

INTERACTION ANALYSIS DURING MANAGEMENT AND DESIGN TEAM MEETINGS

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Management and design team meetings provide a central forum for requesting and exchanging information necessary to ensure the successful and timely completion of the construction project. Whilst such meetings are common to the vast majority of construction projects, little is known about the professional involvement and interaction during the meetings. By observing and quantifying interactions using the Bales (1951) Interaction Process Analysis (IPA) Technique important insights have been made. The Bales IPA provides a system for observing, analysing and interpreting social interaction in small face-to-face groups. The method is used to identify who is interacting and classify the interaction (statements) into either one of six socio-emotional categories or one of six task related categories. The paper presents the findings of an ongoing research project that involves, inter alia, four case studies where data on the interaction of management and design teams were collected during site meetings. The results show interaction patterns, the frequency of the participants' active contribution, and the professionals attending the meetings. Using qualitative and quantitative analysis the issue of control, power and leadership are discussed.

Keywords: communication, interaction analysis, management, design.

INTRODUCTION

Due to the sensitivity of negotiations that occur during the construction process, research of real face-to-face communication as it occurs is a neglected area. In settings where a degree of negotiation takes place, professionals are understandably reluctant to let a researcher observe their work (Rackham and Carlisle, 1978). There are very few studies, regardless of industry, that have investigated what actually happens during real face-to-face meetings where decisions are made that result in an allocation of resources (Rackham and Carlisle, 1978). During the construction phase, as details are developed and the timing of events agreed, resources are allocated. Design and management meetings that deal with project responsibility, information requirements, progress and future action are sensitive environments. Whilst these forums are a rich source of research data they can be difficult for researchers to enter. Even before the researcher can observe or record communication during meetings, there is a certain amount of negotiation that must take place before they can enter the negotiation environment (Hugill 1999). In this research project, the researcher was able to gain access to the meetings of all required projects, on the undertaking not to use audio recordings. What follows is a brief report presenting some of the early findings of this study.

By identifying the percentage of interaction by individuals and the group, and categorising the interaction using the Bales (1951) IPA method, interaction profiles of the individual and group are presented and discussed. Interaction profiles, using line graphs, show the percentage of statements made that fall within one of the twelve interaction categories (see Figure 1 for a summarised list of the categories), these can be applied to group interaction or interpersonal interaction. This paper aims to make a few incremental steps identifying professional interpersonal profiles on one project, summarising the group interaction profiles of four case studies, and briefly presents some issues on individual and interpersonal dominance of communication during the management and design team meeting.

INTERACTION PROCESS ANALYSIS

The lack of research means that very little is known about the group and interpersonal interaction between professionals during the management and design team meetings. Previous studies using the Bales IPA method have made some significant findings (Brown, 2000). For example some group members talk more than others; the people who talk the most tend to receive the most attention; larger groups tend to be dominated by one person; different people are likely to predominate in particular coding categories, this can suggest a specialised role (Brown 2000). The use of the Bales (1951) IPA can help to identify: whether certain construction professionals interact more than other professionals; if interaction profiles predominate towards particular categories for particular professions; and whether different interaction profiles of the group can be associated with certain processes (contracts) or outcomes (successful or unsuccessful contracts). The IPA technique can be used to provide an insight into issues of power (communication dominance) and communicative behaviour associated with this power.

COMMUNICATION, NEGOTIATION AND POWER

Management and design team meetings are used to monitor progress, ensuring necessary information is provided, but they also serve primarily as a central forum to table, discuss and hopefully resolve problems. The uncertain nature of the construction process produces unforeseen events that vary in their predictability and resource demands (Loosemore, 1999). As unforeseen events manifest and are tabled for discussion, power struggles ensue as parties attempt to allocate the project's resources within the constraints of the contract in a way that will mitigate losses incurred by the individual's organisation. Loosemore (1999) suggests, contracts allocate responsibility for uncertainties, however, construction contracts do not deal with the detail of an uncertainty. Negotiations are necessary to decide on action required and responsibility for the action. Overcoming an unforeseen event requires one or more of parties to accept responsibility for action and agree the degree of action to be undertaken. This results in a commitment to supply resources and identifies the extent of resources that are to be supplied. Failure to agree or accept the above either brings that aspect of the project to a halt or results in contractual dispute. During the negotiations power, gained from individual, professional, organisational, political and contractual processes, is used to defend and distribute resources and responsibility for the necessary action. Power has been identified as the ability to make things happen by influencing the behaviour of another social unit; individual or group (Lee, 1987). Although a party's power may be considered to be commensurate with their responsibilities, it would seem that in construction contracts a party's power

