to these alternative perspectives is Yates and Orlikowski's rejection that communication richness is an invariant objective property of the communication medium itself, independent of the social context where the communication takes place. These alternative explanations all regard communication richness or leanness as following not from the properties of the communication medium alone, but as emerging from the interactions which take place between the interlocutors and the context in which the communication takes place, whether it be in an organizational structure or otherwise.

Lee (1994) approaches IRT and e-mail in particular from a hermeneutic perspective. He employs this approach to elicit meaning in the language and interpretation of the e-mail texts. Boland (1991) carried out an interpretation of numeric documents, considered by IRT to be the leanest form of communication. The study showed evidence for the documents being rich in

meaning. Boland examined the responses of experimental subjects to documents which were specifically computer generated. The documents displayed numeric data such as can be found in spreadsheets which reflect the performance of two divisional managers. The task involved the subjects to select one or other manager for a promotion, and to provide reasons for their selection. Boland found that the subjects brought the people and the situations to life; he expresses this as follows:

"They appropriate a warm, human reality from cold numbers. They take hard, objective data and create a subjective reality of people with vibrant personalities and strong motivations, deeply felt intentions and complex histories..." (Boland, 1991:217)

Despite e-mail being considered a lean medium of communication research has shown that the documents themselves can be a rich source of interpretation opening up perspectives for understanding how individuals extrapolate and create meaning. In terms of electronic mail the written documentation is the source from which meaning is extrapolated and interpreted. Therefore, despite the medium of communication being lean in the amount of information it is capable of carrying, the scope for interpretation is vast. Boland emphasises that personal qualities can be inferred from lean 'numeric data' that gives information of human characteristics such as age, weight, height, or educational qualifications and so on. However, it might also be argued that a high degree of subjectivity is used to 'fill in the gaps' and make up for the lack of context not provided by the data.

2.1.2.2 Social Presence Theory (SPT)

The Social Presence Theory (Short et al, 1976) is a seminal theory, the premises of which are based on the early research sponsored by the British Post Office (British Telecom).

Social presence is defined as an intrinsic property of the medium itself and the degree of acoustic, visual and physical contact the medium allows. It argues that the effects of a communication medium depends on the social presence it allows communicators to have, and the degree to which communicators experience others as being psychologically present (King and Xia, 1999).

The theory assumes that more contact will increase the key components of 'presence' such as intimacy, immediacy, warmth and inter-personal rapport. The greater the social presence, the greater the social influence. In the case of CMC, the assumption is that text-based forms of interaction such as e-mail restrict social interaction and therefore are less conducive to social influence. This in turn may lead to ambivalence in the meaning and interpretation of the messages between interlocutors.

Short et al (1976) cite social presence as a subjective quality of the communication medium which relates to the social psychology concepts of intimacy and immediacy. Intimacy is determined by physical properties such as, distance, eye contact, facial gestures, and personal topics of conversation. The immediacy is determined by the medium's capacity for transmitting information. Therefore, social presence can be a function of both verbal cues; for example, tone of voice and non-verbal cues such as facial expressions, direction of gaze, posture, dress and so on. Based on this theory, communication media such as face-to-face meetings which are capable of conveying nonverbal and social context cues are considered to be of a higher social presence than those found in text documents. The higher the intimacy and immediacy the medium has, the higher the social presence (Short et al, 1976; Trevino et al, 2000).

Rice (1993) uses social presence theory to compare traditional and electronic media. In the analysis of data from studies designed to examine the use and effects of electronic media, he found that the lack of social presence, ranked voice mail and e-mail lower in their overall task appropriateness than traditional face-to-face meetings. E-mail was ranked even lower than voice

mail in both overall appropriateness and for exchanging timely and confidential information.

Both task appropriateness and the exchange of timely information is important for geographically distributed project groups, and to some extent both of these characteristics rely on good management practices. However, the lack of physical presence can present problems in terms of immediacy of understanding in relation to the information that is conveyed. The processes that allow individuals to access the emotional register of the communication, and other cues characteristic in spoken language for the guidance of meaning are no longer present and therefore may lack the social influence found in face-to-face communication. Users of e-mail have found other means to overcome these deficiencies, and levels of relational communication which are equal to, parallel to, or exceed face-to-face encounters are achieved through natural language use or questions and disclosures (Tidwell et al, 2000) or the speed and time taken to reply as in chronemic cues (Walther et al, 1995). Perhaps more importantly the creation of emoticons created with the use of typographic symbols help in overcoming the lack of personal contact. Walther (2001) thinks that emoticons should be considered as accommodations for the lack of non-verbal cues in CMC. He considers that they may have the effects of non-verbal face-to-face cues and maybe relational in their use to the written language. He found emoticons had few impacts on message interpretations as hypothesized in his work (see Walther 2001: 330-331) and in each of the analyses, overall verbal message content prevailed over the emoticons contributions.

2.1.2.3 The Social Identity Model of Deindividuation Effects (SIDE)

The Social Identity Model of Deindividuation Effects (SIDE), (Posmes, et al, 1999; Reicher et al, 1995; Spears and Lea, 1994) was developed as a response to the idea that anonymity and reduced presence made communication technology socially impoverished or '*deindividuated*'. The

model distinguishes between the cognitive and strategic effects of a communication technology. Cognitive effects occur when communication technologies make salient particular aspects of personal or social identity. For example, e-mail may disguise the characteristics of the sender that convey aspects of their own unique personality and character, resulting in attention being switched to their social identity. The strategic effects are due to the possibilities, afforded by the medium to selectively communicate particular aspects of identity, and disguise the others. SIDE therefore sees the social and the technological as mutually determining, and the behaviour associated with particular communication forms as the product or interaction of the two.

The SIDE model predicts conformity of norms associated with the specific social identity of the group, rather than deviation and is heavily influenced by related theories of the crowd and mass communication (Postmes et al, 1998). It emphasises group conformity, and asserts that rather than filtering cues out they can be even stronger in CMC compared to face to face. Similarly power differential, the capacity to influence the response of others, rather than being diluted can be magnified (Spears et al, 2002). Although the SIDE model does emphasise conformity rather than individual deviation from the norm, it does raise the question of power differential and the possibility that aggression in CMC might be rooted in issues of power and control.

2.1.2.4 Social Information Processing (SIP)

The previous three studies have emphasized CMC's limited bandwidth, lack of social presence and identity. However, they have failed to examine the relational development between computer-mediated and face-to-face communication as a function of the ways participant's process interpersonal interaction within the constraints of channels and time. This approach is based on principles in social cognition and interpersonal relationship development from social psychology.

According to Walther (1994:476):

".. ..rather than eliminating social information or "blinding" participants to it, CMC's limited bandwidth might simply retard normal impression development and relational communication. The cause of this retardation is that CMC forces both task related and social information into a single verbal/linguistic channel, and takes more "real time" to exchange the same number of messages in CMC as it does in face-to-face interaction. This approach has been called the "social information processing perspective."

Thus, the Social Information Processing Model refers to the way in which communicators process relational and social identity cues using various media in both synchronous and asynchronous time frames. Communicators who use any medium of communication experience similar needs for affinity and reduction of uncertainty. To meet these needs CMC participants adapt their textual and linguistic behaviours through anticipation of the expected response. However, unlike face-to-face encounters, CMC's limited cues moderate the medium's ability to convey the entire task-related and the social-emotion-related information. Therefore, the key differences between face-to-face and CMC environments, is not a matter of capability, but a matter of rate, in other words the socio emotional aspects of the communication take a longer period of time to develop. It can be inferred that the exchange of social-emotional information in CMC environments may be slower than in face-to face environments but does not necessarily restrict information. Walther's perspective views the time lag between interaction as conducive to thoughtful, and reflective responses that are superior to face-to-face communication because interaction is in a sense a "planned discourse" based on the anticipation of further interaction between the interlocutors. He suggests that:

"CMC message senders portray themselves in a socially favourable manner in order to draw the attention of message receivers and foster the anticipation of future interaction." (Walther, 1996:476)

The anomalies that were found between face-to face and computer mediated interaction were put down to the difference between studies of what Walther (1994), terms, '*longitudinal groups*' and '*one shot groups*'. The hypothesis was put forward that groups develop over time and that "one shot experiments failed to capture these dynamics" (Walther 1994:477). The question remains as to why CMC groups appear no less intimate and social than face-to-face groups even in their initial meetings. Early experiments show that anticipation of future interaction may be an inherent aspect of face-to-face conversation, and that participants, especially students may:

"... infer that they may recognise and talk to each other in the future."
(Douglas, 1987:242)

Walther considered the possibility that anticipated future reaction may have positive effects on uncertainty reduction and affiliation processes used by communicators in CMC (Walther, 1992). He hypothesises that CMC partners' anticipation of future interaction is more greatly influenced by long-term versus short-term assignment than is the anticipation among face-to-face partners. It could be conjectured, if such a pattern exists and could be shown to relate to the interpersonal behaviour of CMC groups, then it may account for the initial interactions, and previously observed differences between the relational behaviour of, one-shot CMC groups and longitudinal groups. It would be of greater significance if it could also be shown that the anticipation factor operates differently in one-shot CMC and face-to-face groups. Then considerations would need to be given to the depersonalizing effects of CMC observed in previous studies. Such factors as these may not be the function of the medium at all, but one of anticipation of future interaction that the medium moderates.

The importance of the anticipation of future interaction on interpersonal behaviour has received considerable attention in theoretical and empirical reformulations of Uncertainty Reduction Theory (Berger and Calabrese, 1975). The original theory suggests there is a positive relationship between uncertainty and information-seeking, and an inverse relationship between

uncertainty and liking/affiliative, expression/intimacy. Although these relationships suggest fixed states at the point of pre-interaction (Kellerman and Reynolds, 1990), they are envisaged as predicting the process of initial exchanges; uncertainty causes information seeking, which reciprocally decreases uncertainty leading to increased liking and intimacy. Later reformulations (e.g., Berger, 1979; Berger and Bradac, 1982) have proposed a role of 'anticipated future interaction,' such anticipation increases the motivation to reduce uncertainty. It can be reasoned, by extension, that greater anticipation of future interaction may lead to greater information seeking and intimacy/liking.¹ At the same time, direct effects on interpersonal behaviour or interpersonal evaluations have been shown to result from anticipated future interaction. Studies have shown that anticipation of future interaction increases the amount of biographical and demographic information exchanged among actors (Calalbrese, 1975). Persons anticipating future interaction with someone else, feel more similarity to them when they acquire some information about them, than do persons without such anticipation (Berger and Douglas, 1981) Anticipation causes actors to present themselves more positively and with greater friendliness (Kellerman and Reynolds, 1990). In negotiation settings, anticipation causes more co-operative behaviour (Heide and Miner, 1992). All these conditions of anticipated future interaction appear similar to what happens in face-to-face communication, and the types of interaction that take place in longitudinal CMC groups. However, opinions are divided on potential interpersonal effects of CMC.

McGrath (1990) speculates that the response lags in combination with the loss of non-verbal cues may increase uncertainty and disrupt the groups ability to synchronize their activities, manage their temporal commitments, and "regulate the flow of task and interpersonal interaction" (McGrath, 1991:162).

¹ Kellerman and Reynolds (1990) empirically confirmed a direct positive relationship between anticipated future interaction and information seeking. Their findings on the direct relationship between anticipation and liking were found to be inconsistent.

Walther disputes McGrath's speculations, stating that when individuals do not need to coordinate in real time:

"...temporal commitments become discretionary, and task versus interpersonal interaction becomes, in a sense, de-regulated; both task and social exchange may exist without one constraining the time available for the other." (Walther, 1994:480)

Walther's conclusions are that CMC acts as a moderator, by which participants may or may not expect on-going interaction with others. This moderation takes place to a greater extent in CMC than it does in face-to face communication. Also, that actual anticipation of future interaction held by participants using asynchronous computer conferencing and face-to-face meetings significantly accounts for relational intimacy and composure, and that CMC has little effect once anticipation is considered.

In summary, there are a number of important issues to be taken into consideration. The first are arguments based on the leanness of the medium and the consequences it has for the ability of the medium to convey messages that are supposedly as clear and unambiguous as those found in rich media. In fact it is perhaps not so much that richness denotes clarity, but is able to make available a greater number of options to enable correction and clarification to take place. Secondly much research has taken place which emphasises the lack of social presence and social identity with much of the emphasis on cues filtered out. However the idea that individuals anticipate the actions of others has to be based on some prior evidence of what those intended actions are going to be. The suggestion here is that such evidence resides in the written text of the communication and is denoted by the use of speech acts.

2.2 Computer Supported Co-operative Work

To bring certain related concepts into the remit of this study, a different, but corresponding channel of enquiry needs to be briefly pursued. The term, 'Computer Supported Co-operative Work' (CSCW) was coined by Greif and Cashman (1988) and is defined by Wilson (1990: 105) as:

"...a generic term which combines the understanding of the way people work in groups with the enabling technologies of computer networking and associated hardware, software, services and techniques."

CSCW provides a background from which emerging approaches between the correlations of group processes, and work interaction can be studied to develop software applications (groupware). This term is defined by (Lenz,1982:16) as:

".. intentional group processes and procedures to achieve specific purposes" plus "software tools designed to support and facilitate the group work.."

These applications can assist with the coordination, cooperation and collaboration of geographically distributed groups. Issues that have emerged from CSCW have created new ideas as to what characterises groups; what constitutes work; and how communication and interactive processes are affected by, and respond to these environments.

In particular, the application and use of Groupware for the coordination of distributed group work environments has focused on the morphology of groups, their form, structure, and process. Other software applications such as the COORDINATOR from the Language action/perspective (Winograd, 1987-88), provides an explicit model of conversation as action based on Speech Act Theory.

Contributions to research have come from four main areas of enquiry: software design, systems development; scientific management studies, and group collaboration/human interaction studies. Aspects from all these areas

have influenced the corpus of research in CSCW but whereas, much of the research in CMC has centred on the media's limitations, CSCW has focused on ways of supporting group communication, collaboration and efficiency.

Approaches to group support emerged in the early 1960s and 70s in the form of office automation. Research was largely driven by organizational and economic theorists. The former were interested in how people worked; the latter in how to maximize work to create a competitive advantage. Initial problems centred on system requirements and the integration of single user applications such as word processors and spreadsheets to support groups and departments. Defining the precise requirements for such systems proved difficult, and further research ensued to discover how people worked and interacted in distributed group environments. Two sources of enquiry dominated; firstly, group activities, especially those that surround organizational and social behaviour; secondly, issues that focused on the technical possibilities and constraints of software and systems for the users.

Opinions vary as to which software tools constitute groupware these may include network file servers, data base software, and electronic mail. Ellis et al (1980) emphasise the importance of system support and recognise groupware as providing a supportive interface for those who work in a shared environment. Lynch et al (1990) emphasise the use of software that accentuates the multiple user environment, and coordinates the users and the communication. Malone (1985) (cited in Coleman and Shapiro, 1992: 160) gives a broad definition groupware to include any aspect of:

“ Information technology used to help people work together more effectively.”

2.2.1 Group Concepts in CSCW

To put some of the above issues into perspective, a brief overview highlighting the main themes in group research are considered.

Group theories in general have contributed to our perceptions and expectations of a group's performance. They are influential models that are relied upon to guide our understanding of group behaviour, interaction, task orientation, motivation, cooperation, conflict and so on.

Models and images of collaboration and team-work initially were not readily available. Much of the knowledge about groups and their dynamics rested on theories based on early experimental studies. Like CMC, these studies had relied upon theories that made the implicit assumption that groups expressed common dynamics and attributes across a range of contexts and environments. Therefore these were considered to be predictable factors found in, and expressed by groups generally. Insufficient consideration was given to the measuring devices and conceptual structures used to make these generalizations.

Cole et al (1993), working from CSCW literature, identified characteristics attributed to groups which are either specified or assumed as guidelines for system design. These included; 'small' numbers of individuals, normally communicating face-to-face and carrying out a task or working toward some common goal. Members are usually considered to be positive and 'cooperative' towards each other and the fulfilment of the group task. The members have 'roles' in relation to one another and have specific 'role-related outcomes'. These are assumed to develop from structural divisions developed within the group to fulfil the group's goals. Continued communication is considered necessary for individuals to influence one another, and for individual to maintain a 'sense of belonging'. The group is seen to progress through a series of fixed, predictable stages. Finally groups are considered to be discrete and 'short lived', with no past or future beyond that associated with the particular group task. Although this clearly describes some aspects of groups working in task related settings, it also implies group behaviour that is systemic and operates within perceived constraints towards well defined measurable goals. Normative influences and situational factors associated with defining appropriate group behaviour and goals are largely ignored.

Sproull and Kiesler (1991: 58), state:

“For good or bad, the dynamics of face-to-face meetings usually are predictable and similar across groups. The dynamics of electronic group meetings however, differ from those of face-to-face meetings and are less predictable.”

2.2.2 General Group Theories: An Overview

It is important at this point to briefly overview some of the more salient characteristics of the general group theories and the emphasis placed on concepts such as competition, interaction, information sharing and motivation.

Amongst the very earliest studies on groups are those by Triplett in 1898, these were concerned the ‘*dynamogenic*’ that occurs when people are together and in competition. However, much of the impetus for contemporary research and the theory of group communication in general have come from a variety of 20 Century sources for example, the work on ‘integrative thinking’ (Follett, 1924) and Robert Bale’s Interaction Process Analysis (1950). Bale developed a well defined and unified theory of small group interaction which is centred upon the actions and reactions of people in groups.

Fisher et al (1971) develop a theoretical perspective on group phases and decision emergence that stresses interaction. His theory is an example of a phase model of group development that predicts that groups go through a series of stages in dealing with problems, or set tasks. This approach may have some resonance with Walther’s Information Processing Model. The phase approach has long constituted the dominant view of group development, despite criticisms for being overly simple (Poole, 1983).

The accepted unit of analysis in group research is the individual’s behaviour. Fisher and Hawes (1971) refer to this as the ‘*human system model*’. This

approach has yielded a number of analyses of individual behaviour variables. Whereas Bales' approach focuses on single acts of individual group participants, Fisher believes that a more realistic approach for the study of group communication is the 'interact system model' in which the basic unit of analysis is not an individual 'act' but an 'interact', that is, the verbal or nonverbal act of one person followed by a reaction from another. Here the unit for analysis is a contiguous pair of acts. Fisher and Hawes explore the nature of behaviour-response sets, and have observed that interacts seem to be organized over time in a hierarchical fashion.

An extension of the interactional tradition is: A System for the Multiple Level Observation of Groups (SYMLOG) (Bale and Cohen, 1979). The theory assumes that all interpersonal behaviour can be understood in terms of a three dimensional space. The vertical dimension represents the dominant and submissive positions. The horizontal dimension (forward and backward) represents the instrumentally and emotionally controlled positions. The left to right dimensions (positive and negative) represents the unfriendly and friendly positions. Therefore the way a person behaves depends on the role they assume within the group and their personality. Role is situational, and dependent on the demands and interpersonal dynamics of the group as well as the expectations of other members. Thus the behaviour of an individual will lead to certain perceptions of other members, and the group outcomes depend on the nature of the interaction in the group. Most importantly this theory emphasises communication as a basis of group productivity.

The application of system theory and information theory to communication illustrates how communication can be understood as a system and information based process. This is illustrated by Convergence Theory which defines groups and cultures as:

"... open systems that sustain themselves by expending effort." (Kincaid (1979:27)

In order to sustain a group, communication and information transfer are required. It is this network of relations among people that maintains the structure and the organisation of the group. Without communication the group would become disorganised and entropy would set in. Kincaid used information theory to explain how convergence or divergence will occur in a group working under certain conditions. Generally, the more communication within, or among groups, the greater the expected convergence, this ultimately leads to a more cohesive group. The less information sharing, the greater the divergence of the group and less cohesive it is. Kincaid (1979), states that modern technology enables society to handle a high level of entropy.

The work carried out by Kurt Lewin, remains the foundation for contemporary research on group dynamics. Lewin's Field Theory, took a systems view of group life, which referenced the integrated and interdependent nature of group variables, he states:

"A group can be characterised as a 'dynamical whole'; this means that a change in the state of any subpart changes the state of any other subpart. The degree of interdependence of the subparts of members of the group varies all the way from loose mass to a compact theory. It depends among other factors, upon the size, organisation and intimacy of the group." (Lewin, 1935:94)

One of the most important attributes of groups is considered to be cohesiveness. Cohesiveness is the degree of mutual interest among members and mutual identification is the quality that keeps them together. In a highly cohesive group, members exhibit strong mutual identification.

"Mutual identification is a function of the degree to which to which members are mutually attracted to certain goals or mutually repulsed by certain negative forces Cohesiveness is a result of the degree to which all members perceive their goals can be met within the group." (Littlejohn, 1989)

The 'group cohesion' notion has undergone considerable theoretical and empirical scrutiny, and the literature on cohesion in small groups is abundant,

for example, (Kellerman, 1981; Wolf et al, 1988). Sundstrom and Sunstrom (1986:121) outline how an environmental arrangement can influence group cohesion. Some researchers have targeted cohesion for technology-mediated support (Short et al, 1976), as well as rhetorical and symbolic encouragement. Others have looked at group interaction styles and found that perceptions of shared norms and expectations of task process were types of relational links positively related to a higher level of team cohesion and information exchange in virtual teams. (Warkentin et al, 1997). Consensus has been lacking in management and administrative communication as to whether group cohesion should be considered as a constructive or destructive element in group work. Management in particular have perceived group cohesion as binding group members to each other rather than to the organisation and its goals. This view has triggered managerial attempts to weaken workgroup cohesion (Bramel and Friend, 1987). Group cohesion has also been construed as functional for both the group and the organization, helping to circumvent obvious sources of intra-group tension and disruption.

“Group cohesion promotes the development of consensus on normative standards and the effective enforcement of these shared norms.... cohesion, therefore, increases social control and coordination.” (Blau, 1967:60)

For the most part, research on group dynamics follows an input/output model. Thus, the performance of a group depends on its ability to integrate and organise the individual skills and resources of its members. According to Collins and Guetzkow (1964), when this integration is carried out effectively an *assembly effect* occurs, in which the group solution or product is superior to the individual work of even the best member of the group. The notion of the assembly effect is highlighted in the concepts of ‘*syntality*’ (Cattell, 1948) and the Groupthink Hypothesis (Janis, 1982).

Cattell’s theory of group syntality is primarily concerned with the nature of interpersonal effects in groups. In group syntality, characterised as group personality, there are three defining aspects, *syntality traits, internal structure, and population traits*. The syntality traits refer to the predictable

patterns of group behaviour. For example, the group may appear aggressive, efficient, isolated, energetic, reliable or unreliable and so on. The internal structure refers to the relations among members; it may deal with status, structure, internal sub-groupings, modes of government, and patterns of communication. The population traits of a group refer to the characteristics of individual members, intelligence, attitudes and so on. These three aspects are interrelated and syntality refers to a function of population traits and internal structure. The syntality of the group results in synergy; this is the total energy input of the group members. Often, much of the energy put into a group does not directly support its goals. Because of interpersonal demands, energy must be expended to maintain relationships, and to overcome interpersonal barriers. Effective synergy is the group energy remaining after intrinsic or group maintenance synergy is subtracted. The intrinsic energy is productive in that it works towards group cohesiveness, but it does not contribute directly to task accomplishment.

Essentially the synergy of a group results from the attitudes of the members toward the group. Different attitudes of members towards the group and its operations create conflict and this will result in increasing the proportion of energy needed for group maintenance. Therefore, the more that individuals possess similar attitudes, the less the need for intrinsic investment, and the greater the effective synergy.

These phenomena characterise the complex dynamics involved in a group's interaction, interpersonal behaviour, performance, cohesion, and synergy. Both internal and external changes to the group's composition, such as working practices and interaction processes, can contribute to the harmony or discord of the group. Although CSCW acknowledges and recognises these issues the dominant approach to conceptualizing groups is through small group dynamics. This position has tended to reinforce the restricted view of the group in CSCW as both natural and inevitable and as a consequence has influenced software design through the assumed needs of the group as opposed to their actual.

2.2.3 Group Work

Attempts to characterise group work and develop CSCW 'genres' by labelling certain kinds of work as cooperative, collaborative or coordinated are the focus of science management studies (Orvec,1996). Sorgaard (1987:3) defines co-operative work as acting or working together for a shared purpose, this he states:

"... is a less general term than collaborative work which merely means to work together or with someone else."

Collins English Dictionary defines cooperation as:

'teamwork, joint effort, common effort and collective action. Collaboration is to work with another or others on a joint project.'

Discussion of what cooperative/collaborative work involves has fuelled a number of controversies among developers and critics of CSCW applications. Ehn (1988) (quoted in Grudin, 1989:152) asserts that: *"all work is cooperative work"* that is, all of the work performed in an organization must be seen in relation to the overall goals and objectives of the organisation, and is thus in some senses cooperative. Holt (1986: 8) states that:

"It must be possible to express a network of work relationships among people so as to control a network of machines."

In contrast, Gibbons (1998:8) makes the claim that the notion that people work in groups, and that software can serve to facilitate group work is *erroneous*.

"People don't work in groups, they communicate in groups."

Another perspective of the work done in CSCW is to place it under the rubric 'coordinated science'. A standard definition of the verb 'to coordinate' is:

'to place or arrange in proper position relatively to each other and to the system in which they form parts; to bring into proper combined order as parts of a whole'. (Oxford English Dictionary).

The 'coordination problem' identified by Ellis et al (1980:49) is defined as the:

"... integration and harmonious adjustment of individual work effort towards an accomplishment of a larger goal."

The notion of a 'shared goal' paints a deceptively simple picture of coordination and has a tendency to disguise the large variety of understandings and constructions which are involved in each joint endeavour and any form of human interaction.

Weik (1979) has a decidedly different slant towards the 'coordination problem' and counters those theorists who posit that shared goals are a prerequisite for cooperative activity. He argues that many collaborators 'discover' similar goals after their compatibility has been established and their work efforts have progressed to a certain point. Attainment of common goals among work group members might thus be seen as a by-product of their joint efforts, and not as an essential element of them.

Holt (1986) on the other hand, asserts that individuals possess '*ancient skills and understandings*' about coordination, and that these skills and intuitive understandings can be utilised to design and implement CSCW applications.

The adjectives '*cooperative*' and '*collaborative*' suggest a willingness of group members to work jointly on an activity or project. This does not imply however, that activities are always carried out with accord.

2.2.4 Group Interaction, Coordination and Pathologies

The dichotomy between the shared interaction between people and that which is mediated and integrated into the design of the system is more than a

matter of semantics. Concerns of how best to interpret and understand the dimensions of human cooperative activity in distributed environments, are based on the need to know what factors contribute to harmony or conflict, poor or good performance, success or failure. This has led to an approach based on identifying factors that might lead to pathological behaviours in collaborative groups. Social theorists, such as Goffman & Szasz (1961) assign the label '*pathological*' to behaviour that has the potential to disrupt the established order.

The notion of pathological behaviours has been approached through various interpretations and research agendas. For example, researchers that have attempted to construct group work pathologies to identify dysfunctional approaches include Holt (1989). He links the function or dysfunction of groups as to how well they perform certain activities and engage in '*coordination efforts*'. Lack of engagement, alludes to the failure of group members to interface with the groupware. He states that despite coordination being the '*greatest common denominator*' of group activities it is also an '*odd category*'. It has no direct product, it often cannot be performed alone and, much of it is not even performed consciously (Holt, 1986:20). Malone and Crowston (1990) similarly construe coordination as a nebulous concept and describe it as '*an activity in itself*'.

The passing on of information objects, provided from person to person in terms of both data and services, is considered to be one the most important aspect of a groups' activity. However, Holt regards this to be a limiting notion of group activity and counters it by including coordination efforts such as:

"... waiting, collecting, checking, organising, monitoring, and responding to the unforeseen." (Holt, 1986:202)

He also states that poorly designed systems can precipitate group work pathologies.

A major theme in early social science research in this area was quantification of the advantages and disadvantages of shared activities focusing on the efficiency and effectiveness of group versus individual effort.

One of the most famous discussions of group work pathologies is found in what Brooks (1971) entitles the 'Mythical Man-Month'. Many project group failures are cited as stemming from the 'man-month' phenomenon, that is, the notion that the number of individuals assigned to a project per month is an appropriate way of determining its dimensions. He argues that knowledge work has a sequential component, and adding more people at a particular juncture may decrease the group's quality and speed at which the work is done. Group work pathologies thus develop when the number of individuals assigned to projects is not appropriate.

At the turn of the 19 century, Ringelmann (in Sanders, 1990) devised an experiment to measure the amount of strength individuals exert against each other in a 'tug-of-war'. He found that individual performance gets worse as more pullers are added. Groups of two pulled at about 90% of their individual scores, groups of three 85% and groups of eight at less than 50%.

Parker (1990) perceives group work pathologies to be largely a function of team composition and styles. He argues that most team managers concentrate on obtaining technical diversity and overlook the need to balance team-player styles. The team player styles identified by Parker include the 'contributor' (who is task-oriented and focuses on performance), the 'collaborator' (who sees the accomplishment of team goals as paramount, and who will sacrifice personal recognition for team success), the "communicator" (who is process orientated and skilled in conflict resolution), and the 'challenger' (who encourages risk taking on the part of team members and who questions team methods and goals). Parker claims that where all four styles are evenly represented in a team it will be more productive than those who are imbalanced. Over representation of any style (style overload) can lead to team pathology. Parker asserts that that style overload is a

common phenomenon, because group leaders and managers seldom have adequate notions of team roles and functioning.

Belbin (1981) attempts to link individual variances obtained through psychometric tests, to group role behaviour and relate both to output performances. His work draws upon the early studies conducted by Robert Bales (1950) and his attempts to distinguish the behaviours of group members and separate them into distinguishable group roles. Like Parker, Bales found that a balanced team needed to contain all the roles (styles) contributory to its success.

Bennis (1956) describes the state of collaboration among interdisciplinary social science research teams of the 1950s. He characterises a tension between norms of academic 'professionalism' (individual-centred academic production and adherence to a single discipline) and the then emerging academic 'teamwork' norms (including identification with a common group task). Bennis reflects these conflicts in the following five roles:

- i. The Articulator: an individual who is capable of maintaining a liaison between two or more disciplines and of speaking the language of several styles of research.
- ii. The Innovator: the individual who set[s] out to devise a new form of interdisciplinary cooperation which is usually quite unique to the group or individual using it.
- iii. The Ritualist: individuals who had deep misgivings about teamwork and yet attempted to "play the game" i.e., publicly accepted yet privately rejected the teamwork effort.
- iv. The Isolate: not only rejected the cultural goal but is also determined to stay sequestered both socially and intellectually. For this adaptive role there was no "group", no common task.

- v. The Rebel: rebels reject the institutional means of teamwork by strong adherence to their professional imperatives. The cultural goal of interdisciplinary cooperation is replaced by traditional professionalism.

Bennis' subjects were all eminent academics, portrayed as seldom being 'neutral' with respect to teamwork issues. His research flagged up concern with regard for the need to identify non team players such as Ritualists, Isolates, and Rebels. Some of the pathologies that result from having members of the last three types in teamwork situations are still often noted in accounts of group work. Williams (1992) advises project managers and group leaders to identify non-team players, and give them guidance in their adjustment to group life.

All such pathologies imply control measures over group-oriented activities to make them more effective and efficient, increase performance, avoid conflict, and ensure success. However, these concepts appear to be at variance with the type of group '*structure*' found in virtual environments.

2.2.5 Social Behaviour and Communication Practices: Language Action Perspective

In the 1980s and early 1990s, emphasis was focused on a class of systems that attempted to structure computer-based systems to coordinate social actions. Some of these studies have examined possibilities for developing affordable and flexible support that will accommodate heterogeneous mixture of communication practices; for example, COSMOS, (Bowers and Churcher, 1989). Others have aimed at using system design as a prescriptive mechanism for the a priori forms of social behaviour. The most influential efforts have been the language/action perspective of Winograd and Flores (1988) and COORDINATOR, the system designed to implement it. The

following section will go on to briefly outline the more salient issues of the language action perspective, particularly the work of Winograd and Flores.

