# Talk that works: evaluating communication in a factory production team

Maria Stubbe

Victoria University of Wellington

## Introduction

What part does communication play in the success of a top-performing factory production team? To what extent are the effective communication skills and strategies used by this team transferable to other teams at the factory? These two questions provided the starting point for a collaborative action research project involving the Language in the Workplace Project and staff at the Lever Rexona factory in Petone[1]. This is an ongoing project, now in its second year, which has the long term aim of developing a set of communication evaluation and development tools for use with the factory's own production teams, and testing their applicability to other New Zealand workplaces. This paper provides a brief overview of the methodology developed for this research, and some initial conclusions from a 1999 pilot study of shopfloor communication patterns in one of the factory's production teams.

## Background to the factory research

The general aims of the Language in the Workplace Project are to study naturally occurring workplace interaction in order to identify the characteristics of effective communication, diagnose possible sources of miscommunication, and explore possible applications of the findings for New Zealand workplaces. Since 1996, the project has collected a corpus of over 500 spoken interactions involving approximately 350 people from a range of workplaces in New Zealand. Until recently, most of this data has come from interactions between professional workers in large organisations such as government departments and private corporations, and the project's unique participatory method of data collection was first trialled and developed in such contexts (see also Holmes et al 1999, Stubbe 1998). The same methodology has also been adapted by associates of the project for collecting spoken interaction data in the offices of a hide tanning factory in Auckland, and a number of small businesses such as garden centres in Hawkes Bay.

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[1] I am grateful to the management of Lever Rexona and the members of the 'Power Rangers' team, who between them made it possible to collect the data used for this study. Thanks are also due to the rest of the Language in the Workplace Project team, especially Megan Ingle who did much of the fieldwork, and Bernadette Vine and Louise Burns who processed and transcribed much of the pilot data. The Language in the Workplace Project is funded by the Foundation for Research, Science and Technology.

In 1998, the research team was approached by a manager from the Lever Rexona plant in Petone who was interested in collaborating with the project team on some research relating to the effectiveness of communication in self-managing teams at the factory. It was decided that as a first step we would undertake a pilot study to collect some baseline information, and to determine the feasibility of collecting a larger dataset that would meet our joint objectives (see Stubbe forthcoming a). The management recruited the factory's top-performing production team, the 'Power Rangers'[2] to take part in the pilot. Their team coordinator (TCO) was particularly interested in further improving communication within her own team, while the factory's human resources and training managers wanted information that they could use to assist other production teams perform to a similar standard. We agreed that an 'appreciative inquiry' framework would therefore be the most appropriate and constructive one to adopt for the purposes of the study. This is an approach to organisational development which involves looking for what is done well with the aim of finding ways to share strengths with others and develop them further, as distinct from looking for 'problems' and setting out to 'solve' them (Hammond, 1996).

## Collecting the pilot data

At the time of the pilot study the 'Power Rangers' team had 22 core members, 16 of whom were male, with more than 50% of the team of Maori or Pacific ethnicity. The TCO was a Samoan woman, well-respected by her own team, other workers and factory management alike. This department of the factory runs a 24 hour/7 days-a-week operation, with each of four teams working four days on, four days off. The production team works in two separate areas: a manufacturing area upstairs, where operations are monitored from a computerised control room, and the packing line on the factory's ground floor. The workers in both areas move around a lot as they monitor machinery. The packing team meets together once a day at the start of each 12-hour shift, while the manufacturers hold their own short briefing. Contact between the manufacturers area and the packing line is maintained mainly through the use of the factory-wide intercom radio system or telephone calls, along with occasional visits back and forth.

The official language of communication in the factory is English, but the workforce is multicultural and includes many people for whom English is a second language, and it is not uncommon for other languages such as Samoan and Tongan to be used in work contexts between native speakers of these languages. Related literacy issues mean that spoken interaction is the primary channel of communication for many workers on the factory floor, although written and electronic documentation of various kinds is an essential component of the production process. Communication on the factory floor is often sporadic and predominantly involves the routine imparting of specific information or instructions, along with a certain amount of social talk, punctuated by episodes of 'troubleshooting' or problem-solving talk.

