

AS LIKELY AS NOT IT COULD HAPPEN: LINGUISTIC INTERPRETATIONS OF RISK

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This paper describes a study highlighting the predominance of linguistic, as opposed to numerical percentile expressions of probability, amongst project management groups during risk assessment. When group members were unable to draw upon decisive historical data or personal experience phrases such as ‘could happen’ and ‘as likely as not’ were used. Arguably such expressions amount to meaningless 50/50 probabilities indicating that often probabilities are compiled in ignorance. The effects of such linguistic interpretations of likelihood and their impact upon risk management strategies are discussed. The study methodology utilised conversation analysis techniques within a phenomenological-oriented case study framework that allowed the observation of contemporary group discussion events. The objective of the case study was to establish the ‘methods’ used by individual group members to establish the subjective probabilities of risk occurrence within structured risk management frameworks.

Keywords: linguistics, possibility, probability, risk, conversation analysis.

INTRODUCTION

Risk management strategies are increasingly being used to manage the complexity associated with the execution and delivery of construction projects and to assist in the project management decision-making process. The use of these strategies is usually considered to render the risk management process objective. Consequently emphasis is placed upon ascertaining the probability of occurrence of identified risks in order that suitable management plans may be formulated. The most common methods of risk management utilise historical data and the experiential knowledge of construction management professionals.

Contemporary project risk management usually occurs within a well-defined risk process or framework and these have been well documented. However the decision making processes to ascertain the probabilities used to populate these frameworks is poorly understood and this study examines these processes.

METHODOLOGY

A case study was chosen as the vehicle to elicit information as opposed to an experiment as the study would investigate “a contemporary phenomenon within its real life context” (Yin, 1994). Accordingly case study research has many benefits that are difficult to incorporate into experimental design such as:

individual's do not feel constrained by observers and are therefore able to react and display emotional responses that are not outside that normally experienced; and the studies allow the causal links between true to life interactions to be identified

Conversely an experiment:

- purposefully removes a phenomenon from its naturally occurring environment to focus upon a restricted number of variables that may be controlled (Yin, 1994);
- may constrain individuals to exhibit behaviour that reflects their perception of what the experimenter may expect, desire or require in terms of answers and responses; consequently
- individuals may be under the impression that there are correct and incorrect answers, and answer accordingly.

However, Gummesson (2000) highlights three criticisms often levelled at case study research; these are:

- they lack statistical reliability and validity;
- they may generate rather than test hypothesis; and
- they cannot be generalised.

These criticisms whilst valid are applicable more to the misuse of case study research consequently the first two can be addressed in this instance by examining the purposes of this case study research. Yin (1994) addresses the final criticism that case studies cannot be generalised, by asserting that the conclusions should be generalised to theory rather than between studies. However Fellows & Liu (1997) state that generalisations may be made between studies if a triangulation of data, incorporating literature review to establish the initial premise, interview and case study, are undertaken.

ANALYSIS

The primary intention of the analysis was to establish how the group members communicated a position with regards to the perceived likelihood of occurrence and how they arrived at a shared group understanding of that perception. To accomplish this discourse analysis combined with conversation analysis of the transcribed conversations was undertaken. The two approaches provided the following data:

Conversation Analysis discloses the structure of the discussion between the group members. The practice also provides an accepted transcription procedure and notation glossary.

Discourse Analysis allows the process of understanding to be highlighted and discussed. This was important in highlighting how the group members established a position with regards to the problem at hand.

Conversation analysis (CA) was developed by Harvey Sacks (c1964) and has evolved into a systematic social hermeneutic study and analysis of naturally occurring conversation, 'talk-in-interaction'. Consequently CA facilitates an understanding of the tacit, organised reasoning procedures inherent in how individuals achieve a mutual understanding (Hutchby & Wooffitt, 1998; Have, 1999). The methodology of CA is qualitative in nature and shies away from the contents analysis of the frequentist approach in order to ground theories in naturally occurring behaviours as exhibited by

participants talk-in-interaction (Markee, 2000). Therefore the methodological foundation of CA has been described by Hutchby & Wooffitt (1998) as:

- talk –in-interaction is systematically organised and deeply ordered;
- the production of talk-in-interaction is methodic;
- the analysis of talk-in-interaction should be based on naturally occurring data; and
- analysis should not initially be constrained by prior theoretical assumptions.