may be used to allocate responsibilities to those with less power, rather than retain the responsibility (Loosemore, 1999). The use of power to allocate responsibility for events, resulting in a redistribution of resources, is a fundamental part of the negotiation process. Hickson, Hinnings, Lee, Scheck and Penning (1971) argued that organisation structure, identified by communication patterns, provides the greatest insight into organisational power. A measure of organisational power is the degree of centrality, this measures the extent that a person receives or sends information (Loosemore, 1999). Using this as an indication of who is using their 'interaction power' to control negotiations the Bales (1951) Interaction Analysis Technique can be used to classify the type of communication behaviour that is used by those with high degrees of centrality. Early studies, which touched on power and dominance, used the Bales IPA technique to explore interaction and leadership roles within small decision making group (Bales and Slater, 1969). The analysis presented here identifies the degree of participation, percentage of interaction, between individual professionals (Table 1) and the interaction profiles of individuals (Figure 2) and groups (Figure 1 and 3).

METHODOLOGY

Four projects, using design and build contracts with values of 3 million to 14 million, were used as case studies. A minimum of three meetings were observed for each case study. Observations were recorded using the Bales Interaction Analysis Process (IPA) technique, which identifies the communicator and the recipient (target of communication). It also permits classification of the statement into either one of six 'task related categories' or six 'socio-emotional categories'. The observer recorded the data using a prepared check-sheet with tick-boxes enabling the identification of the person speaking, recipient, and the interaction category that classified the statement used. The observer sat at the meeting table, and the participants were aware that the researcher was observing but would take no active role in the meeting. A brief qualitative note was made of the issue being discussed and the emotional tone of the meeting.

RESULTS

A total of 5443 statements were recorded. Each statement identifies three variables: who is communicating, who they are attempting to communicate with, and the Bales IPA category (Figure 1). A total of 16,329 variables were recorded and are represented in the following descriptive statistics. A matrix has been assembled for one of the case studies (Table 1). This identifies the percentage of interaction between professional attending the meeting. The matrix provides the percentage of interaction between professionals attending the meeting. The matrix provides interaction percentages for four sequential meetings. The percentage of interaction between professionals is shown in each cell. An 'x' is used to indicate where a professional did not attend the meeting. The person speaking is identified along the top of the matrix, and the person they are addressing is identified down the left hand side. In this case study the architect and the contractor dominate the interaction. The contractor speaks the most, but the architect and contractor are addressed to a similar extent.

The group interaction profiles for the four sequential meetings are presented (Figure 1), there is a degree of consistency between the profiles in this case study, but some variance is noted in meeting four. Meeting four was the final management and design

meeting, and most of the issues and problems were resolved at this time; this may account for the variance in the descriptive statistics.

Table 1: Percentage of interaction between professionals – Case study 1A

Meeting	Architect speaking to:-				2nd Architect speaking to:-				Contractor speaking to:-				Contractor's QS speaking to:-				Structural Engineer Speaking to:-				Total % person being addressed			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Architect addressed					0.8	1.1	0	2.7	34	39	48	47	6.1	5.1	x	X	0.7	0	X	x	42	45	48	49
2nd Architect addressed	1.7	1.5	0	1.0					0.3	0.7	0.7	5.1	0.2	0.4	X	X	0	0	X	X	2.1	2.6	0.7	6.1
Contractor addressed	27	32	50	38	3.0	2.9	1.4	6.5					3.9	6.2	X	x	7.4	4	X	X	42	46	51	45
Contractor's QS addressed	0.7	1.5	x	X	0.2	0	X	x	1.9	1.8	X	X					0.2	0	x	X	2.9	3.3	X	X
Structural Engineer addressed	0.7	0	x	X	0	0	X	X	9.1	3.3	x	X	1.2	0.4	x	X					11	3.6	X	x
Group addressed	0	0	0	0	0	0	0	0	0.2	0	0.4	0	0	0	0	0	0	0	x	x	0.2	0	0.4	0
Total % person Speaking	31	35	50		4	4	1.4		46	44	49		11	12	0		8	4	X	x				