[2] All names used here are pseudonyms.

As the brief 'snapshot' above clearly shows, there were a number of challenging technical and logistical problems to resolve before we could successfully collect natural interaction data in this environment. For instance, we had to develop new strategies for identifying and collecting a useful and representative sample of natural interaction data from a dispersed workforce engaging in limited face-to-face interaction. We also had to devise appropriate ways of physically collecting recordings and essential contextual information about each interaction in an extremely noisy environment where the workers moved around constantly. In addition, we faced some tricky ethical issues around the relationship between the research team, factory management and the participants themselves. These issues included gaining the trust and cooperation of team members, ensuring all recording/notetaking was done with informed consent, and satisfying ourselves that this consent was freely given, and not simply out of compliance with management wishes.

Our key objective was to retain the participatory approach that characterised our existing methodology, and to ensure that individuals still had maximum control over whatever data was collected from them. However the data collection process clearly had to be much more 'hands-on' than had been our practice before- it would not be possible just to hand over the task of selecting and recording interactions to workplace volunteers as we had done elsewhere, as this sort of activity is simply not compatible with the nature of work in a factory.

The approach we took, on the suggestion of the TCO, was for her to introduce our fieldworker to the team over several shifts. Initially she was there only as an observer, and then gradually introduced the recording equipment as the team members became more familiar and comfortable with the idea of the study, and were in a position to give their informed consent. The pilot study was carried out over a period of several weeks. During the first stage, our fieldworker spent a total of 25 hours over two 4-day shifts on initial observations. This allowed her to (i) become familiar with the factory layout and procedures, the team's work and communication patterns, and team dynamics; (ii) investigate potential recording situations and identify technical problems, and (iii) gain the acceptance of the workers. The next stage involved a series of systematic technical checks to establish the best combinations of equipment to use in different settings before beginning the actual recording of interactions[3].

Audio-recording was undertaken for a rolling three to four hours a day over successive shifts in order to obtain samples from each part of a typical day and each day of 4-day shift. Because of the nature of the team's work and the factory environment, it was impractical to expect the team to take any

[3] We achieved the best results once we started to use portable digital minidisc recorders along with radio microphones or high quality lapel microphones. Using this combination produced a significant improvement in the sound quality over that achieved with cassette tapes, and had the added advantage of allowing random access editing, an invaluable aid to analysing the recordings in a situation where there are often long intervals between interactions.

responsibility for the mechanics of recording interactions or related contextual information. Our fieldworker therefore remained on-site throughout each recording period to change tapes and batteries, write-up interaction notes, obtain ethnographic information, and begin data processing.

We limited data collection to audio-recording and observation, despite the fact that video data would have added a useful extra dimension to our analysis, given the amount and importance of non-verbal communication on the factory floor. We judged that introducing a video camera would have been too intrusive, and would have created a number of further technical and logistical issues. In any case, any suggestion of video-recording was flatly rejected by several of the team initially, although they became more comfortable with the idea once we had completed several days of audio-recording.

The pilot study was more successful than we could have dared to hope. By the end of the two-month period, we had established an excellent working relationship with the 'Power Rangers' team, who were happy for us to return at a later date. We had proved that, despite our initial misgivings, it was indeed possible to record usable natural data in this environment and to collect related ethnographic material without disrupting the team's work to any great extent. We had also fine-tuned the technical and logistical issues sufficiently well to feel confident that we could successfully proceed with more closely targeted and extensive data collection. Finally, we had managed to gather a wealth of background and ethnographic information and 30 hours of analysable recorded data (albeit sometimes of varying technical quality!). This provided a useful baseline for giving some initial feedback to the team and factory management, and for planning the next stage of the action research collaboration.