The COORDINATOR is an example of basing a system on theories of language without attempting to program understanding. This perhaps can be regarded as one of the most important applications of speech act based protocols in collaborative design in CSCW based technologies. Their studies were based on the recurrent use of language acts in work settings containing groups with collective interests inside large organizations such as hospitals. The intention of the research is to build a structure for action oriented conversations; the content of conversations is indicative of a specific goal to achieve a particular action. For example, in the act of ordering medication for a patient, the language action perspective focuses on the act of ordering and on the patterns of interaction in conversations that relate to the context of the actions. For example an enquiry may be made into the availability of a medicine for patient A. This may be followed by a request for a certain quantity of the drug, plus any other variants of the conversation that may unfold throughout the process. Thus, all of the language/action interpretations such as, enquiries and requests perceived as actions in the context of the event that requires an appropriate responses to fulfil the order for the medicine. These actions are made by the people who use the system, guided by appropriate menus and prompts.

The approach used by Winograd and Flores (1987-88) provides a very explicit model of conversation as action. In order to initiate a conversation, the type of action must first be identified as a request, promise, question, and so on. The action leads to very specific further action for continuing the conversation. For example, a request can either be declined, queried, or lead to a promise. This conversation can ultimately be terminated, or completed. However, the overall aim is to make the intentions of the conversation explicit, and thus remove any elements of uncertainty of meaning and interaction between users. Bowers and Churcher (1988) argue that this forcing of explicitness gets in the way of conversation rather than improving it. From a shared understanding viewpoint, this approach is an attempt at grounding conversation at a higher

level. The question is whether it forces attention to an extra layer of understanding on the conversationalists and detracts from the content originally intended for grounding. It is one thing to analyse the conversation from such a perspective, it is quite another to potentially change its course by fashioning a structure.

The Coordinator system is not built for arbitrary sequences of messages, but for requests, promises and completions that are at the heart of coordinated work. The system grew out of Flores work in training people in communicative competence (Flores and Graves, 1986). In this work, Flores demonstrates that people's ability to communicate effectively (with or without support from computer systems) is improved when they develop facilities in distinguishing the kinds of commitments people make in conversations for actions, and the dimensions of time associated with the completion of those conversations. By starting with a language/action perspective Winograd and Flores (1994) found it possible to create systems that can be effective in getting work done whenever it involves communications and coordinated action among a group of people. This work is based on the premise that people act through language. The language action/ perspective is dependent on theories of language rather than linguistics, and therefore is not primarily concerned with the details of natural language utterances, but those issues that are common to all human communication such as form, meaning, and use. Emphasis is placed on language, rather than communication, and is used to emphasize the relevance of symbols and interpretation, and also to avoid the connotations of communication theory which has come to represent a rather specialised mathematical approach.

Winograd and Flores (1994) take meaning to be critically dependent on considerations of language action and context; and syntax to be of interest primarily in its ability to reflect meaningful distinctions in conversation. The language/action perspective emphasises pragmatics that is, what people do with language rather than the form of the language. The starting point for language/action is Speech Act Theory (Austin, 1962).

An example of an application of Speech Act Theory that attempted to overcome the limitations of the action-oriented model was the negotiation model proposed by Chang and Woo (1994). Unlike Winograd and Flores, they consider Searle's speech act classification unsuitable for supporting negotiation stating that it was unidirectional because it considers:

"... speech acts from the speaker's point of view only, there is no analysis of interaction between the speaker and the hearer." (Chang and Woo, 1994: 109).

They therefore used the Struggle and Institutional Models by Ballmer and Brennenstul (1984). These models, 24 in total were obtained by grouping meaning categories composed by German verbs. Previous to this Ballmer had made a significant contribution to Accommodation Analysis. This was based on accommodation as:

"... a theory of how deviant usages are brought back into line with the expectations of a co-operative interlocutor." (Haung, 2007:201).

Ljungberg and Holm (1979: 68) point out that *"... speech act theory may be useful, but only if one is aware of the shortcomings."*

Clearly the language /action perspective has much to offer, and if the language in e-mail text can be analysed through speech acts it may be possible to recognise the conflict resolution strategies used by the groups in this communication. It is in this direction that this thesis steers its arguments.

Summary

The chapter has set out the broad theoretical background to CMC and the plethora of research that exists on the limitations of the medium. This focuses on 'cues filtered out', in which the lean bandwidth of the medium, the loss of non-verbal cues, and lack of social presence are considered. These were discussed on the basis of the limitations they caused, and changes they made

to factors of interpersonal communication that influence meaning and understanding.

The socio-emotional approach was then examined which considers the reduced bandwidth to be a moderating feature of the medium, rather than a limiting factor, and show that the development of positive forms of relational communication is ultimately overcome by other salient factors of extended time and the anticipation of future interaction

The CSCW approach is from a different set of perspectives; and centres on the adaptation and design of software to accommodate and coordinate group needs. It highlights some of the difficulties encountered by the constraining definitions it gives to small groups, and tends to limit itself to a priori, mechanistic and brittle representation of human activity. Further, although it sees the groupware as assisting the coordination of the group, it attempts to take into account the ambivalent behaviours of groups in terms of their pathologies, for example, based on such factors as style and group composition. These pathologies may or may not lead to conflict but highlight possible triggers that might be expedient to control.

The design of software to create computer-based systems that attempt to accommodate the communication needs of groups comes from a particular approach that highlights the use of language as the primary dimension of human cooperative activity and interaction. Drawing on the theory of speech acts, (Winograd and Flores 1988) show that from a language/ action perspective it is possible to focus on various human actions, and on patterns of interaction in related conversations. However this approach is highly prescriptive and based on the implementation of certain speech acts to initiate actions and reactions within a specific work context. This thesis goes on to investigate the speech acts which reside in the 'written dialogue' of e-mail text. The emerging language/action is perceived to be a possible way in which interlocutors convey strategies in their written communications for resolving conflict in distributed group environments.

Chapter 3

E-mail Communication

The purpose of this chapter is to steer the direction of this thesis to consider text in terms of inscription and interpretation, and then to look at issues of e-mail communication in terms of its limitations, structure, and its propensity for misinterpretation. Within this chapter three important issues are referred to, these are text as a written dialogue; the recognition of conflict as processes of attribution, and the identification of conflict resolution strategies in the text through speech acts.

Section 3.1 introduces the background to the research that has taken place in aspects of linguistic behaviour in CMC. It considers the characteristics of e-mail in terms of 'conversation' and as a 'written dialogue.' Language conveys meaning therefore, the place of text as inscription and interpretation is also discussed.

Section 3.2 considers some of the general features of conflict and its portrayal in interpersonal situations and hyper-interpersonal circumstances. The ensuing discussion becomes more specific and emphasis is placed on the reasons that are given for conflict escalation in e-mails.

The previous chapter takes a broad view of a range of issues, from the nature of CMC to the characteristics of communication in two distinct and separate environments of the interpersonal face-to-face and the hyper-interpersonal, temporal-spatial. Therefore, although CMC may impose certain limitations on

the interpersonal, interlocutory aspects of interaction, the human ability and ingenuity to adapt, modify and re-represent meaning through interpretation of the language action perspective may go beyond the structural constraints imposed by the medium. The structural and tangible computer mediated processes and the discernable comparisons of communication modes, are not the only approaches that can be used to explore human interaction in these contexts. Although meaning is conveyed via an abundance of possible perceptual perspectives, the words conveyed in the text can, according to speech act theory, be understood as actions. These actions, as represented in the written dialogue, and the meanings attributed to them by the interlocutors, may be sufficient to formulate modifications to interpersonal interaction and adaptations of new linguistic behaviours within computer-mediated forms of communication.

3.1 Research: Agendas and Approaches

There is an extensive research agenda on linguistic behaviour using CMC, much of which has been conducted in experimental settings. Paccagnella (1997) gives a detailed and insightful review of the literature which identifies the limitations of experimental designs from the perspective of qualitative researchers.

The analysis and deconstruction of textual documentation for clues to context and meaning, leads to the general consensus that oral narrations produce qualitative data that exhibits greater personal and interpersonal accuracy than written accounts. Thompson (1988), and Paccagnella (1997) have identified some ways in which qualitative analysis of online discourse might lack some of the analytic breadth that is possible to find in face-to-face conversations. Referring to Marvin (1995), Paccagnella claims that important aspects of information are often lost in analysis. For example, similar to face-to-face interaction, CMC also exhibits a dynamic dimension to conversational turn-taking. The delays between turn-taking in CMC can vary from between a few

seconds in synchronous to hours or even days in asynchronous CMC. As discussed in some detail in 2.2.2.4, these delays play an important part in influencing and shaping the mood of the interaction.

According to Frankfort-Nachmias and Nachmias (1996:210), the foci of observation in real life can be identified through the following interpersonal processes: non-verbal behaviour, such as body language and particularly facial expressions; spatial behaviour, for example issues of physical closeness and distance; linguistic behaviour, such as, what is being said and how it is expressed; extra-linguistic behaviour as used in the case of the rate of speaking, loudness, the tendency to interrupt, pronunciation and so on.

Bevelas et al (1995) use face-to-face communication as a standard against which to measure other forms of human communication. They point out, that whilst words are used in the majority of communication settings the full potential range of verbal and non-verbal expressiveness cannot always be accommodated by the medium. Herring (2001), notes that language will necessarily be affected by technological or medium variables. For example, whether the messaging is synchronous or asynchronous; the length or brevity of the text; the multi-modality, whether or not graphics, audio and video are included, along with a plethora of other non-linguistic variables such as participants' relationships, expectations and levels of motivation and so on.

Language conveys meaning; the use of language within the e-mail text, just as the spoken and written word, will vary according to the individual's proficiency and usage of the language. Eloquence and ability to write powerful or potent statements can empower some individuals online beyond their relative strength in real life. For example, in face-to-face meetings some individuals may be too self-effacing to contribute. However, the anonymity of email allows them freedom to express their views.

Where small groups of people use e-mail as a means of controlling and sharing project work, the epistolary style prevails, but the intimacy of the

content may change over time or between certain interlocutors (Walther, 1994). In CMC, *'conversation'* brings together different styles and forms that may take place without oral language and face-to-face communication. Murray (1991) points out, that individual computer conversations like ordinary conversations create a mode of discourse appropriate for particular tasks and topics as well as particular interpersonal relations. Computer-mediated communication also links conversation to written language thus producing a categorical change which affects not only the notion of what the conversation is, but also the speaking-writing dichotomy which results in a type of *'computer mediated conversation'*.

3.1.1 E-mail: Conversation or Written Dialogue?

The most frequently quoted feature of e-mail is its informal tone, although this can be dependent on its contextual purpose. For example, Gains (1999) reports that commercial e-mails tend to follow the conventions of written business English, with well formed and correctly punctuated sentences. Personal correspondence on the other hand adopts a wider range of styles.

Li Lan (2000) remarks that abbreviations and creative language are more frequently used among young people. Linell (1982) has pointed out that the absence of non-verbal and social aspects requires the written text to be more explicit, more autonomous (context free), and more constrained by formal rules, and less varied than spoken language. Collot and Balmore (1996) view CMC as typed and therefore like writing. However, it also contains exchanges that are often rapid and informal and therefore similar to talk. Davis and Brewer (1997:2) stress the overlap of the two traditional modes claiming:

"... electronic discourse is writing that very often reads as if it were being spoken - that is, as if the sender were writing talking."

In a similar vein, Spitzer (1986:19) has conceptualized CMC as:

“talking in writing” or as “... writing letters which are mailed over the telephone” where participants, “... use language as if they were having conversation, yet their message must be written.”

Ferrara et al (1991) argue that CMC shows involvement (such as asking direct questions) in ways traditionally associated with face-to-face forms of interaction. They also point out that other aspects which normally assist social etiquette, (such as, salutations and other rituals of social norms and rules) decline significantly the longer the delay between message exchanges. These message exchanges should be perceived in time intervals of minutes and hours rather than days. In these situations, individuals may have difficulty in modulating their responses in socially appropriate ways and appear to be, either too aggressive or too empathetic.

Denzin (1989:24) characterises the text of ‘*screen talk*’ as being “... *deliberate, stilted, and formal*”. Metz (1994) shows that palliatives, such as the use of electronic paralinguage are often used to overcome the limited social and contextual cues of the medium. Other forms of electronic paralinguage include, ‘Expressives’ such as used in comic strips ‘humpf’. The use of multiple vowels to represent intonation contours – ‘soooo’. Multiple punctuation marks - ‘well how did things go yesterday?????’ to express exaggerated questioning or surprise, and the use of asterisks for stress - ‘please call – we’ve *got* to discuss’ (Murray, 1991:37)¹. Mann and Stewart, (2000) found that sarcasm is particularly hard to convey using written text and if left undetected can lead to serious misunderstandings. Lanham (1994), on the other hand, suggests that the ‘electronic word’ should be considered a separate conceptual category different from, but with qualities that are shared with, the spoken and the written word. Discourse is defined as ‘written or spoken communication’ and in linguistics, as text or conversation. This thesis prefers to use the term ‘dialogue’, to define e-mail ‘conversation.’ The Oxford

¹ See Appendix A for examples of the paralinguage taken from the research data.

Concise Dictionary defines the term 'dialogue', as: '*conversation between two or more people as a feature of a book, play or film*'. Thus dialogue is perceived as conversation as portrayed and recorded in the written form and grounded in an identifiable context and having a defined purpose. Therefore, the term 'written dialogue' is used through out this thesis to mean a conversation that is personified by the e-mail text.

3.1.2 Text: Inscription and Interpretation

Text based communication in general may be described as occurring through two processes: the inscription of text by a sender and the interpretation of text by a receiver (Dickey et al, 2006). Inscription results in the creation of text, which can be interpreted by one or more other participants in the group. The interpretations however may not result in additional inscriptions. Inscription always occurs when individuals write down events, experiences, and thoughts. Thus a project member who sends an e-mail message to another member has created an act of inscription. This creates text objects from which meaning can be assembled. The text itself can be regarded as a cultural artefact which serves as a permanent record of someone's attempt to convey meaning.

The second implication of inscription is that all text documents action. Such documentation of action is important for it is not just the narrative form of the events as related by the individual, or what that 'story' expresses about an event, but also what the text reveals about the intentions of its author as interpreted and understood the receiver. According to Ricoeur (1981), people communicate using text to craft a story or narrative of events that reveals not only a way of life, but also the way a particular environment functions and is organised.

Inscription alone does not result in communication. Text must be read and interpreted to elicit meaning. Multiple possible meanings can be given to the text and interpretation is a necessary component of this process. The ultimate aim of interpretation is to understand, reproduce and share as closely as possible events and experiences. The interpretation of text may be constrained by our own assumptions, understandings and the knowledge used to reconstruct the context in which the text is inscribed. Thus in text communications, the certainty that shared understanding has taken place may be elusive and uncertain.

According to Hinds and Weisband (2003:21), shared understandings are:

“... a collective way of organizing relevant knowledge.”

Across distributed group members, shared understanding assists individuals in the processing of information and organizing activities, and to facilitate the efficient use of resources. It helps to predict the behaviours of others, reduce errors, frustration and conflict among group members. Text can create, reaffirm or change our shared understandings. Lack of shared understanding among individuals causes miscommunication to take place. Therefore the complexity and equivocal nature of information processing tasks are not functions of the communication media, but the perceptions of individuals engaged in the communication, and the creative approaches used to share meaning and overcome restrictions imposed by the media.

As opposed to the transient and evanescent nature of oral communication, text forms a permanent documentation of some action that can be archived and made available for subsequent scrutiny. As such, text is considered to be the central component of the communication effort expended by distributed project members to create a shared understanding.

3.2 Conflict.

The term '*conflict*' can be used in a generic way to signify disagreement or argument, incompatibility, a difference of opinion, a quarrel or an altercation. Conflicts can also manifest in many ways. Robbins (1998) believes that certain common denominators underlie most definitions and that formal definitions should strive for broad flexibility. He defines conflict as:

"... a process that begins when a party perceives that another party has negatively affected, or is about to negatively affect something that the first party cares about." (1998:434).

Brown and Keller (1979: 243) define conflict as "*... differences involving real or perceived incompatible positions.*"

According to Ewbank (1967), groups typically deal with conflict in five ways: Firstly by eliminating the opposition; secondly, subjugating the opposition; thirdly, forming an alliance to overpower the opposition; fourthly, by reaching a compromise with the other side; and finally, by integrating ideas toward solutions.

Prior to computer-mediated forms of communication, Klein (1948) perceived conflict as growing out of the wishes and fears of members at a particular stage in a group's development, with the focal concern usually centred on issues of authority, leadership and inter-group relationships. Ezrial (1950) focuses exclusively on group level themes. He assumes that each member is involved in the common group tension; only by proper interpretation of the group dilemma, and its unconscious nature, can progress by individual members be advanced. He calls the common group theme the '*common group tension*'.

Pruitt (1983) states that conflict begins when there is a perceived divergence of interest between one party and another, for example, coercing someone to

behave, or do something they do not want to do. This tactic is approached using mild actions with the use of more aggressive strategies when mild tactics fail. The use of more aggressive strategies usually has the effect of increasing the conflict.

Conflict may also escalate for other reasons. The Conflict Spiral Model (Rubin et al, 1994) depicts escalation as a product of reciprocal aggressive actions. Burgoon et al (1995) cite several studies that confirm that people reciprocate unpleasant behaviour in social interactions. Brett et al (1998) describes how group members can get stuck in '*reciprocated contentious communications*' when in negotiations. As each side is exposed to aggressive behaviour by the other they change their perceptions and attitudes toward each other, and a more negative persona is often attributed to the person or persons involved. He goes on to state, that when changes of perception do occur and the counterpart becomes disliked, then more aggressive behaviour is likely to occur. He lists several reasons:

- i. Disliked others tend to receive more blame, whereas liked others are given the benefit of the doubt
- ii. Ambiguous actions are more likely to be seen as threatening if the other is disliked.
- iii. Inhibitions against retaliation are reduced if the other is disliked.
- iv. People tend to avoid those towards whom they are hostile, thus limiting communication.
- v. Negative attitudes reduce empathy and increase deindividuation.

Early research, prior to e-mail communication shows that once perceptual 'transformation' has taken place, it becomes 'locked in' owing to biases in perception that make people see only evidence that reinforces their view of the other, e.g. Hastorf and Cantril (1954). Hayden and Mischel (1976) claim that perceived bad actions appear to be attributed to personality (dispositional) causes, rather than those of circumstance (situational) causes.

Although inter-group tensions exist in e-mail communication, they are often difficult to trace to a particular source, and triggers for inter-group conflicts are more difficult to define. It may be conjectured that the way forward to identifying conflict and its cause in e-mail is through the recognition of attribution processes. This leaves the problem of identifying such processes in the language of the text. However, attributions may be able to be distinguished through the type of speech acts used in the written dialogue, and as such the characteristics of the conflict resolution strategies used by the interlocutors determined.

3.2.1 Conflict Escalation in E-mail

In order to understand the character of conflict in e-mail and the reasons for its apparent prevalence, it is important to consider the literature on these aspects.

Clark and Brennan (1991) and Rubin et al (1994) suggest that conflict and the escalation of disputes is more likely during electronic communication than during face-to-face. Friedman and Currall (2003), describes the ways in which the structural features of e-mail create conditions that make conflict escalation more likely. Drawing on work by Clarke and Brennan (1991), they review the properties inherent in face-to-face conversation and lacking in e-mail. They argue that in face-to-face conversations there are six tools for 'grounding' communication.

These are listed as:

- i. **co-presence**, this allows each party to be in the same surroundings and be able to see what the other is doing and looking at;
- ii. **visibility**, which allows each party to see one another (but not necessarily their surroundings);
- iii. **audibility**, which allows each party to hear the timing of speech and intonation;
- iv. **co-temporality**, where each part receives an utterance just as it is produced;
- v. **simultaneity**, where both parties can send and receive messages at once;
- vi. **sequentiality**, where turn-taking cannot get out of sequence.

None of these properties which enable communicators to 'ground' their interactions, to achieve a shared understanding, and a sense of participation are available in e-mail communications. Grounding also allows participants the time to adjust their actions and reactions letting them move towards agreement and consensus. Grounding, timing, and adjustments to communication are considered to be critically important tools in successful conflict resolution.

The discussion so far has emphasised the asynchronous nature of the e-mail, its epistolary style, its asocial context in terms of lack of social presence, and social information. It is difficult if not impossible to have the same type control over the mediated interaction when it lacks the tools for grounding the communication. The lack of influence over the message, how it is composed, and the subsequent modifications and interpretations, encourage other ways of interpreting and understanding the communication. Such strategies include lengthy messages or communications that bundle multiple arguments together to reiterate important issues. However, multiple arguments in a lengthy e-mail message may be difficult to unravel, and emphasis on the salient issues and context of the message may be misread, or not responded

to. Normally in face-to-face communication, topics of importance can be reiterated and emphasised. In asynchronous communication, response time intervals in the feedback may appear to make their importance either diminish, or in some cases heighten them. Moreover, in crafting a response, emphasis may be focussed on arguments that have been found to have the most emotional impact. When a sender believes that a recipient has ignored parts of the message, he/she may consider this to be a violation of interaction norms. Hence, misunderstandings can occur with resultant insults becoming more likely.

Electronic communications inability to generate the same type of feedback as those found in face-to-face, means that it exhibits few clues about the recipient's reaction to the message. This lack of response results in comments and responses which lack the fluidity found in face-to-face communication. Adjustments, clarifications, and repairs to misunderstandings are more difficult. As a consequence, incidents of inadvertent insults and loss of face appear more readily and misunderstandings have a tendency to increase. Because of the written accentuation of meaning as a means of compensation for the loss of oral nuances, recipients of the message may intuit communication tactics as being less moderated than perhaps is intended; instances such as these have a tendency to weaken social network bonds and those involved find it more difficult to resolve conflicts.

The properties of '*reviewability*' (reconsideration of the message) and '*reviseability*' (alterations and modifications) allow '*excess attention*' on the content of the e-mail (Friedman et al, 2003). Research such as this suggests that deliberation increases angry moods and the interlocutor's perceptions of a problem's magnitude. Reviseability also permits elaborate editing of the message, which has the affect of increasing the composers' commitment to their arguments. Ultimately, parties may become less willing to compromise, and begin depersonalizing one another, viewing the conflict as un-resolvable.

These structured, thoughtful, and less spontaneous responses are considered by Friedman et al (2003) to have both negative and positive impacts for the message process; on the one hand, giving time to carefully plan the 'tone' and 'register' of the message whilst on the other, making it appear more contrived and less natural than conversation.

Whilst much attention is paid to the problems attributed to aspects reviewability and revisability, e-mail is often perceived as allowing thoughtful, organized and detailed communication. Positive views of asynchronous CMC emphasize interaction similar to that found in face-to-face conversation, but with the additional bonus that responses to comments are produced at:

"... a pace set by the writer alone and can be consumed at any speed the reader chooses." (Yates, 1996:33).

Such reflexivity is believed to increase the accuracy of data, and the visible presence of script may also ensure that 'conversation' stays on track. Thus, allowing participants to scan the text for prompts and questions and other contextual indicators. Perhaps most importantly, script allows previous interactions to be re-called so that they become a point of reference for future communication.

Friedman and Currall (2003) emphasise that our use and reliance on e-mail, create many opportunities for disputes waged via the written word throughout the course of day-to-day work. Their interest centres on the dynamics of conflict management in e-mail, and contend that the structural properties of e-mail and its use make it more likely for disputes to take place, and conflicts to escalate.

Their work augments previous research carried out by Rubin et al (1994), from which they propose a new conceptual framework called 'The Dispute-Exacerbation Model of E-mail' (DEMI). This model expresses the structural properties of e-mail communication, the impact these properties have on

conflict process effects, and how process effects in turn trigger conflict escalation.

Friedman and Curral (2003) identify several ways in which escalation can be triggered, any of which may lead to higher rates of escalation when disputes are managed by e-mail. These are:

- i. **Use of aggressive tactics.** If e-mail communication encourages the use of more aggressive tactics during a dispute, or makes a counterpart's tactics appear more aggressive, then escalation will be triggered.
- ii. **Perceptual changes of others.** Escalation is more likely if e-mail causes negative changes in psychological processes (e.g. perceptions and attitudes) towards the other, such as (a) seeing the other as unfair, (b) lessening empathy toward them, (c) increasing deindividuation and anonymity, or (e) seeing the other as immoral. These observations align closely to attribution, the notion that others react to the behaviour of others, situational problems, and one's own inbuilt biases.
- iii. **Weakened interpersonal bonds.** If email weakens social bonds with the other, then escalation is more likely (reduced inhibitions leading to aggression).
- iv. **Problems are difficult to resolve.** If the communication limitations of email (e.g. asynchrony deficits) make problems more difficult to solve, conflict may be escalated as frustrated disputants move from mild to more aggressive strategies to achieve their goals.

Not all conflicts go through these processes. In some situations little in the way of anger may be shown in response to another's action even if it is perceived as being unreasonable. For example, strong social bonds and network-ties have a tendency to 'encourage yielding and problem solving' (Rubin et al, 1994: 127). In such cases it is less likely that others are seen as

being unfair or unreasonable and are therefore treated in a friendlier manner. Perceptions of the other person as having similar characteristics to oneself may also dampen aggressiveness by making empathy more likely, and thus producing a more positive attitude towards them and their actions (Davidson & Friedman, 1998). Escalation may also be dampened by social norms that make aggressive behaviour inappropriate; this suggests that certain effects may be moderated. In particular, the depth and type of relationship between the parties may affect how vulnerable they are to escalation dynamics. However, individuals who constitute the members of distributed groups may randomly come together and not necessarily have strong network-ties. They may not know each other and therefore by the very nature of the communication, personal characteristics, and idiosyncrasies may remain hidden, or take longer to be revealed. The social norms that would normally control and create boundaries for acceptable behaviours, and attitudes no longer exist.

Friedman and Currall's work highlight important issues for this thesis. It not only defines the structural qualities inherent in e-mail which contribute to those issues that trigger conflict. It also creates a platform for questioning the role attribution plays in the escalation of conflict, and how it might be defined in the text. It emphasises the ambiguous way language is used and interpreted in e-mail and how this can lead to misunderstandings that are difficult to correct. These observations lead to questions such as, what constitutes aggressive 'actions' in e-mail? How might negative or positive perceptions either of a dispositional, or a situational attribution be intuited by the sender or receiver through their understanding of the text?

Summary

The issues raised in this chapter are important for advancing the arguments in this thesis. Firstly, the nature of e-mail communication can make messages ambiguous and susceptible to misunderstanding. Secondly

misunderstandings can occur on a number of levels, from the restrictions imposed by the leanness of the communication, to the way in which meaning is expressed through the use and interpretation of language in the e-mail. Thus issues of meaning are significant for understanding how meaning is created and assembled from the text. The following chapter uses the concepts of attribution theory and speech acts to attempt to understand these issues and create a framework for the analysis of the corpus of e-mail data.

Chapter 4

Templates for Analysis

This chapter outlines the part played Speech Act Theory and Attribution Theory. It emphasises in particular Searle's typology of speech acts and Searle's typology of conflict resolution strategies. The aim of this chapter is to introduce the reader to the salient features of their work and show how the speech acts and the conflict resolution strategies are used in the methodology as templates for the analysis of the e-mail text.

Section 4.1 describes what are considered to be the principal features of speech act theory and the relevance of Searle's typology of speech acts as a template for the analysis of the e-mail text.

Section 4.2 outlines the background, theory and research of attribution, and positions the main concepts in relation Sillars' typology.

Section 4.3 explains how Sillars' typology of conflict resolution strategies is used as a template for the recognition of the use similar strategies in the data for this study.

Distributed project groups develop their own unique social contexts which are expressed through their hyper-textual identities, relationships, behaviours and modes of interaction. Expressions of these hyper-interpersonal features can be gleaned from the written dialogue of the e-mail messages. Such idioms are open to wide ranging and subjective interpretations, and therefore the context

in which they are couched, along with the methods of analysis, are critical for the interpretation of the expressions of meaning within the text.

Many of the approaches to understanding e-mail communication dwell on either the human characteristics of face-to-face communication used as a basis for making comparisons against other communicative forms; or, by questioning the limitations the medium imposes on communication and its users. Much of the research carried out extrapolates issues pertaining to the character of the communication, the medium, and the users, only to find that the links between all are inextricably intertwined. Separating out those issues which are considered salient, shifts the emphasis, allowing the subject to be approached using a different set of criterion, and a different order of events. Speech acts and attribution theory under-pins the approach taken and influences the choice of methods used to analyse the e-mail text.

4.1 Speech Acts

As outlined in Chapter 2 speech acts have been used in CSCW from the language action perspective to create computer based systems. In such systems, language is seen as the primary dimension of human cooperative activity. From this perspective, language is ordered and based on the patterns of interaction in related conversations. In such an approach 'language' is used to emphasize the relevance of symbols and interpretation, therefore avoiding the connotations of communication theory. Thus, a priori patterns of interaction are imposed upon the users. These prescribed patterns are based on the use of the speech act in a defined context, thus imposing limits on the possible range of responses.

Speech act theory has its foundations in the philosophy of language, and can be traced back to Wittgenstein and language-games. Wittgenstein (1984:74e) stated that, '*words are deeds*'. Austin (1975:16) is considered to

have made the most influential and enduring contributions to speech act theory; categorically stating that: *“The issuing of an utterance is the performing of an action”*.

We use words not only to represent how things are, but also to ask questions, give commands, tell jokes, make promises, or suggestions, insult, persuade, threaten and warn and so on. The fact that words go beyond representation led Austin to draw a three fold distinction between different kinds of speech acts.

Firstly, words have a distinct, conventional meaning. For example, the sentence, ‘The dog gnaws the bone’ refers to, a dog, a bone, and the relationship between the dog and the bone as indicated by the verb to gnaw. The ordinary sense of meaning constitutes what is said or written of any particular speech act. Austin named this the ‘locutionary act’: *“The act of saying something”* (Austin, 1975:94).

Secondly, by saying something or expressing in writing certain words we are actually committing an act or acts. For example, in the wedding vows, saying “I do” constitutes an act of promising; in saying “will you” a question is being asked, and in the statement “you will!” an order is being given. Austin named these acts ‘*illocutionary*.’ The term ‘speech act’ is considered to refer exclusively to the illocutionary act. The illocutionary act ‘describes’ the nature of the action a person intends to make, thus it is:

“... an act or action intended to be performed by a speaker in uttering a linguistic expression, by virtue of the conventional force associated with it, either explicitly or implicitly.” (Huang 2007:281)

Thirdly, the perlocutionary act; are speech acts that produce consequences or effects these effects are special or significant to the circumstances of utterance. For example, by saying ‘I do’ commitment is denoted and the act of

promising is fulfilled. By saying something like, 'I will give you a better deal than the shop along the street;' I may persuade the buyer that my goods are a better deal. Thus the resultant actions of these types of utterances may be to promise, persuade, force, or frighten, coerce, or anger someone. By calling B a liar, A may cause B to feel angry, insulted, and revengeful. Therefore, B's reaction to A gives some clues as to the nature and emotions involved in the encounter. The resulting interaction between actions and reactions helps reveal the meaning context of the encounter between A and B. Therefore, if A makes the following utterance:

"Please meet me at 2 o'clock outside the library" = the locutionary act.

B interprets this as a *polite request*. = the illocutionary

B replies, "great, see you then" = the resultant perlocutionary act, would appear to be a happy agreement to A's request.

The fact that this is a 'polite' request and may be considered as non-coercive also gives the communication an emotional voice, this adds to the meaning context. Had on the other hand, the utterance been, "Meet me at 2 o'clock outside the library or else!" it might be perceived as a threat with the aim of intimidating the recipient. Of course the recipient may not wish to appear intimidated by the threat and reply "I'll be ready and waiting for you." Thus the illocutionary force and its possible effects, tells us something about the nature of the message the situational context of both the sender and receiver, their intended actions, and their reactions, and their emotional voice.

Although this may seem relatively straight forward, Austin emphasised that these different functions of words are not necessarily exclusive, and may involve all three kinds of acts. For example, the statement "It's cold" can be interpreted as a locutionary act describing the fact that it is cold. It might also be taken as an illocutionary act if uttered in the context of a room with an open window, in which case it may be interpreted as a request to close the window 'please close the window'. Finally, in-so-far as the hearer may have

responded by closing the window, the single utterance of 'it's cold' has also performed a perlocutionary act. These examples illustrate the importance attached to understanding the meaning context connoted by the speech acts in the dialogue.