From an ethnomethodological perspective society and cultures are constructed by a collection of communications (Littlejohn, 1992). Consequently CA attempts to identify the sequential organisation inherent in conversations that lead to a shared understanding of the environment (Hutchby & Wooffitt, 1998; Littlejohn, 1992). This view underpins CA's rejection of the functionalist perspective and is more akin to Garfinkel's (1967) view that individuals are sufficiently cognisant and rational to account for their own actions. Therefore, whilst society may communicate desired values these are not simply accepted and internalised to be replicated in perpetuity. Rather they are established through inter-subjective agreement between individuals whose collectivisation of values establishes cultures and norms of behaviour. Therefore CA is a valid method to ascertain how the transposition of communicated individual 'values' are understood, in this instance by construction management professionals. For a valid analysis to have been undertaken the talk-in-interaction data must have occurred naturally and not in response to an artificially structured investigation such as an interview (Hutchby & Wooffitt, 1998; Have, 1999). In this instance the data was collected using mini-disk audio recorders, placed as unobtrusively as was practicable, within the two group discussion rooms. However as the groups were aware that their conversations and deliberation processes were being recorded the validity or purity of the recorded data may have been compromised because of one or a combination of the following:

- the group members may not have appreciated the confidentiality of the recorded material;
- they may have perceived that the researcher was looking to identify a preconceived correct answer;
- failure to provide this correct answer may make them look foolish; and
- their inability to provide the correct answer may be reported to their employer (confidentiality issue) and result in some form of punitive response.

The aggregation of these factors implies that there is a possibility that the discussions and responses may not have been as forthcoming as they may otherwise have been in order to avoid the ramifications detailed above. As it is necessary to obtain permission from participants before recording conversations these criticisms are unavoidable and such considerations must be levelled at similar methods of data collection. Also the groups presented the findings and conclusions of their discussions to their peers directly after their group discussions. Therefore whilst the presence of recording equipment may have influenced their discussions, the 'threat' of peer review arguably provided sufficient motivation. Similarly the group participants were not asked to provide any additional explanations or to comment upon the originally recorded text as self-report data may reconstruct and reinterpret original behaviour as opposed to explain it (Markee, 2000).

Secondly whilst it is imperative that the research findings communicate the participants rather than conversation analyst’s perspective relative to the phenomenon the recorded material may still be subjectively and intuitively explained by the analyst (Markee, 2000). This difficulty may be overcome by adopting the following two methods:

- provide data samples together with the analysis for the reader to ‘judge’ for authenticity; and
- provide a triangulation of data sources together with counterexamples in order to facilitate replication of the study by other analysts (Hutchby & Wooffitt, 1998; Markee, 2000).

In this instance two sources of data were considered sufficient (Fellows & Liu, 1997) to provide a triangulation (sic) of sources; transcriptions of audio recordings together with their analysis and ‘hard’ copies of presentation materials produced by the groups concurrent with their discussions.

Transcription Glossary

Table 1 provides a glossary of symbols used in the transcription of the group discussions as recommended by Hutchby & Wooffitt (1998) and is replicated here to assist in the analysis of the provided transcription segments.

Table 1: Transcription notation glossary (Hutchby & Wooffitt, 1998)

Symbol	Description
(0.5)	The number between the parentheses indicates the time elapsed in tenths of a second.
(.)	Indicates a pause in conversation of less than two tenths of a second or less
=	Equals sign indicates one sentence ‘latching’ onto the following of the same speaker
[]	Open square brackets indicate an overlapping sequence of conversation
(())	Double parentheses indicate a non-verbal activity or a transcribers comment
-	Dash indicates the sharp cut off of the preceding word or sound
:	Colons indicate the stretching or continuation of the previous sound or letter. The more colons the greater the length of the continuation
!	An exclamation mark indicates an emphatic tone
()	Empty parentheses indicate the presence of an indiscernible fragment
a:	Marked falls in pitch are indicated by underlining the letter preceding the colon
a:	Marked rises in pitch are indicated by underlining the colon
under	Underlining indicates speaker emphasis
CAPITALS	Capitals indicate a fragment of noticeably louder speech than the surrounding speech
° °	Degree signs indicate a fragment of noticeably quieter speech than surrounding speech
> <	Greater and less than signs enclose speech that was noticeably quicker than the surrounding speech

Individual lines of the transcribed text can be identified by their preceding three-part code. For example the code G987fa refers to the green group transcription, denoted by the initial letter G, line 987, denoted by the three figure number following the initial letter, spoken by group member ‘fa’, denoted by the two letters following the three figure number. Table 2 details the professions of the group members.