N = 1441

Key:

X = Not present at meeting

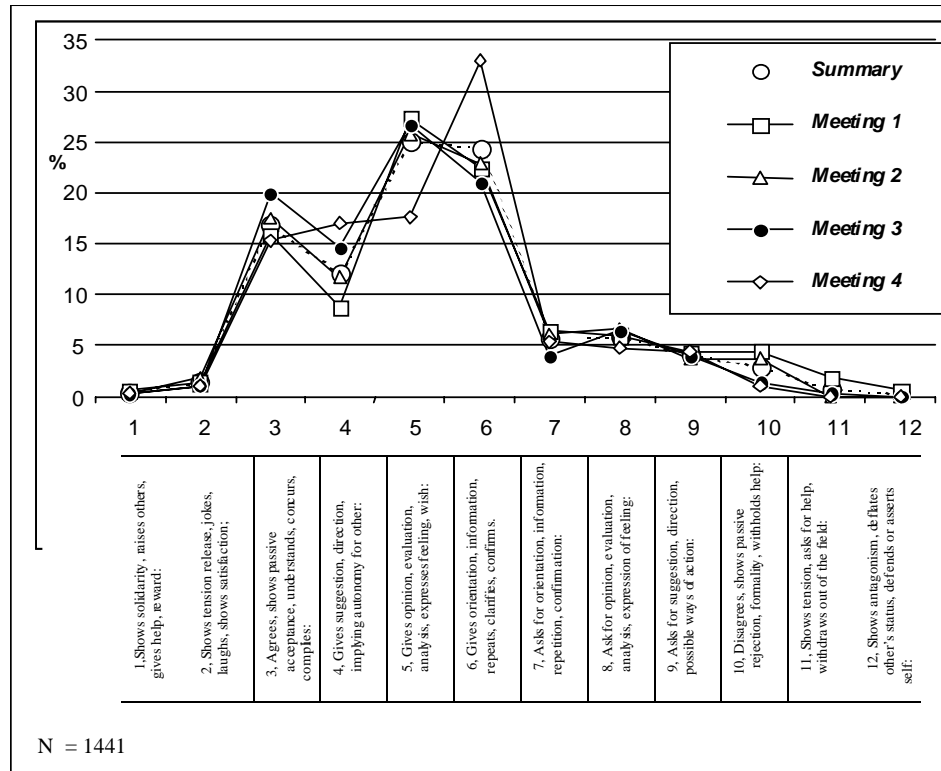


Figure 1: Group Interaction profiles for management and design team meetings of case study A1.

The majority of interaction during the meetings, of this case study, was between the architect and the contractor (Table 1). The interpersonal interaction profiles for these professionals are presented (Figure 2) enabling the identification of communication behaviour of the two professionals who undertake the majority of interaction.

Each individual (professional) was found to have a consistent but different style of communicating. The main differences occurs in the task related statements: the contractor gives more suggestions, direction implying autonomy (IPA 4), whilst the