4.1.1 Searle's Rule Governed Behaviour

Although there have been many attempts to systemise and strengthen Austin's original system of speech acts, the Searlean typology remains the most influential. Searle states fundamentally that:

"... speaking a language is engaging in a rule-governed form of behaviour."
(Searle, 1969:22)

Similarly, it might be considered that the interlocutors of e-mail communication are required to 'use comparable types of rule governed behaviour.'

Searle highlights two important types of rules, *constative* and *regulative*. The constative rules create new forms of behaviour; that is acts or behaviours created by the establishment of rules. For example, chess is a game that exists only by virtue of its rules; the rules constitute the game. Thus when people are observed following a certain set of rules it is possible to know whether they are playing chess or bridge. Rules set the context for the game and allow us to interpret what it is being played. Thus in speech acts, A's intention is largely understood by B, by virtue of constative rules, these rules tell others what counts as a particular kind of act.

The regulative rules provide guidelines for acting out already established behaviours. Regulative rules therefore tell us how to use the behaviours to accomplish a particular intention.

According to Searle (1969) any illocutionary act must fulfil four conditions. Firstly, the *propositional content condition* specifies some condition of the referenced object therefore in uttering, "I promise to meet you at the library tomorrow" some future act has been indicated. Secondly, the *preparatory conditions* involve the presumed pre-conditions which are necessary for the act to take place, and indicates the preferred action of the speaker. Thirdly *the sincerity rule* requires the speaker to mean what is said (In the case of insincere illocutions, the act is presented in such a way that receiver B, presumes that A the sender actually intends what he or she says). Fourthly, the essential rule states that the act is indeed taken by B to represent what appear to be the intentions of the sender. It defines the act being performed in the sense that the speaker has the intention that his/her utterance will count as the identifiable act and that this intention is recognised by the receiver. For example, (for this rule to be fulfilled) in the case of a request the speaker must have the intention to create an obligation for the receiver to do what is requested.

Searle (1969) developed Austin's theory extensively to include linguistic analysis, and established a typology of speech acts, in which he defines conditions for determining speech act types and the rules governing their explicit use, It is this typology which is used as a template to guide the recognition of the speech acts used in the e-mail text and is outlined in detail as follows.

4.1.2 Searle's Typology of Speech Acts

Searle's classifies speech acts into five types; Representatives, Directives, Commissives, Expressives and Declaratives. These are arranged along four dimensions (Figure 4.1). These are: i) the illocutionary act, speech act type; ii) direction of fit, the relationship between words and world; iii) the expressed

psychological state; iv) the propositional content (Huang, 2007:106). The five speech act types are as follows:

Representatives (Assertives); are speech acts that commit the speaker to the truth of the expressed proposition and thus carry a truth-value. They express the speaker's belief in something or someone. Paradigmatic instances include; asserting, claiming, concluding, reporting, and stating. Thus in performing this type of speech act, the speaker represents the world as he or she believes it to be. For example, 'Christopher Columbus discovered America'.

Directives; these are requests and promises and always deal with a future action. They express the speaker's desire for the recipient to respond in some way and there is a desire or expectation on the part of the speaker, sender of the message, to elicit some future course of action from the recipient. An example of the type of utterance might be a question, "Can you finish this work by tomorrow?" Other paradigmatic instances include; advice, commands, orders, questions and requests.

Commissives: are speech acts that commit the 'speaker' to some future course of action and express his or her intention to do something. Typical examples include offers, pledges, refusals and threats. In the case of a Commissive, the world is adapted to the words via the speaker, For example, 'I'll be back in half-an-hour.'

Expressives: are speech acts that express a psychological attitude or state of mind of the speaker, such as joy, sorrow, and anger. Examples include apologising, blaming, congratulating, thanking, and praising, as in the utterance, 'Well done Fred.' There is no direction of fit for this type of speech act.

Searle's Typology of Speech Acts. (Adapted from Huang 2007:106-08)				
ILLOCUTIONARY ACT (Speech act type)	PARADIGMATIC CASES	EXAMPLES	DIRECTION OF FIT	EXPRESSED PSYCHOLOGICAL STATE
1. REPRESENTATIVES	Asserting, claiming, concluding, reporting, stating.	<ul style="list-style-type: none"> James is the projects leader. The group is struggling to meet the deadline. 	Words to world. The speaker represents the world as he/she believes it to be	Expresses the beliefs of the speaker
2. DIRECTIVES	Advice, commands, orders, questions, and requests	<ul style="list-style-type: none"> Finish the work by Monday 	World to words via the addressee.	Expresses the speakers desire or wish for the addressee to do something
3. COMMISSIVES	Offers, pledges, promises, refusals and threats	<ul style="list-style-type: none"> No, I will not finish the work. I will e-mail you later. 	World to words via the speaker him-or herself.	Expresses intention.
4. EXPRESSIVES	Apologising, blaming, congratulating, praising, thanking	<ul style="list-style-type: none"> Sorry I did not get back to you Thanks for your e-mail 	None	Expresses the attitude or State of the speaker.
5. DECLARATIVES	Declaring war Firing someone Nominating someone	<ul style="list-style-type: none"> James is fired I nominate Fred as the new project leader 	Both words to world and world to words.	Effect immediate changes In some current state of affairs.

Figure 4.1 Searle's Typology of Speech Acts

Declaratives: are speech acts that affect immediate changes in some current state of affairs. These are sometimes called '*institutionalized performatives*'. In performing this type of speech act, the speaker brings about changes in the world, that is, he or she affects a correspondence between the propositional content and the world. Paradigmatic instances include bidding in bridge, declaring war, and nominating a candidate. For example, 'The chairman says the meeting is adjourned.' Directional fit is both words-to-world and world-to-words.

Searle's expatiations are important to speech act theory. He makes communicative intentions central to the premise that a 'speaker' has wants, beliefs and intentions which are indexed in the performance of utterances. His typology of speech acts, delineate the range of illocutionary verbs that occur in the language and predicate the sentence. His contribution to the development of a theory of indirect speech acts emphasises the importance of a known context in which the utterance is made. However, the essential merit of the speech act lies in putting forward a view of language use as action.

The analysis of the speech acts in the dialogic events is important because, the locutionary act is recorded in and expressed through the written dialogue of the e-mail text. The illocutionary speech acts allow the action or intended action to be identified in the written dialogue, or speculated upon in the light of the topic context of the message or circumstances of utterance, that is; the action that resides in the statement, as in 'the request to meet'. The perlocutionary act defines the response to the request, question or demand, as in compliance or a refusal; or allows for speculation on the possible or probable outcome of an encounter.

The illocutionary and the perlocutionary act are pivotal for framing the 'voice' and the meaning context of the event and for identifying the conflict resolution strategies in the written dialogue of the e-mails. They comprise the interaction which takes place between the interlocutors and as such help to distinguish

the attributions. One of the major problems in using speech act theory for discourse analysis is that it is immensely difficult if not impossible to determine an exhaustive list of the mapping relations between utterances represented in the written.

We now turn to the part played by attribution theory for this study, briefly discussing its background, the theory and the research, but most importantly positioning Sillar's typology to show its importance as a platform for recognising and interpreting the conflict resolution strategies contained in the data.

4.2 Attribution: Background, Theory and Research

Attribution theory stems from what Fritz Heider (1958) termed *naïve psychology*. According to Kelley (1971), attribution may be defined as a theory about how people make causal explanations about their own and other peoples' behaviour, how they deal with and use this information in making causal inferences, and what they do with the information to answer causal questions. Therefore, it explains the processes by which people come to understand their own behaviour and that of others, and centres on the perceived causes of behaviour in an act of communication. In attributing a cause to a situation a reason is sought to explain the behaviour exhibited by others. According to the theory of communication in interpersonal conflict, those involved in disputes often develop their own reasons to explain the situation; these reasons are the products of attributions made by the conflicting parties.

The attributions have an important effect on how members perceive one another and deal with disputes. Brett et al (1998) implies that it is not necessarily aggressive behaviour itself that initiates retaliation, but the reasons that are attributed to the aggressive behaviour. Many of these

reasons appear to be dependent upon the contextual knowledge an individual has about the cause, intent, and resulting behaviour of the other person or persons. As such they may instigate perceptions and attitudes that create either negative or positive responses.

Attribution theory makes three basic assumptions: Individuals begin by judging a situation to determine the causes and effects of behaviour, when in doubt they look for further information that will help them to answer the question/s. Through this process, along with their own reactions, they construct a theory to attempt to understand the reasons for the actions of others, or a situation. From this 'theory' they infer and assign causes systematically. Kelly (1971) perceives attribution as a rational process in which individuals carefully examine the various causal possibilities and generalizes on the basis of best available data. Finally, attributed causes are influenced by the actor's own idiosyncrasies and biases. These idiosyncratic patterns of perception may give rise to a number of possible interpretations and are subject to attribution errors any of which may appear to be true to the perceiver depending on his/her perceptual bias.

Based on these assumptions, it is considered in this thesis that the lean medium of e-mail may restrict the same breadth of information seeking compared to that found in face to face communication, and as such could be the trigger for conflict and its escalation in distributed groups. The incompleteness of the available data may have an influence on the idiosyncrasies and biases of the receiver and magnify the attribution errors. In order to overcome the limitations imposed by the medium and construct a clear understanding of another's perceived actions it is necessary for interlocutors to seek for information that confirms or refutes their views. With regard to the research problem section 1.4 the types of speech acts as used in the e-mail messages may provide the interlocutors with the type of information they require and as such also assist in analysing, identifying, and profiling the conflict resolution strategies in the e-mail data for each of the groups.

Much of the early empirical work in this field is based on controlled and experimental observations of face-to-face communication and conversation, (Wittenbaum and Stasser, 1995; Pfeiffer et al, 1998). The research is confined to, and based on the rich communicative environments of interpersonal communications which assumes the channels by which individuals communicate are dominated by close interpersonal forms of communication. However, communication technologies have allowed the integration of communication media which has created a paradigm shift to a 'hyper-interpersonal' form of communication which often relies on text to relay messages.

In face-to-face communication attributions are based on the perceived actions of others. In e-mail text, attributions may have to be based on what is implied by the text. For example, the following e-mail message "Please could you e-mail me about the matter we discussed earlier?" can be read as a polite request; whereas, "e-mail me" can be construed as a demand, and "If you don't e-mail about the matter we discussed earlier I will never speak to you again," as a threat. The context in which these judgements are framed will depend upon the knowledge the recipient and sender have about each other and the situation that is being addressed by the message.

Various studies for example Crampton (2002), Walther et al (2002) have suggested that lack of 'mutual knowledge' across geographically distributed sites affects judgements about remote partners. Lack of knowledge about respective local contexts and their situational influences on the behaviour of others has been alleged to lead to biased attributions during inter-site conflict in distributed groups.

Research indicates that a variety of socio-technical accommodations are required for effective virtual teamwork. It is shown that distributed groups working over long periods of time adapt relatively successfully to these challenges. However, those working over short periods of time make these adjustments less successfully (Walther et al, 2005). Both Crampton (2001)

and Walther et al (2005) consider that failure to adapt may result in negative interpersonal judgements among members. Also, attributions may be systematically biased in distributed groups, this is contributed to the effects of co-location, and the attributions members make about their partners' behaviour (Crampton, 2001). In contrast, Walther and Bazarova (2007) focuses on the attributions virtual group members make about themselves, and their tendency to indict their partners as the situational causes of their own actions, thereby perceiving their own behaviour as being shaped by others and absolving themselves of blame. Self-attribution may also be influenced by co-location. Relative location differences may have an affect on the way individuals rationalize their own negative behaviour in ways that highlight the intransigent practical problems within the group.

The perception of negative behaviour problems appear to be due to the nature of the group distribution effects, rather than seeing negative behaviour as being due to member distribution effects. For example, CMC affects the rate of discussion, and failure to adapt expectations and participation hinders sufficient information exchange. When this occurs frustration is directed at remote members (Burke et al, 2001). This deters from trust and liking and has a negative affect on group performance (Walther and Bunz, 2005; Wilson et al, 2005). Sillars (1980:188) work indicates that high information exchange is an important factor for the dissipation and resolution of conflicts in interpersonal communication. However it should be emphasised that Sillars uses the term 'information exchange' in a descriptive sense, relating it to the ease with which individuals are willing to disclose and share information about themselves or situations in an objective and none judgemental way. This "facilitates understanding of perceptions, feelings, and reasons for behaviour." These correlated positively with attributions attributed to ones own self and responsibilities. However explicit acknowledgement and discussion of conflict which was coercive and sought to gain compliance correlated with attributions of dispositional blame (judgements made about personality) against the other person.

A recent descriptive study by Crampton (2001) suggests that the dynamics underlying dispositional blame is a *'fundamental attribution error'*. Errors such as these have the tendency to blame another's disposition, or personality for behaviours triggered by the situation. Crampton considers these biases to pertain to judgements made because of unfamiliarity with the contexts and situations that influence the behaviours of other remote members. In contrast to this, a shared place proffers assumed similarity allowing co-located members to regard one another with less uncertainty than remote partners.

In a more direct experimental test, Bazarova and Walther (2005) failed to support the fundamental attribution error hypothesis, and illustrated that lack of common location did not inflate dispositional attributions in virtual groups. On the contrary, co-located members made greater dispositional judgements about partners, compared to those of distributed groups. However, Walther considers that the virtual group settings stretch attribution theory beyond its typical boundaries, and cites instances such as the dissipation of the iterative and cumulative effects of communication for achieving targets: the mediated nature of 'observations' in terms of the limitations of verbal and non verbal cues. Finally traditional research in attributions is from the active participation of the observer, rather than the passive forms of observation found in virtual groups.

4.3 Sillars' Typology of Conflict Resolution Strategies

The following section outlines Sillars' typology of resolution strategies. In his early research on conflict and attribution Sillars (1980), believed that attributions are important determiners of the definition and outcome of conflicts. Although his work does not specifically relate to attributions in the hyper-interpersonal context of e-mail, it is considered that his use of attribution theory in interpersonal forms of communication might create a useful template for identifying the types of conflict resolution strategies as

defined by the use of speech acts in the written dialogue of e-mail. As such his work in this area influences the methods used in the final phase of the analysis in this study.

Sillars' typology of conflict resolution strategies was developed in part deductively and inductively, and formulated from open ended descriptions of conflict experienced by the subjects of an American college dormitory. He acknowledges the use of 'retrospective self-report data' as one of the studies weaknesses.

The typology is divided into three general categories, passive-indirect, distributive, and integrative. These are further divided into six subcategories, which in turn are divided into seventeen further subcategories. These are enumerated below.

I. **Passive/ Indirect strategies**, Passive - Indirect strategies are primarily avoidance strategies and discourage communication between participants. They include equivocal and ambiguous forms of communication. These strategies minimise information exchange between participants.

The passive and indirect strategies are further divided into: 1) Non-strategies, where discussion is perceived to be unnecessary. This contains a further three sub divisions which are entitled: (i) *Letting the issue resolve itself* - the problem is expected resolve itself without any active attempt to find a solution; (ii) *Empathic adjustment* - where an implicit understanding develops between the two parties and the problem is resolved without explicit attempts to communicate; (iii) *Disregarding the issue* - the problem is dismissed as being unimportant.

The second sub strategy of the category is: 2) Avoidance Strategies, where discussion is avoided to minimise negative reactions from others. This again is sub-divided into: (iv) *Avoiding the issue* - where a problem is tolerated to avoid negative reactions and (v) *Avoiding the person* - here the other person is

avoided, communication is minimised or the relationship terminated to avoid conflict.

A further sub-division within this category is: 3) Indirect Strategies, these are strategies that attempt to communicate feelings indirectly, they include: (vi) *Hinting* - indicating feelings and perceptions that may be conveyed through non-verbal communication and indirect comments only; (vii) *Setting an example* - the expectation that behaviour will be imitated in some way; (viii) *Joking* - in this category a problem is discussed jokingly and actual feelings of concern or irritation are made to appear less serious than it is actually perceived to be.

Within this category are placed: 4) Submissive strategies, these include the sub-categories: (ix) *Yielding* -, the act of passively complying without input to the solution or problem. Finally, (x) *Submissive emotion* - an emotional display that indicates weakness and passivity, such as crying or acting hurt or sick. The use of these strategies is one of giving in without providing input to the resolution of the conflict.

II. **Distributive strategies** show explicit acknowledgement of conflict and seeks concessions from the others. The outcomes for one self tend to be favourable, whilst other participants lose out. This is an individual over a mutual or group gain and in certain contexts, for example, where the other is disliked or blamed, leads to further arguments and disagreements before a resolution is found. When this strategy is used it generally increases conflict and lowers mutual gains.

The two major sub categories in this group are; 5) Non-coercive compliance gaining: these include (xi) *Requesting* - that a situation or behaviour be changed with the minimum of elaboration or disclosure; (xii) *Demanding* - is an imperative, it is similar to requesting but is more assertive/aggressive and a negative evaluation of the other person is implied; (xiii) *Persuading* - is an imperative accompanied by reasons for complying. The appeal may attempt to

change the other person's outlook as well as behaviour. 6) Coercive compliance gaining emphasises the more aggressive approach such as: (xiv) *Aggressive emotion* - for example insults, the use of abusive and profane language denoting anger towards the other person; (xv) *Threat aversion* - punishment of some sort is threatened to be carried out if there is failure to comply.

III. **Integrative Strategies.** Integrative strategies, exhibit explicit acknowledgement and discussion of conflict and sustain neutral evaluations of the others without seeking concessions. Information exchange is maximised. There are mutual positive outcomes to be gained from this strategy and conflict resolution is facilitated. (xvi) *Disclosure* - the person provides and elicits information to facilitate understanding of perceptions and feelings and reasons for behaviour, but no attempt is made to explore alternative reasons or solutions to the problem. (xvii) *Problem solving* - this is similar to disclosure except that the person shows a willingness to consider alternative solutions to the situation that are mutually acceptable.

There are number of issues of importance from this typology which influence this study. In each of the main strategies Sillars sets out the parameters in which the sub-categories function on the level and type of information that is exchanged between interlocutors. These vary from minimal and avoidance in the Passive and Indirect Strategies, to emotional exchanges in the Distributive, to high and evaluative in the Integrative strategies. These levels help to identify the 'voice' for example, Indirect, submissive, non-coercive, coercive, or neutral and evaluative. Secondly, Sillars outlines the overall gains in the strategies used such as Indirect and Submissive strategies would not affirm any sort of communicative gain for either of the interlocutors. The use of Distributive strategies would encourage gains for one at the expense of the other and lower any possible joint outcome and maximise conflict. The Integrative strategies maximise information exchange and facilitate conflict resolution.

Sillars considers attributions to be important for the following reasons. Firstly, people's attributions in a conflict will determine their choice of strategy for dealing with the conflict. If it is considered that the other group member has a personality trait that causes the conflict, then, he or she is considered less likely to cooperate, and use positive forms of communication or, integrative strategies. Secondly, biases in the attribution process which cause others to be seen in a negative way, discourage the use of integrative strategies. Thirdly, the strategy chosen affects the outcome of the conflict. Integrative strategies encourage cooperative communication and information exchange. Distributive strategies are more competitive and may escalate the conflict and lead to less satisfying solutions. Indirect strategies seek to limit or avoid communication.

Summary

The definitions given to these general strategies formulate the basis for recognising the conflict strategies in the e-mail data of this study. However before they can be applied to the text, it is necessary to establish the intentions and types of actions expressed by the Interlocutors and expounded by the speech acts in the written dialogue.

Although Sillars' research is based on US dormitory behaviour of college students, the resulting typology is based on the established theoretical concepts with regard to, the conflict strategies he uses, see (Pruitt et al, 1977:161); (Jones et al, 1967:1-24); and (Morton et al, 1960:181-189). Sillars' findings support and contribute a range of theoretical concepts in communication. Therefore, the importance of his typology and its use in this study lies in its ability to give a comprehensive definition of the strategies of conflict, explanations of the types attributions found in the strategies, and the types of information exchange in the strategies. These create a platform from which to identify and explore the types of speech acts in the e-mail data used

in this study. It may also be possible to trace the patterns of use throughout the duration of the group's project.

The following chapter explains the methods used to code and interpret the speech acts in the corpus of e-mails used in this study.

Chapter 5

Empirical Background and Approach

The previous chapter has explained the importance of speech acts and conflict resolution strategies as outlined in Sillars' typology along with the theoretical concepts that influence the direction the study takes. The purpose of this chapter is to describe the empirical background to the study, the approach taken and the methods used to analyse the data. The organization of this chapter is as follows:

Section 5.1 profiles the empirical background to the study. It details the nature and characteristics of the research and the groups involved and the data that is used.

Section 5.2 explains the reasons why the study has been approached through pragmatics and explains the use of discourse analysis to understand and interpret the text.

5.1 Empirical Background

The data for this study is taken from the naturally occurring corpora of e-mail text. E-mail is the dominant communication resource in the panoply of facilities used by the groups involved in this study, and the data is accessed

from two major sources; the first is comprised of Software Engineering Groups (SEGs) centrally based at a major UK university. The second source is a group of Academic Collaborative Writers (ACW) whose members were distributed throughout various European universities.

The empirical part of the study focuses initially on the general nature of the groups involved in project management. The Software Engineers conducted their work through a mixture of e-mail communication and face-to-face encounters. The Academic Collaborative Writers communicated mostly using e-mail and some telephone conversations.

As is shown in sections 2.2.1 and 2.2.2 of this thesis, previous research into group processes cover a wide range of issues from group decision making, relationships, motivation, and cohesiveness. Group interaction in particular may be approached in a number of ways, these include, personalities and relationships, task related processes, leadership and motivation. The specific issues which are highlighted in the context of the groups used in this research are firstly, the nature of the communication and interaction in distributed groups as opposed to face-to-face. Secondly, the means by which conflict resolution strategies may be identified and recognised in their use of e-mail communication. In this instance emphasis is placed on the content and textual analysis of the 'written dialogue' between members over the duration of the project.

Initial observations of the SEGs' face-to-face meetings took place over three academic terms (32 weeks). During this time, it was observed that various instances of disagreements and disputes arose between members. Some disputes were ignored and dissipated over time, some continued and were tolerated; others were settled amicably, whilst on occasions, some escalated into conflicts.

Observations of the SEG groups made in this study showed that disputes and disagreements occur for a range of complex reasons which may, for example, reflect interpersonal power struggles, compliance gaining strategies, a particular stage in the group's development or the dislike of a particular member fuelled by either dispositional characteristics, or situational circumstances. This study approaches conflict on an interpersonal level in terms of attribution that is, the ways in which, group members' infer the causes of each others behaviour. These issues steer the analysis away from e-mail structure and conflict as outlined by Friedman et al (2003) and direct it towards concepts of interpretations of the meanings attributed to others perceived actions as portrayed by the speech acts in the written text of inter-group e-mails. Therefore, from these initial observations, and taking into consideration the two different interactional environments of face-to-face and distributed communications, three important questions were posed.

- i. Given that e-mail can be considered to be a lean form of communication (compared with face-to-face) and, therefore, lacking in the rules of grounding, what strategies are group members using to deal with conflict in a distributed environment?
- ii. How are these strategies represented and expressed in the text?
- iii. What methods of analysis are most appropriate to recognise these strategies?

5.1.1 Software Engineering Groups (SEGs)

The initial groundwork for the study began by participatory observation of the Software Engineering Groups (SEGs). Friedrichs (1973:273) classifies observational procedures as follows:

- Covert versus overt.
- Non-participant versus participant.
- Systematic versus unsystematic
- Observational in natural versus artificial situations
- Self-observation versus observing others.

Based on this classification, observations that took place in the early part of the study may be said to have been, overt, participatory, unsystematic, natural, and observing others. This observational process served to provide an orientation to the range of group communication themes and as a means of providing broad, non-specific descriptions of various group issues in order to develop a research question.

The groups were involved in managing a project to develop a repository to store electronic photographs. The project was carried out over a period of 32 weeks, from October 2003 to May 2004. The repository was developed in MSQL and necessitated secure access to specific user groups; for example, university colleges, societies and the SEG students themselves. These groups used both e-mail and face-to-face communication throughout the duration of the project.¹

The project involved 79 second year undergraduates. The students were formed into 17 groups; 6 groups of four members and 11 groups of five members. Each group was comprised of two third year undergraduates acting as joint project managers, one of whom in theory, dealt with the management of the technical aspects of the project, whilst the other managed human resource issues. The gender ratio of the total number of students was 82%

¹ For details of the project brief, refer to Appendix C.

male and 18% female.¹ There is extensive qualitative and quantitative analysis in gender issues that indicates subtle differences in the language use of men and women in CMC. Women for example generally reference emotions and have a tendency to be more tentative than men (Mulac et al (2001). However, when examining the language of individuals criticising each other in an organizational setting, Mulac et al (2002) found that men referenced emotion more frequently than women. Thomson et al (2001) have shown that e-mail readers show a great deal of accuracy in determining e-mail author's sex by either the topics or the language forms present in the messages. Findings such as these suggest that subtle features in the language use might influence the direction and development of the language used in the replies. In CMC, and e-mail in particular, people primarily rely on others use of language to make judgements and form impressions (Walther, 1996). Therefore language use is particularly important to the formation and development of relationships in CMC.

It is generally recognised that the effectiveness of a group is dependent, amongst other things, on its cohesiveness and therefore, to function successfully it is advantageous for its member's to have a diversity of skills and be able to fulfil a number of roles. To assist with the recognition and the utilisation of these traits, individual members in all the groups were encouraged, as part of their remit, to define team roles using a team building manual based on, Self Perception Inventory of Roles in Groups (Belbin, 1981).

The environment in which the student's worked was partly computer-laboratory based, known as Software Engineering Sessions. Thus, each week all groups attended a computer workshop to fulfil the various prescriptive activities of their course related to the project's phases. Each group was also given a face-to-face meeting slot of one hour per week. During this time groups met with their project managers to discuss the progress of the project, and any other technical or management problems that had arisen during the

¹ See Appendix D for details of group size and characteristics.

course of their work. All groups were given video recording facilities for these meetings. The official meetings between members were often augmented by unofficial ones. In terms of groupware, none of the groups used authoring software to assist with the shared production of their documents, but all had shared electronic mailing facilities and developed their own individual websites. Therefore, for the SEGs, inter-group communication was a mixture of computer-mediated and face-to-face communication.

In excess of a 1,000 pages of e-mail text was produced by all 17 groups over 32 weeks. Two groups were randomly chosen, and the corpus of e-mails produced by them was used as the primary data for analysis. From hereon, the data for these two groups is recorded as Data Set A and Data Set B. The total number of e-mails sorted and analysed in these two sets numbered 342, 35% Deadlines for each of the projects deliverables were prescriptive and contingent on term time dates.

5.1.2 Academic Collaborative Writers (ACW)

Data set C was comprised of e-mails derived from a group of academic collaborative writers distributed throughout a number of European universities. The group consisted of 10 members of whom seven were male, and three were female. The sample obtained from this group comprised of 281 pages of e-mail messages from which 158 e-mails, 59% were analysed.¹

The Academic Collaborative Writers (ACW) carried out their work from the inception of the idea for their paper (December 2001) to the deadline set by the Designing Interactive Systems (DIS) conference for the submission of papers in December 2002. Compared to the SEGs there are subtle differences in the organisation and working practices of ACW group. For example, the intermediate deadlines for the completion of the various stages

¹ See Appendix E for examples of unsorted data.

of the work were not prescriptive; planning and scheduling was an ongoing process of negotiation, which acknowledged members other professional work commitments. The location and distribution was akin to wide area networking, and computers were situated on separate university sites throughout Europe. Unlike the SEGs the ACWs could not arrange regular face-to-face meetings. This meant that they sometimes found it necessary to extend their communication by using a range of electronic channels, including instant messaging, and phone calls.

5.1.3 Data Sample and Ethical Issues

A total number of 500 e-mails were analysed from all three groups. According to Potter and Wetherall (1987) in the use of Discourse Analysis sample size is not necessarily a significant issue as most emphasis is placed on the way language is used in the sample data. Thus, large variations in linguistic patterning can emerge from relatively small data samples. In this study the number of e-mails used comprises a significant representation of the messages sent and received by interlocutors in all three groups.

The age of the data is of little or no consequence to the analysis or methods used. The text is naturally occurring data, 'written dialogue' between group members and therefore it is the content of the e-mail message, and the context in which the messages are formulated (distributed groups) that are important to the analysis of the text.

Using e-mails as data presents the researcher with ethical issues of privacy. Data of this kind can be considered as the private correspondence between interlocutors, and therefore using these documents without permission can be regarded as the equivalent of 'eaves-dropping' on someone's private conversation or using their private correspondence without their consent. In order to overcome these issues an application to retrieve and use the e-mails

for analysis was submitted in the case of the Software Engineering Students to the University Ethics Advisory Committee.¹ In the case of the Academic Collaborative Writers Group, individual consent from each of the members was sought.

5.2 The Approach

The overall aim of this study is to use the written content of the e-mail data to identify the speech acts contained in the text and ultimately by identifying the speech acts to distinguish and categorise the conflict resolution strategies used by the members of the group in their e-mail messaging. In other words the data is read as the record (text) of a dynamic and interactional process in which language is used as an instrument of communication, in a context, by a speaker/writer to express meanings and achieve intentions (Brown et al, 2007).

This study is a qualitative piece of research based on naturally occurring text. The term text is used to refer to the written record of the communicative act (the e-mail messages). Discourse Analysis is the preferred methodology and the use of DA is approached from the perspective of pragmatics.

In general, there are various fields of enquiry which are directly influenced by pragmatics; the two primary areas being the philosophy of language and linguistics. However, other areas including artificial intelligence, psychology and sociology have also drawn substantially from pragmatics. A broad definition of pragmatics defines it as:

“... the study of understanding intentional human action.” (Green, 1996:2)

¹ Refer to Appendix F for documentation.

As it stands this definition is too broad for the purposes of this study. The use of the term pragmatics is therefore perceived within a framework of linguistic theory and the philosophy of language. Huang (2007:2) states that:

“Pragmatics is the systematic study of meaning by virtue of, or dependent on the use of language....”

Within this framework one of the central topics of pragmatics is *speech acts*, which may be defined as the uttering of a sentence whose function is to perform acts as well as to say things.

Levinson (2003:1) gives a detailed and important exposition of the term ‘pragmatics’. The outcome of this lengthy examination places the use of pragmatics beyond the formal boundaries imposed on meaning by the rules of grammar. The inclusion of relationships and contexts allow the analysis to be taken further than what is encoded in the formal rule based structures of the language. The delimitation of the formal boundaries is important to the methods of analysis used in this study. The textual language is used for understanding the inferences and propositions of the sentences in the messages.

From this perspective, Levinson perceives the use of DA as being separated by two possible approaches; the first he calls the ‘*text grammarians*’ and the second, ‘*speech act (or interactional) theorists*,’ those who see language as action. The text grammarians use grammatical formulations and view discourse as a series of sentences strung together. ‘Interactional theorists’, on the other hand are mostly concerned with ‘conversation’ as a particular type of discourse which has a specific context (pragmatics). Levinson points out that the use of Discourse Analysis does not necessarily exhibit a bias towards the study of either spoken or written language found in naturally occurring data.

The approach used in this work can be explained by taking into consideration the nature of the data (e-mail text), and the demands made to place the messages into the contexts of the events that they describe or account for. The linguistic features of the written dialogue, employs Searle's typology of speech acts to understand what people are doing. From this standpoint, the significance of our use of language, even in written dialogue lies in the context of its use rather than grammatical abstractions.

Therefore, the e-mails are treated as a '*written dialogue*,' and as such contain the '*utterances*' which infer certain actions and intentions. It is the inference made by these actions and intentions as identified through the speech acts which are considered helpful to identifying the attributions and the strategies of conflict resolution used by the groups' members throughout a project's life cycle.

Summary

The overall design of this study is influenced by a range of issues that determine the treatment of the data and the analytical methods used. These include the type and the amount of data produced; therefore, careful consideration is given to data reduction methods to create manageable segments of texts that attempt to capture the context of the messages. Secondly, the communication characteristics of the text are considered as a written dialogue. This necessitates methods of analysis that allow the text to be 'read' as acts which capture meaning in the context of their use, hence the use of speech act theory.