After the pilot study was completed in April 1999, the Language in the Workplace team and factory staff and management agreed to proceed to the next stage of the project starting in August 1999. This has involved further intensive data collection and analysis, which is being followed by ongoing collaboration on the development of communication evaluation and training resources for use within the factory. Possible applications of the research include a team development programme focusing on communication issues, mentoring for managers and team coordinators, and learning support for NESB workers. The results of the data analysis and the practical applications developed in this factory will also provide a basis for further research into workplace communication, and for the development of communication evaluation and development tools aimed at a wider audience.

## Evaluation of communication in the Power Rangers team

This next section outlines the results of an initial analysis of the pilot data. This focussed on evaluating communication patterns within the team in order to provide some answers to the two questions raised by staff at the factory (see introduction), and to establish a baseline from which to proceed to

further, more detailed analysis. Our first objective was to investigate to what extent and in which ways communication, in particular spoken language use, might contribute to effective teamwork on the factory floor. As outlined above, we decided to do this by observing and analysing the communication patterns and discourse strategies used by members of a particular team, the 'Power Rangers', throughout the course of a typical shift. The results of this descriptive analysis are summarised below.

**Communicative demands on team members**

When we started observing the 'Power Rangers' at work, we were struck by the range and complexity of the communicative demands placed on the workers in this environment. Taken collectively, these clearly have the potential to become real barriers to successful communication. Firstly, there are the obvious physical aspects of working in a factory environment, such as the constant noise and the separation of team members into different locations which reduce both the ease and frequency of face-to-face communication. The factory staff's own perception was that team members, especially those working on the packing lines didn't really talk to one another very much. In fact, our recordings show that a surprising amount of face-to-face verbal interaction does take place in this context, along with other modes of communication such as signs and gestures, and talking over the factory intercom system.

Secondly, there is tremendous variation in the complexity of the communicative tasks which may be required during the course of a shift. These demands vary from individual to individual, according to their particular role, but range between very brief and intermittent routine interactions breaking up long periods of solitary work, to involved troubleshooting and problem-solving discussions (often conducted under pressure), through to participating in on-site training or representing the team at factory-level meetings dealing with complex issues such as quality assurance.

Thirdly, it was also clear that recent changes to production procedures and a move towards self-managing teams has placed greater communicative demands on both individuals and teams in terms of their English language proficiency and literacy, and also their interpersonal and intergroup communication skills. For example, cooperative teamwork is increasingly replacing the previous more hierarchical and directive management structures, and changes to quality assurance processes have led to an increase in the amount and complexity of documentation. This was particularly problematic for those workers who had been at the factory for a number of years, and had not previously needed this level of communicative competency in order to undertake skilled and responsible tasks[4].

[4] This was pointed out to us by the TCO, and was also raised during some exploratory interviews conducted at the factory by Mary Roberts later in 1999 as part of a study into the needs of ESOL workers in NZ workplaces.

Finally, the factory has a very diverse workforce in terms of social factors such as gender, age, cultural and linguistic background, as well as workers' technical and/or educational backgrounds, their practical experience, and literacy and numeracy skills. This diversity places great demands on people's interpersonal skills in particular, as well as making communication at a purely transactional level more problematic than it would be in a less heterogeneous environment.

## Communicative strategies

Our analysis of the pilot data confirmed the evaluation by the factory management that, on the whole, communication within the Power Rangers team worked smoothly and effectively. Despite the potential for difficulties, there were surprisingly few clear examples of ineffective communication in the pilot data, if we define this in terms of negative outcomes on a practical or interpersonal level (for instance production problems or tension between members of the team). As in any type of interaction, it was, of course, possible to identify numerous examples of problematic talk which required a degree of effort on the part of the participants to work through, but these instances of actual or potential miscommunication rarely seemed to lead to problems, and issues seldom remained unresolved for any length of time. It is clear that team members had a variety of communicative strategies at their disposal for dealing with issues that arose and/or for preventing problems from arising in the first place.