Table 2: Group member professions

Red Group		Green Group	
ID	Profession	ID	Profession
Aa	Senior QS	ea	Project Manager
Ba	Contract Manager	fa	Chief Surveyor
Ca	Contracts Engineer	ga	Project Engineer
Da	Chief Engineer	ha	Technical Integrator

Analysis of the information provided by the group discussion transcriptions and the subsequent findings established that the group decision-making suffered from the following:

- the groups were often unable to calculate meaningful probabilities of occurrence and in the main opted for linguistic 50/50 propositions.
- The evidence for this finding is now presented and discussed below.

Probabilistic Propositions and their Derivation

At the outset of the risk management assessment stage the groups are required to ascertain and record what they consider to be the cost and time impacts to their respective projects and recorded on a pro-forma probability/impact chart that expresses minor opportunities and insignificant threats, as negative and positive figures respectively. The groups must initially equate financial and time impacts to the threats and opportunities for their respective projects. The following extracts from the transcribed group discussions suggest that the group members are unable to discern the numerical expression of probability, a phenomenon discussed by Bruine *et al.* (2000). Instead the group members rely upon the linguistic expressions within the probability/impact chart. Shackle's (1969) potential surprise offers one explanation for this phenomenon by predicting that individuals prefer to use the notion of the possible rather than the probable. Consequently the use of linguistic expressions of 'could happen' and 'as likely as not' reflect the perceived possibility rather than the objective probability inherent with the particular decision domain. Consequently the subsequent calculations in the assessment stage of the process are fundamentally flawed because they are based upon the notion of the possible, a subjective interpretation borne of experience and intuition, which is no basis for frequentist probability calculations (Christensen, 1979). Similarly the evidence suggests that the expressions 'could happen' and 'as likely as not' are not discriminated between within the group discussions and are interpreted intuitively as inferring one and the same option. It is suggested that these two phrases whilst intended to express probabilities of 10 - 30% and 30 - 50% respectively are actually intuitively interpreted as linguistic expressions of a 50/50 option. Consequently this allows the group members the freedom to express practically meaningless probabilities of equal likelihood.

The red group identified twenty-three risks, twelve of which were ranked as 'could happen (2)' and six as 'as likely as not (3)'. The green group identified twenty-two risks eleven of which were identified as 'could happen (2)' and ten of which were identified as 'as likely as not (3)'. This result is similar to the regression to mean tendency whereby individuals expect an equal 'spread' of outcomes (Slovic *et al.*, 1982). This may explain the predilection to use 50/50 options. The following text explores the proposition that group members often failed to question the validity of an individuals linguistically expressed prediction of likelihood as a causal factor for 50/50 choice options.

G1034fa. yeah (.) ok (.) yeah (.) labour availability (0.8) er:m (3.7) it could happen
 G1035ha. [yeah]
 G1036ea. it could happen
 G1037fa. [yes it does
 G1038ea. it's a two
 G1039ha. two

This passage of text concerns the green groups' discussion of labour availability. In this instance the group express their estimation of probability with the phrase 'it could happen'. None of the group members express actual percentile probabilities however in line G1037 fa implies that "it does" happen. Therefore the group members know that it does happen, but relying solely upon their intuition and experience they acknowledge that 'it could happen'. It is arguable that this equates to a 50/50 proposition even though the probability/impact chart defines this as a 10 – 30% chance of occurrence because of the notion that the phrases 'could happen' and 'as likely as not' evoke. Similarly the group fail to identify, verbalise or discuss the causes that they perceive may lead to problems with labour availability. The group remain oblivious that they may all be working from differing experiential backgrounds and therefore discussing (sic) the problem from different premises. The following is another example from the red group.

R938da. builders work (2.3) delivery times on materials (0.3)

R939aa. phew ((audibly breathes out))

R940da. well that's as likely as not could happen (.)