A number of important aspects need to be emphasised in relation to the methods of analysis used in this study. Firstly, with regard to the treatment of the e-mail text the term '*written dialogue*' denotes a '*written*' representation of '*conversation*' between interlocutors. Secondly, these representations are

indicated by the 'utterances' (in this case, what is inscribed by the text). These are then situated in the context of a dialogic event (a series of interrelated messages).

In addition, the written dialogue may also contain structural characteristics, such as the length of the e-mail, visual symbolic nuances (such as the use of electronic paralanguage) and the individual stylistic content and use of language. These types of indicators are considered in the analysis process if or when the overall meaning context of the message is unclear.

As opposed to the ephemeral and transient nature of conversation, written dialogue has the advantage of being recorded and permanent. Therefore data such as this can theoretically be drawn from any number of sources or historical time frames. Because the data used in this study covers all three projects from their inception to their completion, a rich picture of events is portrayed by the text. The permanence of the data enables the e-mail messages to be characterised as events and therefore placed into a meaningful and coherent contexts. The following chapter describes in detail the procedures and methods used to analyse the data.

Chapter 6

Methods

This chapter describes the procedures and methods used to analyse the data. Section 6.1 describes the procedural steps in the methods used for the treatment, preparation and initial coding of the data. It deals with the data reduction and sequencing in Stage 1 of the methods process, and explains the handling of the data in terms of its reduction, segmentation and classification.

Section 6.2 moves the description of the processes used in Stage 2, the Discourse Analysis, and focuses on the dialogic events as units of text which represent the written dialogue. It explains the procedures used in Phase 1 and the part played by Searle's Typology of Speech Acts in the first and second cycles of the analysis in order to isolate and understand the type of actions depicted in the dialogic events. The importance of giving these actions a context is explained in the second cycle of this phase.

Section 6.3 explains the use of Sillars' typology of conflict resolution strategies to assist in the identification of similar strategies that may be found in incidences of written dialogue. These are illustrated using examples taken from the data sets. The section then turns to Sillars' theoretical approach to communication in interpersonal conflict and the role of attribution processes as highlighted by his typology. The refinements that are made to Sillars'

typology represents the types of strategies found in e-mail communication. Section 6.4 provides a summary of the refinements made to the typology.

It should be stressed that Searle's typology of speech acts is used to define and understand the acts within the e-mail messages. Sillars' typology of conflict resolution strategies is used to help identify the types of strategies. The analysis of the text is attempting to identify conflict depicted by the language. Therefore it is this process of analysis which establishes whether or not conflict is, or can be reflected in the data.

6.1 Procedural Steps in the Methods Used

The overall design and rationale for the procedural steps taken in Stage 1 to reduce the amount of data, and the analytical methods used in Stage 2 in the first and second Phases of the Discourse Analysis are shown in Figure 6.1. Each is discussed in detail.

Stage 1 describes the preliminary steps of Discourse Analysis, namely: the reduction, segmentation, and classification of text. The rationale for the reduction and sequencing of the data is based on the necessity to understand its broad structure and content and organise it into manageable units of text for analysis. These units must ultimately reflect the context and narrative content of the e-mail messages between the interlocutors.

6.1.1 Data Reduction

The first stage in this process can be considered as a first pass. The data is trawled and information that does not contribute to the overall meaning of the message is factored out. This type of unwanted detail includes lengthy

attachments of programming language which are particularly prevalent in the SEG data and repeated strings of messages.

Process	Activity	Rationale
Stage 1 Data Reduction and Sequencing	I Reduction of Data Sorting and preparation of data	To reduce the amount of data to make it more manageable. Factor out unwanted detail, i.e., programming language and repeated e-mails.
	II Segmentation of Data Data arranged into themes that contain broad thematic commonalities; coded as thematic episodes	Allows further ordering and reduction of the data. Allows the logic of the phases of the projects life cycle to emerge.
	III Classification of Data Units of text comprised of strongly related e-mail messages between interlocutors; coded as dialogic events.	Prepares manageable units of text for analysis and the identification of the speech acts
Stage 2 Discourse Analysis	Phase 1. Searle' Typology of Speech Acts Analysis of the dialogic events to identify the speech acts used in each of the events.	To isolate, code, and analyse the illocutionary acts according to Searle's typology.
	Phase 2 Sillars' Typology of Conflict Resolution Strategies Analysis of the patterns of speech acts as paradigmatic cases in each of the dialogic events for each of the data sets. Comparison of findings using Sillars' Typology	To look for patterns in the use of the different speech acts that accord with Sillars' typology To compare the findings against Sillars' typology To draw a set of conclusions with regard to the types of conflict resolution strategies used when compared against the type of speech acts found in the text

Figure 6.1 Procedural Steps and Analytical Methods

Whereas data such as this is important in situ for establishing the overall rich picture of events, it added little to the understanding of the interpersonal aspects of the exchanges between group members therefore it is not used in the analysis. Instances of repeated strings of e-mail messages sent between group members are also eliminated.¹ The attachments of programming language cannot be coded using speech acts. Occurrences such as these are flagged in the original data should they be needed for future reference, and to ensure that the original presentation and integrity of the data is maintained.

6.1.2 Segmentation: Thematic Episodes

In the second step of this process the data is segmented. This requires the data to be scanned for topics that show broad thematic commonalities over periods of time that reflect the major phases of development in each of the projects. By doing this, the emails generated during these periods can be gathered together. These themes are coded as **Thematic Episodes**, each of these episodes create broad contextual constraints which reflect a range of interrelated themes in the data. For example, in the SEG data, the thematic episode entitled 'Domain Analysis' in Figure 6.2 contains the range of data that are most significant to this episode.

The data for each of the two Software Engineering Groups A and B are divided into seven thematic episodes each of which contain datum contingent with the phases of the project's life cycle. These thematic episodes for both SEG/A, and SEG/B groups are coded as Thematic Episodes 1 to 7. The number and order of the Dialogic Events varies between groups and reflects the individual approaches used by the groups to scheduling their work.

The data for the ACW group underwent the same processes of reduction and segmentation. The process of segmenting the data for this group required a

¹ See Appendix G examples of text excluded from the data

careful appraisal of the subject headings, and the linkages between the headings and the content of the e-mail messages. Overall, this group guided the broad areas of their project through the use of succinct and cogent subject headings indicative of the issues under discussion. Therefore, the e-mails using similar subject heads generally reflected the essential details contained in the group's e-mails. This process enabled the thematic commonalities to be grouped together, and be recorded as closely as possible under their original subject headings.

Thematic Episodes	SEG/ A	SEG/ B	ACW/C
1	Domain Analysis	Domain Analysis	Ideas for Paper
2	Requirements	Requirements	Rules for Writing
3	Requirements Appraisal	Requirements Appraisal	Structure and Content
4	Design; implementation	Design and Implementation	Title Debate
5	Trade Fair Poster Design	Trade Fair Poster; Design	Final Text
6	Acceptance Testing	Acceptance Testing	Submission
7	Presentation	Presentation	

Figure 6.2 Thematic Episodes of all Data Sets

The type of messages generated by this group did not necessitate their use of programming language and therefore the elimination of unwanted data was based only on repeated strings of e-mails. This set of data was segmented into

six thematic episodes and are coded as Thematic Episodes (TE) 1 to 6. These two initial steps in the processes of reducing the data made it more manageable, and assisted with the further classification of the data to isolate the more specific e-mail messages between interlocutors.

6.1.3 Classification: Dialogic Events

The third and final step in of the data reduction and sequencing process is the classification of messages as discrete units of 'written dialogue.' These units reside within each of the thematic episodes and are known as **Dialogic Events**. The dialogic events have a number of functions:

- Firstly, they represent the exchange boundaries for the written dialogue that takes place between the interlocutors.
- Secondly, they contain the equivalent of 'utterances' found in spoken language.
- Thirdly they set the parameters for the meaning context in which the utterances take place.

Each of the dialogic events is formulated by the 'utterances' of the interlocutors as recorded in the written dialogue. These events are used as the units of analysis for the recognition of different types of speech acts.

The term '*dialogic*' is borrowed from Volosinov (1973) and was first used to stress the continuous, interactive, and generative nature of language. Volosinov, considers all language to be expressive of social relations, hence every individual 'utterance' is structured as dialogue. Therefore, an '*utterance*,' is made by a speaker or writer towards an anticipated response in the hearer or the reader. When the utterance is received, it results in meaning

and understanding through a dialogic interaction. This is a type of 'internal dialogue' which translates signs into sense, and simultaneously moves the process of communicating forward by generating a response that is capable of being uttered as the next 'moment' of the dialogue. This feature of signification, is not just tied to speech, but characterises all utterances. Therefore, it can apply equally to both spoken and written forms of communication.

The term 'utterance' as used in terms of the written dialogue requires clarification. Huang (2007:11) defines utterance as:

"... the use of a particular piece of language — be it a word, a phrase, a sentence, or a sequence of sentences — by a particular speaker on a particular occasion."

Levinson (2003:18) emphasises the difference between a sentence and an utterance, pointing out that:

"... a sentence is an abstract theoretical entity defined within a theory of grammar, while an utterance is the issuance of a sentence, sentence-analogue, or sentence fragment, in an actual context."

Grundy (2000:60) gives the following example:

"... a sentence used by a speaker for some purpose. Thus 'I'm Peter' is both a sentence (it has a determinate grammar) and an utterance (I use it to introduce myself)."

Therefore, dialogic events form the core units of text for analysis. They consist of the utterances, that is, the written dialogue, between interlocutors, and they create the parameters for the exchange of a series of continuous and related topics contained in the messages and are similar in character to topics of conversation. The easiest way to consider the dialogic events is to imagine the



script of a play. The project is the play itself, the thematic episodes represent the acts or main divisions and the dialogic events represent the scenes or sequences of continuous action and dialogue between interlocutors.

The processes of reducing, segmenting and classifying the data is summarised in Figure 6.3. This also shows the links to Phase 1 in Stage 2 of the analysis. The overall classification for all the thematic episodes and dialogic events for each of the data sets is given in the overview in Figure 6.4.¹ This completes the initial treatment of the data and enables the dialogic events in Stage 2 to undergo analysis using Searle's general typology of Speech Acts.

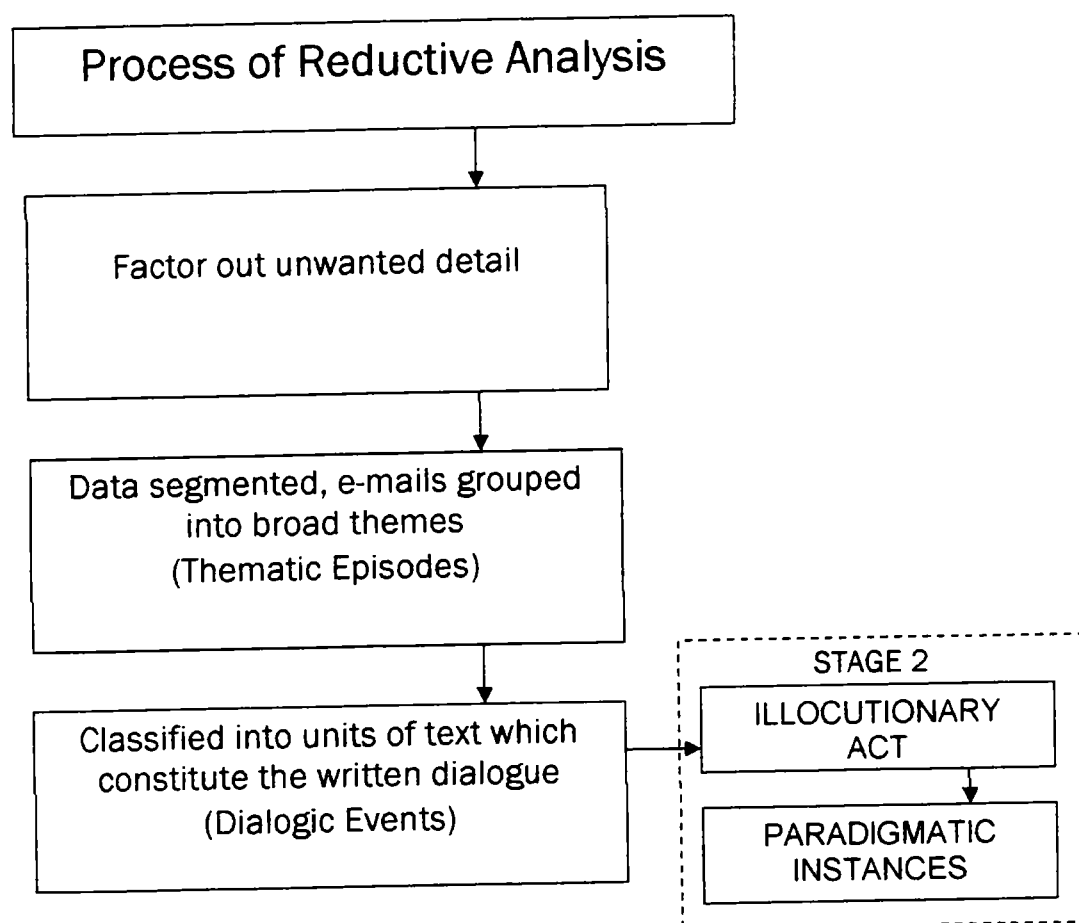


Figure 6.3 Data Reduction Processes showing the link to the processes of analysis in Phase 1 of Stage 2

¹ Refer to Appendix H for the number of e-mails analysed in each Dialogic Event

SEG/A		SEG/B		ACW/C	
Thematic Episodes	Dialogic Events	Thematic Episodes	Dialogic Events	Thematic Episodes	Dialogic Events
1 Domain Analysis	1 Organisation & responsibilities	1 Domain Analysis	1 Organisation and roles	1 Ideas for Paper?	1 Ideas for paper & feedback
	2 Technical roles				2 Contributions please
	3 Name of project				
2 Requirements	4 Functional requirements	2 Requirements	2. Scheduling & meetings	2 Rules for Writing	3 Rules/ discussion
	5 Documentation		3 Submission of work		4 Issues of editing Other members work
	6 Work problems				
	7 UML dispute				
3 Requirements Appraisal	8 Schedules	3 Requirements Appraisal	4 Responsibilities	3 Structure & Content	5 Main focus of the paper
	9 Issues & problems		5. Have we completed?		6 Organisation & structure
4 Design & Implementation	10 Design Details	4 Design & Implementation	6 Use of JSP a discussion	4 Title Debate	7 Ideas and debates
	11 Motivation - work - deadlines		7 Issues for Consideration		8 Concessions & Agreements
	12 Disaster				
5 Trade Fair Poster Design	13 Design Issues/ Art work	5 Trade Fair Poster Design	8. Just get on with it	5 Final Text	9 Writing up 10 This is the first draft 11 Some Revisions
6 Acceptance Testing	14 It will be OK	6 Acceptance Testing	9 Outline of work for this unit	6 Submission	12 Final checks
	15 Some fine tuning		10 This is what we do		
			11 All systems go		
7 Presentation	16 Organisation	7 Presentation	12 I will do you will do		13 Acknowledgements

Figure 6.4 Thematic Episodes and Dialogic Events in all Data Sets

6.2 Stage 2: Discourse Analysis

The discourse analysis is divided into two major phases. The first of these uses Searle's general typology of speech acts to identify the illocutionary acts in each of the dialogic events and establishes the paradigmatic cases. The second uses Sillars' typology as a template for comparison to attempt to recognise the conflict resolution strategies and identify the attributions presented in the written dialogue.

6.2.1 Phase 1: Searle's Typology of Speech Acts.

This phase of the analysis is divided into two cycles (Figure 6.5). The first begins by analysing the text and searching for the general use of illocutionary acts as categorised in Searle's Typology. The results are recorded in the Collection Grids (see Appendix I). Each of these grids gives the code for the Data Set, Thematic Episode, Dialogic Event and line numbers for the utterances. This coding is consistent throughout and allows the documentation resulting from the analysis to be traced back through the various processes. The analysis in this cycle gives a general overview of the type of illocutionary acts used in each of the dialogic events.

On their own and in isolation these acts are devoid of a specific context, therefore, it is important to use the text analysis sheet (Figure 6.7) to establish the context. The complete overview of the stages of text analysis for Phase 1 is delineated in Figure 6.6.

This second cycle begins by the careful analysis of the text for each of the dialogic events to identify the meaning context of the illocutionary acts, that is, the paradigmatic cases. The paradigmatic case reveals the explicit meaning of the utterances within the context of the dialogue recorded by the text. For example, whether or not the illocutionary acts as directives are framed within

the context of the message as questions or demands? Knowledge of the context in which the acts are framed clarifies the intentions of those who express the act/acts in the written dialogue.

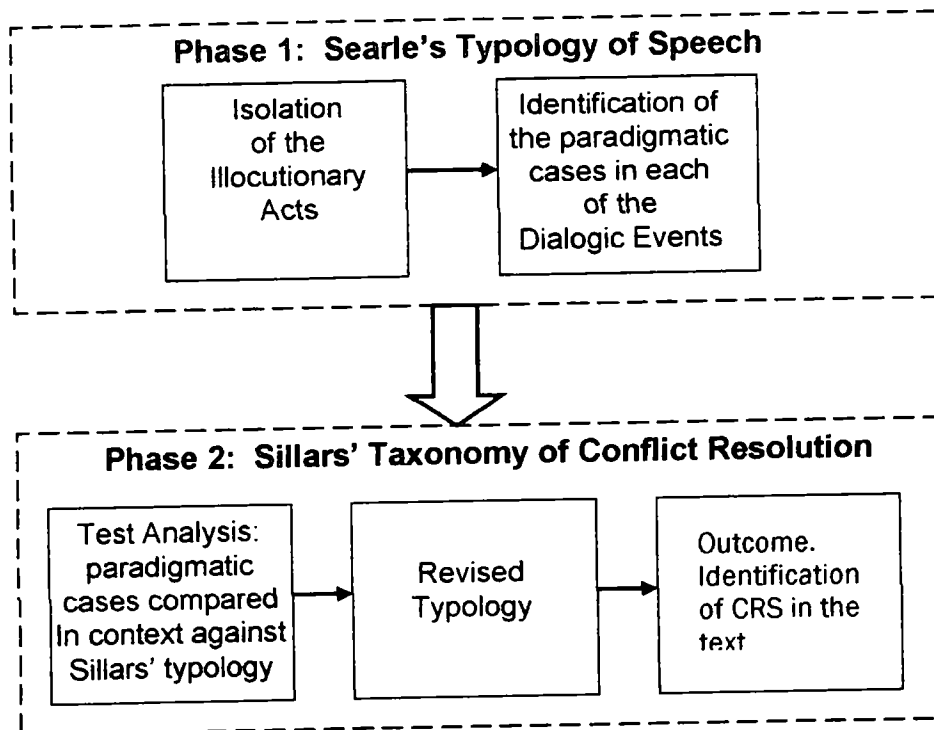


Figure 6.5 Stage 2 - Discourse Analysis

The results are recorded on the Text Analysis Sheets (Figure 6.7). The analysis sheet is headed by the identifier code for the event being analysed, for example, SEG/A refers to the data set; TE2, Thematic Episode 2; DE3 Dialogic Event 3. These can be cross referenced with the collection grids.

The rest of the sheet is comprised of four columns. The first column of each sheet contains the line code, and the transcript of the 'utterances' contained in the written dialogue for that event.

The second column records the illocutionary points, as expressed in Searle's typology; for example, whether or not the utterance depicted by the written dialogue is uttered as a directive, a commissive, or an expressive, and so on.

The third column records the paradigmatic cases; for example, if the utterance is an expressive then, what is the nature of its expression? Is it used as an apology, is it congratulating someone, blaming them or praising them?

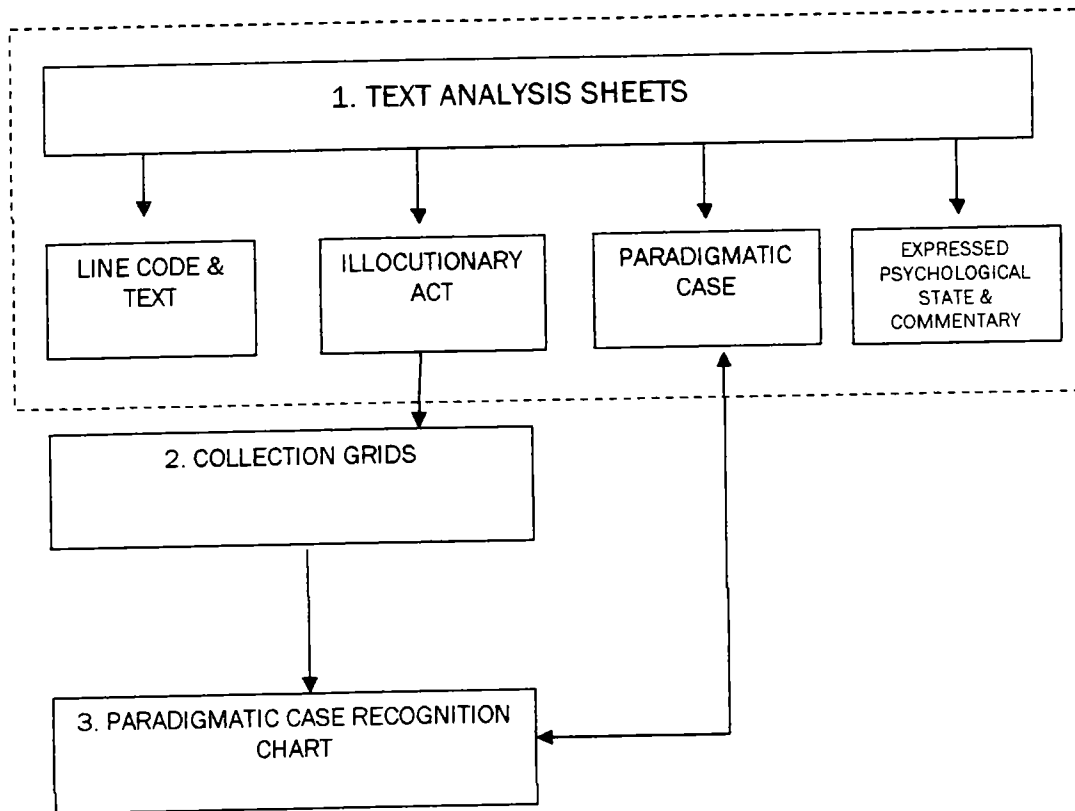


Figure 6.6 Steps in Text Analysis - Phase 1 of Stage 2

Austin (1975) noted that there are over a thousand English verbs denoting the illocutionary act; for example, state, describe, assert, warn, remark, comment, command, order, request criticise, apologise, censure approve, welcome, promise, object, demand, argue and so on. These formulate the paradigmatic case and help to establish the context of the message and the 'voice' or tone of the dialogue.

The fourth and final column is used for recording comments about the utterance and elucidating the type of context in which it is situated. For

example, the commentary is important because it allows the context of each dialogic event to be interpreted and situated, and to build a rich picture of the type of communication taking place in each of the dialogic events throughout the project's life cycle. Thus, the significance of the dialogic events lies in their ability to highlight the contextual significance of the speech acts.

6.2.2 Examples of Illocutionary Acts in the Dialogic Events

Representatives: commit the speaker to the truth of the expressed proposition and expresses the speaker's/writer's belief. For example, 'Gold is a precious metal'. Paradigmatic cases include, asserting, claiming, concluding, reporting, and stating. An example of the type of written 'utterances' one would expect to find in the text belonging to this category is:

I know/ pretty much everything is done now up to the start of section 3 (SEG/B-TE2-DE3:2)

'I know' expresses X's belief. Therefore, he feels confident to assert that much of the work has been completed and he perceives this to be a true representation of the group's situation with regard to their work schedule.

Directives: informally, these are requests that always deal with a future action. These type of utterances attempt to make the other person's actions fit the propositional content, that is to elicit some future course of action from the addressee Y by the addresser X. Paradigmatic incidents include advice, commands, orders, questions and requests. In using a directive the speaker intends to elicit some future course of action on the part of the addressee. Examples from a dialogic event include:

Commands orders and requests (SEG/B-TE4-DE6:17)

This is what I want you all to do

Dialogic Event: SEG/A -TE2 - DE3 Text Analysis Sheet

Written Dialogue	Illocutionary Act	Paradigmatic Case	Expressed Psychological State	Commentary
3.1 Issues have been raised <i>that</i> I am doing too much work.	Rep	Stating	Belief, to be the case.	This is what I believe
3.2 This is ridiculous.	Exp	Stating	I deny this is the case.	This is not true.
3.3 There is tons of work to be done, it just seems like I am the only person doing it.	Rep			
3.4 EVERYONE needs to put work into this.	Dir	Advice	You (everyone) are advised to do something	
3.5 If we put as much effort into this as domain analysis we will get 4/10 because that was 5%. This is 30%	Rep	Blame (indirect)		The results we get will be the groups fault
3.6 Furthermore we had to decide phase group leaders.	Rep	Report		
3.7 You decided at the time it was not necessary to actually implement this.	Rep	Statement		
3.8 However I am a <u>little p***ed off</u> at having to try to drive the group to do some work and failing.	Exp		Fed -up /angry	
3.9 <u>Maybe</u> you've all gone off over the weekend and done hours and hours of work and completed the NFR's	Rep		speculation	Without the adverb maybe this stands as a statement of fact.
<i>but</i>				But maybe suggests that although this is a possible state of affairs, it is unlikely.
3.10 I would appreciate it if at <u>least</u> someone else seemed <u>bothered</u> to <u>try</u> to complete this <u>properly</u> before the deadline.	Dir	Blame (indirect)		An insinuation of blame.
<i>and</i> 3.11 actually put some effort in off their own back	Dir	Request (indirect)		

Figure 6.7 Text Analysis Sheet

Directives, whether or not they are read as command, orders or requests are highly dependent on what has been said before and what comes after the utterance. The above as it stands could be regarded equally as an order or a request. To ascertain the voice and a more accurate contextual meaning it is important to make a judgment based on what X has expressed in the written dialogue of previous e-mails, or what follows in future messages. This situation emphasises the importance of grouping e-mail of similar topic content into dialogic events.

Fred and Phil: You're doing the last section.

Jim and Sue: You're doing the third section.

(SEG/B-TE4-DE6:20)

It is clear from this that X is ordering Fred, Phil, Jim and Sue; the use of the contraction you're, (you are doing) can be interpreted as the expressed wish of X that these tasks be done by these designated persons.

Examples of requests might be phrased as follows:

Before I can do the GUI I really need to know what you want.... (SEG/B-TE2-DE3.27)

In the above example, X is making a request to know or clarify what is required in order to carry out the task. Advice on the other hand, may be delivered as a suggestion (as shown below); this took place over a title debate in the ACW group.

I suggest to change 'what is intimacy and how can it be mediated? How could it work in the community?' To: 'what is intimacy and how can it be mediated through the introduction of new technology?' (ACW/C-TE4-DE7.32-33).

Commissives: the use of these types of speech acts commit the writer to some future course of action, and express the writer's intentions to do something. Typical examples include offers, pledges, promises, refusals and threats. Examples from the data include the following:

Promising:

I promise to check the references in the paper
(ACW/C-TE4-DE8:7)

Offers:

Me I'm gonna do section 3.2
(SEG/B-TE2-DE3:14)

Refusals:

I'm not going to take any more of your s***.
(SEG/A-TE4-DE12:26)

Put into context, the above is an example of a refusal to accept implied criticism, as opposed to an outright refusal to do something. It is interesting to note in this example as with many others, that the utterance also contains an expressive.

Expressives: express the psychological attitude or state of mind of the writer, such as joy, sorrow, anger, likes and dislikes. Examples include apologising, blaming, congratulating, praising and thanking. Examples from the text include:

Apologising:

So sorry Charlie, won't be able to learn Dreamweaver until the weekend. (SEG/B-TE2-DE5:37)

Blaming:

Fair enough you are still waiting on Fred, but this is just an excuse. (SEG/A-TE2-DE6:18)

Praising: (reference to the title debate)

I REALLY LIKE THIS ONE! It works really well.
(ACW/C-TE4-DE7:37)

Thanking:

Cheers Peter (ACW/C-TE4-DE7:47)

Declaratives: are speech acts that affect immediate changes in some current state of affairs. These types of speech acts are sometimes called 'institutionalized performatives' because they emphasise some change brought about through institutional or legal affairs. Paradigmatic cases include declaring war, the act of marriage, firing someone from their employment, condemning the prisoner to death by hanging, or nominating someone. The following examples show the type of utterances that are found in the text. However, Declaratives can create problems for analysis and the issues concerning these problems are discussed later in this section and examples taken from the text typify the problem.

And ... The title is; (ACW/C-TE6-DE12:10)

This assertion is the equivalent of saying. 'I name this ship'.

Issues have been raised (that) I am doing too much work. (SEG/A-TE3-DE9:17)

The utterance "Issues have been raised" can be regarded in this context as an assertion. This is linked by the conjunction *that* to the second utterance "I am doing too much work" which can be recorded as a statement of fact which may be regarded as true or false, as it is based on X's perceptions of the

issues. However, both of these paradigmatic cases are categorised as representatives in Searle's categories. As such, they tell us little about the context in which the utterances are made, other than we may assume these to express the beliefs of the speaker as expressed through the written dialogue. In his taxonomy, Searle's fifth illocutionary class appears to reinstate a grammatical emphasis relating to the sentence rather than the use of the utterance within the context of what is 'spoken'.

Further to this, Searle already classifies 'asserting' under the illocutionary act representatives, and questioning and requests under directives. For these reasons, declaratives have not been used as part of the overall analysis. A detailed discussion related to the use of the declarative can be found in the appropriate literature - for example, Levinson (2003), Loxley (2007) and Grundy (2000).

When the text analysis sheets are completed, the illocutionary acts recorded on these sheets are transferred to the collection grids (Appendix I). These grids show the number and patterns of distribution of the illocutionary acts for each utterance in each of the dialogic events for all data sets. The totals of the illocutionary acts from these collection grids are shown in Figure 6.8¹, and depict the different types of speech acts used in each of data sets A, B, and C.

As depicted in Figure 6.6, the three types of documents in this phase of the analysis (the text analysis sheets, the collection grids and the paradigmatic recognition chart) are also important tools for analysing the text in the context of the dialogic events, and for identifying the type of illocutionary points used throughout the written dialogue in each of the dialogic events. Therefore, the collection grids depict the number and the patterns of distribution of the illocutionary points. These allow comparisons and contrasts to be seen in the use and distribution of each group's use of speech acts both in the dialogic events, and throughout the duration of the projects.

¹ Refer to Appendix J, Data Cluster 1 (Data Table 1) for the actual totals for each data set.

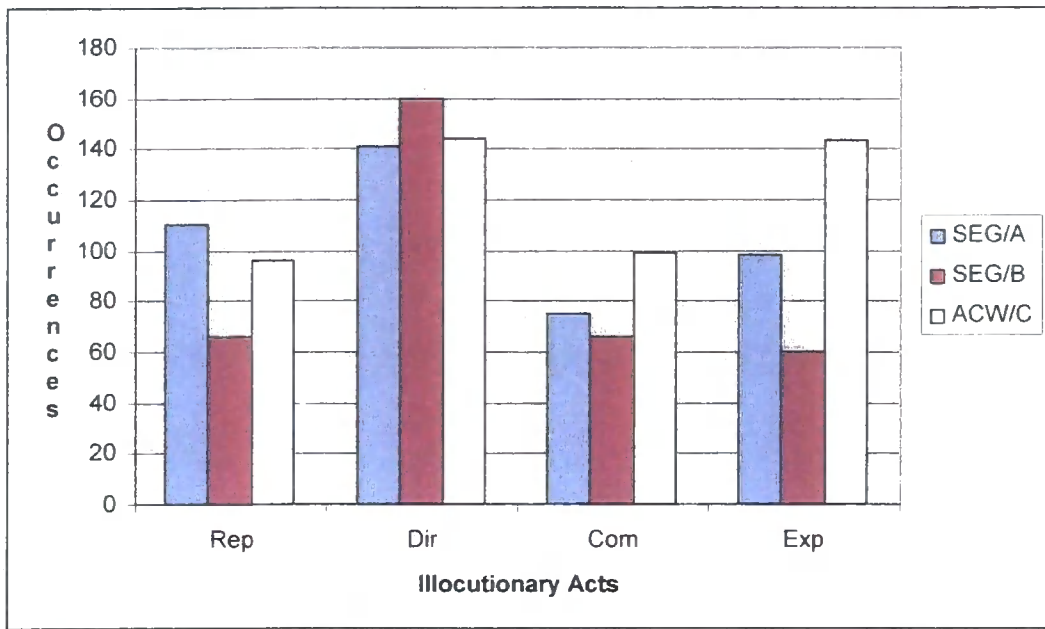


Figure 6.8 Chart showing the distribution and use of the Illocutionary Acts

After the first cycle of the text analysis the dominant paradigmatic cases in each of the dialogic events are assessed. This process is depicted in Figure 6.6 by the linkage between the recognition of the Paradigmatic Case on the Text Analysis Sheets and the Paradigmatic Case Recognition Chart. This chart contains a broad representative sample of the types of cases used by each of the groups. For example, the data may exhibit the high use of expressives as depicted by data set ACW/C in Figure 6.8, Identification of the speech acts collated according to the paradigmatic cases, gives a general picture of the groups' use of speech acts in the dialogic events. The process also enables the context in which the speech acts are used to be recognised. Not only is this useful for gaining a broad outline of the categories of speech acts and for recording the dominant use of certain categories by each of the groups; it also creates an important link to Sillars' typology of conflict resolution strategies. In that it allows specific acts in specific contexts to be identified and compared against the criteria for conflict resolution strategies.

