GRI report 2000:7

Bracketing an issue

in a product development process

by

Sten Jönsson & Anders Edström

Gothenburg Research Institute

School of Economics and Commercial Law

Göteborg University

sten.jonsson@gri.gu.se

Abstract

This paper deals with action in the complex setting of a large product develeopment project – a new year model of a car. The prespective is that of one engineer who has discovered a problem with the prototype car he is driving (a noise problem). He wants a mandate to study and propose a solution, but the issue is lost to a colleague. The analysis is based on a video recording of the project management meeting and audiotapes of participants' explanations to the conversation as it is replayed to them individually. It seems like the focus person (Charlie) fails to control the definition of the problem. The "bracketing" of an issue in meetings, and floor management as a means of making meetings efficient, are discussed.

Introduction

Charlie was not exactly worried, but he had two points on the agenda today. One was a major issue concerning reduction of road noise. That point was approaching a solution and he had test data to show that he had come to grips with that one. It was a matter of implementing the new stiffer bushings in all suspensions. The other point concerned what he was going to do next in the project. His own choice was to have a go at wind noise at high speeds. He had driven his prototype version of the 1998 model at about 235 km/hour on the German "Autobahn" and there had been this annoying noise. He called it a "standing wave" since it was a noise, generated by some vibrations due to the speed, that hit the driver's ear directly, monotonely, and with the wrong frequency. It seemed to come from the top of the windshield or the sun roof. Since Charlie was an NVH expert (Noise, Vibrations, Harshness), and repsonsible for "Properties" in the XYZ project, he felt that he had to sound the alarm. Tests (wind tunnel?) were necessary to determine the exact cause of the noise and the appropriate action to take. This would cost money and there were all kinds of ugly scenarios in his mind when he arrived to work on the day of the Project Management Group (PMG) meeting. He had raised the issue, as was the right thing to do, at the TMG (Technical Management Group) meeting yesterday, but even if he was able establish the issue as a prospective "Action Point"on today's PMG agenda the arguments had been inconclusive. Charlie himself did believe that the noise came from the trim moulding but he knew better than to jump to conclusions; air flow shifts due to the geometry of the body, effects from the outside rear mirrors were other possible causes. Even if he had argued for a more comprehensive study his colleagues at the TMG meeting had jumped at the easy solution, that the problem was a inadequate fastening of the trim moulding around the windshield and/or the sun roof. Charlie wanted to get a decision to do a proper study and then come back to the PMG with reliable measurements and a recommended solution that would stick. That would be proper design work. Noise problems is nasty business since they are difficult to deal with and have a direct effect on customer value. The whole point with this year model change is the installation of powerful turbo engines and it simply won't do to have wind noise at the intended price level for this car! The problem was that his prototype car was not updated with the last changes to the design of the X! In the PMG meeting today the project leader will be present (he was not at the TMG meeting yesterday) and this provided a second opportunity to get the right decision to spend the necessary money to assure a sound solution. Charlie had

some goodwill with the project leader to build on. There was a general drive to reduce noise in the car and Charlie had done a good job with the road noise issue focusing on the bushings in the suspensions (front and rear) that are about to get the right stiffness. Maybe a budget in terms of money and time to find a solution could be decided upon today if the issue were presented in the right way....

Context

The PMG meeting is held every second week and it is the decision making meeting on matters of technical content, quality and cost for the project. Members of the group are the ST (system task) managers in the project, like Engine, Transmission, Body, Chassi and Installation, Exterior, Testing, Electricity etc., and representatives of departments like Business Area X, Production, Quality, Accounting, Technical Documentation, After Sales. Every ST area is broken down into DTs (Design Task) like Brakes, Doors etc. Every ST manager thus has subordinate groups of design engineers organised into teams to manage and to represent in the PMG. The project leader (an "engine man" - this year's model will install more powerful engines) has signed a contract with the Board of Directors to deliver a design with the contracted properties, at the contracted time, and at the contracted target cost. He likes to lead the project" by participation" in the technical discussions wherever it takes place. Therefore the Quality manager of the project is chairing the meetings moving them down an agenda that contains numerous points, all with a few allocated minutes. This is a decision making meeting, not a technical seminar, and all items must be well prepared and to the point. But alas! The time schedule breaks down every time because people (and especially the project leader) cannot help getting involved in discussions. So instead of the scheduled 2 - 2.5 hours the meetings drag on for 4 hours or more in spite of the fact that the pace is exhausting, breaks are few and the amount of information passed across the table per minute is quite large. There has been discussions since the start about what could be done to make the PMG meetings more effective. The Dutch members often talk about the lack of discipline among the Swedish design engineers. One way of improving meeting efficiency would be to radically reduce the PMG group to the core team of the project (project leader, deputy project leader, Quality manager and Project Co-ordinator) plus the engineer(-s) concerned from issue to issue. This has been dismissed since the engineering culture of the company (Volvo Car Corporation) has been to organise product development

in a way that will keep everybody informed about the progress of the different parts of the joint project in order to run a co-ordinated project by responsible individuals taking the necessary contacts and allow parallel problem solving. Concurrent engineering has been used since before the name was invented as has target costing. Time to market has been shortened considerably even if there are late changes due to late market information or because creative ideas come up. The company is a niche producer of premium cars which makes it an essential strategy factor to keep designs open as long as possible in order to stay tuned to progressive customers. All this requires intensive communication in meetings and outside.