R941aa. that could happen (0.4)

R942da. er:m (.) as likely as not though is it

R943aa. yeah

R944da. is it a three

R945ca. yeah give it a three

R946da. give it a three

R947aa. yeah: i think so (0.9)

On line G940da the phrase "as likely as not could happen" is used. This confuses the two options 'of could happen' and 'as likely as not' and highlights the lack of meaningful difference between them when considered as linguistic constructs. However the group agree that it is 'as likely as not' without any discussion of their individual assumptions regarding the nature of the risk. The following text is example of the green groups failure to address their potentially differing assumptions and premise.

G1073ea. erm: adverse weather (1.2)

G1074ga. i'd say a three (0.6)

G1075ea. it is yeah (.) it's as likely as not isn't it (2.8) now (1.4) the impact (1.7) i- i basically think =

G1076fa. [yeah]

[yeah]

On line G1074 ga opines "I'd say a three", using the communicative numerical value of the chosen likelihood as a pro-form for the complete linguistic expression. On the following line, G1075, ea responds, "it's as likely as not isn't it" preferring to use the linguistic construct of likelihood. Both group members avoid using the numerical percentile expression provided in the probability/impact chart when communicating probabilities. Although only three examples from the text are provided here at no time do any of the members from either group use a numerical percentile expression of probability in the one and a half hours that they spent considering the likelihood of occurrence of their identified risks. This tendency to use linguistic expressions of probability may be attributed to the group members' non-rational as opposed to objective interpretation of the decision domains, a theory proposed by Howarth (1998). Therefore whilst percentile numerical expressions are provided within the probability/impact chart they are never utilised and reliance is placed upon the use of

linguistic constructs of probability in order to communicate individual interpretations of decision domains.

Effect of Group Member Relationships on Probability Assignment

A limiting factor with the group performance hypothesis of this research is that only two groups were studied. However there are marked differences between how the two groups both discussed potentiality and the overall spread of values attributed to their identified risks. Of the two groups the green group showed almost an even distribution between the probabilities awarded to their risks. On the whole the green group exhibited a more cohesive group structure than the red group who scored twelve risks as ‘could happen’ and six ‘as likely as not’. In this research group cohesion was measured by the number of occasions on which the group members rejected a proffered measure of potentiality, in essence how often they disagreed with one another. A study of the transcribed group discussions highlighted nine occasions when the red group showed any signs of outright disagreement when discussion likelihood of occurrence compared to only two occasions for the green group. The most explicit examples are shown below.

R758da. right (.) additional requirements ie landscaping (1.4) well again that’s going to be a two =

R759da. = isn’t it (.) it could happen they could ask us (1.7)

R760aa. i think that’s er: (.) a bit higher than that

R761da. as likely as not

R762aa. hm::

R763ba. but landscaping drain upgrading i think that is highly unlikely

R764da. wel- well we can still put something

R765aa. you think that’s unlikely

R766ba. yeah

R767aa. do ya (3.8)

R768ba. well f- for a small extension i agree if it was a big one

R769da. that’s right you see (.) you see people who build extensions and leave builders =

R770ba. [but not for a little extension like this one]

R771aa. [right ok then]

R772da. = rubble around their houses

R773aa. [put it a one; then (.) put a one; then

In this example three red group members disagree about the likelihood of additional requirements being imposed by the local authority. They do not negotiate a value rather they present their opinions and the most valid argument holds. The initial position is set in line R759da to the effect that “it could happen”. A counter position is offered in line R760aa but without the use of a rhetorical strategy. A third position is established in line R763ba that is questioned in line R767aa. The originator of this third position, ‘ba’, uses a rhetorical strategy in line R768ba to ‘set a scene’ with regards to the problem to which agreement is found in line R769da. The original scene is complemented in line R769da and completed in lines R770ba and R772da.

Throughout this discourse ‘ba’ and ‘da’ contribute to create a scene by which ‘aa’ can see that his original position may be unfounded and consequently he alters his position to concur with them. This may be explained by ‘aa’ acquiescing to group social pressure rather than pursuing his position further. Alternatively the position forwarded by his two colleagues may have given him reason to doubt the veracity of his own

initial position. Nonetheless in both instances the group entered into a discussion regarding the issue at hand and unanimously agreed having persuaded one of their members to alter his original position. The following scenario is a typical passage of conversation taken from the green group as follows.