The paradigmatic cases, isolated from the dialogic events are themselves insufficient to give the context in which the act is performed; it is therefore

important to look for patterns of use within each of the dialogic events. By placing the speech acts in the context of their use (as a paradigmatic case), it is possible to determine from the written dialogue the type of actions used in the dialogic events. The isolation of these paradigmatic cases allows actions and responses of senders and receivers to the 'language act' to be 'observed.'¹

DATA SET	Representatives	Directives	Commissives	Expressives
SEG/A	Asserting Reporting Claiming Stating	Requests Questions Demands Persuasion	Refusals Threats	Blaming Accusing Apologising
SEG/B	Reporting Stating	Requests Questions Advice Orders	Offers Promises	Congratulating Praising
ACW/C	Reporting Stating Concluding	Requests Questions Advice	Offers Promises	Congratulating Praising Thanking

Figure 6.9 Paradigmatic Case Recognition Chart for all Data Sets

This final process identifying the paradigmatic cases moves the analysis to the second phase. Therefore, the columns on the Text Analysis Sheets (Figure 6.7), containing the examples and interpretations of the paradigmatic cases, enable the findings to be transferred to the Paradigmatic Case Recognition Chart (Figure 6.9). This chart records the dominant use of paradigmatic cases found in each of the data sets.

From this juncture the processes of comparing the resulting paradigmatic cases used in the text, against Sillars' typology² forms the second phase of the analysis. The results from this create a revised typology for identifying the conflict resolution strategies used by the groups in their e-mails.

¹ Also refer to Chapter 4, Figure 4.1 – Searle's Typology of Speech Acts

² See Appendix B

6.3 Phase 2: Sillars' Typology of Conflict Resolution Strategies

The second phase examines how the relationships between the illocutionary acts (what is stated in the text) as defined through the paradigmatic cases (how it is being stated) relate to the criteria in Sillars' conflict strategies. This is a particularly important phase in the process of analysis as it brings together the speech acts, the contexts in which they are performed and the strategies as defined by Sillars, and ultimately the resolution strategies as identified in the e-mail text.

This section begins by reviewing those aspects of Sillars' work that are most relevant to the course the second phase of the analysis takes, and builds on the processes which have taken place in Phase 1 of the Discourse Analysis. The use of the criteria defining the conflict resolution strategies in Sillars' typology is used as a template for identifying the strategies used in the e-mail text. Examples are drawn from the dialogic events and examined in terms of their correspondence between them and the definitions found in Sillars' typology. These are then examined to determine the nature and characteristics of attributions as ascribed by the interlocutors and depicted in the written dialogue.

The importance of isolating the speech acts within the dialogic events helps to determine the way the interlocutor's link, or attribute, the perceived behaviour of others as denoted by the acts contained in the illocutionary force. Sillars' typology is used as a template from which to compare and recognise the types of acts that constitute the recognition of the strategies used by the interlocutors. It is through these comparisons, that refinements are made to Sillars' typology, resulting in the identification of the types of conflict resolution strategies expressed in the written dialogue of the group's e-mail. Therefore, whereas, the speech act identifies the type of acts being carried out, Sillars' typology helps to identify the characteristics that assist in identifying the type of conflict resolution strategies in the written dialogue. Hence, the title of this

thesis: 'A *Typology of Conflict Resolution Strategies in E-mail Communication*'.

Therefore, the second phase of the analysis may be considered in three stages:

- Firstly, the examination of the correspondence between the paradigmatic cases in the dialogic events and the criteria Sillars ascribes to the strategies in his taxonomy.
- Secondly, the notion of attribution in terms of its identification in written dialogue.
- Thirdly, in accordance with Sillars, the consideration of promotion of communication exchange and the degree of orientation towards individual versus mutual goals.

As a reminder to the reader, the following section briefly outlines the main issues in Sillars' work that are directly relevant to this phase of the analysis¹.

6.3.1 Sillars' Typology: A Review

Sillars' work led him to believe that attributions (the causal explanations we give to our own or the behaviour of others), are important determiners of the definition and outcome of conflicts in interpersonal communication. In his paper, Sillars develops a theoretical approach to communication in interpersonal conflict that emphasises the role played by attributional processes. His paper states:

"According to this view communicative decisions in conflict are largely a function of social attributions about intent, causality and stability of

¹ Refer to Chapter 4, section 4.3 for a discussion of Sillars' Typology.

behaviours in conflict. Factors which bias attributions along these dimensions encourage non-cooperative conflict strategies.” (Sillars, 1980:180).

Therefore, attributions are considered by Sillars to be important for the following reasons:

Firstly, because people’s attributions in a conflict determine the types of strategies they choose to use to deal with the conflict.

Secondly, there are biases in the attribution process that discourage the use of Integrative strategies; that is, those that sustain neutral evaluations of others, increase communication and produce mutually satisfactory outcomes. In such biases there is a tendency to see others as being personally responsible for negative events, and to see oneself as merely responding to circumstances or the provocations of another. Such attributions have a tendency to be negative and increase conflict and lower the collaborative outcome.

Thirdly, the strategy chosen affects the outcome of the conflict; passive and indirect strategies seek to limit communication exchange. Distributive strategies on the other hand appear to increase the conflict and lead to less satisfactory solutions. Integrative strategies maximise information exchange and facilitate conflict resolution.

Sillars’ original typology is comprised of three general categories as shown in Figure 6.10, namely: Passive/Indirect, Distributive and Integrative. The last two categories show variables along what may be considered as two axes of communication. Both these exhibits the extent to which the strategies promote information exchange and the degree of orientation towards individual versus mutual goals. In contrast, the Passive/Indirect strategies appear to suppress or communicate about conflicts indirectly and ambiguously. The subsequent changes made to this taxonomy take into consideration the nature of the data under analysis, that is, the perception of

the text as 'virtual-interpersonal' written dialogue as opposed to an oral interpersonal exchange.

<p>I. Passive/ Indirect</p>	<p>Strategies which suppress conflicts or communicate about conflicts indirectly and ambiguously.</p>
<p>II. Distributive Designed to achieve individual goals. (low information)</p>	<p>Refer to explicit acknowledgement and discussion of conflict which promotes individual over mutual outcomes by seeking concessions, or expressing a negative evaluation of the other person.</p>
<p>III. Integrative Strategies designed to achieve mutual goals. (high information)</p>	<p>Defined as explicit discussion of conflict which does not seek to elicit concessions and sustains a neutral or positive evaluation of the other person. Integrative strategies promote information exchange, neutral or positive affect and mutual action.</p>

Figure 6.10 Three General Categories in Sillars' Typology

Sub-strategies in the taxonomy, which describe a mode of communication that is dependent upon long periods of silence between interlocutors or passive responses, are excluded from the revised typology. Thus, revisions based on what are perceived to be the 'limitations' of written dialogue especially in grounding¹ such as sequentiality, co-temporality, audibility, visibility and so on, and issues regarding time lags between messages influence the inclusions and exclusions of certain sub-categories. For example, Sillars' non-strategies (where discussion is perceived to be unnecessary) are excluded such as letting the issue resolve itself; empathic adjustment, and disregarding the issue.² For similar reasons, adjustments have also been made to other strategies in the taxonomy all of these exclusions are referred to in detail in the section 6.4.

¹ Refer to Chapter 3, section 3.2.1

² See Appendix B for Sillar's original typology

6.3.2 Sillars' Typology: Strategies in Relation to the Analysis of the Data Sets

The strategies as found in the data are described in this section. The process of locating strategies described by Sillars is carried out by making comparisons between paradigmatic cases in each of the dialogic events and assessing the correlations between these and the criteria used in Sillars' typology. This is done by comparing the type of speech acts used, the paradigmatic cases they represent, and the context in which they are expressed in each dialogic event. The resulting revisions made to the typology are shown in Figure 6.11. The following gives a detailed explanation along with examples of the changes made to Sillars' original typology.

The following is the transcription notation used in analysing the text:

- Numbers such as 3.2 is the code given to a particular section of dialogue within a dialogic event. Example: 5.8 Please check your affiliation information
- / indicate breaks that isolate the main illocutionary force of the utterance. Example: So/he did say I wasn't good enough.
- Underline a word or series of words shows emphasis that has been made to confirm or emphasise something, or express an emotion as might be used in ordinary conversation. Example: Thank you all for listening, and good night
- Words in bold lettering highlight the use of electronic paralanguage. Example: **Umm**...hi guys

STRATEGIES	Subcategory (1)	Subcategory (2)	Criteria
A. Passive Indirect	a) Indirect	1. Hinting	Indicating perceptions and feelings through indirect written comments.
		2. Joking	The problem is discussed jokingly. Actual feelings of concern or irritation are not disclosed. Problem is made to seem less serious than it really is.
	b) Submissive	3. Submissive Emotion	An emotional "display" that indicates weakness and passivity, e.g. crying or "acting" hurt or sick. Often signified in the text as apologising, and making excuses.
B. Distributive	c) Non-coercive/compliance Gaining	4. Requesting	Simply suggesting or requesting that others may change his/her behaviour. Little elaboration or disclosure.
		5. Demanding	Same as requesting, but more assertive. Negative evaluation of other team member is implied
		6. Persuading	Others are given reasons for complying. The appeal attempts to change outlook as well as behaviour.
	d) Coercive Compliance Gaining	7. Aggressive Emotion	Emotional behaviour directed against others to gain compliance; e.g. insults, slurs, profanity, yelling, anger. Some instances of this emphasized by 'flaming'
C. Integrative	e) Neutral, Evaluative, Concessionary	8. Disclosure	The group member provides and elicits information to facilitate understanding of perceptions, feelings, and reasons for behaviour. No attempt is made to explore alternative solutions to the problem. The problem may be viewed as a misunderstanding or the parties may agree to disagree. Willingness is shown to consider alternative solutions to the problem that are mutually acceptable.

Figure 6.11 Revised Typology

- *Italicised* words highlight conjunctions that have been used to connect sentences, especially the use of 'and' and 'but' Example: *but* that should be ok.
- () are used to indicate inclusions that are not present in the original transcript. Example: (I) won't be able to learn Dreamweaver until next weekend.

6.3.2.1 Examples of Passive and Indirect Strategies from the Text

Passive/Indirect strategies are described in Sillars' typology as those that seek to avoid and limit communication between participants. The Oxford Concise Dictionary defines avoidance as to 'keep away or refrain from.' Awareness of a lack of involvement may be easier to document by a person who is involved or observing the ostensive interactivity of others. Within this context it is possible to 'see' or intuit peoples 'peripheral' actions and reactions to a situation. The nature of written dialogue excludes the strategies which 'refrain' the communication from recording the actions of others for it is these actions as recorded by the speech acts used that give meaning to the type of interaction taking place between interlocutors. Therefore the revised typology as shown in Figure 6.11 begins with those strategies that can be recognised through the paradigmatic case in the written dialogue as located in the dialogic event. The indirect strategies of hinting and joking and submissive emotion were found throughout the dialogic events for all groups. The following are examples taken from the dialogic events in each of the data sets.

i Hinting

Hinting is recognised as an indication which indirectly expresses some form of discontent, intention, or the existence of a problem or an attitude that the

interlocutor cannot or does not want to express openly. Indirect strategies appear to attribute blame, dislike, or admiration either towards a situation, another person or oneself. Analysis of the text for hinting in written dialogue is shown in Figure 6.12.

Hinting: (SEG/A- TE6-DE9:3.21-3.22) Person X			
Written Dialogue Illocutionary Act	Illocutionary Act	Paradigmatic Case	Commentary
3.21 <u>And</u> since/ I am in charge of this phase, I will be compiling the document.	Rep	Statement	Used to mean 'for this period of time' I am in charge
3.22 Which means that from now on /the only person to leave <u>half-compiled documents</u> in dcsx00 will be me	Com	Intention	I will compile the document
	Com	Indirect/warning	Warning that alludes to the fact that the receiver of the e-mail has submitted a half completed document.

Figure 6.12 Example of Hinting

This particular example is expressed through illocutionary acts of representatives and commissives. X begins by stating openly that he is in charge of this phase of the project and therefore will be compiling the document (3.21). However, this statement and intention is followed by an indirect accusation, attributing the blame to Y for filing half finished documents (3.22). It is the indirect nature in which this warning is expressed that alludes to Y's misdemeanour and the attribution of blame. Other examples in this category show that the illocutionary acts may be represented by a mixture of representatives, directives, commissives and expressives. Therefore the strategy is not dominated by any particular illocutionary act. However, in terms of the paradigmatic cases blaming, warning and requests are all made in an indirect way. This lack of directness can be identified

through working through the dialogic event in order to see the dialogue in its entirety.

ii Joking

The second example from this group of strategies is joking. Joking in this context relates to masking feelings of concern or irritation to a situation or problem that is perceived as important. The following example outlines the type of written dialogue that ensues in such a case (Figure 6.13).

It exhibits a mixture of illocutionary acts, most of which are representatives and expressives. In fact a joke in its entirety could be said to be an expressive in that it denotes an amused frame of mind. In this case though it is important to realise that the situation is framed jokingly and is used to disguise the possibility of a potentially more serious situation. Z may have real concerns about retrieving the work from the broken processor (2.12-14). The delay in learning Dreamweaver may have consequences for other members' contributions at this stage of the project (2.15). To say that Z has concealed his feelings through expressing his intentions in this way is a reasonable assumption, and can be backed up by other similar examples in all data sets.

In terms of attribution, it was found that throughout the analysis of the text, when jokes were used responsibility for the situation was usually attributed to the circumstances of the situation or to oneself, rarely if ever was blame attributed to another member.

iii Submissive Emotion

Finally within this group is the sub-strategy of submissive emotion as delineated in Figure 6.14. This strategy is usually characterised by displays that indicate 'emotional characteristics such as crying, sulking or acting hurt

or sick. Essentially these are emotional acts outwardly conveyed through tears, laughter, sulking and so on. However, analysis of the data highlighted instances of these types of emotional demonstrations that could be identified within the dialogic event by the paradigmatic cases such as the use of accusatives. Also the 'voice' and the context in which the 'voice' expresses itself are important indicators in this particular strategy.

Joking: (SEG/B-TE3- DE5: 2.6 -2.17) Person Z					
Written Dialogue	Illocutionary Act	Paradigmatic Case	Commentary		
2.6 Umm .. hi guys!	Exp	Greeting Claim	NB use of 'Umm' denotes uncertainty, trepidation. This is how things are		
2.7 Good news <i>and</i> very bad news <i>and</i> some more good news.	Rep				
2.8 Good news:	Exp				
2.9 I started work on the document/ <i>and</i> all is going well.	Rep				
2.10 Very bad news: My processor blew up.	Rep				
2.11 More good news:	Rep				
2.12 It will all still be there - once I have gotten a new processor.	Rep				
2.13 Perhaps McDonalds would like to buy one(?)	Dir			Possibility	
2.14 Should be up and running again by Friday.	Com			Apology	
2.15 So sorry Andy(,) (I) won't be able to learn Dreamweaver until the weekend. <i>but</i> that should be ok!	Exp			Claim	
2.16 In all seriousness, I am very <u>distressed</u> about this occurrence, and may need council ling.	Rep				I will not be able to do this
2.17 Thank you all for <u>listening</u> , and good night.	Exp			Distressed/ Unhappy	This is how I feel about the situation. (Tongue in cheek)
		Thanking	NB 'listening' as though in conversation.		

Figure 6.13 Example of Joking

Submissive Emotion: (SEG/A-TE6-DE5: 2.19-2.27) Person Z			
Written Dialogue Illocutionary Act	Illocutionary Act	Paradigmatic case	Commentary
2.19 <u>He said</u> that too.	Rep/claim	Claim/accusation	He said I wasn't good enough
2.20 In our first practical ever (which you were in)	Rep	Claim	When it was said
2.22 <u>he said</u> that it would take 'all weekend' to do the <u>dom an on</u> MSQL but he could do it 'in half an hour',	Rep	Claim/accusation	I claim he said the following
2.23 <u>he said</u> you weren't 'technically minded' enough to analyse PHP, and	Rep/claim	Accusation	This is what he said (domain analysis) I claim he said the following about you.
2.24 <u>he said</u> , 'the legal aspects would obviously be less technical, so why don't you do them z?'	Rep/claim/report	Implied/criticism	I claim he asked me do the following
2.25 Then <u>he said</u> a few days later, 'I'd understand why you'd be a bit worried about using PHP.'	Rep/ report	Implied criticism	I am reporting that this is what he said.
2.26 And/ <u>he told</u> me in the practical this morning that he did the UML without telling me /because he 'thought it would be easier for him to do it'.	Rep/ claim	Implied criticism	I claim he told me And - as in by the way
2.27 So/ <u>he did</u> say I wasn't good enough. Several times.	Rep	Accusation	The claims I have made support what he said about me. He said it several times.

Figure 6.14 Example of Submissive Emotion

Throughout the data, re-occurring incidences of examples of excuses were found in the written dialogue. Such excuses were often used to conceal intentions for not having done something, to get out of doing something or not wanting to participate in a particular activity. Such examples were considered as submissive forms of emotion because of their intentions to hide the person's real reasons for not having done, or not wanting to carry out some task. The following example shows how 'acting hurt' and sulking is portrayed in the written dialogue.

If we take Searle's typology, then, much of the written dialogue can be read in terms of representatives. It is only by putting these into a paradigmatic case and looking at the case within the meaningful context of the dialogic event that it is possible to define the emotional context of this e-mail reply. The way in which this incident is reported, and the claims that are made, clearly show that Z is hurt by Y's accusations. 'He said that too' (2.19) and the repetition of 'he said' (2.22, 23, 24, 25) finishing with the expressive 'So he did say I wasn't good enough several times.'(2.27), expresses Zs sulky and petulant behaviour through the written dialogue. In terms of attribution, clearly Z is far from willing to acknowledge any weaknesses that Y has attributed to him and therefore Z attributes the blame to Y for the way he feels about this matter.

6.3.2.2 Examples Distributive Strategies from the Text

Distributive strategies according to Sillars' criteria exhibit explicit acknowledgement and discussion of conflict that seek some form of concession from other interlocutors. These strategies, which are included in the revised typology in Figure 6.11 (requesting, demanding, and persuading) are all considered to be non-coercive compliance gaining, whilst the last of the strategies in this section (aggressive emotion) is coercive compliance gaining.

iv. Requesting

The criteria for requesting in Sillars' typology can be interpreted in a very similar way to the illocutionary act of making a request. In the case of non-coercive compliance gaining there is no elaboration and the request is made in a straight forward way, as illustrated in Figure 6.15.

Requesting. (ACW/C-TE6-DE12:5.8)			
Written Dialogue Illocutionary Act	Illocutionary Act	Paradigmatic Case	Commentary
5.8 Please check your affiliation information.	Directive	requesting	Straight forward non-coercive request to act, i.e. to check the affiliation information.

Figure 6.15 Example of a Request

Elaboration of the request may include a reason for making the request such as "Please check your affiliation information /it needs to be correct before we can submit the document." Logically there is no necessity to give a reason; it is obvious that given the background context, information such as this would need to be correct.

What is the difference between a question and a request? 'Have you checked your affiliation information?' amounts to a direct question that requires a yes/no answer. In the above case, although the request can be interpreted indirectly as a question, it would not be appropriate to give a 'yes' or 'no', reply. The request is not for information but for action to be taken. These indirect forms of speech acts occur when the utterance indicates one sort of act but means to perform some other act. Taken out of their context, indirect speech acts can be construed to mean something else other than the goal of

the act they seek to achieve, as illustrated in this example. Thus, the referential social context framed by the dialogic event in which the exchange takes place is important for anchoring the meaning of the act conveyed in the written dialogue. In his typology, Sillars labels this strategy as being non-coercive, but the act of requesting does require the recipient of the request to comply; however, unlike demanding there appears to be no direct negative implication attached to the acts of requesting.

v. Demanding

Demanding, the second strategy in this section of the typology is considered to be more assertive and aggressive form of request. According to Sillars, it implies a negative evaluation of the team member to whom the demand is made. Figure 6.16 illustrates a case in which other team members are considered not to be 'pulling their weight.' The use of pronoun EVERYONE (4.6) implies that the accusation is targeted at the whole of the team, rather than an individual member. The use of upper case lettering normally denotes 'shouting' and therefore structural paralanguage of this e-mail implies that something stronger than a request is being made. It is followed by further emphasis on the words 'GET WORKING!' (4.10) this may also in this context be interpreted as an order. Its interpretation either as a demand or an order would still place it in the same overall Distributive stratagem. The utterances 'I demand that you 'GET WORKING' 'I order you to GET WORKING, exhibit contextually the same message, but may be indicative of the position and relationship of the sender to the rest of the group. For example, to give an effective order a person has to have real authority and be in the position to carry out sanctions if the order is not obeyed. If this is not the case, the order is of no significance. The demand, on the other hand, is expressive of a more assertive attitude and in this case depicts frustration. The frustration displayed in the written dialogue and recorded in the dialogic event would appear to be one of the few cases to support the interpretation and the match of this illocutionary act and paradigmatic case.

Demanding (SEG/A-TE5-DE3: 4.6-4.7)			
Written Dialogue Illocutionary Act	Illocutionary Act	Paradigmatic Case	Commentary
4.6 EVERYONE must put work into this	Directive	Demand/order	Use of upper case to 'shout' shows both aggression and an element of frustration.
4.7 GET WORKING!	Directive	Demand/order Demanding	Directed at the whole group.

Figure 6.16 Example of Demanding

vi Persuading

The third and final category in this section is persuading. The Oxford Concise Dictionary defines the verb 'persuade', as 'to cause to do something through reasoning or argument, or cause to believe something.' Sillars in his criteria states that reasons are given for complying, or there may be an attempt to change outlook as well as behaviour.

The example in the following Figure 6.17 shows an attempt by a team member to persuade the team into working by: a) setting out the situation (3.8), b) making comparisons with a previous piece of work (3.11), c) insulting them by implying they are not working hard enough (3.12) d) asserting how he thinks they will feel (grumpy) and using the possibility of having to work on a Friday night as a lever to persuade them, and e) using what finally appears to be an indirect threat, that is, the 'handing in of a document that 'won't come close to the top of the class' (3.12). In fact the threat alludes to a number of fundamental issues which influence the group's overall behaviour. These can be enumerated as: firstly, the intellectual integrity of the member's contributions; secondly, the importance of their individual contributions to maintaining group cohesiveness and success.

Persuading. (SEG/A-TE5-DE7:3.8-3.12)			
Written Dialogue	Illocutionary Act	Paradigmatic Case	Commentary
<p>3.8 <u>Everyone</u> - <u>We</u> have today, Wednesday, Thursday and Friday to complete a 10,000 word document with extensive diagrams.</p> <p>3.9 Currently <u>we</u> have finished functional requirements (about half the document) and 4 scraps of writing.</p> <p>3.10 There is still a <u>hell</u> of a lot of work to be done on the document.</p> <p>3.11 <u>If you</u> think proof-reading domain analysis took 6 hours, this is 6 times bigger.</p> <p>3.12 <u>If you</u> do not get you're a**** out of gear soon/ you will end up grumpy/ <i>and</i> working all Friday till midnight <i>and</i> handing in a document that won't come close to the top of the class.</p>	Exp	Address	<p>We have a lot of work to do and very little time left in which to do it.</p> <p>We haven't done much to date</p> <p>There is still a lot to do</p> <p>This is a bigger piece of work than the domain analysis.</p> <p>Insult If you do not work harder.</p> <p>This is how (I think) you will feel.</p> <p>It will be a poor piece of work</p>
	Rep	Statement	
	Rep	Claim	
	Rep/Exp	Statement	
	Rep	Claim	
	Exp	Insult	
	Rep	assertion	
	Com	threat persuading	

Figure 6.17 Example of Persuading

Most of the persuasion exhibited in this example is of an emotive nature and appeals, perhaps unwittingly, to the negative issues that will result if members do not comply. Examples of persuasion can be voiced in either a negative or positive way to gain the compliance of others. However examples of negative forms of persuasion appear to exhibit stronger coercive tendencies than positive forms of persuasion. In terms of attribution there is some ambiguity particularly in this example. The message begins by the use of the pronoun

'we' thus including him or her self as well as the other members as responsible for the work in progress. In 3.11 'we' is substituted by 'you' and the responsibility is directed at the group members. Therefore, attribution of responsibility in the use of persuasive strategies appears to be dependent on whether the persuasion is of a positive or negative nature.

vii. Aggressive Emotion

Finally, within this category there is coercive compliance gaining which is depicted by aggressive emotion. As has been shown in the above example, certain forms of negative persuasion exhibit a more coercive voice. In terms of aggressive emotion, examples of the paradigmatic case contain direct forms of insults, threats, and slurs and the liberal use of profane language. This category largely exhibits the illocutionary acts of expressives. The written dialogue itself, both in voice and the use of electronic paralanguage such as flaming helps to confirm the context of the interaction taking place between the interlocutors.

Figure 6.18 gives an example of written dialogue which expresses the anger of the 'speaker' who is upset and offended by the suggestion that he is uncooperative (4.10-11). This part of the written dialogue implicates another member of the group which suggests that sides have, or are being taken (4.12). The sender S refuses to accept what W has said about him and denies that he/she is uncooperative. The interaction ends by S challenging W's assumption through a scornful and sarcastic retort. (4.13-14).

In terms of attribution, S is seen as un-cooperative and it would seem that other members may concur with this view. The implication is that the group is more than a little circumspect as to how much S can be trusted to cooperate.

Aggressive Emotion: (SEG/A-TE4-DE12:4.10-4.14) Person S			
Written Dialogue	Illocutionary Act	Paradigmatic Case	Commentary
4.10 I'm not going to take any more of your <u>s***</u> .	Com	Refusal	Refusal to accept what W has said.
4.11 That you can tell me /that/ you doubt my cooperation/ is taking the <u>pi**</u> .	Exp	Disbelief	I cannot believe that this is what you are saying about me.
4.12 But don't worry W <u>mate.</u> / You <u>just</u> take his side/ and do all my <u>f***ing</u> work.	Exp	Challenge	Just, used as an adverb (simply) take his side.
4.13 If you need your pencils sharpening, <u>just</u> call me over.	Exp	Scorn	Used as sarcasm, conveying contempt, for W.
4.14 You might have to show how to do it first time though.	Exp	scorn	

Figure 6.18 Example of Aggressive Emotion

His lack of cooperation is perceived as a threat which may have repercussions for the group's cohesion and syntality and ultimately their success. Brett et al (1994) states that 'disliked others' tend to receive more blame whereas 'liked others' are given the benefit of the doubt.¹

6.3.2.3 Examples Integrative Strategies from the Text

The Integrative strategy is the final general strategy in the revised taxonomy. Here the dialogue sustains neutral evaluations and seeks no concessions. Information is provided to facilitate understanding and perceptions such as reasons for behaviour. Attempts are made to explore alternative solutions to problems and situations.

¹ Refer to Chapter 3, section 3.2

viii Disclosure

Figure 6.19 illustrates an example of disclosure taken from data set ACW/ C (the Academic Collaborative Writers). The written dialogue in this illustration deals with the cooperative efforts of all team members and the processes of editing individual contributions to the paper. The problem highlighted in this dialogic event emphasises the caution with which group members approach correcting the work of their peers. This situation is recognised as a potential trigger for conflict and therefore is treated with a degree of sensitivity. Changes made to other's work may be construed as interference, or criticism of style, expression, or composition.

Disclosure: (ACW/C-TE2-DE4:6.2-6.5)			
Written Dialogue	Illocutionary Act	Paradigmatic Case	Commentary
6.2 Fred illustrates an important point about 'ownership of text'.	Rep	States	While this is a
6.3 While /it is polite not to totally destroy someone else's thoughts without consideration, /we must not be afraid to work on the text.	Dir	Advice	Be considerate of others work
6.4 At some point text must become common and although I joked about butchering/	Dir	Advice	Don't let this prevent you from working on the text
6.5 it may be that we will have to change our style, wording, juggle paragraphs etc in order to deliver a pleasantly readable and coherent paper.	Dir	Advice	Group ownership Past tense; treated the situation with levity. The use of the modal verb is used to express a possibility. Thus Perhaps we will have to etc. We will have to etc.

Figure 6.19 Example of Disclosure

In this example the situation is approached through a series of carefully worded directives couched as guarded advice and presented in a circumspect way. The advice is based on concerns that have already been raised by another team member in a previous e-mail (6.2). The group is advised to approach the problem as a collaborative issue, which should be treated with the feelings of others taken into consideration (6.4-5). However, the sender of this e-mail is quite open about his attitude towards 'not being afraid to work on the text' (6.3). It is worth noting the neutral stance of this piece of advice that refers explicitly to the text, and not to a particular persons work. The sender of the message is also open about a previous joke he has made about 'butchering' (6.4) expressing the context in which the word is used. There are mutual and positive outcomes to be made from this strategy and there is room for other group members to manoeuvre and express their point of view without feeling under pressure from coercive or aggressive means, the voice is neutral and considers the situation. Therefore, the capacity is given to maximise the information exchange and facilitate further discussion.

6.4 Summary of the Changes Made to Sillars' Typology

Changes to Sillars' typology were made on the following bases, and the results are shown in the revised typology in Figure 6.11.¹ Each of the sub-categories in the main divisions of the taxonomy was examined in terms of their feasibility against the type of acts denoted by the type of Speech Acts found in the context of the dialogic events.

6.4.1 Passive and Indirect Strategies

In Sillars' original taxonomy, the sub-strategies of the Passive and Indirect Strategies under (A) were considered unworkable in terms of not being

¹ This can be compared with Sillars' original taxonomy in Appendix B.

identifiable through the text. The same problems were considered to exist with (B) Avoidance strategies. Such strategies are non-existent in this context by default, and therefore cannot feasibly be recorded from a written text. The nearest the content of an e-mail message can be said to display an avoidance strategy is when individuals either do not to reply to a message or take a long time in replying.

The study focuses essentially with what is denoted by speech acts contained in the text rather than surmising about situations, or emotions that might or might not be implied by default. However Indirect Strategies (C), particularly hinting and joking, can be identified in the dialogic events and are included in the revisions apart from 'Setting an example' in (7) as this is perceived as an expectation to observe and imitate a behaviour or act, and therefore realistically cannot be verified through the use of written dialogue. Such actions are essentially ostensive and observable; the meaning attached to them is not readily translatable from the text. Within Sillars' original taxonomy, Submissive Strategies (D) such as 'Yielding' (9) (i.e. passively complying) was excluded for similar reasons to those mentioned above. However, 'Submissive emotion' (10) was included as the e-mails in many of the dialogic events reveal emotional displays many of which exhibit themselves as excuses for not wanting to do something or taking part in, or apologies for not having completed work.