The project (and, consequently the PMG) is embedded in a large number of disciplining structures which impign on its freedom of action. The contracted budget is released in 10 portions (Quality gates) depending on whether the project fulfills the prescribed progress in quality and timely delivery of solutions at the respective gate. If the requirements are met "the gate" is opened and funds released. In real project life it is not feasible to stop a project just because a problem with one of the engine versions has not been solved on time. So, a project may be only partly past a "gate". The gates set the rythm of the project. There are also regular cost review meetings (CRMs) to monitor whether target costs are met. An increasing number of suppliers actively participate in the development of components. Departments (like the Engine Department, which is probably the most "macho" department) have R&D of their own which now and then generates results which they are eager to include in cars as soon as possible. There are a large number of co-ordinating committees at different levels dealing with issues concerning the alliance partner (Mitsubishi Motor Corporation) and with the planning departments of the joint venture (50-50 owned) production company (NedCar).

It is a complex context by any measure and engineers coming down to Holland from the different departments of the mother organisation expecting to work in the "Volvo-way" are in for all kinds of surprises. Colleagues from the other partners (NedCar and Mitsubishi) have their own ways-of-working and their own notions of what constitutes professional behaviour. Mitsubishi is an accomplished "lean production" organisation. NedCar has been successfully slimmed down to a high level of efficiency over the last few years (doubled production volume and halved personnel, while managing fairly well to produce two competing cars, designed by

each of the two owners, on the same assembly line with a budget set by the two owners/customers).

Charlie's intention is to bracket (a phenomenologist term) an issue and get a mandate to use resources to solve an emergent problem of strategic importance inside a project under a strict target costing regime in a professional manner. The complex embeddedness of the process makes it difficult to accomplish this since the project is under cost pressure, but on the other hand all involved are likely to recognise the relevance of the problem and the potential value of a good solution. How should Charlie, a senior project member, go about this task?

Data Collection

The situation that will be analysed in the following pages is taken from a longitudinal study of several product development projects in the car industry. Focus in this study is to capture data on micro processes in the implementation of strategies and project management. Car projects are large in terms of personnel, cost and duration and they are increasingly complex as ever larger parts of component development are done by specialised suppliers. Production in this industry is largely standardised, automated, and of high quality, which means that competitive advantages has to be sought at the development and design stage. This is where customer friendly properties and product price are determined. Alliances can be used to share basic development costs. Car models are, increasingly, built on technical "platforms" that are designed to accommodate several car models. In our case Mitsubishi and Volvo share the same platform to build competing cars in the same production process. A further restriction is that brand identity will require "family resemblence" between the different models of the same brand. The car to be designed must fit into the Volvo family (similar exterior features) and with "safety" as the leading dimension. How do competent design engineer accomplish their tasks in such a complex environment and how do strategies emerge (Mintzberg 1988)?

We have been allowed to be participant observers in PMG and other meetings, we have interviewed all members in the PMG at least once and usually on several occasions, we have done interviews with top managers in surrounding organisations, and we have measured work climate using standard questionnaire forms (c.f. Ekvall 1988) once in Charlie's project and on more occasions in other projects. We have

video filmed many meetings and played back sequences from these recordings to participants individually asking "What is going on here?" audio-taping the interpretations/explanations given by the participants themselves. The sequence about to be analysed is such a sequence that has been interpreted by about 15 members. This gives us a rich data coverage of the process with a special focus on the "figure" constituted by the sequence when Charlie tries to get the go ahead on his noise problem. Participants have made sense of this "figure" against the "background" of their own experience and tasks (described by themselves in separate interviews). With several sets of sensemaking reasoning on the same, recent, self-experienced event we can see how "figure" and "ground" are coupled to produce different understandings.

In analysing this event the task is to see how Charlie tries to establish the figure (the noise problem) while the meeting, against differing grounds, redefines it into a "trim moulding fixation problem", which is not Charlie's responsibility.

The wind noise sequence

The project management group (PMG) holds its bi-weekly decision making meeting. The project is somewhere halfway through its allotted time. The project leader started the meeting with an oral report from the recent test driving excursion to the north (winter conditions) where top managers participated and had occasion to stress some strategic aspects (like the importance of solving the 5th gear setting of the high pressure turbo version for the Japanese market also for the case when the car has a caravan in tow). Next the Project Secretary goes through decisions taken in yesterday's TMG meeting. Those decisions have a character of "Action Points", i.e., the person identified in the decision is charged to present a solution to the identified problem at a prescribed date. These "Action Points" remain on the agenda until an acceptable solution is presented in the PMG meeting. The Project Secretary is one of the management team of the project (Project Leader, Deputy Project Leader, Project Secretary, Quality Manager). The Quality Manager has as his main task to see to it that the project lives up to the requirements at the regular "Quality Gates" where project progress is reviewed by representatives of Head Quarters. The Project Secretary has the difficult task to keep track of all decisions taken in meetngs. As he goes through the new "Action Points" put on the agenda in yesterday's TMG meeting

participants (especially the deputy project leader) correct him if he did not get it right.