G1034fa. yeah (.) ok (.) yeah (.) labour availability (0.8) er:m (3.7) it could happen
G1035ha. [yeah]
G1036ea. it could happen
G1037fa. [yes it does
G1038ea. it's a two
G1039ha. two

In this passage of the transcript there is a sense of apathy regarding the issue under discussion; the three participating group members simply agree amongst themselves “it could happen” without recourse to discussion of any kind. The majority of the green group discussions were of this nature with only two notable exceptions, one of which follows below.

G1276ea. = shall we go for the minus five
G1277fa. it wouldn't do any harm would it (.) it's going to be the biggest opportunity that =
G1278fa. = you will have
G1279ea. >PUT IT this way you couldn't be proven the other way could ya<
G1280fa. no
G1281ea. >you couldn't be proven < (.) that it's a minus four (.)
G1282ha. we are talking about decorating (3.4)
G1283ea. oh i tho- yeah yeah
G1284ha. we are not going to save five grand on decorating are we ha ha ((laughs))
G1285fa. [yes (.) we've go t- to be]
G1286ha. on decorating

In this instance whilst two of the group members are in agreement in lines G1276ea – G1281ea inclusive, they are proven to be incorrect in their assumptions in line G1282ha. This shows that group member ‘ha’ is willing to point out the group errors if he is aware of them whilst also showing his desire not to make errors. Therefore the group will reassess its position if shown to have cause to do so. Noticeable throughout the transcriptions of the green groups discussions is the willingness of group member ‘ea’ to use rhetorical strategies, or scene setting, to communicate his perspective to the group. Accordingly he seems to be the most influential member of the group. No subsequent analysis of this hypothesis has been undertaken as it is the author's belief that a more comprehensive study utilising psychological measures is required to establish any one group member as the most influential in the group decision-making environment (Rim, 1963, 1964a, 1965, 1966a & 1966b; Katzell *et al.*, 1970). Similarly red group member ‘ea’ appears to be an influential member in terms of his willingness to question outright his fellow group members. Although not confrontational his attitude is one of devils advocate, albeit perhaps unwittingly. The following are examples of this behaviour taken from the transcribed group discussions.

R908da. = would go up (.) and that it would go down (1.1) so we are talking three for up and three=
R909da. = or less than three for down
R910aa. no i think it's more for going down int it

- R911da. yeah (.) so we could have it three minus three perhaps (0.5)
R984da. up to:: (1.3) a three >which is a serious one< (.) just over a week
R985ca. yeah
R986aa. i wouldn't say it's serious i would say it's marginal really (1.4) two to four days out of a =
R987aa. = six months
R988da. [but what happens if we go-
R989aa. [what
R990da. what happens if we go over our six months period (3.6)
R991aa. w- what does happen (1.9)

In all of the above examples 'aa' forces the group to reconsider their position and defend their position by asking 'what if' questions. This can be construed as a pivotal role in the group dynamic because it requires the group to reconsider their choices and options, a role highlighted by Janis (1982) as one of the preventative measures in avoiding groupthink. No member of the green group would appear to fulfil such a role.

The conclusion is that the green group exhibited some of the traits of highly cohesive groups, such as concurrence-seeking tendencies, as detailed by Janis (1982) that encouraged them not to question one another's position for the sake of maintaining the group dynamic. This may be evidenced within the group discussions by the apparent willingness to accept the first option that is disclosed. However the questioning nature of the red group, specifically 'aa's role of 'devils advocate', amounted to a less cohesive group relationship but arguably facilitated more reliable results in terms of the risk management process.

CONCLUSIONS

Those risk management processes that exhibit an outwardly objective structure by promoting the use of numerical percentile expressions are rendered explicitly subjective by the use of linguistic constructs of probability by group members. Also the use of linguistic forms encourages the acceptance of 50/50 probabilities in group discussion regarding risk, a phenomena that is especially evident in groups that exhibit a cohesive nature. As a consequence the objectivity of many risk management processes has been shown to be questionable. Work is currently underway to address these concerns and to develop a risk management process that encourages the use of linguistic terms for expressing probabilities as opposed to the numerical percentile expressions.

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