6.4.2 Distributive strategies

In the Distributive Strategies, Sillars makes the categories more clear cut and identification within the text is easier. For example in Non-coercive/Compliance gaining (E), 'Requesting', 'Demanding' and 'Persuading' are all clear illocutionary acts whose context can be ring-fenced by the dialogic event in the revised typology. Coercive Compliance gaining (F), such as the 'Aggressive emotion' and 'Threat aversion', can be recognised through the illocutionary force denoted by acts of being insulting, rude or offensive and

through the use of threatening language. These two categories have been combined in the revised typology because they can be closely associated with the type of language that expresses a state of mind such as anger or sorrow.

6.4.3 Integrative Strategies

The integrative strategies have to be treated with more circumspection as essentially disclosure has to be recognised as actions that facilitate understanding and may appear to be neutral. In the e-mail messages used in these strategies, one would expect to find the sort of speech acts that express neutrality, understanding and conciliation. Both disclosure and problem solving are combined in this strategy because they both elicit and facilitate information exchange, and it is difficult for them to be perceived as separate concepts in terms of the e-mail text.

Summary

A number of important aspects central to understanding the direction of this study emerge from the processes and the methods used. As is shown in Figure 6.1 the analysis of the data is carried out in two stages. The data is arranged into thematic episodes; and the dialogic events used as units of written dialogue between group members. Sorting and classifying the data in this way allows the text to be arranged as a conversation between interlocutors placing it into contexts that reflects what is happening. The analysis of the written dialogue and the identification of the speech acts in the 43 dialogic events, allows comparisons between the acts identified in the data and the criteria used in Sillars' typology to be made. Throughout this process revisions are made to the typology. These revisions lead to criteria for identifying the conflict resolution strategies used in the groups' e-mail

communication, the results of which can be used to reflect the conflict resolution strategy profiles used by the groups throughout the projects life span. The outcomes and subsequent interpretations of the above issues, and their prominence for supporting a typology of conflict resolution strategies in e-mail are discussed in more detail in the next chapter.

Chapter 7

Interpretation and Synthesis

The aim of this chapter is to situate the main concepts and ideas in each of the different stages of the analysis and present the relevant findings and interpretations; thereby bringing the various themes of the research together as a unified whole.

Section 7.1 overviews the empirical research. It reiterates the importance of the thematic episodes and the dialogic events and emphasises the distinctive character of the typology for the interpretation of conflict resolution strategies in written dialogue, and reiterates its importance in relation to the part it plays in the recognition of these strategies.

Section 7.2 presents the data as tables and charts which show the distribution of the illocutionary acts and strategies used throughout the duration of each of the projects. Their significance is discussed in relation to research as a whole.

Section 7.3 appraises and evaluates the overall methodological approach and the methods used; in particular, it assesses the reliability and consistency of the approach to the data analysis as a template for the classification of speech act and conflict resolution strategies.

7.1 Overview of the Empirical Research

As stated earlier, this is a qualitative piece of research which uses discourse analysis as a method for analysing the e-mail text. This is approached from the perspective of pragmatics and allows the language used in the e-mails analysed through the use of speech acts. The identification of the speech acts situated in the context of the e-mail messages allow comparisons to be made between the type of events described in Sillars' criteria of conflict resolution strategies, and those that occur in the dialogic events. These epistemological concepts provide the theoretical basis through which speech acts and attribution theory are discussed in Chapter 4; thus forming the basis for the empirical research as described in Chapters 5 and 6.

In these two chapters, the thematic episode and the dialogic event are explained as providing important platforms for organising and placing the contents of data into context. The process of defining the thematic episodes enables the nature and content of a series of events, taking place over a period of time, to be understood and classified into broad themes. The dialogic events, on the other hand, allow the text to be viewed as a component of written dialogue (conversation). Dialogic events also formulate the units of text that are used to locate the occurrences of the illocutionary acts (speech acts) and paradigmatic cases. By putting the acts into specific contexts as shown in 6.2.2., it is possible to draw comparisons with the type of acts that denote attributions leading to the types of conflict resolution strategies in the e-mail communication.

This research therefore focuses on the way language in the context of e-mail communication is capable of demonstrating the use of conflict resolution strategies. Examples of these strategies are illustrated in the revised typology and the profiles for each group records the way the strategies are used throughout each projects' duration. These processes have been described in detail Chapter 6. The overall procedural steps and analytical methods are given in Figure 6.1. In Stage 1 of the analysis, after the data has been sorted,

the e-mail dialogue is then classified, and thematic episodes and dialogic events identified. This enables a transition into Phase 1 of the second stage of the analysis by enabling Searle's typology to be applied through the identification of the illocutionary acts and accompanying paradigmatic cases. In this way, the language used in the text can be analysed with regard to specific meaning contexts. The Text Analysis Sheet in Figure 6.7 provides a good illustration of the outcome of this process showing how the written e-mail dialogue can be coded and then analysed by using Searle's typology of speech acts.

Once these procedures have been carried out, the scene is set for the analysis of the text using Sillars' revised typology as delineated in Phase 2 of Stage 2 in Figure 6.1. This typology is depicted in Figure 6.11 and is used as a template for identifying the conflict resolution strategies found in e-mail text. As can be seen from the various examples given in Chapter 6 in section 6.3.2¹, Searle's speech acts provide the 'building blocks' through which to identify the various strategies within each dialogic event.

This research uses the same three broad examples of conflict resolution strategies found in Sillars' typology namely: Passive/Indirect, Distributive, and Integrative. However, various sub-strategies were amended based on the results of the Text Analysis Sheets. This makes the typology more amenable to an asynchronous e-mail environment². As such, the changes made are important and add value to the research because they stress the characteristics of the type of strategies that can be recognised in e-mail communication as opposed to face-to-face. Further to this and as emphasised previously, the profiles depict the conflict resolution strategies for each of the groups.

¹ See Figure 6.12 through to Figure 6.19.

² See Chapter 6, section 6.4 for a discussion related to these changes.

7.2 Data Cluster Interpretations

Appendix J demonstrates the types and range of tables and charts that can be used to complement this qualitative research. Mason (2002:169) in her study into 'Qualitative Researching' states that diagrams and charts:

"... can help you to spot connections or relationships in your data which are difficult to see when data are in ...a text-based format."

The various tables and charts in Appendix J have been developed with this view in mind. Whereas the analysis in Chapter 6 presents a 'micro-analysis' of the methods used, the data clusters described here 'raise' the analysis on to a higher level of discussion and interpretation.

For example, Data Cluster 1 shows the distribution of illocutionary acts for each of the data sets, being the summary data at the end of Phase 1 of Stage 2. This gives an idea of the pattern and distribution of the type of Speech Acts used by the groups. There may be several comparisons that can be made with this sort of analysis but to give two examples: (i) there is a high occurrence of the use of Directives¹ for all data sets. This would suggest a high degree of use of advice, commands, orders and requests within a project environment, (ii) there is a higher use of expressives in group ACW/C. This supports the notion that this group had a more open form of communication using a preponderance of congratulatory and supportive comments².

Data Clusters 2 to 9 in Appendix J relate to Sillars' conflict resolution strategies as delineated in Phase 2 of Stage 2 of the empirical research. They represent the cumulative totals of the instances of specific strategies identified in the e-mail text. Appendix K provides three examples of what

¹ Giving a grand total of 445 in Table 1 of Appendix J.

² See the two examples of Expressives (Praising and Thanking) for ACW/C in Chapter 6, Section 6.2.2.

counts as an 'instance' for each of the three general strategies. Example 1 shows an instance of an Indirect Strategy for SEG/B which occurs as part of Dialogic Event 2. This instance is one of the 'counts' in Data Cluster 3 adding up to a total of 35 instances for the Indirect Strategy. Similarly, Example 2 shows an instance for a Distributive Strategy and Example 3 shows an instance of an Integrative Strategy within specific dialogical events. These too become part of the total count found in the various data clusters.

The tables and charts presented in these data clusters are examples of the kind of analysis that can be carried out with this type of research; it is important to emphasise, however, that a finer analysis of the various sub-strategies¹ could be undertaken (such as Hinting or Joking categories) if this was deemed to be a useful line of enquiry by the researcher.

Data Clusters 2 to 4 provide an overview for the three broad strategies (Indirect, Distributive and Integrative) for SEG/A, SEG/B and ACW/C. Chart 1 for each group shows how the patterns of these strategies vary over time through each of the thematic episodes; Chart 2 in each case gives the cumulative totals for these strategies. The Data Cluster 5 gives a useful comparison of the three data sets both in instance totals and in percentage terms.

The first distinctive feature is the relatively low use of Indirect Strategies used by all groups as depicted in Chart 2 in Data Clusters 2 to 4 and by the percentage instances (Chart 1) in Data Cluster 5. Generally speaking, there appears to be a commitment to keep the 'airing' of personal problems in e-mails to a minimum in order to make progress in the various projects. However, SEG/A members were the most 'vocal' in their e-mail communication by making excuses concerning personal illness, pressure of work and faulty computer equipment. This accounts for their relatively higher score of 25% in Chart 1 in Data Cluster 5. This also can be related to the

¹ See Figure 6.11 in Chapter 6.

example given in Chapter 6¹ of the sub-strategy 'submissive emotion' used by Person Z concerning pressure of work issues.

The second highest category of conflict resolution strategies is the Distributive type as illustrated by Chart 1 in Data Cluster 5. In percentage terms, SEG/A has the highest instance count at 42% with ACW/C with the lowest count at 36%. This is an important strategy to discuss because it can bring about direct conflict between other members of a group as portrayed by the type of e-mail communication in use.

The written dialogue found in distributive strategies ranges from assertive to aggressive and mirrors to a large extent the two sub-categories (non-coercive/compliance gaining and coercive compliance gaining) as outlined in Sillars' typology, Figure 6.11, Appendix B. The coercive compliance gaining strategies relied heavily on directives, the sort of speech acts, for example, that make demands, use requests or persuasion. Throughout the dialogic events these speech acts can be found to be used in two dominant contexts. The first example situates their use in contexts that emphasise task related issues. The second are situated in contexts that centre on personal issues. Therefore, in e-mail the way in which a request is made, or an order given is significant to the meaning given to it, and will influence the attributions and the responses that are made.

Distributive coercive compliance gaining strategies that exhibit emotionally directed personal behaviour, make disagreements in e-mail more difficult to resolve. They increase the likelihood of reciprocal aggressive language and create negative changes in perceptions and attitudes. This would seem to endorse Friedman and Currall's (2003) work which contributes some of the causes of the escalation of conflict to attributions that make the other person seem unfair and unreasonable. On the other hand the task orientated, non-coercive compliance gaining strategies appear in most cases to be more

¹ See Figure 6.4.

tolerant and rarely spill over into more personal and aggressive acts. It might be conjectured that this type of distributive strategy takes a more measured view, developing the communication by anticipating future interactions and thereby reducing uncertainty.

A good example of coercive compliance gaining is shown in the segment of e-mail in Figure 6.18 where Person S from SEG/A is not only using profanities to express his 'Aggressive Emotion' but also making it a personal attack. The problem with this type of e-mail communication is that the situation can escalate out of control. Each member of the group is then exposed to 'aggressive actions' whereby perceptions and attitudes towards each other are changed in a negative way. The attribution of 'blame' becomes dominant amongst the interlocutors and this can spread to other members in the group.

As a consequence of this e-mail, there followed several replies (with copies sent to the whole group) re-affirming the original blame attribution with further 'evidence' of alleged incompetence by S. For example, Person L replied shortly afterwards in a sarcastic tone:

... me and D are the ONLY people to put our documents correctly on dcs0000. You want to take charge - fine go ahead. I'll lay back, do what I'm told and watch what happens.

(SEG/A-TE4-DE12:42)

This example shows how more blame can be attributed to the 'disliked other' and, as a consequence, negative attitudes can reduce empathy and increase alienation. Once this perceptual transformation has taken place it can become 'locked in' owing to biases in perceptions and attributions that make people see only evidence that reinforces their negative views of the other and attribute perceived bad actions to dispositional rather than situational causes. This aggressive form of exchange of information increases conflict and heightens emotional disclosure whilst reducing the exchange of information.

These contrasting types of e-mail communication (from assertive to aggressive) can be demonstrated by viewing the non-coercive/coercive distributive strategy analysis in Appendix J. These can be assessed separately for each group in relation to the thematic episodes (Data Clusters 6 to 8) or as a means of comparison between the three data sets as illustrated in Chart 1, Data Cluster 9. This type of analysis shows up distinct profile differences between the groups; for example, the percentage instances in Data Cluster 9 shows a predominant use of non-coercive communication for data sets SEG/B (89%) and ACW/C (80%) compared with SEG/A (41%); or alternatively, SEG/A can be seen to use more coercive distributive strategies as depicted by the 59% total in Data Table 2.. This type of broader analysis enables the researcher to make more sense of the e-mail messages described in Chapter 6 and brings to the discussion further confirmation as to the dynamic nature of each group. It would seem from this analysis that both SEG/B and ACW/C are more goal-orientated and there is less member-to-member friction compared with SEG/A. Although there may be gender issues with regard to the use of language and the more aggressive communication of SEG/A, (a predominantly male group); the analysis is not able to account for gender differences in the use of language, therefore these differences are not reflected in the profiles.

Finally in this section, is a discussion of the integrative strategies used by the three groups. Chart 1 and Data Table 2 in Data Cluster 5 shows that the use of this type of strategy was used predominantly for both SEG/B and ACW/C. The reading of 48% for both these groups contrasts with the lower figure of 33% for SEG/A. These findings enhance the discussion concerning the more goal-orientated behaviour of both these groups compared with SEG/A.

It can be seen, especially for SEG/B and ACW/C, that the use of these strategies appears not only to facilitate conflict resolution but also are more resistant to conflict and its exacerbation. It relies more on open, positive and neutral evaluations of others, and exchanges which do not seek concessions; it also encourages mutual gains between the interlocutors. Such transactions

are more mature and considered, and appear to encourage outcomes that are positive and mutual. Thus, attributions of blame are not directed at the other person as already demonstrated for SEG/A. The information exchange is maximised and clear statements of the perceived situation is made. A good example of this is shown in Chapter 6 for Sillars' Disclosure category for the data set ACW/C.¹

From the above discussion, it become clear why the use of Sillars' Integrative Strategies (a) reduce conflict, (b) increase information exchange, (c) maintain mutual and positive outcomes, and (d) sustain neutral attributions amongst members. These types of strategies can also be linked with the use of Searle's illocutionary acts especially the expressives. As pointed out for Data Cluster 1, there is a higher use of expressives in group ACW/C supporting the notion that this group had a more open form of communication using a preponderance of congratulatory and supportive comments. This is also born out in the Paradigmatic Case Recognition Chart (Figure 6.9) where the paradigmatic cases of 'Congratulating, Praising and Thanking' are recorded for ACW/C compared with 'Blaming, Accusing and Apologising' for SEG/A.

7.3 Appraisal of Methods

The use of speech acts to analyse and categorise e-mail is not novel. Speech acts have been used to classify the intent of the sender (Cohen, 1996); and to classify e-mail to ascertain the types of acts they contain (Cohen 2004 et al, Carvelho et al, 2005). Speech acts have also been related to e-mail and workflow tracking (Weigant et al, 2003), and as discussed earlier in this thesis to explore the use of human communication and the speech acts to create tools for coordinating group activities, 'the language-action perspective' (Winograd, 1987). To interpret the use of speech acts in the corpora of e-mail, to analyse

¹ See Section 6.3.2.3 and Figure 6.19.

the speech acts in relation to a known typology of conflict resolution strategies, and to obtain the profile of strategies used by each of the individual groups, adds an important dimension to understanding the character of e-mail conflict. The analysis also provides a picture of the types of strategies used throughout, and in the various phases of the projects. Furthermore the findings give an indication as to how the use of certain strategies may influence the direction of conflicts.

Discourse analysis is the methodology of preference by treating e-mail text as written dialogue which can be isolated and identified through specific coded units of discourse. The preliminary steps of reduction, segmentation and classification of text in Stage 1 provide the basis for the analysis in Stage 2 as represented by the two phases depicted in Figure 6.1. Phase 1 identifies Searle's speech acts in the written utterances of the e-mail text; Phase 2 makes a comparative analysis between characteristics found in the written dialogue as described in Sillars' revised typology (Figure 6.11).

The methodology and the methods used in this study are evaluated in terms of: (i) the dependability and capacity of the choice of data to disclose the information that is being sought (ii) the reliability of the methods used to analyse the data, and (iii) the accuracy and quality of the interpretations made. Because this study is a piece of qualitative research, the use of the word 'reliability' is preferred rather than 'validity' because, according to Silverman (2000:91), "*... validity is usually posed in terms of what constitutes a credible claim to truth*" which is usually associated with positivistic areas of research. Reliability, on the other hand, can be more readily related to qualitative types of studies where both methods and findings can be repeated and hopefully replicated by other qualitative researchers.

The question to be asked is whether the type of data used, and the methods of analysis and interpretations made, are capable of reliably reflecting the meanings and actions of the users of e-mail communication; and whether these reflections represent an honest and accurate portrayal of the speech

acts and conflict resolution strategies contained within this type of asynchronous communication. In so doing, it charts the processes, and justifies the steps taken in explaining how the data has been used and woven together to achieve the final interpretations.

The essential character of this study was initiated through the linkage of a number of pervading ideas. The first was the perceived dichotomy that exists between the interpersonal interactions that take place in computer-mediated forms of communication (i.e. e-mail), compared with non-mediated communication (face-to-face). Both of these communication environments are open to disagreements and disputes, however, the literature¹ suggests that e-mail makes such disputes more difficult to handle, hence conflict is more likely to escalate.

The projects undertaken by the groups have a clearly defined start and finish, therefore, the e-mail data generated by the groups could be regarded as self-contained units of naturally occurring text shaped by and reflecting the character and events taking place in each of the groups. From a researcher's perspective, this presented a large amount of data to sift through. For example, for the Software Engineering Groups, there was in excess of a 1,000 pages of e-mail text from the 17 groups. Even after the original data was sorted and reduced for the two data sets (SEG/A, and SEG/B) in Stage 1², the total number of e-mails sorted and analysed numbered 342.

The data sorting procedures of this study is not just regarded as a process of eliminating irrelevant tracks of text; there is still the fundamental requirement to maintain the integrity of the remaining data as a reliable and true representation of the group's communication. Therefore, for all 3 data sets, the need for sensitivity and critical awareness is required in reducing, segmenting and classifying the data so that the original content does not

¹ See Chapter 3, Section 3.2.1.

² See Chapter 6, Figure 6.1.

become distorted by the choices and selections made from the data. The thematic episodes derived from the process of data segmentation represent such a selection and are the representative units of text that comprise the main events of related activities in each of the projects. As such they are important for situating the episodes sequentially as parts of each project's life cycle. Similarly, the dialogic events were identified as discrete units of written dialogue each of which is formulated by the 'utterances' of the interlocutors as recorded in the written dialogue. These coded events are used as the units of analysis which allow the recognition of the different types of speech acts. In this way, the thematic episodes, dialogic events and the utterances themselves become the units of discourse within the overall methodology of discourse analysis.

This means that the analysis of the data never takes place in isolation of an overall context nor is the text divorced from the contexts of the events it records. This complies with the overall approach to pragmatics by Levinson (2003:14) in that language, as identified by the 'conversation' (i.e. the written dialogue in e-mail), is not divorced from the naturally occurring text. This approach is partaken by 'speech act (or interactional) theorists' as opposed to the 'text grammarians' who view discourse as the study of a series of sentences without the subject matter being related to a specific context.

The analysis allows for the data to be coded in such a way that, if necessary, examples can be cross-referenced with other examples that occur throughout the data. This approach to ordering the data not only makes it more manageable but allows the researcher to remain cognisant of the events in the each of the episodes. There is also the process of 'self-correction' whenever the researcher senses that perhaps certain events have not been coded correctly. This has already been mentioned in Chapter 6¹ with regard to the connecting arrow between the Paradigmatic Case on the Text Analysis Sheets and the Paradigmatic Case Recognition Chart (Figure 6.6). To give an

¹ See Section 6.2.2.

example, the utterance as coded in 3.4 of the Text Analysis Sheet¹ could be construed to be a 'Demand'; however, in reviewing this paradigmatic case within this context, it has been recorded as 'Advice'.

The comparisons of findings in Phase 2² of the Discourse Analysis are critical to the correct identification of Sillars' conflict resolution strategies used within the e-mail text. In making these comparisons and drawing appropriate conclusions, there may be a degree of subjectivity as the emphasis moves from text analysis to how the analysis of the actions denoted by the speech acts relates to the Sillars' revised typology in Figure 6.11. However, notwithstanding this, the processes involved are generally considered to be reliable because it is possible to recognise people's goals by distinguishing what speech acts they are performing and, as such, brings to this qualitative research a level of objectivity. Levinson (2003:21) reminds us that the study of language within the field of pragmatics involves understanding aspects of meaning that are essentially concerned with 'inferences' made from the meaning-contexts of the dialogue under study.

This pragmatics approach, therefore, and the methods used in this study have attempted to be open and transparent in their presentation, and true to the interpretation of data throughout the processes of analysis. In this way, the findings are considered to be both reliable and consistent and, therefore, it is conjectured that the overall methodology is both rigorous and robust. The data treatment has been comprehensive. The overall aim of this study set out to answer the central question as to whether conflict resolution strategies can be found in e-mail text and whether a typology of strategies can be created. This has been achieved, and it is hoped that the methods and processes used, demonstrate a degree of consistency and analytical accuracy that allows any subjective interpretations of the data to be seen as one of commonsense under the auspices of qualitative research.

¹ See Figure 6.7.

² See Figure 6.1.

What then is the nature of this conflict and how might it be recognised and recorded in e-mail communication? Within the methodological framework of discourse analysis, Searle's general category of speech acts and Sillars' revised typology are both used in order to 'make sense' of conflict within a distributed group environment. In this way, the Text Analysis Sheet¹ used in Phase 1 shows how the various utterances are coded according to Searle's speech acts, and the resulting paradigmatic cases are recorded as a way of discussing the possible causes of inter-personal frictions and conflict at a micro-level of analysis. This approach then moves to Phase 2 where Sillars' revised typology is used to identify the broader conflict resolution strategies. This centres upon various strategies that can be used by groups to 'manage' conflict as the project progresses to its final outcome. From this discussion, it can be seen that the empirical data has been used in such a way as to bring about various results and conclusions about the nature of conflict. It is argued that:

- a. The data and subsequent analysis enables the speech acts in each of the dialogic events to be categorised according to the context in which they are situated.
- b. It has enabled the conflict strategies whose characteristics accord with the typology of conflict resolutions to be classified according to the use of speech acts in the text.
- c. From both of the above profiles of the conflict resolution strategies used by the groups can be recorded.

As a result the conflict resolution strategies used by distributed project groups indicate that where groups have a shared understanding (Hinds et al, 2003) behaviours have a tendency to be more predictable and conflict amongst members is reduced. The two contrasting profiles of SEG/A and ACW/C highlight this, where on the one hand, the distributive and coercive strategies used by SEG/A encourage attributions of blame and reduce understanding,

¹ See Chapter 6, Figure 6.7.

and on the other, where the Integrative strategies of ACW encourage information seeking and more conciliatory attitudes. Although the distributive category highlights aggressive language as one of the triggers for conflict, it is not just the use of aggressive language per se. Disputes as recorded in the profiles are far more likely to occur when strategies are coercive and compliance gaining than when they are non-coercive and compliance gaining. Examples from the data also tend to support perceptual changes in how we perceive others according to their actions and reactions, and how in written dialogue it is easier to misattribute and create uncertainty. Incidents of misattribution can also create misunderstanding leading to disputes.

Examples of such strategies, as depicted in the typology, may encourage further future research into how they can be used in distributive project work to encourage cooperation and productivity, and to identify the constructive use of strategies and to avoid those strategies that exacerbate conflict.

Summary

This chapter puts forward various discussions associated with evaluating the overall approach and the methods used in the research. The overview of the research given in Section 7.1 provided the basis for further analysis and interpretation by evaluating the various data clusters illustrated in Appendix J. Various analyses were carried out highlighting the contrasting data totals between data sets, illocutionary acts and the conflict resolution strategies. The ensuing discussions enabled more sense to be made of the data and provided a synthesis at a 'macro-level' of analysis by which the results could be compared with the finer data analysis in Chapter 6.

The final section on the appraisal of methods presented a critical discussion of the methodology and the various methods used. In particular, the reliability of the research data within a qualitative research framework was discussed.

The overall conclusion that the data analysis and the research findings are both reliable and consistent supports the view that the overall methodology is both rigorous and robust. This type of discussion is continued in the final chapter where the value of the whole research and its contribution to knowledge is presented.

Chapter 8

Conclusions

“... every sentence we speak, even lowly assertions such as “the sky is blue” change the state of affairs in the world by creating duties and expectations.”
(Flores, 1998:353)

This chapter sets out to establish clearly what this research has shown and its relevance to the central question raised in Chapter 1: Can conflict resolution strategies, similar to those found in interpersonal conflict, be found in intermediated forms of communication such as e-mail and can these strategies can be identified in the text? It outlines what the research has achieved and the contributions it makes to our understanding of the nature of e-mail conflict, and its influence in the wider professional debates.

The overall aim of this thesis stemming from the research question is: to identify the communication features inherent in e-mail which reflects the use of conflict resolution strategies contained within the dialogue of the e-mail messages for each of the project groups. The basis for the study has been developed from theory, empirical observations and the concepts arising from the methods used to analyse the data. An overview of the processes involved in achieving this aim is illustrated in Figure 1.1.

The overall research findings are discussed in Section 8.1 this is followed in Section 8.2 where these findings are related to the CMC and CSCW literature. Finally, the discussion ends in Section 8.3 where the overall worth of the thesis is discussed including recommendations for research in the future.

8.1 Research Findings

This discussion relates primarily to Chapter 6 and 7 by making sense of the empirical research in terms of the various outcomes arising as a consequence of applying the procedural steps and analytical methods (as depicted in Figure 6.1) and by assessing the value of empirical study in the way it contributes to knowledge in the research area.

One of the first discussion points is to emphasise how the revised Sillars typology contributes to the CMC research area in the way in which it can identify conflict resolution strategies within a project group e-mail environment. The study demonstrates that it is possible to adapt Sillars' original taxonomy and apply it to the 'none face-to-face', asynchronous environment of e-mail. Overall, the three broad conflict strategies of Passive/Indirect, Distributive and Integrative are shown to be present in the e-mail text; however, various sub-strategies were changed accordingly in Chapter 6.¹ In particular, categories that could only be recognised with direct face-to-face discussion were eliminated, such as (2) Empathic Adjustment and (7) Setting an Example, as these types of communication rely on ostensive observations of a non-verbal nature. Other categories are subsumed such as (14) Aggressive Emotion and (15) Threat Aversion because they can be more readily recognised through Sillars' use of illocutionary acts of insults, being rude, and through the use of threatening language.

The revisions made to Sillars' typology as delineated in Figure 6.11 are considered to be important examples of conflict resolution strategies based on the corpus of e-mails and thereby reflect the types of conflict found in e-mail communication. It is hoped that the revised typology can be used by fellow researchers as the basis of an important tool for making sense of the type of conflict found in e-mail, for identifying the possible 'flash points' of disputes, and for understanding more readily the strategies used by project

¹ Refer to Appendix B and Figure 6.11, and the discussion in Section 6.4.

groups when they are dealing with conflict. This understanding can occur on both a micro and macro-level. The research shows the processes used for identifying Searle's speech acts in the written dialogue of the e-mail text. The categorisation of these acts which are contingent with, and reflect the strategies in Sillars' typology show up in the revised categories, for example (4) Requesting (5) Demanding and (6) Persuading. These can be identified as illocutionary acts in the examples given in Chapter 6.¹

At a higher analysis level, these illocutionary events can be examined in terms of the dialogic events and where they belong within the range of conflict resolution strategies not just in relation to the broad strategies (Indirect, Distributive and Integrative) but with the sub-categories as shown in Figure 6.11. In this way, Searle's speech acts can be seen as the 'building blocks' by which the meaning-context in e-mails can be examined and classified within Sillars' revised typology.

Another area of discussion which adds value to the research are the actual results of applying Sillars' revised typology to the three data sets – SEG/A, SEG/B and ACW/C. Chapter 7 provides a useful summary especially with regard to the Data Cluster analysis in association with Appendix J. Several meaningful relationships from the data have already been shown but, what is more important here is to evaluate the findings on a broader academic basis. The main conclusion to be made is that the application of the research shows that there are three distinct and different profiles for the three data sets.

What is the most interesting here is the Distributive Strategy type, as this provides an important insight into the nature of direct conflict within project groups. Of the three data sets, SEG/A has shown more propensity towards conflict in the tone and delivery of the various e-mails; this compares with the other two groups who were much more open and communicative with one another. Although the use of Distributive Strategies tend to promote individual rather than mutual outcomes, not all of these strategies are considered to

¹ See Figures 6.15, 6.16 and 6.17.

have negative outcomes; they can be either non-coercive or coercive with the former associated with compliance gaining and the latter being associated with aggressive emotion.

Data Cluster 9¹ provides a good summary of the level of coercion for the three groups with SEG/A scoring a relatively high 59% compared with the other two data sets or, alternatively, scoring low on the non-coercive Distributive types. This sort of analysis is very useful for evaluating the outcome of the group dynamics especially where conflict threatens the progress and quality of the project. Further, the analysis provides support and confirmation for the dispute flashpoints found in the e-mail text and this area of research is considered to be a worthwhile endeavour that can be applied to other research contexts in the future.

8.2 Relating the Research to the Literature

This research relates primarily to the field of study of Computer-Mediated Communication as delineated in Chapters 2 and 3 where two contrasting views are discussed between face-to-face and asynchronous electronic communication. Several themes in the literature pertaining to the asynchronous and epistolary nature of e-mail emphasise aspects of communication that highlight its limitations and drawbacks. They stress the lean and socially impoverished nature of a medium lacking in the social cues that regulate and control the interpersonal aspects of communication.

Daft and Lengel (1984) for example, consider the 'reduced bandwidth' of e-mail as the leanest form of communication compared with the rich communication environment of face-to-face where inter-personal communication takes place in environments that allow actions to be seen, utterances to be heard, and spatial relations to be observed. When any of

¹ See Appendix J

these cues are missing a different emphasis is placed on the communication and the character of the message.

The implications of this discussion is that reduced cues restrict individuals from 'grounding' their communications; there are limitations for feedback which can bring about a lowering of self-awareness (Short et al, 1976) and a greater sense of anonymity (Diener et al, 1976). These sorts of views have a tendency to emphasise the unfavourable traits of human behaviour in electronic communication. For example, Seigal et al (1986) state that the depersonalised nature of CMC can create an environment of hostility where the users resort to the excessive use of aggressive and profane language. This shows up in the research findings in Section 8.1 concerning the coercive nature of some of the e-mails sent by SEG/A; but whether this is to do with the leanness of the medium or the nature of the group dynamics requires further debate.

It would seem from the discussion so far that e-mail, being regarded as a lean form of communication in terms of the medium used, is generally regarded as more susceptible misunderstandings and disputes. Although the outcome of this research would appear to support this premise, the profiles also reveal long phases where for example integrative strategies dominate. Researchers such as (Boland, 1991; Yates and Orlikowski, 1992; Lee, 1994), regard e-mail as being a rich form of communication per se, regardless of the medium being used. This school of thought centres upon the notion that e-mail 'discussion' and accompanying documentation can induce rich forms of dialogue with other members in the electronic loop. It is argued that the e-mail text used in this thesis is material which exhibits rich forms of dialogue. However rich forms of dialogues do not necessarily preclude it from misunderstandings taking place between senders and receivers. However the written dialogue has created a rich and diverse corpus of material in which to apply both Searle's speech acts and Sillars' typology

Computer-Mediated Communication has therefore provided the overall framework in which this typology and resulting profiles have been developed. However, Computer Supported Cooperative Work (CSCW) is also relevant for this study, as shown in Chapter 2, by providing an important backdrop for understanding some of the problems of group cooperation and the facilitation of work in distributed environments. Winograd and Flores (1986) use of speech acts in this field is particularly salient. Their method is approached from the study of language within pragmatics based on studies of nursing work in a hospital ward. Although this primarily was used for developing aspects of software that contribute to group interaction and cooperative processes within CSCW, it also contributes and complements the research carried out in CMC field by allowing further insights to be made into the way people communicate in electronic environments and by allowing the communication processes to be modelled.