### *Getting the message across*

The team members themselves defined effective communication principally in terms of the accurate transmission of information or instructions, or 'getting the message across' to other workers. It is easy to understand why this is seen by factory personnel as being of prime importance, as any miscommunication at this level can have negative (and highly visible) practical consequences, incurring real costs in terms of lost production, as well as a loss of mana vis-à-vis co-workers and management (cf Coupland et al 1991). One example which occurred during the pilot study involved a breakdown in communication between the packers and manufacturers about how many tonnes of a particular type of soap powder were to be produced before a scheduled cleanout of the hoppers. This simple misunderstanding resulted in an 'outage' of several hours because the hoppers had to be cleaned out a second time before a new product could be put through the packing line.

One set of strategies involved making consistent use of routine processes or 'systems' for conveying or clarifying information and instructions. For instance, the morning briefing meetings provided a regular opportunity to pass on any important information, to raise issues or problems, and to clarify or reinforce any written instructions or notices. The team also had a clearly understood set of procedures to follow if they were in doubt about what to do, and any member could suggest a special meeting be called to sort out an ongoing issue or grievance within the team. The TCO made a practice of going on regular 'rounds' in order to pick up potential problems and to provide an opportunity for one-to-one clarification or coaching as required.

Team members also made use of many different channels of communication. These included face-to-face interactions (not always in English) such as team briefing sessions or one-to-one discussions on the factory floor or in the control room, use of the telephone and factory intercom, non-verbal 'sign language' on the packing floor, and a plethora of written information, including email, notices, instruction manuals, production documentation, computer programmes and so on.

Team members also used a wide range of discourse strategies to convey information accurately and to persuade others to do things. These included simple strategies such as:

(1) repeating key information and providing feedback

GT copy kiwi copy kiwi
RU what's up
GT stand by and I'll give you the figures bro
RU **yep go**
GT for the line 1 acma rainbow flight we need 24 tonnes **24**
RU **yo bro**
GT ... then we are on orange wave **orange wave** # for the line 1 orange wave we need two hundred and fifty six tonnes **two five six**

(2) checking or seeking clarification

RU copy Lesia
LF cool
RU bin 29 should be your last bin on line 1
RW **bin 29 did you say?**

(3) being very direct and explicit

GT **you must fill them out properly** the purpose of these sheets is to give information for people up there on how these the efficiencies of these lines # when we fill out a sheet that says we nearly packed six thousand cases in three- three and a half hours **that's a load of shit** that's running the machine at five hundred packets a minute ... **fill them out properly**

[General laughter]

*Negotiating meaning*

However, the pilot data provides clear evidence that successful communication in the team consisted of much more than the simple transmission of information, as indeed we would expect on the basis of other research into spoken discourse. Spoken communication is by its very nature a dynamic interactive process, and is seldom purely a matter of the accurate 'sending' and 'receiving' of a message.

Firstly, even in the most routine interactions, meanings and intentions usually have to be jointly negotiated between the individuals involved. A conversation is not governed by a script- it is always an improvisation in which one person's contribution at any given point is a response to what

precedes it and also affects what will follow. This is true even for the three quite simple examples provided above. However, the data also included many instances where the process of negotiation and clarification was much more complex, often extending well beyond the boundaries of a single interaction, as a particular issue or task was followed through a series of related interactions by staff members during the course of a shift. Indeed, many of the conversations we recorded at the factory can perhaps best be characterised as connected episodes in an ongoing dialogue, rather than as a series of separate interactions (see Stubbe 2000 for a more detailed discussion of this point). The TCO's practice of following an issue up in a range of different settings indicated an awareness of the 'intertextual' nature of much workplace talk, and provided an effective strategy for dealing with this complexity.

Secondly, it is also important to recognise that workplace interactions, especially in a factory environment, are typically highly context-embedded. The successful negotiation of meaning depends on a great deal more than just the verbal interaction itself. Other variables include non-verbal signals, shared access to and understanding of the work activities, physical objects and processes referred to in a particular exchange, knowledge about what has gone before, the role relationships involved, the kind of talk appropriate in each setting and so on. In many ways, the Power Rangers team functions as a 'community of practice' (Wenger 1998) whose members share a great deal of background knowledge and a specialised linguistic repertoire, built up over time through their mutual engagement in tasks and their membership of the team.