The final point on his list says "Wind noise at high speeds: Taken up as a XYZ-project issue. Properties to investigate source(-s)". When the Project Secretary presented this point he indicated that he is not sure that he got all the points right. The discussion pointed in different directions. He said that "apparently" there was a noise at high speeds and it was indicated that this required action on "Exterior items" and then turned to Charlie to "complete the story". Before Charlie could say anything the project leader injects "This is a strange point to me! I was not at the meeting yesterday, is it because.." Charlie breaks in and says that he brought the issue up and there is a wind noise for all turbo models at high speed. The project leader asks if this noise is different from what is the case with the current year model. Charlie says that it is not different but it is due to the speed. Then the following exchange takes place:

Legend:
Speakers name is given as XX when unidentified.
Left hand column of figures denotes row numbers for reference
[2 uhum]2 denotes overlapping talk, brackets indicating start and end.
Text between < and > comments on other behaviour than speech.
(....) denotes inaudible speech
Upper case letters denote emphasis (except in abbreviations)

Charlie <leaning forward>:

1 ...the difference is due to speed, but what I did, I
2 focused on the possibility to improve the trim.. the roof
3 trim connection to the (.....).because it loosens.

<the deputy project leader first shows, by body language, dissatisfaction with the explanation by leaning back from a leaning forward position and shifting gaze towards the project leader, then in an almost continuous movement stands up and goes to the white board>

Project leader:

4 That is, for me, a typical refinement item [1]1 to be done.
5 But wind noise has not been an item earlier.... but I can ...I

6 can really...maybe on the high level but then... that is a
7 basic...a base car problem as I see it.

Charlie:
8 [1uhm]1

<deputy project leader is writing on the white board>

Charlie:
9 uhum, but my recommendation was to bring it in as an
10 item in the project .. wrong or right, but someone has to do it.

Project leader:
11 Yeah, as I said, as a refinement item .. good .. but it was not
12 something that we promised to improve in the project, but
13 can we improve it ...FINE.

<deputy project leader finishes writing on the white board: two lines:
"General analysis -> QAC" and
"Trim moulding loosening at high speed -> higher wind noise">

Deputy project leader (standing by the white board):
14 This is the way we talked about it, eh...
15 Wind noise, when it comes to a general level is an analysis
16 done by QAC <Quality Action Center>.

XX :
17 ...wind noise?

Deputy project leader:
18 Yes, So that has nothing to do with us. But when it comes
19 to the trim moulding getting loose at high speeds ... and
20 that generates very clear a higher wind noise. This point is
21 also a VCCQ point already... in our project..

Project leader:
22 Why isn't that at QAC? Are they okay today and will
23 loosen...

Deputy project leader:

24 Due to the higher speeds above 200 -220 it bends open.[2]2..
25 it doesn't come loose completely [3]3 but it increases the
26 wind noise. Therefore "Exterior" is already today working on
27 trying to fixate.. trying to fix
28 [4 the]4..

Project leader:

29 [2 hm]2

Charlie:

30 [3 bends up]3

Exterior:

31 [4 but]4.. But, as I said yesterday, not in the light of wind
32 noise! That was not the task.... (pause)..[5]5..I will just do the
33 moulding [because wind noise is...]6

Deputy project leader:

34 [5Ha! (barely audible)]5

<expressive body language; several people smiling>

Project leader:

35 [6 ... are we starting the same discussion..]6

Deputy project leader:

36 So the task we agreed upon yesterday, anyhow, eh, is that
37 we should try to fix the trim moulding better. That is part
38 of [7 "the project".]7 <speaking a bit louder>Hopefully it will result
39 in, also, an improved wind noise.

Exterior:

40 [7 "the project" including it]7

Exterior:

41 of course now I will take in that also in the task, but the
42 task itself.[8..]8

Deputy project leader:
43 [8 eeh]8 It's okay!...hehe

Project leader:
44 Yeaaah, we don't want to loose that one...he he..

- end of sequence -

(the meeting moves to the next point on the agenda)

What is going on here?

Charlie has an agenda point pointing in his direction and the Project Secretary signals uncertainty passing the word to Charlie, but the project leader cuts in and questions the legitimacy of the item, but since he was not at the meeting yesterday he is willing to listen. Charlie starts to explain that the problem appears at high speed and it is probably due to the trim moulding at the upper part of the windshield bending up... the project leader seems anxious to keep this away from the project. The problem belongs to the base car and should be solved by the Quality department (QAC = Quality Action Center). Charlie indicates ("wrong or right", line 10) that he thinks the project leader is ducking the issue (He should give the job to Charlie and discuss who will take the cost later). The project leader indicates that he is willing to take on the job only if it does not cost anything because it is outside the defined project content ("a refinement"). The deputy project leader is prepared, which is evidenced by his standing up almost immediately and starting to write on the white board. He explains that the general analysis of noise is a QAC responsibility, but in this case the increased noise is due to the new powerful engines in this project which allow speeds well above 200 km/h. Therefore the problem belongs to the project, it is already registered as a problem for the project anyway since it is a VCCQ point with the project (VCCQ is a register of quality problems). This fact persuades the project leader only after the deputy project leader repeats that the problem is due to the high speeds of the top cars in the project and in the same turn indicates that Exterior is already at work with a simple, satisfactory solution - fixing the trim moulding better. At this point Exterior is anxious to establish that the task is not to reduce wind noise but to fixate the trim moulding (He does not want to get stuck with a noise problem that might never go away and engineering hours might accumulate in his budget....)