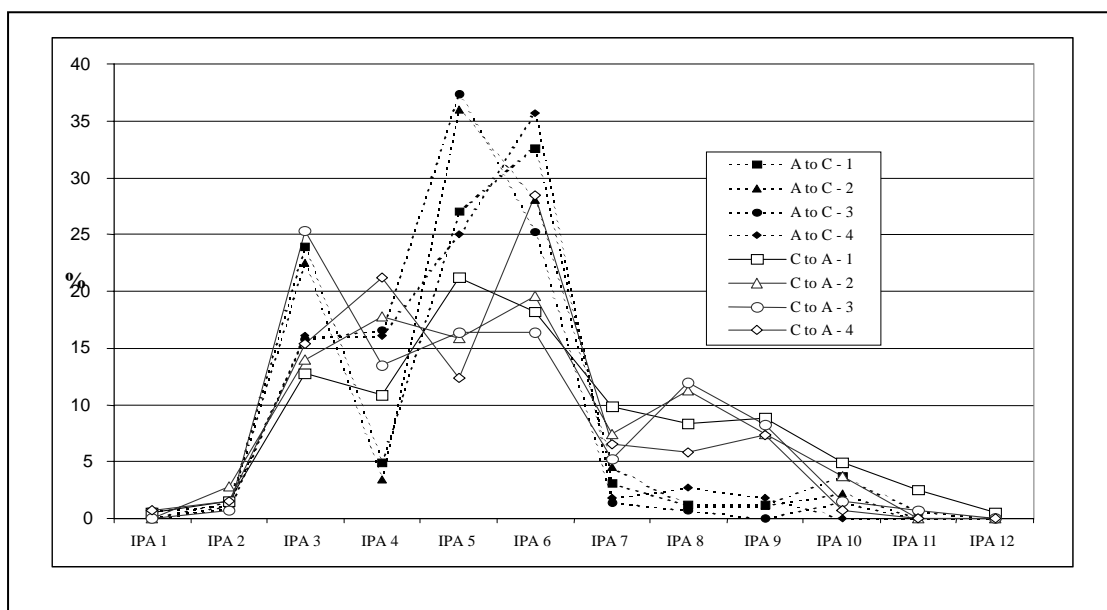


Figure 2: Interpersonal Interaction Profiles between the Architect and Contractor for Case study A1

architect gives more information (IPA 6) and opinions (IPA 7). The contractor can also be seen to ask for more information (IPA 7), opinions (IPA 8) and direction (IPA 9) than the architect does. The contract for this project is a Design and Build contract led by the contractor, who in this instance has employed architect, on a subcontractor basis. It may be expected that the contractor, in this type of contractual arrangement, would give more direction than the architect. Whilst this interaction does seem typical for this case study, further investigation is required to examine interpersonal interaction between those who dominate communication in other case studies.

The group interaction profiles of all four case studies are again concentrated around the task categories, giving or asking for information, opinions and suggestions, rather than the socio-emotional categories. The emotional categories include showing solidarity, show tension release, show agreement, show disagreement, show tension increase and show antagonism.

DISCUSSION

All of the interaction patterns described by the IPA profiles have a greater concentration around the task related, rather than the emotional, categories.

The interpersonal profiles of the contractor and the architect identified in case study A1 are different (Figure 2). Although most of the difference occurs in the task related categories there are some slight differences in the social emotional categories. The contractor in this case study was chair of the meeting and may have been considered the meeting's leader. In studies carried out by Bales and Slater (1969), who examined the role of leadership, it is suggested that those who have high task related scores are associated with 'ideas men' and those who have lower task scores but higher socio-emotional scores are more likely to be associated to the 'most liked men'. The perceived Leaders' of the groups held a strong relationship with those who talked the most, received the most information, generated ideas and guidance (ideas men) but

had a relatively low association with liking (Bales and Slater, 1969). However, the same study suggested that if the task specialist scored too low on likability the person who was most liked, the socio-emotional specialist, may be attributed to leadership. In case A1, the professional with the highest degree of interaction is the contractor, and this person has higher levels of task-related statements. As this is a Design and Build contract led by the contractor it may be expected that the contractor assumes the lead position; in these case studies the contractor did chair the meetings and offer direction to other parties. Much of the interaction activity centres on the main contractor and architect.