The discussion so far has centred on the literature providing a background and being supportive of the empirical research undertaken in this thesis. Primarily the research is within the CMC umbrella but there are links with other disciplines such as CSCW and the more wider discussions associated with group pathologies and cohesiveness (e.g: Cattell, 1948; Wolfe and Box, 1988). The typology as depicted in Figure 6.11 has been influenced by the literature, but the analytical methods used have developed and shaped it.

The task of sorting through over a thousand pages of e-mail and categorising them into the thematic episodes and dialogic events was a lengthy and repetitive task. Its rewards allowed a breadth and depth of insight into the written communications, the social interactions, and the specific meaning contexts exhibited in the e-mail messages. Sorting and reducing the data in this way provided sound foundations for the further stages of analyses. The working knowledge of the text derived from these processes was both helpful and insightful for understanding how Searle's speech acts might be used and categorised in the data to locate and recognise the examples of conflict resolution strategies. As well as relating the literature to the research, the

consequences of revising the typology and the resulting profiles is that the findings can be related to the existing literature. In Section 8.1, the discussion ends by emphasising the Distributive Strategy as a means of understanding conflict within groups especially in relation to the non-coercive – coercive continuum. There has been several examples given, both in the e-mail sample texts and in the Data Cluster Analysis¹, which provide an insight into the nature of conflict within and between the research groups.

The research shows that SEG/A has more ‘counts’ of coercive type behaviour compared with the other two groups² and it is this type of analysis that can be added to the research debate. For example, Holt (1986) links the dysfunctional aspects of groups as to how well they perform certain activities and engage in ‘coordination efforts’. Friedman and Currall (2003) emphasise the properties of the ‘reviewability’ and ‘reviseability’ of e-mail in that there can be ‘excess attention’ given to the content of e-mail which can create a hostile vehicle for disputes. They also present the Dispute Exacerbation Model of E-mail (DEMI) as a means of expressing and researching into the structural properties of e-mail communication and the impact these properties have on conflict processes.

In contrast to the discussion on conflict, the research findings shows that the more cohesive groups (such as ACW/C) are able to concentrate more on the co-operative Integrative strategies in pursuing project goals. This shows up in the relatively high count of this type of strategy in Data Cluster 5 compared with SEG/A, and also complements the analysis in Data Cluster 9 where ACW/C use a greater number of non-coercive strategies. Walther (1994) points out that the nature of the relational intimacy and composure of the communication within asynchronous communication has a bearing on processes and outcomes. For example, if someone in a distributive group is perceived as being a co-operating member then Integrative Strategies are more likely to be chosen and attributions tend to purport self blame rather

¹ See Chapter 7, Section 7.2 and Appendix J.

² See Appendix J, Data Cluster 9.

than blaming others. In turn, such strategies further influence the cohesiveness of the group and, to use Sillars' parlance, members are more likely to achieve 'mutual over self' goals rather than the 'self over mutual' ones as found in the Distributive Strategies.

8.3 Research Perspectives

There is evidence throughout the thesis to demonstrate that this research has a contribution to make to the ways in which conflict is perceived and understood in asynchronous e-mail communication. The overall aim of 'identifying the communication features inherent in e-mail which reflect the use of conflict resolution strategies within project groups' has been demonstrated through the examples of strategies found in the text through the processes of analysis. These strategies have been recorded in profiles which reflect the changes and use of strategies by the individual groups throughout the life cycle of each project.

The research findings in Section 8.1 emphasise how the research has successfully adapted Sillar's original 'face-to-face' taxonomy to a project-based e-mail environment. The discussion also regards the revised Sillars' typology as an important 'tool' which can be used by fellow researchers in evaluating the types of conflict found in e-mail project settings. At a higher of analysis, the Data Cluster Analysis shows that the three data sets have different profiles and it is possible to identify which groups are more susceptible to carrying out coercive Distributive type of strategies as opposed to achieving project goals of an Integrative type. Further, it is argued that the typology provides a means of assessing the nature and characteristics of the types of communication in e-mail that might create flash-points for conflict, or escalate conflict, or make it more difficult to control.

In relating the research to the literature in Section 8.2, the discussion highlights how the research complements other theoretical and empirical studies such as the nature of conflict within groups that use other forms of computer-mediated communication. Although e-mail can be considered a lean form of communication the range of research literature presents a rich source of perspectives from which to consider the requirements for a typology that categorises and shows examples of conflict resolution strategies found in e-mail communication.

These claims to knowledge must be considered in relation to the consistency of the research methods as demonstrated in Chapter 7¹. The researcher has made every attempt to be consistent in the analysis and classification of the research data. This has been achieved by the process of cross-referencing and self-correction in the classification of the data, ranging from the specific utterances and illocutionary acts in the e-mail text, to the higher classifications of thematic episodes and dialogic events. This resulted in the examples of conflict resolution strategies derived from the analysis of the text. Despite the attempt to be thorough and consistent in the approach taken, there are always limitations of this type of research particularly within a qualitative framework. There can be no claims of 'validity' in the same way as used by positivist researchers in proving or disproving hypotheses; however, it is possible for the objectivity of the research to be enhanced by fellow researchers in the field using a similar approach in different e-mail contexts.

One possible shortcoming that could be levelled at the research is the sample size of three data sets. In the case of the SEGs two data sets seems small compared with the total population of 17 groups. However, overall this must be measured against the work undertaken in the extensive preparation of the data, as described in Chapter 6. E-mail messages also vary in length and complexity of content and have to be organised into broad episodes that bring together the phases in the projects life cycle. These episodes are broken down

¹ See Section 7.3.

further into events that contain the written dialogue. It is this dialogue that brings all the elements of the analytical processes together.

In total, 500 e-mails were analysed from the two SEG groups and the ACW data set. According to Potter and Wetherall (1987), sample size is not necessarily a significant issue when using discourse analysis as most of the emphasis is placed on the way language is used in the sample data.

The use of qualitative research may reveal certain drawbacks in its methods of analysis and interpretation. However, this is the same with all forms of research as it is not possible for data to be captured or incorporated into a complete and universal picture of all the channels of interactions between people. Even human interactions captured on video or recorded through observational participation are only representative of a sample of a much bigger picture, and therefore open to a range of interpretations. Similarly, the use of naturally occurring text is subject to preferences and choices of approach and methods.

Every endeavour has been made to ensure that the data analysis and results are both consistent and reliable within the practices and methods of qualitative research. In support of the consistency argument, the authenticity of the research is also re-enforced by choosing two types of e-mail projects, namely: the development of software by SEG students from a leading university and the writing of a conference paper by the ACW lecturers distributed throughout European universities. The structure and nature of the projects differed in both context and style. However, it was possible to draw upon the criteria of Sillars' typology and apply it to both of them. This presented a rich picture of inter-related and relevant events and contexts, from which the characteristics of conflict resolution strategies in the data could be evaluated, as well as providing a good foundation with which to assess the consistency and objectivity of the research.

Finally, what are the future implications for this research? It is hoped that the typology and the resulting profiles will be useful to other fields of research related to communication technologies and establish opportunities to assess the outcomes of this study. This not only relates to the empirical research but also the evaluation of the theoretical concepts that underpin the methods and the analysis: namely speech act and attribution theory. This research shows the importance these theories may have for helping to understand the nature and character of conflict in scenarios and environments relevant to the use and development of communication technologies.

The beginning of this thesis highlighted the links and reciprocal contributions between Computer Science and other disciplines and the sharing of ideas and useful theoretical concepts. Therefore, the research should, from a broad perspective, help to enhance the adoption of best practices and highlight problems in the use of certain styles of written messages that can impede shared understanding and progress in distributed groups.

The research identifies and profiles which types of conflict strategies have been used by the various groups. The question as to whether members in the three data sets were aware that they were using these strategies might have been an avenue for further exploration in the original study, but this field of enquiry must be for other researchers to pursue. The importance of this research in studying conflict patterns within e-mail environments can be undertaken in the future not only for academia within Computer-Mediated Communication but also, hopefully, for project managers and other practitioners in adapting and developing the typology into an appropriate methodology. As Friedman clearly states:

".... as reliance on electronic forms of communication in our society increases researchers who study conflict resolution and negation will devote more and more of their attention to studying this form of communication." (2003:1326)

Appendix A

Examples of the use of electronic paralanguage (emoticons) from the data

1. OK. Keep up the good spirit! Looks great so far!
:-) (smiley)
2. Talking about the design work for this audience is **extreeeeeeeeemly** ok.
3. Hey, it begins to look like a design paper!!!
4. Great job, **Finlaaaaaaaaaand ! :-)**
5. and here comes the academy awards talk... ;)
6. After reading them, we'll go back and read our paper again. **(hmmm. wow!)**
7. It is going to be difficult to put together 9 styles of thinking and writing, but we will try!!! it will be worth it.
8. In short, it is a brand new IT thing and we really need more of those ;-)
9. Ok, this email became too long! :)

Appendix B

Sillars' Typology of Conflict Resolution Strategies

Strategies		Criteria	
1 Passive Indirect Strategies Strategies that minimize explicit acknowledgement of communication about conflicts. Suppress, ignore, or communicate indirectly or ambiguously	A Non-strategies Discussion is perceived to be unnecessary	1 Self Resolution	Letting the issues resolve themselves. The problem either disappears or is expected to without any active attempt to resolve it.
		2 Empathic Adjustment	Understanding develops and the problem is resolved without explicit attempts to communicate
		3 Disregarding the Issues	The problem is dismissed as unimportant
	B Avoidance Strategies Discussion is avoided to minimize negative reactions	4 Avoiding the Issue	The problem is tolerated to avoid negative reactions from the partner
		5 Avoiding the Person	Person is avoided, communication is minimized or the relationship is terminated to avoid conflict.
		C Indirect Strategies Indirect communication, there is no explicit acknowledgement that a problem exists	6 Hinting
	7 Setting an Example		The partner is expected to observe and imitate the actor's own behaviour.
	8 Joking		The problem is discussed jokingly. The actor does not disclose actual feelings of concern or irritation. The problem is made to seem less serious than the actor perceives it to be.
	D Submissive Strategies	9 Yielding	Passively complying without providing input to the solution of the problem.
		10 Submissive Emotion	An emotional display which indicates weakness and passivity, such as crying, or acting hurt or sick.
2 Distributive Strategies Explicit acknowledgement and discussion of conflict.	E Non-coercive/ compliance gaining	11 Requesting	Simply suggested or requested that the partner change his or her behaviour, there is little elaboration or disclosure
		12 Demanding	Same as requesting except that the request is assertive. A negative evaluation of the partner is stated or implied.
		13 Persuading	The partner is given reason for complying. The appeal attempts to change outlook as well as behaviour
	F Coercive compliance gaining	14 Aggressive Emotion	Emotional behaviour is directed against the partner to gain compliance
		15 Threat Aversion	Emotional behaviour is directed against the partner, e.g., insults, slurs, profanities, yelling (<i>flaming</i>), anger.
3 Integrative Strategies Discussion that sustains a neutral evaluation, does not seek concessions	G Neutral Evaluation	16 Disclosure	The actor provides and elicits information to facilitate understanding of perceptions, feelings and reasons for behaviour. No attempt is made to explore alternative solutions to the problem.
		17 Problem Solving	Same as disclosure, except that the actor shows a willingness to consider alternative solutions to the problem that are mutually acceptable.

APPENDIX C

Project Brief

Department of Computer Science University of *****

SEG Project 2003/4

***** Electronic Photographic Database

A repository is required to store electronic photographs of *****. The repository will be developed in MySQL and run on the ITS machines. The system requires very secure access for specific groups. These groups include colleges, societies and SEG students. Some photographs will require permission for use from the owners. The owners will be Durham students and staff. Owners can authorise access to all or some of their photographs.

Photographs within the repository need to be authorised for inclusion within the database and each photograph is restricted to a maximum file size of 1MB. All photographs must be suitable for inclusion on a web page and include a description that satisfies the WC3 guidelines for accessibility. Photographs should be available in monochrome and/or colour and have associated with them information about the photographer, photographic settings and camera details.

Desirable functionality includes the ability to search the picture descriptions and / or information and access rights based on a free text search criteria. Pictures resulting from a match should be ordered on the closeness of their fit. The repository administrator also desires reporting features so that unpopular photographs can be removed and photographers can be complemented on their popular works. This message of congratulations may also include a request for additional photographs to be submitted. The administrator has heard that thumbnails may be useful.

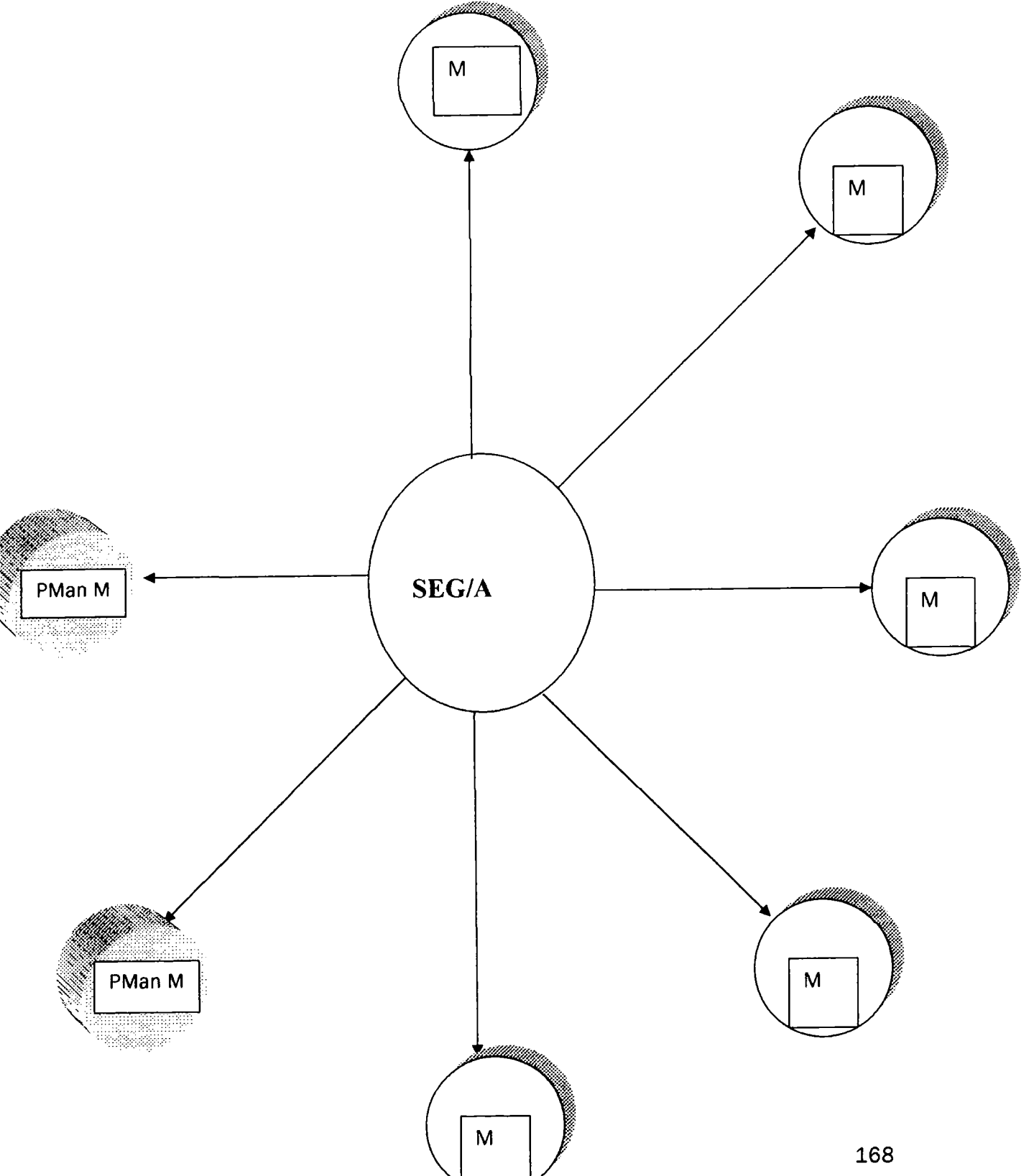
Advertising features for the tool may help promote the photographers and gain popularity for the use of the tool. This may include an automatically generated web page of newly added pictures.

APPENDIX D

Group Size and Characteristics

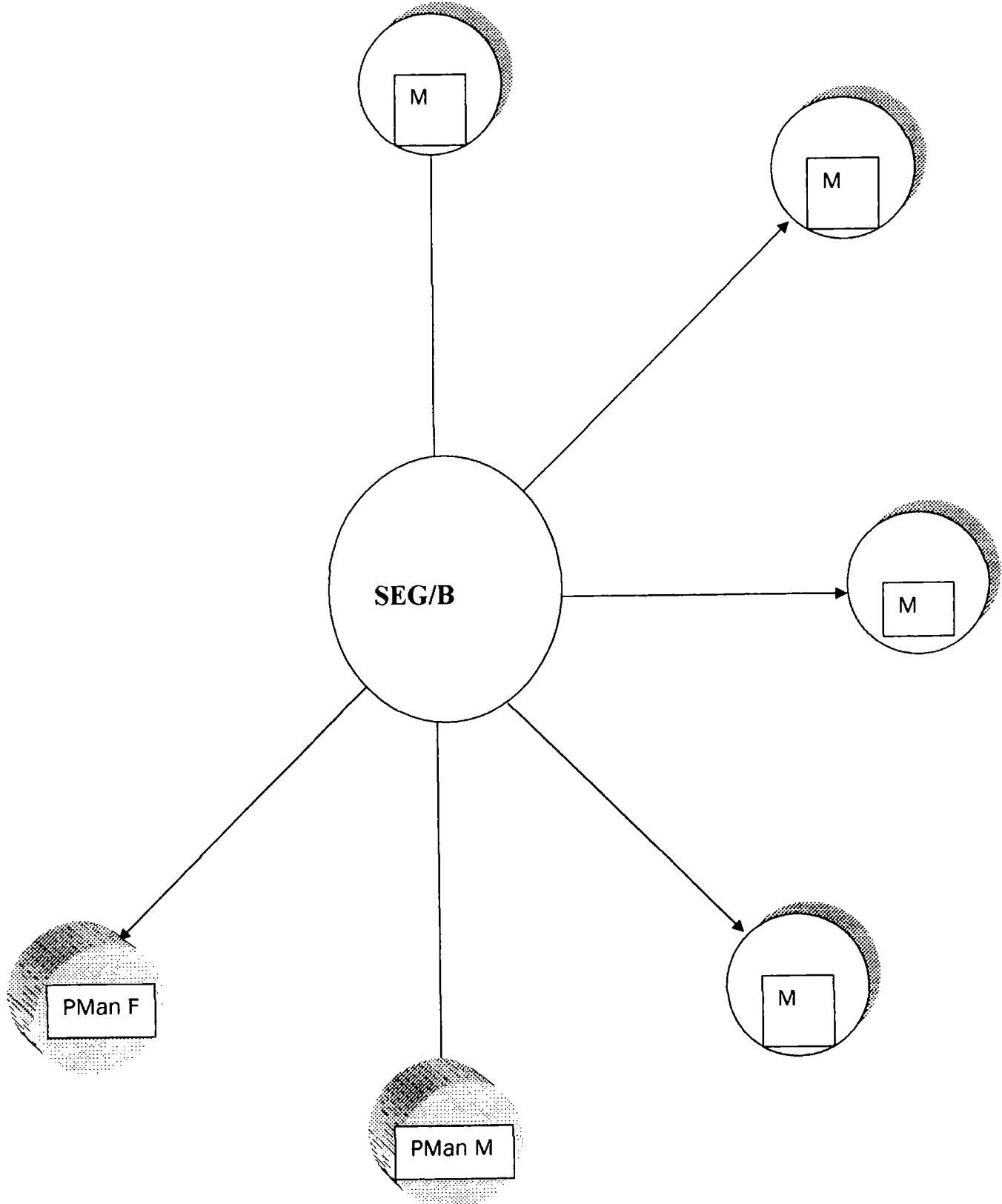
(SEG /A)

Software Engineering Group A	Project Man	2	No in Group	7	M/F ratio:	M:7
	Members	5	Data Set	A		F:0



Group Size and Characteristics (SEG/B)

Software Engineering Group B	Project Man	2	No in Group	6	M/F ratio:	M: 5
	Members	4	Data Set	B		F: 1



Appendix E

Examples of Unsorted E-mail Data

Software Engineering Group (SEG)

Received: (from majordom@localhost)
by hermes.XXX.ac.uk (8.11.7-20030928/8.11.8) id
hA69Fkr28255;
Thu, 11 Nov 2003 15:00:34 GMT

Date: Tue, 11 Nov 2003 15:00:34 +0000
From: To: cs-seg8@XXX.ac.uk
Subject: Team Roles

Name	Technical Role	Management Role
E.G	Requirements Leader	Chairman
I.M	Design Leader	Team Worker
G.D	Implementation Leader	Plant
J.L	Testing Leader	Monitor-Evaluator
B.R	Marketing Leader	Investigator

Date: Tue, 11 Nov 2003 16:00:47 +0000
From:
To: cs-seg8@XXX.ac.uk
Subject: tasks division

^O division of work - Fred
^O chairing meetings (this may change for different project
phases) ^O
Everyone/project managers
^O good group relations - J
^O liaising with the client - A
^O co-ordinating production of new documentation - G
^O maintaining existing documentation - Emir
^O dealing with specific technical / managerial problems - E
^O software engineering decisions - G
^O interfaces between modules ^O G/I
^O designing tests sequences - J
^O implementation of design method - I
^O version control ^O I

any ideas for some more? Anybody? Please ^A

Date: Thu, 13 Nov 2003 14:23:52 +0000
From:
To: cs-seg8@XXX.ac.uk, cs-seg9@XXX.ac.uk
Subject: Tutorial presentation

Hi, im just e-mailing around to see if everyone in the lgst tutorial for week 6 has decided on a partner already and which topic they have decided to do their presentation on. Could everyone e-mail me with their pairings and topics (if you have them) and I will forward the list onto everyone else.

Anyone who doesnt give me a pair or a preferred topic by 5:15 tomorrow will be allocated a random partner and topic.

Turing machine
register machine
post system
markov algorithm
cellular automaton
lambda calculus

Date: Fri, 14 Nov 2003 17:02:47 +0000
From: To: cs-seg8 <cs-seg8@XXX.ac.uk>
Subject: Weekend Work

Please research the following things over the weekend

Functional Req.		J
UML	A	
Ext. Interface Req.		I
Performance/Design Req.		G
Full Requirement List for the program to be produced	E	

Date: Mon, 24 Nov 2003 11:12:56 +0000
From: To: cs-seg8 <cs-seg8@XXX.ac.uk>
Subject: Meeting

Hey guys,

Just to let you know I wont be able to come to the meeting today, I have to go see my college master at 1 so wouldn't be able to make it on time.

Cheers,
E

Academic Collaborative Writers (ACW)

Date: 11 Jun 13:00:37 +0000

To:

From:

Cc:

Subject: all together now

Great!!

I think this is going to be a lot of fun... Who's ordering the pizza's??

Anyway.

It is a great idea to have a working prototype of our satelite roaming around the conference (I think roving pet was the word...

let's do it :-)

-now I really have to start working.

M

>
> Dear all!
>
> here we are. Everyone wrote back, wanting to join in. excellent!
>
> We haven't yet decided on what exactly we want to do for DIS -
please
> if you have ideas on that, contribute. Otherwise, just comment
on
> other people's ideas.
>
> I think we have enough to make this into a proper paper - for
DIS that
> means between 6 and 12 pages. With illustrations, easy.
Remember, they
> are doing a full-colour book publication!
>
> the topic we belong to (in my opinion) is
> - Designing interaction between people with computer
intermediaries
>
>
> Now, as for presentation at the conference.
>
> Posters are good, if they are made well. I think we can do that
- have
> our visual material speaking for itself.
> Something concrete would also be great. I wonder what happened
to the

> things we built there? have they been recycled already, heating
a
> local pizza oven? If a miracle happened, we could have a
functioning
> (if maybe limited in mobility) prototype of the satellite: sound
one
> way, video image the other way.
>
> I have attached here the word document with some ideas for the
paper -
> please comment, give your own ideas, etc. On Friday we will have
form
> a conclusion about what we will do and have some kind of an
outline
> about what will be in the paper.
>
> From then on you can take the role of being a commentator and
also, if
> you like, writer (and change between these roles as long as you
> deliver what you promise on time). It is going to be difficult
to put
> together
> 9 styles of thinking and writing, but we will try!!! it will be
worth
> it.
>
> K
>
> PS. the next paper we write will be about this kind of
distributed
> writing process... I am only joking of course!

APPENDIX F

Documentation Sample for Approval of Use of E-mails for the SEG Groups

FORM EC2
(revised October 2002)

ETHICS ADVISORY COMMITTEE

APPLICATION FORM FOR RESEARCH ETHICS APPROVAL OF WORK WITH HUMAN PARTICIPANTS

Introduction:

All University work with human volunteers must be assessed for ethics approval, whether it is in teaching, undergraduate or taught postgraduate project work or research. Applications should normally be submitted two months before the intended project start date.

Normally, Departmental Ethics Committees consider applications from undergraduates and taught postgraduates and from academic staff for teaching projects. Ethics approval for research projects, by research postgraduates or staff must be sought from either the University Ethics Advisory Committee or an NHS Local or Multi-Centre Research Ethics Committee.

3. PRINCIPAL INVESTIGATOR

Sally Rossin

10. TITLE OF PHD PROJECT:

The Expression of Conflict in Computer Mediated Communication

15. DESIGN OF STUDY and METHODOLOGY, in brief:

This is a qualitative study. Discourse Analysis is the method used for analysing the data.

17. PARTICIPANTS:

(a) Who are they (eg students, colleagues,...)?

Software Engineering Students

(b) If students: course, year, size of groups, % of students involved

Software Engineering, Year 2 (some year 3) 78 students = 17 groups. 4 groups of 4 = 16 students = 21% of the total group.

(c) How many participants are involved?

16

(d) Selection (eg age, sex)?

N/A

(e) How are the participants to be recruited?

Random choice of groups, written consent of students involved.

(h) How are the participants to be involved in the study?

Through the analysis of their group emails

18. TESTS – QUESTIONNAIRES/OTHER

Data which has already been collected by the department and for which the department has already obtained the consent of participating students.

32. CONFIDENTIALITY

(a) Please indicate what steps will be taken to safeguard the anonymity and confidentiality of the participant's records, and confirm that the requirements of the Data Protection Acts will be complied with.

A meeting with Elizabeth *** has clarified and dealt with aspects of safeguarding the anonymity of the students involved. The study is also of the nature where the names and identifications of students will be eliminated from the data before it is analysed, and nowhere in the study will the names or personal details of the students be used. not be used in the results

(b) If you are intending to make tape recordings or video recordings of participants please answer the following questions:

(i) Will tape or video recordings and any written transcriptions from these be destroyed at the end of the project? **NO**

(ii) If NO, what further use do you intend to make of the recordings and what arrangements will be made for their secure storage?

None. Video recordings belong to the Dept of Computer Science. Consent has already been given by students to the department for video recordings of their meeting to be used for further study and analysis.

(iii) Will consent be requested for this future use? **NO**
If your response is "no", please give reasons:

I have no intention of using any of the data in the above form for future use.

33. PROJECT DURATION

(i) When do you hope to commence the project?

This part of the project began October 2003. but I require access to student's emails to complete the analysis phase.

Appendix G

Example of the Type of Data Excluded from the E-mail Text during the Reduction Process

From XXXXX Tue Jul 6 13:13:45 2004
Received: via tmail-2002(14) for dcs8s00+; Thu, 6 Nov 2003
09:17:22 +0000 (GMT)
Received: from hermes.XXX.ac.uk (hermes.XXX.ac.uk [129.234.4.9])
by pluto2.XXX.ac.uk (8.12.8/8.11.7) with ESMTTP id
hA69Fk1q004830
for <dcs8s00@neptune.XXX.ac.uk>; Thu, 6 Nov 2003 09:15:46
GMT
Received: (from majordom@localhost)
by hermes.XXX.ac.uk (8.11.7-20030923/8.11.7) id
hA69Fkr28155;
Thu, 6 Nov 2003 09:15:46 GMT
Received: from mailrelay3.XXX.ac.uk (mailrelay3.XXX.ac.uk
[129.234.4.177])
by hermes.XXX.ac.uk (8.11.7-20030923/8.11.7) with ESMTTP id
hA69Fff28145
for <cs-seg11+XXX.ac.uk@hermes.XXX.ac.uk>; Thu, 6 Nov 2003
09:15:41 GMT

From: "XXX" <XXX@XXX.ac.uk>
To: <cs-seg11@XXX.ac.uk>
Subject: link
Date: Thu, 6 Nov 2003 09:15:33 -0000
MIME-Version: 1.0
Content-Type: multipart/alternative;
boundary="-----_NextPart_000_000C_01C3A446.88E8CCD0"
X-Mailer: Microsoft Office Outlook, Build 11.0.5510
X-MimeOLE: Produced By Microsoft MimeOLE V6.00.2800.1165
Thread-Index: AcOkRogCW4rEoja9RLSdCJ4SLoYLsg==
Message-Id: <20031106091533.9678124FB02@XXXX.nildram.co.uk>
X-DurhamAcUk-MailScanner: Found to be clean
X-MailScanner: Found to be clean
Sender: owner-cs-seg11@XXX.ac.uk
Precedence: bulk

.....