The deputy project leader assures him that "it is okay" if he fixes the trim moulding, it will "hopefully" take the wind noise down. The project leader ends the sequence with a (lame) joke now that he is convinced that Quality will have to pick up the bill (since they have initiated Exterior already before the PMG decision). It is obvious that Quality will have to pay also if further action is needed. Charlie did not participate after he had lost the battle for control. It should be noted that there is no decision on this item (it will not appear in the minutes that the project decisde to go ahead, because then Quality might get the idea to transfer costs from their budget to the project). In fact the matter was taken from the initiator (Charlie) and handed to Exterior without the project leader indicating that he was aware of this. Even if Charlie's responsibility on this issue is unclear now, he can always fall back on his general mandate to follow up on the "properties" of the car.

Comments to the sequence by principal actors

Charlie starts out,when commenting on this exchange, by airing frustration. His arguments are that it is unsatisfactory that the issue was not brought to a conclusion in the form of a decision at the meeting, and that he thought it proper to bring up the issue now even if the source of the noise had not been properly documented. He also expresses the opinion that if the project leadership is not sensitive to this kind of "fussy" points being brought up in meetings project members may choose not to bring matters up in the future.

Charlie considers this issue strategic because the customers who are expected to buy these cars, with their powerful engines, will drive fast. He knew from the beginning that this was basically a base car problem, it had been discussed before, but now with the faster versions it was right and proper to raise the issue to the team's attention. Charlie's ideal conclusion of this issue would be that the project leader should have stopped the discussion as soon as he realised that this was an important problem and charged Charlie with the task to report back with a proper study of sources of the noise and a suggested solution. He describes his action after the meeting as acting as if he had got the task he asked for. Contacting the engineers at Exterior who were in charge of the fixation task to discuss solutions, updating his prototype car for on-the-road- testing of the new solution. The matter was solved and the issue closed in a few weeks through the improved "fixation" of the trim moulding.

The project leader confirms that the discussion in this exchange is really about whether the noise belongs to the base car (and thus is a cost for QAC) and what the project should do to get the improvement but not the cost. It clearly is a quality issue, but Charlie is interested in it from a property point of view and Exterior sees it as a fixing-the-trim-moulding problem. It so happens that the two problems/perspectives overlap. The project leader explains his being so adamant about keeping this problem away from the project because wind noise appears at much lower speeds than they talk about here. He explains the nastiness of taking on noise problems by reference to Charlie's task force (also comissioned by QAC) on a specific kind of road noise and the frustration of it not having found a solution until recently. He expands on the trouble of road noise and points out how the Volvo engineers have an experiential advantage since the roads in Sweden have a much coarser road surface than Continental Europe and Japan (due to the fact that the roads must keep also in winter conditions). There is a cost related to noise reduction and somebody else than the project should pay.

The deputy project leader comments on this sequence as a case of communication problems. Two problems interlock. Exterior questions whether this work should go inside his project budget (he is also responsible for Exterior in the next year model project that is in its early phases yet and has a kind of a book keeping problem for his engineering hours.). He is a guy that wants to see things in "black and white". He wants clearly defined tasks, but what is needed in situations like this is flexibility and openness. The deputy project leader says that he was quick to go to the whiteboard because when he feels that there are communication problems he tries to split problems up into component parts and visualise them. It usually simplifies things.

On a direct question if he thinks that Charlie got what he wanted the answer is yes. The one who has difficulties accepting the point is Exterior. The deputy project leader has not calculated how much of the problem should be seen as belonging to the base car and how much to the project, and the same seems to be the trouble for Exterior. One should not really juggle issues like this in a PMG meeting. Exterior is responsible for these details and we all must assume responsibility for what we offer our customers.

Exterior first points out that this problem with wind noise at higher speeds was already recognised as a problem and "we were working on it". It was defined as a

quality problem. The sequence is a long discussion of whether the problem belonged to the project or not. Exterior had been handed the problem from the VCCQ (Quality department) so it was not a task for the project. This confusion is the reason for the discussion. Clearly this does not belong to the project since the problem was already present on the current model. But on the other hand the risk is greater with the project since the cars in this project are faster. "Fortunately the quality action we took was OK" it solved the problem for the project as well. Exterior had already procured test details (trim moulding) for a better design at the time of the discussion, they applied them after the meeting and Charlie accepted the solution. Exterior is of the opinion that the handling of the matter in the PMG was not very good. Instead one should have cut the discussion short, stating that the matter was being taken care of and that results would be reported at a later meeting.

On a direct question as to whether it was right for Charlie to bring the matter up at the two meetings (TMG and PMG) Exterior says that Charlie had driven the car and discovered the problem and it was only natural that he wanted to direct attention to it. But he could have approached Exterior directly and the outcome would have been the same. This was not a matter for the PMG and it never came up again.

In sum the speakers in this sequence did not see this inciedent as a very significant one. A problem was brought up and after it was clarified that it 1) would not cause extra costs to the project and 2) had an obvious solution the matter did not require any further attention. Charlie, who brought up the issue, was not satisfied with the outcome since he wanted a mandate to go ahead with a sub-project on noise. The project leader is not willing to import a noise problem to the project because its potential for getting out of control. He refers to a recently finished road noise job that Charlie took his time to solve (comissioned by Quality). The deputy project leader pointed out that the issue whether this is a probem for Quality or the project is not really relevant. There is joint responsibility for the offer to the customer. Exterior was already working on the solution (on the assumption that the trim moulding was the problem) and was disturbed by the problem being opened up again. Especially if the problem were to be defined as a noise problem. At the time when the sequence was shown to the respondents a satisfactory solution had been found. The sequence illustrates how a "problem" evokes different problem definitions, has motivational effects, and is related to different goal dimensions. How can a proper "framing" of the problem contribute to effective communication in the problem solving process?