The next example illustrates how this shared background knowledge enables team members to understand what is going on in a particular interaction and assists them in making effective and appropriate contributions in a way that would be impossible for an outsider. (Contextual information is in italics)

(4) LF: what's the speed [*referring to the conveyor belt on the packing line*]
SF: speed slow one twenty [*number refers to a dial reading*]
LF: thanks a lot [*4 second pause*]
SF: ... hurry up [*addressed to a third party*]
LF: got no idea eh brother [*5 second pause*]
keep 'em eyes on the rejects [*sub-standard packaging*]
keep 'em eyes on the rejects er sue please and also on your weight [*refers to a running joke amongst the team about diets/losing weight*]

*The social dimension of workplace talk*

The pilot data also provided abundant evidence that team members were able to pursue their practical or transactional goals (eg conveying information, giving instructions, criticising, problem-solving), while at the same time paying attention to interpersonal or social goals (eg maintaining positive relationships, motivating others, boosting team spirit). In excerpt (4) above, for example, Lesia, a leading hand, is explicitly monitoring work on the packing line: he asks SF a question about the conveyor speed and reminds Sue to watch out for 'rejects' or substandard packaging. At the same time,

however, he makes sure that he stays 'on side' with his co-workers. We can see this from his use of polite language like *thank you* and *please*, and by the way he attempts to neutralise the status difference implied by his instructions with the statement *got no idea eh brother* and by teasing Sue with his reference to a current 'in-joke' about diets. His friendly tone of voice also adds to the overall effect. The way Lesia chooses to convey his message therefore plays a vital part in building and maintaining good relationships, which in their turn are likely to contribute to more effective task-oriented communication within the team (cf Stubbe & Vine 1998).

This attention to the interpersonal aspects of their interaction clearly had positive implications for the Power Rangers' motivation and team spirit. In fact, one of the most noticeable characteristics of this team was the strong orientation to team morale. One very important set of strategies for achieving this was the use of humour. The Power Rangers have a well-deserved reputation at the factory for constantly joking around and 'having each other on' which sits alongside their status as the 'top team'. At the time of the pilot study, their particular blend of verbal humour, jocular abuse and practical jokes contributed to a unique team culture and generally helped to create positive relationships within the team (see also Stubbe forthcoming b). Sometimes humour would be used as a localised discourse strategy during task-oriented talk to defuse tension or soften criticism (as in Excerpt (3) above), or to emphasise group solidarity or downplay status differences, as in Excerpt (4). More extended instances of humour such as telling jokes or teasing also occurred in their own right, as in the following excerpt, from a lengthy interlude during which PT's co-workers are teasing him at during a period of 'downtime':

(5) **PT: oh man i'm starving i am starving ... i might go and join the war remind me of the old days the army and the front row ...**
DM: you'd be the first one to get shot
PT: why //what makes\ you say that
DM: /you're so\\ you're so big
PT: brother
DM: it's very rare that a bullet will miss you
[laughter]
PT: yes //(that's not on\\
DM: /look at the\\ size of your stomach
PT: that's NOT on (3)
DM: actually they'll close their eyes and sh- fire a shot
[laughter]
PT: [drawls]: oh: i see
DM: they got no problem missing that

This type of humour tended to occur in the gaps between tasks and therefore did not interfere with the demands of the job. However it very definitely helped fight the inevitable tedium of factory work, thus maintaining morale and keeping people on their toes, as well as providing a way of generating group solidarity.

## Conclusion

In answer to the first question posed in the introduction, it should be clear from the brief summary provide here that at the time of the pilot study, members of the Power Rangers team had a number of effective communicative processes and strategies in place which contributed in no small measure to their acknowledged status as a well-motivated and high-performing production team. Our second objective was to try and tease out which of the communication features observed were unique to this particular team, and therefore not readily transferable to other groups, and which ones could be identified and emulated successfully by other teams in similar contexts. This is a rather more complex issue, which requires more detailed analysis than is possible here. However, it is possible to draw some overall conclusions based on the work done to date.