</style>

</head>

<body lang=EN-GB link=blue vlink=purple>

<div class=Section1>

<p class=MsoNormal>Here’s a link to the work so far as requested by Nic<o:p></o:p></p>

<p class=MsoNormal><o:p> </o:p></p>

<p class=MsoNormal>http://www.dur.ac.uk/t.e.spencer/Domain%20Analysis%20-%20TSnew.doc<o:p></o:p></p>

<p class=MsoNormal><o:p> </o:p></p>

<p class=MsoNormal>Tom<o:p></o:p></p>

<p class=MsoNormal><o:p> </o:p></p>

<p class=MsoNormal><o:p> </o:p></p>

<p class=MsoNormal><o:p> </o:p></p>

</div>

</body>

</html>

Appendix H

Number of E-mails in each Dialogic Event

SEG/A			SEG/B			ACW/C		
TE1	DE1	8	TE1	DE1	9	TE1	DE1	10
	DE2	6		DE2	12			
	DE3	9						
TE2	DE4	12	TE2	DE2	5	TE2	DE3	15
	DE5	13		DE3	12		DE4	18
	DE6	16						
	DE7	20						
TE3	DE8	9	TE3	DE4	9	TE3	DE5	11
	DE9	26		DE5	16		DE6	14
TE4	DE10	19	TE4	DE6	14	TE4	DE7	16
	DE11	16		DE7	17		DE8	10
	DE12	10						
TE5	DE13	9	TE5	DE8	13	TE5	DE9	13
							DE10	9
							DE11	10
TE6	DE14	9	TE6	DE9	14	TE6	DE12	12
	DE15	8		DE10	16		DE13	8
				DE11	9			
TE7	DE16	6	TE7	DE12	12			
Thematic Episodes 7	Dialogic Events 16	Total e-mails 196	Thematic Episodes 7	Dialogic Events 12	Total e-mails 146	Thematic Episodes 6	Dialogic Events 13	Total e-mails 158

Appendix I

An Example of part of a Collection Grid for the Academic Collaborative Writers Group

Thematic Episode 4, Dialogic Event 7

ACW/C-TE4-DE7					
DE3	REP	DIR	COM	EXP	DEC
2.48		■			
2.49				■	
2.50				■	
2.51				■	
2.52		■		■	
2.53	■				
2.54		■			
2.56		■			
2.57				■	
2.58				■	
2.59					■
2.60				■	
2.61	■				
2.62	■				
2.63					■
2.64				■	
2.65		■			
2.66				■	
2.67				■	
2.68				■	
END					

Appendix J

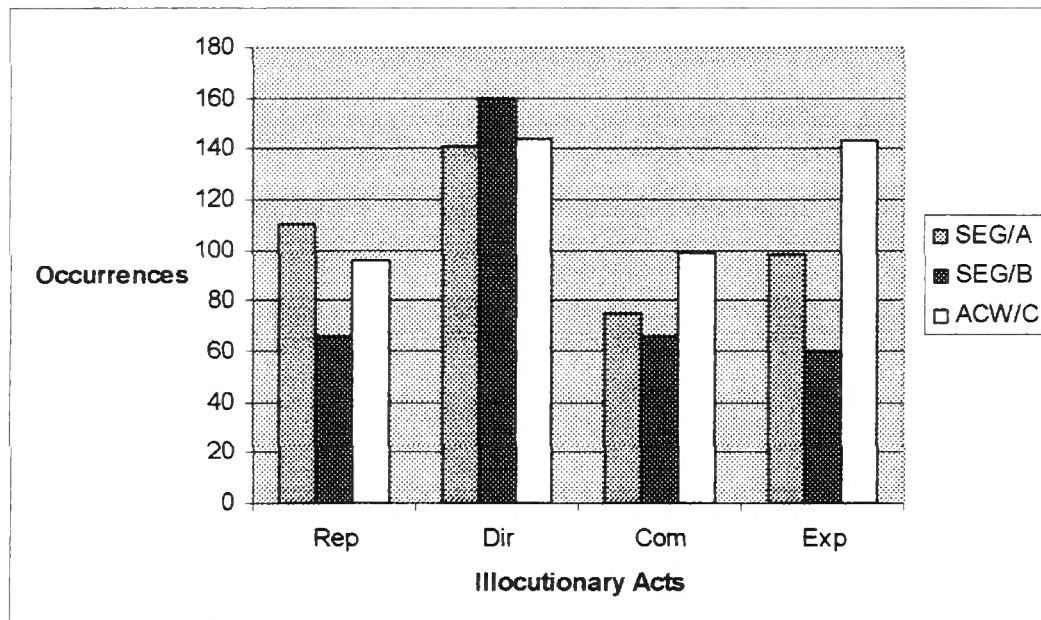
Data Clusters: Illocutionary Acts and Strategies

Data Cluster 1: Illocutionary Acts Distribution for each Data Set

Data Table 1: Occurrences

	Rep	Dir	Com	Exp
SEG/A	110	141	75	98
SEG/B	66	160	66	60
ACW/C	96	144	99	143
Totals	272	445	240	301

Chart 1: Distribution and use of Illocutionary Acts



Data Cluster 2:
SEG/A

Data Table 1: Instances of Strategies

	TE1	TE2	TE3	TE4	TE5	TE6	TE7	Totals
Indirect	8	11	9	7	12	9	2	58
Distributive	20	23	13	20	11	7	3	97
Integrative	17	15	12	16	8	6	4	78

Chart 1: Distribution of General Strategies throughout the Thematic Episodes

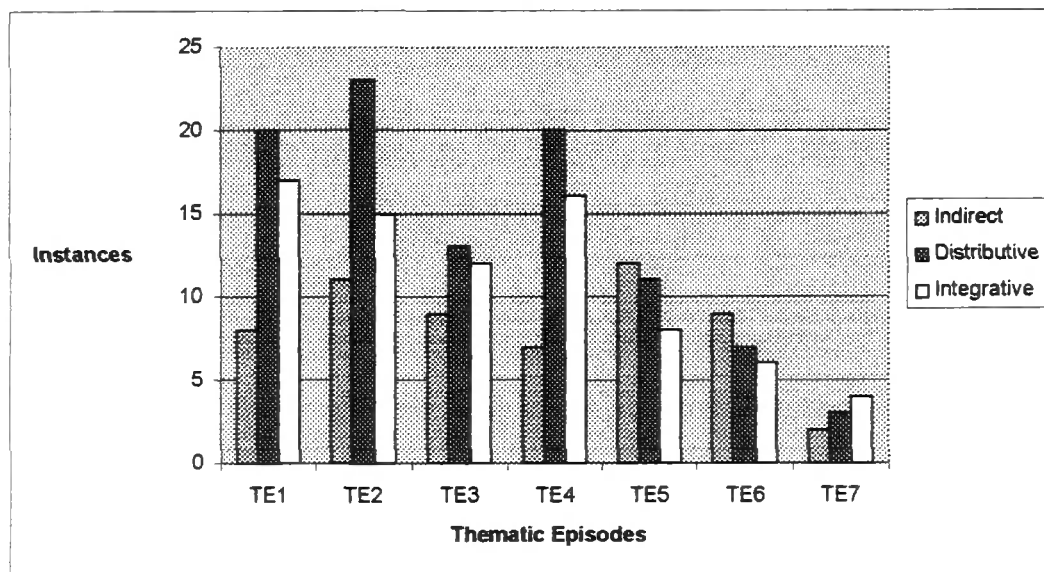
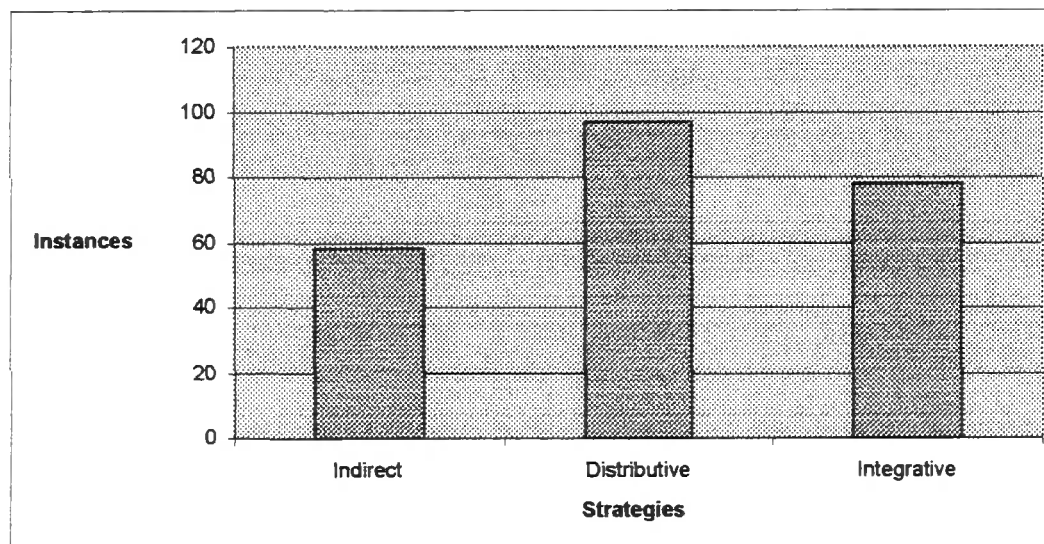


Chart 2: Totals



Data Cluster 3:
SEG/B

Data Table 1: Instances of Strategies

	TE1	TE2	TE3	TE4	TE5	TE6	TE7	Total
Indirect	1	8	3	4	6	9	4	35
Distributive	2	17	15	9	18	14	15	90
Integrative	7	23	20	20	18	16	10	114

Chart 1: Distribution of General Strategies throughout the Thematic Episodes

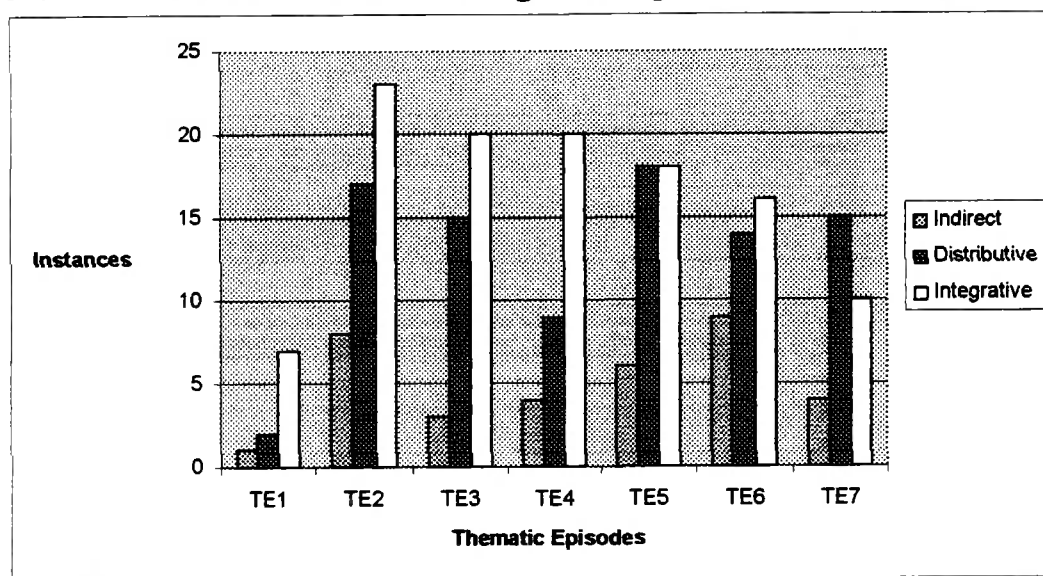
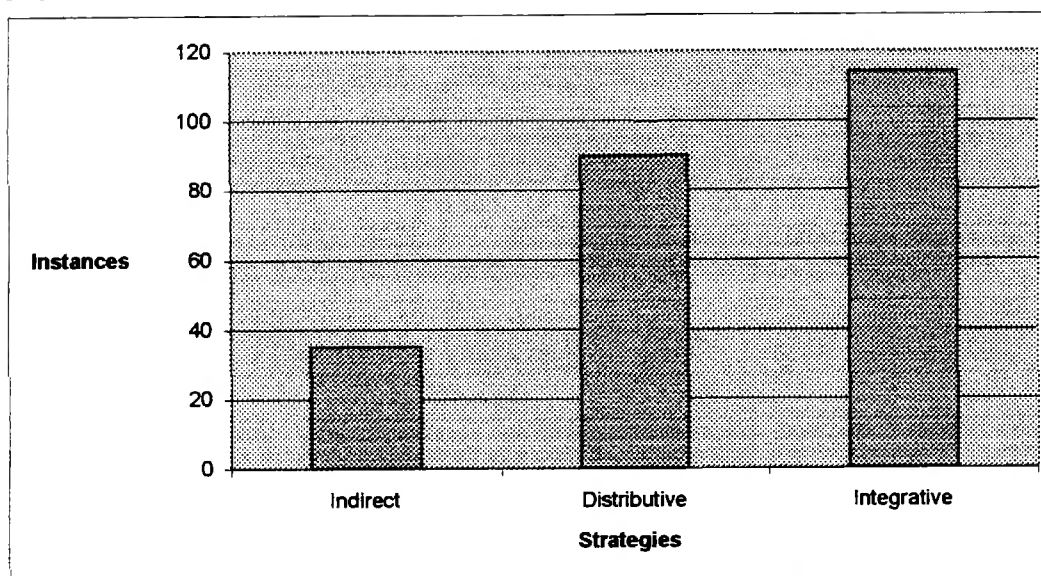


Chart 2: Totals



Data Cluster 4:
ACW/C

Data Table 1: Instances of Strategies

	TE1	TE2	TE3	TE4	TE5	TE6	Totals
Indirect	10	7	14	7	11	2	51
Distributive	17	21	24	27	17	13	119
Integrative	19	24	28	28	30	30	159

Chart 1: Distribution of General Strategies throughout the Thematic Episodes

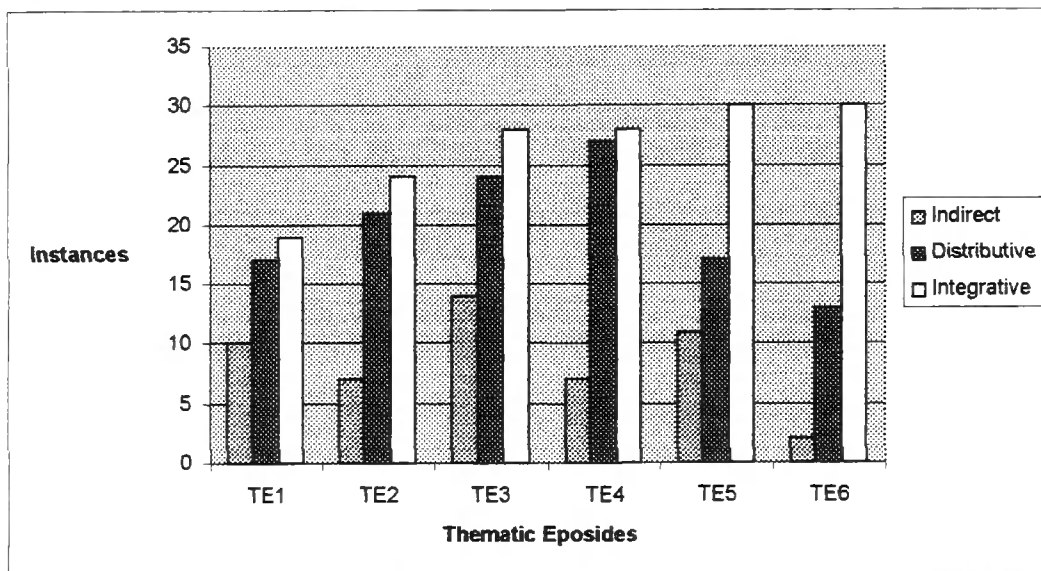
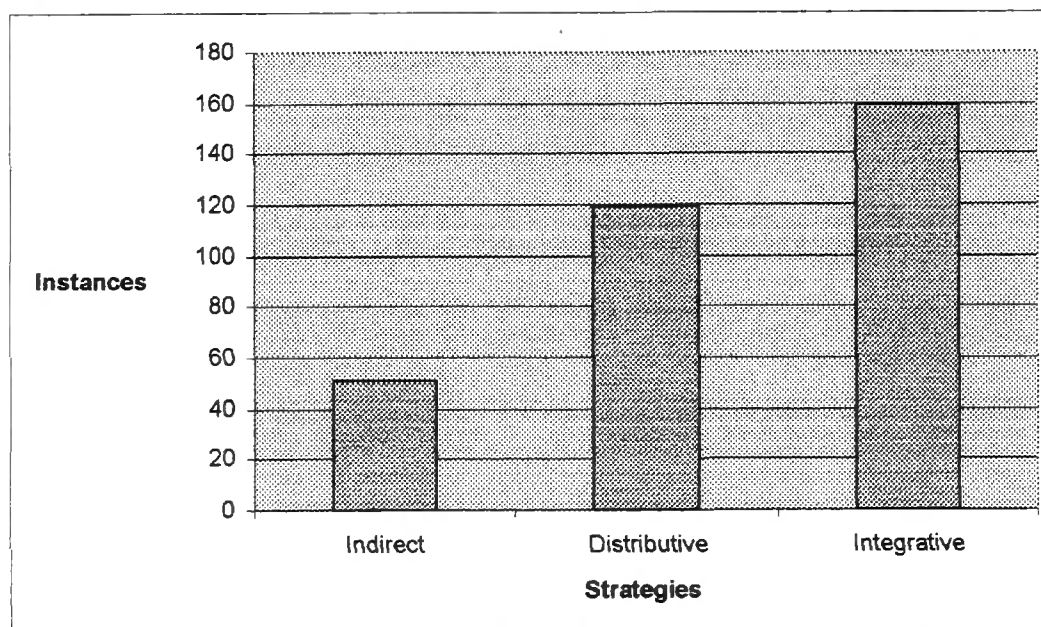


Chart 2: Totals



Data Cluster 5:
All Data Sets

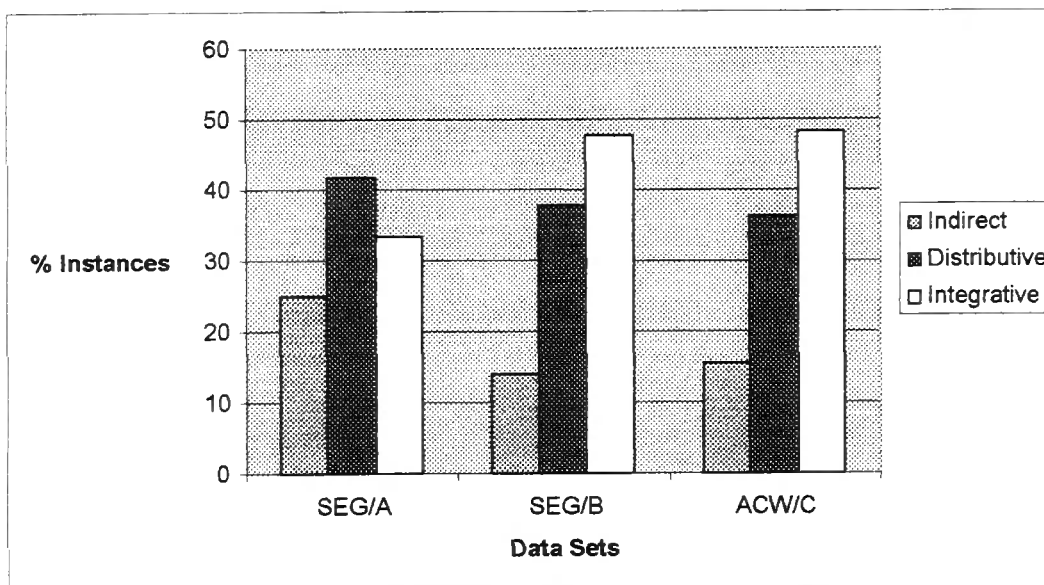
Data Table 1: Instances of Strategy Types

	SEG/A	SEG/B	ACW/C
Indirect	58	35	51
Distributive	97	90	119
Integrative	78	114	159
	233	239	329

Data Table 2: Percentage Instances of Strategy Types

	SEG/A	SEG/B	ACW/C
Indirect	25	14	16
Distributive	42	38	36
Integrative	33	48	48
	100	100	100

Chart 1: All Data Sets - Percentage Instances for each Strategy Type

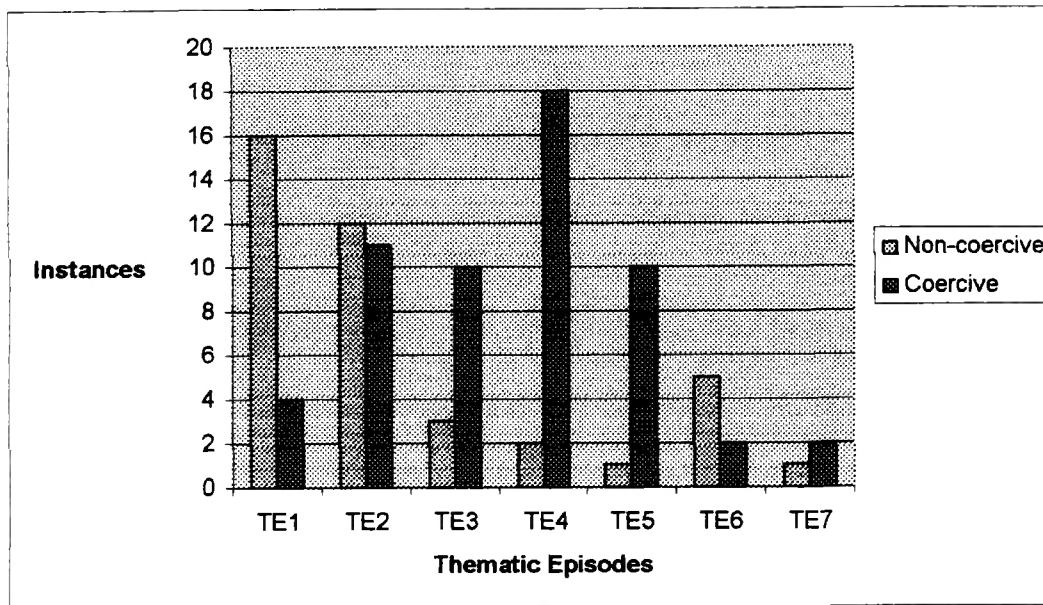


Data Cluster 6:
SEG/A:

Data Table 1: Instances of Distributive Strategies

	TE1	TE2	TE3	TE4	TE5	TE6	TE7
Non-coercive	16	12	3	2	1	5	1
Coercive	4	11	10	18	10	2	2

Chart 1: Non-Coercive & Coercive Distributive Strategies

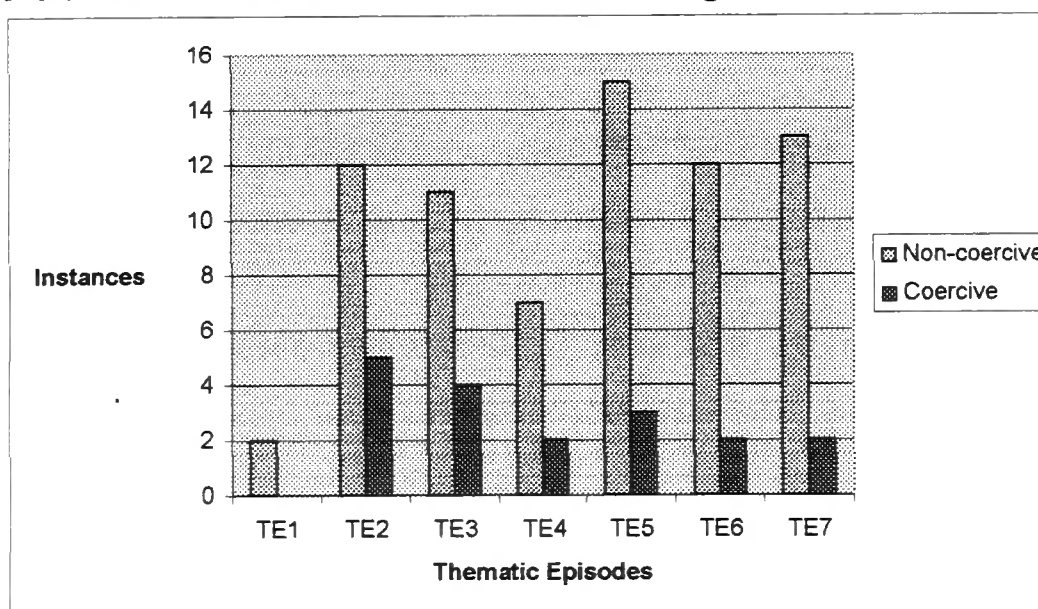


Data Cluster 7:
SEG/B:

Data Table 1: Instances of Distributive Strategies

	TE1	TE2	TE3	TE4	TE5	TE6	TE7
Non-coercive	2	12	11	7	15	12	13
Coercive	0	5	4	2	3	2	2

Chart 1: Non-Coercive & Coercive Distributive Strategies

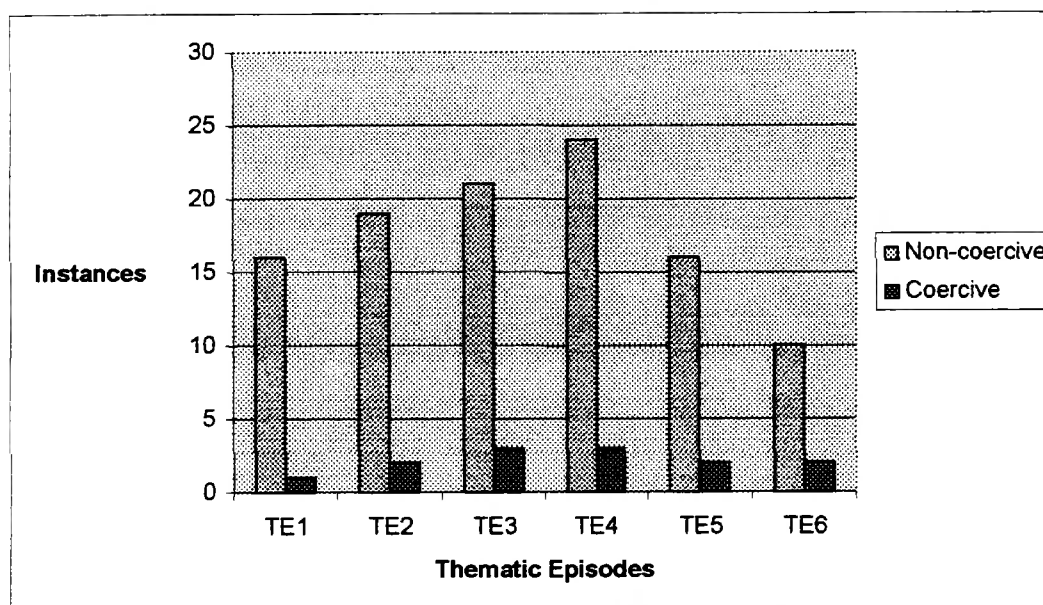


Data Cluster 8:
ACW/C:

Data Table 1: Instances of Distributive Strategies

	TE1	TE2	TE3	TE4	TE5	TE6
Non-coercive	16	19	21	24	16	10
Coercive	1	2	3	3	2	2

Chart 1: Non-Coercive & Coercive Distributive Strategies



Data Cluster 9:
All Data Sets

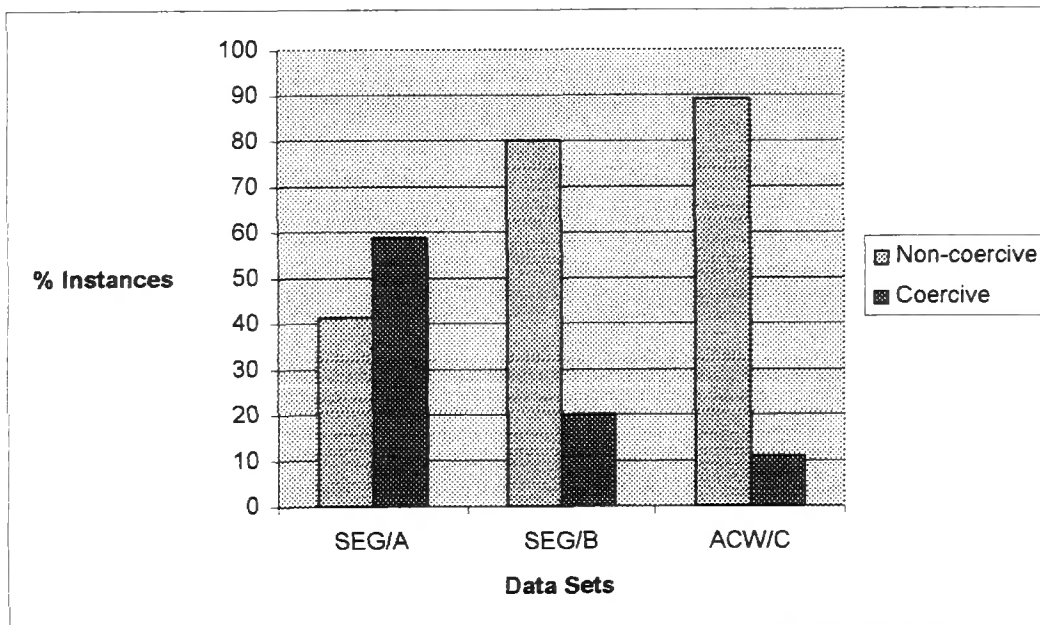
Data Table 1: Total Non-coercive/Coercive Instances

	SEG/A	SEG/B	ACW/C
Non-coercive	40	72	106
Coercive	57	18	13
	97	90	119

Data Table 2: Percentage Non-coercive/Coercive Instances

	SEG/A	SEG/B	ACW/C
Non-coercive	41	80	89
Coercive	59	20	11
	100	100	100

Chart 1: All Data Sets - Percentage Instances of Non-Coercive & Coercive Distributive Strategies



Appendix K

Examples of Strategy Instances

Example 1: An Indirect Strategy Instance

Strategy A2 Joking. SEG/B TE3 DE2 Indirect Strategy				
Written Dialogue	Illocutionary Act	Paradigmatic Case/context	Strategy	Commentary
2.6 Umm... hi guys!	Exp	Greeting Claim	Indirect	NB use of 'Umm' denotes uncertainty, trepidation. This is how things are
2.7 Good news <i>and</i> very bad news <i>and</i> some more good news.	Rep			
2.8 Good news:	Rep	Possibility		Representatives are a mixture of statements and claims.
2.9 I started work on the document and all is going well.	Rep			
2.10 Very bad news: My processor blew up.	Rep			
2.11 More good news:	Rep			
2.12 It will all still be there - once I have gotten a new processor.	Rep			
2.13 Perhaps McDonalds would like to buy one.	Dir			
2.14 Should be up and running again by Friday.	Com			
2.15 So sorry Andy won't be able to learn Dreamweaver until the weekend.. <i>but</i> that should be ok!	Exp			
2.16 In all seriousness, i am very distressed about this occurrence, and may need counselling	Rep	Claim		
2.17 Thank you all for listening, and good night.	Exp	Distressed/ Unhappy	This is how I feel about the situation. (Tongue in cheek)	
	Exp	Thanking	NB 'listening' as though in conversation.	

Example 2: A Distributive Strategy Instance

Strategy B7 Aggressive Emotion SEG/A TE3 DE4				
Written Dialogue	Illocutionary Act	Paradigmatic Case	Strategy	Commentary
4.10 I'm not going to take any more of your <u>s***</u> .	Com	Refusal	Distributive	Refusal to accept what W has said.
4.11 That you can tell me /that/ you doubt my cooperation/ is taking the <u>p***</u> .	Exp	Disbelief		I cannot believe that this is what you are saying about me.
4.12 But don't worry <u>W mate.</u> / You <u>just</u> take his side/ and do all my <u>f***ing</u> work.	Exp	Challenge		Just, used as an adverb (simply) take his side.
4.13 If you need your pencils sharpening, <u>just</u> call me over.	Exp	Scorn		Used as sarcasm, conveying contempt, for W.
4.14 You might have to show how to do it first time though.	Exp	scorn		

Example 3: An Integrative Strategy Instance

Strategy C8 Disclosure ACW/C TE4 DE7				
Written Dialogue	Illocutionary Act	Paradigmatic Case	Strategy	Commentary
2.14 More ideas for a title	Rep	Statement	Integrative	I have some more ideas
2.15 New ICT = Intimacy, Community & Technology or Intimacy and Community Technology [i. see. tea] : = intimacy, community, technology.	Dec	Title		This is the title (for consideration) Play on words.
2.16 (why did I write so many buzzwords!)	Dir	Question		Rhetorical does not demand a reply. Similar to thinking out loud.
2.17 For me/ a title is a means to draw people into reading the paper/ not necessarily to tell them what's inside it.	Rep	Statement		Statement of what a title is
2.18 So, I like the more poetic ones, more 'intimate'? ones such as... (only example)	Exp	Personal Opinion		This is my opinion. Only an example, strengthens this, leaves the exchange of ideas open and fluid.
2.19 Intimacy (is still nice, mysterious and simple...) Pools and Satellites: Intimacy in the City (how about this one?) Piazzatalk (hehe) Gathering at the Pool (nah) As satellites roam the city (nah)	Exp			A continuation of the above

Glossary

ACW: Academic Collaborative Writers

Attribution: judgements made about the actions of others.

Cohesion: the degree to which the members of a group perceive that their goals can be met.

Dialogic event: a series of e-mails that contain written utterances and create a unit of continuous communication which depicts the written dialogue/interaction between interlocutors.

Discourse Analysis: A methodology used for analysing the e-mail text, based on the analysis of speech acts and approached from the perspective of pragmatics, therefore emphasis is placed on the e-mail messages as a series of conversations in a specific context.

Dispositional attributions: judgements made about a person based on their perceived personality traits.

Illocutionary force refers to the type of function the speaker/writer intends to do.

Meaning context: the overall context in which actions take place as defined in the dialogic event, in which the utterances of the interlocutors are recorded.

Paradigmatic case: a specific example of a speech act. For example, a request, a question, or a demand.

Performative: the use of language to bring about an action.

Pragmatics: An approach to the interpretation of meaning, dependent on the use of language.

SEGs: Software Engineering Groups.

Situational attributions: judgements made on the basis of what is known about a situation rather than personal traits.

Speech act: The action performed by an utterance, either spoken or written, as part of an interaction. Utterances symbolize a range of speech acts such as betting, commanding, greeting requesting and so on.

Syntality: The predictable patterns of group behaviour

Text: refers to the e-mail messages.

Thematic episode: large segments of data profiling the events which have taken place in each of the phases of the projects life cycle.

Typology: A classification according to general type.

Utterance: a word, a phrase, a sentence, or a sequence of sentences uttered (written) by a particular person on a particular occasion.

Written Dialogue: the equivalent of a spoken conversation conveyed in writing and therefore devoid of the nuances found conversation.

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