Before this issue is discussed the comments by non-speakers at the PMG-meeting will be presented:

Non-speakers

As usual the majority of the participant did not speak on this issue, even if it may have more or less relevance to the individual member. Most attentive was probably the Project Secretary. He was the one who introduced the issue and gave the word to Charlie, he keeps record of decisions in the PMG-meeting and is responsible that they are followed up in coming agendas. He is probably the member who is best informed on formal and is obliged to keep a broad attention span while the project leader and his deputy will be more focused on critical issues. The Project Secretary is the member who gives the most background information when reviewing this sequence. He first helps with the definition of what is meant by a "refinement" (a lower priority category, which will be dealt with if there is time). This is as opposed to a "problem" which the project undertakes to solve. He also places the issue in perspective. The project has more important problems to deal with at this time (e.g., the action point the project leader took upon himself e few minutes before in this meeting - adjusting the gear box setting for the fifth gear on the turbo version). He also points out that Exterior also is a line manager for Exterior in relation to the Quality department. This explains why he was already working on the "roof trim" initiated by a production quality complaint on the base car. The deputy project leader tries to make the wind noise problem that Charlie brings up into a Quality Department problem by defining the work Exterior is doing as its attempted solution.

The Project Secretary focuses on the way the matter was brought up in evaluating the sequence. Charlie is a good engineer and a "sound" person, but this time he brings a problem up on a subjective basis. There should have been a better analysis for causes before the matter was brought up for decision, that would have helped in specifying what action was needed.

Interior is closely involved in noise. The Interior engineer informs us that this is an old, familir problem that he has discussed a lot with Charlie. Interior is used to take a lot of abuse because of noise. He and Charlie agree that there is a bias in engineers' views on noise. They are mostly concerned with road noise. But wind noise is a

significant problem for this car due to its geometry. Interior explains the details of how high speeds generate vibrations. What Charlie does in this sequence is to try to get a priority label on fixing the trim moulding problem, because he knows that the Quality Department will go on with their analysis because the wind noise is not only due to the trim moulding, it is also caused by the mirrors. In the "third actor" is Exterior who is of the opinion that the trim moulding fixing is not part of the project, but after this PMG meeting the fixation of the trim also for speeds up to 235 km/h has been added and he has to work out the cost consequences (division between the quality departmet and the project).

As far as Interior knows there were some test runs with extra clips for the trim moulding, but it seems to have petered out into nothing....well, the quality department has done the fixing that was required, but the issue has not been treated again in any PMG meeting.

Chassi and Installation is closely concerned. His is the largest sub-team and he is hoping to get a project leadership job soon. He first comments on the project leader's way of handling this incident; he has a habit of letting people speak their mind on issues like this (that is why the meetings tend to be too long). Quite clearly this problem belongs with the base car. There is an unfortunate design that generates a vortex which hits the driver right in the ear and with amplification from the side window. The project is supposed to install a couple of new engines but it is not supposed to tamper with the body. One has to be strict about project definitions otherwise projects will intermix into soup. This point should have been ended earlier by a decision that this was a quality department problem, but Exterior is a newcomer to the project and does not quite know how to deal with this kind of issues. That is why this one becomes a bit messy. The core of the project team (project and deputy leader, Charlie and Chassi) sits together and talk all the time, while Exterior is more distant with his damned trim moulding.

When Chassi's attention is drawn to the fact that the deputy project leader argues that the noise is due to the high speed Chassi is not convinced. The base car already can make more than 200 km/h and it is not proven that the noise starts above that, but on the other hand noise increases with the square of the speed so it might be argued...

Last among those more closely concerned is Project Quality. He is a memeber of the project leadership team. Focus in his comments is on the way the matter was brought up. Charlie wanted to flag this as a significant quality problem and the discussion turns on the responsibility dimension. Charlie should have brought this up as a technical matter through the TMG (he did). Exterior wants to say that this fixing of the trim moulding may not solve the wind noise problem. The project leader is concerned why this has not been brought up earlier and the deputy project leader seems to be satisfied that fixing the trim better will solve the problem. Exterior thinks that it is not as simple as that. Quality points out that this "new" problem will remain defined as the (old) trim moulding problem only if it turns out that better fixing will solve it (otherwise it will come back as "the wind noise problem"?).

Comments by the less concerned

Throughout the series of PMG meetings which the authors have attended we have observed that different people pay different attention to different issues. This is a necessary defence mechanism in such a complex and densely packed meeting. Some of the participants seemed less concerned about the noise problem.

The Project Accountant was comparatively new to the job at the time of the meeting, but talks about the problem in technical terms describing the air flow and the wind rush due to the design. Even if it did not belong to the project from the beginning it is now included due to the higher speed of this year model. A "refinement" is an adjustment to the existing car as opposed to a new solution, which would be if, e.g., the project were to redesign some part to steer the air flow differently.

Purchasing describes the incident as a borderline problem where the discussion concerns who will take care of this specific problem.

Electricity comments that it is not always easy to understand problems because everybody is specialised and not acquainted with the areas of the other participants. Therefore it is difficult to see what is behind a discussion. In this case it is a wind noise problem which has been with this car since the start. Some action has been taken but not enough. Now the issue is whether it is a quality problem or a project problem. It all boils down to what has been specified for this model. If the specification is good enough to be valid also for high speeds then it is a quality

problem. Electricity associates the problem with a similar situation in the first year model. It does not seem quite clear whether Exterior accepted responsibility for the solution in this discussion. Electricity points out that this sequence illustrates how preconditions change for projects all the time; new conditions, new requirements, of course project content has to be adpted!