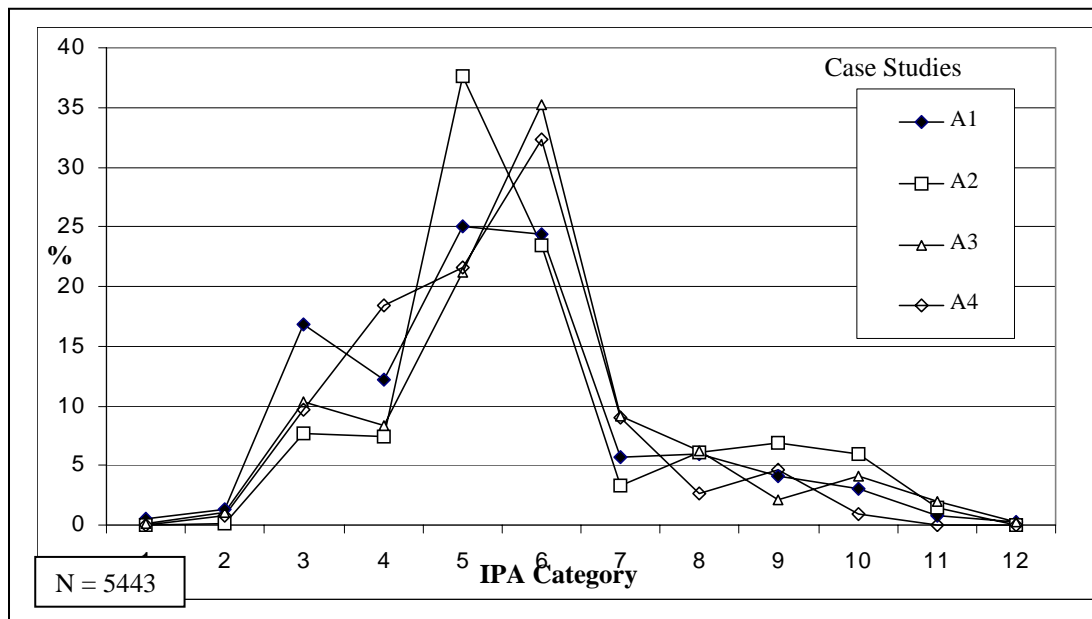


Figure 3: Group Interaction Profiles for all case studies (A1,A2, A3, A4)

This is not surprising, both are central to design and management of the building. Both are heavily involved in making decisions that have a major effect on the resources of their organisation. Changes to the design have resource implications for both designer and contractor, and adjustments to the construction programme will also have resource implications for both these parties. Any change results in a redistribution of resources, these changes must be negotiated; discussed and agreed.

CONCLUSION

The results have produced some interesting profiles that suggest some trends may exist. There seems to be a pattern, 'norm', for management and design team meetings. Further investigation is required to determine where there is a norm, and whether those that deviate from the norm are producing more or less successful outcomes. Outcomes will need to be considered from different perspectives; what is a successful outcome for the contractor may be different for the client and the architect. Successful outcomes for the individual organisations could include profit, completing the project on time, or the degree satisfied demonstrated by the client organisation. It is also clear that some individuals have different interaction profiles when communicating with other individuals; again further examination is required to determine whether these interaction patterns represent successful or unsuccessful interpersonal relationships.

Further studies are required to determine whether such trends, as outlined in this paper, exist in other project and whether the communication style has any relationship with the ability to deliver organisational objectives.

REFERENCES

- Bales, R.F. (1951) *Interaction Process Analysis*. Cambridge USA, Addison-Wesley Press
- Bales, R.F. and Slater (1969) Role Differentiation in Small Decision Making Groups. In C.A. Gibb, *Leadership*, Penguin modern psychology, Middlesex, England, Penguin Books.
- Brown, R (2000) *Group Process - Dynamics within and between groups*. 2nd Ed. Oxford, Blackwell Publishers.
- Hickson, D.J., Hinnings, C.R., Lee, C.A., Scheck, R.E. and Pennings, J.M. (1971) A strategic contingencies theory of intra-organisational power. *Administrative Science Quarterly*, **16**(2): 22- 44
- Hugill, D. (1999) Negotiating access: presenting a credible project. In W. Hughes (ed), Proceedings 15th, *Annual ARCOM Conference*, Liverpool John Moores University, September 15th-17th: 53 - 63
- Lee, R (1987) Towards and appropriate theory of organisational politics. *Management Education and Development*, **10**(4): 315-329
- Loosemore, M (1999) Responsibility, power and construction conflict, *Construction Management and Economics* **17**: 699-709
- Rackham, N and Carlisle, J (1978) The Effective Negotiator. *Journal of European Industrial Training*, **2**(6&7): 6 – 11.