It is obvious from the pilot study that the 'Power Rangers' have developed a particular style of communication that suits the individuals in the team and has evolved out of a unique interaction of personal and group characteristics. For instance, the TCO played a crucial role in uniting the team around a common purpose, as well as fostering and modelling the use of a wide range of communication strategies, including the use of humour. It is also likely that the cultural composition of the team, with its high proportion of Polynesian workers, has been a major influence on the development of the team's 'high solidarity' style of interaction, and the sense of collective responsibility that is evident. For these reasons, amongst others, it is unlikely that another team could simply copy the Power Rangers' way of doing things.

A more useful way of looking at this issue is to see the team as a 'community of practice', with its own unique 'culture' or ethos and a shared repertoire of communicative strategies (Wenger 1998). This framework implies that there no one 'right' way to do things, and that taking a prescriptive, skills-based approach will not get us very far. Rather, each team will need to develop its own way of communicating, its own set of shared practices which reflect the needs , skills and personal characteristics of its members.

This implies a focus on global strategies or principles rather than on specifics. These might include the following general principles:

1. Talk is interactive — all participants share the responsibility for conveying and interpreting a 'message'.

2. Communication operates on different levels — *how* you say something can be just as important as *what* you say.

3. Workplace communication is 'intertextual' — talk is not the only way to communicate at work, but ties in with signs and gestures, written documents, computers etc.

4. Good communicators are flexible and responsive — they adapt according to where and to whom they are talking — there is no one 'right' way to communicate.

Working within this framework, it should be possible to develop team members' awareness of the range of discourse strategies and processes they might use, and to assist them to select appropriately from the linguistic and other resources they have available to them.

## References

Coupland, Nikolas, Howard Giles and John M. Wiemann 1991. Talk as 'problem' and communication as 'miscommunication': an integrative analysis. In Coupland, Nikolas, Howard Giles and John M. Wiemann (eds) Miscommunication and Problematic Talk. London: Sage, 1-17.

Hammond, Sue Annis 1996. The Thin Book of Appreciative Inquiry. Thin Book Publishing Co. Plano, TX

Holmes, Janet, Maria Stubbe and Bernadette Vine 1999. Analysing New Zealand English in the workplace. New Zealand English Journal 13, 8-12.

Holmes, Janet 1998. Victoria University's Language in the Workplace Project. In Janet Holmes (Ed). Te Reo: Special Issue papers from the Language and Society Conference June 1998, 41.

Stubbe, Maria 1998 Researching language in the workplace: a participatory model. Paper presented at the 1998 Annual Conference of the Australian Linguistic Society (ALS), Emmanuel College, the University of Queensland, 3-5 July. Published electronically in ALS 98 Papers in Proceedings: http://www.cltr.uq.edu.au/als98/

Stubbe , Maria 2000. 'Just do it...!': Discourse Strategies for 'Getting the Message Across' in a Factory Production Team. Henderson, John (ed.) 2000 Proceedings of the 1999 Conference of the Australian LinguisticSociety.
http://www.arts.uwa.edu.au/LingWWW/als99/proceedings

Stubbe, Maria (forthcoming a) Collecting natural interaction data in a factory: Some methodological challenges. Murdoch Symposium on Talk-in-Interaction, September 1999

Stubbe, Maria (forthcoming b). Just joking and playing silly buggers: humour and teambuilding on a factory production line. New Zealand Linguistic Society Conference, Massey University, November 1999.

Stubbe, Maria. and Bernadette Vine 1998. Swings and roundabouts: getting things done at work. In Janet Holmes (ed.), Te Reo: Special Issue papers from the Language and Society Conference June 1998, 41.

Wenger, Etienne 1997. Communities of Practice. Cambridge: Cambridge University Press.