Body, a senior project member, sees this exchange as a side track. Somebody brings up noise and the discussion focuses on a quality problem with the base car. In the PMG we are supposed to take decisions not discuss technology! This is what time is spent on here! A little ad hoc exercise! Body is of the opinion there is nothing about noise in the project contract, and rightly so, because this project adds very little to the noise, except some turbo noise, so the problem belongs squarely with the base car and thus with the quality department.

The engineer responsible for a special engine installation, a French guy, sees this incident as an example of an important type of problems. A technical problem is brought up to determine who owns the problem and thus is expected to solve it. It is a matter of finding the right department or man for the job. One cannot know everything and one turns to Exterior who knows a lot about what is going on outside the project in this technical area. The task is probably included in the project now (he does not know if it hs been solved). This is an important issue - who is responsible for moving this problem towards a solution?

It is fairly obvious that the members who did not participate in this exchange did so because they had their mind on other things (like their own upcoming presentation?) and as a consequence they are rather similar in their interpretations of what was going on here. The issue was whether this task belonged to the project or not - a rather simple matter. Senior project members remember that this has been discussed before, in job one, where the base car was designed. It is a diversion and they have not paid much attention to it afterwards. A simple and straight forward interpretation (even if several of the respondents demonstrate that they are well acquainted with the aero-dynamics of the car).

Summary of comments

The two participants who are most directly involved in the exchange are also most focused on the definition of the problem. Charlie wanted a wider mandate and lost it,

Exterior wanted a specified task (what to do rather than what to acheive) and got it. They tend to understand the argument in terms of their professional speciality (and how they want a job defined). Those who are responsible for the project (the project leader and his deputy) understand the issue in terms of jurisdictions; is it in or out of the project? The project secretary saw the problem as prematurely brought on the agenda (procedure), while most of those who did not participate in the discussion tended to minimise the significance of the event - it was a deviation. It seems like the participants understand the problem in terms of their own function in the project. What is said is given meaning by that particular background and that the degree of detail in sensemaking is dependent upon responsibility and professional distance to the problem.

What happened then?

After the meeting Charlie acted as if (his own description) he had got the task to follow up on this issue. He contacted the responsible person in Extrior, was informed about the intended solution, and got an agreement to update his own test car to the right status for further fast drive testing. (The problem was that in the updating the garage broke the wind shield so there was delay in his own work on the issue). Charlie informed those concerned about what was going to happen on the MEMO-system. The tests of the solution were finished 3 months after the PMG meeting and the solution was then "frozen" awaiting verification and it has later been accepted.

What goes on here?

When seen by an outsider this sequence seems to illustrate how somebody brings up a problem in a meeting but the ownership of the problem is given to somebody else with possible negative effects on motivation. This interpretation is supported by the first comment by Charlie to this sequnce. He says that if the project leader is so insensitive to issues being brought up, ill-defined as they may be, who will bother in the future? Could the project leader have managed this discussion differently to avoid the possible loss of motivation? This could be called the floor management problem and shoud be discussed in the analysis.

A more fundamental problem seems to be the definition of what kind of problem this is and who is its "owner". Browsing through the comments to the sequence one finds that participants seem to engage to different degrees in the exchange and the activity in the discussion signals "closeness" to the problem. But the person ending up with

responsibility for the solution was a reluctant "owner" already before the issue was brought up by Charlie. He offered resistance to a change in criterion for what defined a solution (the "fixing the trim moulding" problem was running the risk of being transformed into a "wind noise" problem) that carried increased uncertainty with it? Or was Exterior more worried about the accounting problems implicated in doing a job for two principals (Quality and the Project) with engineering hours to allocate and a possible target cost effect (if the whole job were a quality job, the new cost for trim moulding material could be charged to Quality?). The incident ends in ambiguity. Was there a decision and if so what was decided? Is there a noise problem that might be reduced by the fixing of the trim moulding and might need further action or is it declared solved at this moment? Given the nature of projects and their time and task focus (Lundin and Sîderholm 1995) it seems important how the team arrives at a conception of the problem in view of whatever concerted action is required to solva that problem. How do members manage to focus team attention? This could be called the "bracketing" problem.

The floor management problem

The first item to discuss is how the group, and its leader, manages their discussion: How does the conversation "flow" when it flows well, how do people know when to talk, and how is "order" maintained?

For the flow of conversation to continue smoothly and in a mutually satisfying manner it must exhibit coherence and conform to some structure. There are small acts (interjections) that participants use to keep it going like "I see!" (or "uhum" like in line 8 and 29) without any particular intention of influencing the conversation. An interaction consists of a set of "moves" that can be classified into e.g., soliciting, introducing, interrupting, explaining etc. A "turn" refers both to the opportunity to assume the role as speaker and to what is said and done by that speaker. Turn-taking in conversation is driven by adjacent pairs (e.g., questions requiring answers for meaningful conversation). An exchange is a set of turns providing a minimal unit of interaction which consists of one or two sets of turns (e.g., question - answer - feedback).We are now ready to define floor, which was originally introduced by Harvey Sacks (see Silverman 1999) as a ticket or right to begin to talk (cf. "the floor is yours"). Through experience we learn to apply the social rules of conversation. We

even find tricks of the trade in our children; like if you want the "floor" start with a question that must be answered with a question:

> Child: You know what?
> Parent: What?
> Child: Susy has got a new doll, and.....

The child is given the floor to develop her plea for a new doll of her own. But "floor" is also defined by the topic as the floor is also a tool for orienting attention, not on the level of the turn or move but at a higher level of conversation structure.

Participants in conversation establish floor according to the diverse contexts of the interactions including both the immediate context of situation and the global context of the history and culture of each participant and of their relationship. Once a floor is established, the floor functions as a resource for the interactional activities occurring at each moment. (Hayashi, 1996).

Participants in conversation place themselves either within the floor (on-floor) or outside the floor (off-floor). On-floor members can take a role as primary floor holder, supporter to the prime speaker etc. which determines what activities are appropriate.Hayashi (1996) studied dinner conversations and devloped a set of social conventions for claiming and yielding floor. In the example discussed here the context is different, but even if there is a hierarchical structure in the project (at least in terms of who is in project leadership positions), there is also an explicit emphasis on team work, and there is a way-of-working in the project developed over time and dependent upon the style applied by the project leader. This accounts for a certain ambiguity. The project leader has the habit of not chairing the meetings (Project Quality does), but since he has authority as project leader the "floor" will be yielded to him whenever he chooses to speak. This makes the job a bit difficult for the formal chairman if he had conventional norms of chairmanship to uphold. But since he does not the format of the meetings tends towards that of a seminar with people normally feeling quite free to speak their mind. On the other hand the project secretary has difficulties registering when a decision has been made, and meetings tend to drag out (a frequent topic of discussion in meetings to review project progress).

Now, let us look at the exchange in this sequence from a floor management point of view. First one should note that the floor is firmly Charlies at the very beginning (just

before he makes his statement focusing on the trim moulding the project secretary had, first, indicated that the discussion yesterday pointed in different directions and, second, given the floor to Charlie for clarification). Charlie, who had not prepared for a real presentation chose to focus attention on the fact that the task belongs to the project, and there was a probable solution (trim moulding) so the mandate he is asking for is not very far-reaching. He tries to say it all in line 1 - 3. (High speed is the cause (so it belongs to this high speed project), and fixing trim moulding is the probable solution).

In response the project leader takes the floor by claiming that the problem is not the responsibility of the project (refinement - being something you do as a bonus but not as a required property) and he does not yield the floor (now defined in terms of responsibility issues rather than noise). Charlie is not doing so well (Line 9 - 13) which the deputy project leader wants to put right (using his habitual method of dividing the problem into its constituent parts, using the white board, which signals clearly that he wants the floor, maybe too clearly). The key statement here (line 20-21) is "This point is already a VCCQ point ....in our project" (which means that the Quality department will pay out of its budget). The project leader has already said that reducing noise is a good point (by stressing "FINE", line 13) and now he finds that it will not cost the project anything. Too good to be true! So he asks if it is a quality issue why isn't Quality doing this on their own (i.e. as a QAC-project), the deputy project leader has the answer that the cause of the noise has been decided to be high speed (so it is a XYZ-project matter) and hastens to point out that Exterior is already at work with the solution (there is virtually no risk!). Now Exterior breaks in to set criteria right, as he said yesterday, he will do the trim moulding (not reduce noise), the deputy project leader signals with body language and the "Ha!" (on line 34) that 'here he goes again dodging responsibility!' and several members recognise the joke/irony by smiling at the exchange. Then the deputy project leader reformulates the task in a way that is acceptable to all parties - the trim moulding will be fixed better by Exterior and that is likely to solve the problem. Responsibility is taken by the project leadership and Exterior has the assurance that the project believes Exterior will solve the problem for them. The project leader recognises the elegance of the resolution by rounding off the point with a joke (of the Gothenburg type where you insert a word with double meaning (often frivolous) in a short sentence like the one on line 44). Exterior confirmed his role as a cautious member, the deputy project leader strengthened his role in the project by his handling of

Exterior, and the project leader tried to soften the outside push of Exterior by a joke, but he forgot Charlie.

Charlie's own comment to this exchange is that the project leader was unsensitive to his sounding the alarm, the project leader's comment indicated that he was not fully satisfied with the time used by Charlie to come up with an improvement on road noise. The project secretary points out that when you bring up an issue in the PMG you should have data to back it up. These observations indicate that Charlie is not a core member of the project, as a matter of fact he serves as an internal auditing function to the team (verifying that the project meets contract specifications), but he is also an NVH-expert who likes to work professionally with difficult challenges like noise. It is his task to find faults with the solutions other members present. He would have to work extra hard to avoid an outsider role in the team. Exterior is an insider of the team by design, since a car maker with a niche strategy like Volvo will have to work with exterior details. But Exterior is behaving like an outsider when he tries to avoid hving noise reduction as criterion for this task (rather than "better glue"). Exterior is also working in the following year model project, and with the Quality Department. Possibly these multiple roles force him towards the outside since he will be preoccupied with keeping "accounts" for more than one principal.

The deputy project leader must be assumed to have improved his position in the team in this sequence. He sorted the issue out (by using the white board), offered an improved performance of the car without extra cost, and managed to keep everybody happy (except Charlie) through his intervention. Charlie is an "outsider" who is supposed guard the specified properties of the project. If a choice is forced Charlie will be the likely victim to be pushed towards the outside, in spite of his competence and professional approach. We can assume that he saw "wind noise" as his next project inside the project and that he might have caused cost with tests beyond the trim moulding issue.

The sequence exhibits a distinct structure; first there is an exchange between Charlie and the project leader (on the legitimacy of the point), then there is an exchange between the deputy project leader (on whether the initiated action also will solve the wind noise problem). The structure seems to be generated by content, and there is little "management" of the interaction. The people in action are the ones implicated by their roles in the project.

In sum we can conclude that "floor management" (who is allowed to speak and who controls the topic) may be thought of as serving a "membership work" function. In and through the "floor management" members will influence the centrality of their position in the team (Dorriots and Johansson 1999, Munro 1996). Charlie felt that "the floor" was taken away from him, but the deputy project leader demonstrated concern for the core of the team by keeping the initiative at the center. The project leader was satisfied that risks had been minimised.

The bracketing problem

Communication is usually about something. Part of being in control of the conversation is controlling the topic, but conversation is a co-operative game where adequate contributions are required for progress to be made. (Grice's Co-opertive Principle; Grice (1989). So control is exerted with the consent of participants, while participants continuously work out implications of what is said. Grice ("Implicature" in Grice 1989) points out how speakers may signal implications by breaches with the 4 conventions (the "maxims"; Quantity, Quality, Relation, Manner) of the cooperative principles. Members work out the implications (what is behind that which is being said) by relating the "object" of conversation (call it the "figure") to their own relevant background knowledge (call that "ground"). Figure and ground together determine the mening of a "move" (or speech act). Consequently the speaker has only partial control of what is understood in the "here and now" of the conversation. The speaker may be skillful in presenting the "figure", but the listener generates the meaning of what is said by connecting it to the "ground" that seems relevant at that moment.

What is to be judged a "good" conversation is dependent upon its purpose and the situation in which it takes place. The speaker's purpose may be the most obvious criterion of "goodness", but there is a host of other possible criteria, e.g., the floor management aspects brought up above. A teacher may be mindful to present the "object of learning" in such a way - offering several approaches to the concept "budget" for students - so as to maximise the opportunities for students to attach "budget" to their existing systems of knowledge for retention. (Bowden and Marton 1998, see also Rovio-Johansson 1999). In the project arena of a decision making meeting the speaker purpose may be less well articulated, and interpretation by way of member reactions and comments to the video sequence must be used in sense-

making. What may be learnt from such situation specific analysis is the types of methods members use to "bracket" the issue and present it to the group (or some target person, like the project leader). "Bracketing" is a concept from phenomenology (Husserl, Heidegger) and idealist philosophy (cf "IntentionalitÑt") and Searle's discussion of Intentionality (19) which means isolating the object of analysis from its environment for clarity and rigor in the analysis. A similar connotation relates to "definition of the situation" (Clark ?). The speaker has already diagnosed the problem and is presenting the result either for the group to accept problem+proposed solution, or problem to be discussed. Skilful presentation will, as a minimum, induce members to talk about "the same thing", and as a maximum they will accept the problem as such and the proposed solution and behave accordingly in its implementation (i.e., there will be commitment to contribute).

Just before the sequence starts the project secretary has pointed to the last point on his slide, reporting on yesterday's discussion, "Wind noise at high speeds: Taken up as a XYZ-project issue. Properties to investigate source(-s)". It is presented (in so many words) as 1) a problem, 2) that belongs to the XYZ project, and 3) has no obvious solution. The project leader takes the word and signals that he does not agree with 2) because the project is not supposed to do anything about this part of the car. Charlie breaks in to "repair" by claiming that the noise is due to high speed (which is the characteristic of the project), but also that there is a probable solution (trim moulding). The project leader goes further in problem definition ("refinement", meaning that the task is optional), and Charlie responds that this is not a relevant issue ("someone has to do it"). Now the deputy project leader has prepared a picture to sette the issue:

The project leader is right; noise in general is a matter for the Quality departmentbut Charlie is also right; noise due to high speed relates to fast cars, but this does not matter much because Quality has agreed to take the cost (its a VCCQ-point with the XYZ-project already). Furthermore the noise problem is no problem any more since there is a solution (fixing the trim moulding). Next Exterior delimits the "problem" further; it is not a noise problem, its a fixing trim moulding problem and that is what he is promising to do. The deputy project leader reformulates the task in line with this claim and thus leaves the risk of non-solution with the project management team (and this would allow Charlie to come back again if the noise remains). The project is back on track and discpline restored. The project leader is satisfied.

Should Charlie be demotivated? Things did not go so well for him! His intention was to initiate action on the wind noise problem he had discovered. He went through proper channels by taking it up in the TMG meeting (even if the project secretary thought he should have had data to back his claims up). He got a preliminary decision in the TMG to study the causes, but he was overruled in the PMG where it was found that the problem was not new and that Quality had already started a solution. Requesting responsibility for an overlapping project in such a situation is not a good idea. One must conclude that Charlie was acting on tha basis of incomplete information, which might be due to his role in the project, and his strong professional focus (on noise). He was obviously not well enough informed about the project in general and his habit of designing his work in focused sub-projects (he was just finishing a job on road noise and needed a new challenge?) limited his view. He probably lost position through this exchange, becoming more de-centered. On the other hand his role in the project is to guard that contracted properties are met and thus is like an auditing function. As such he should be off-center stage pushing the others to do a better job rather than trying to take over. Only when there is a diffuse problem in need of diagnosis he could engage his expertise in order to leave the others to more task oriented work. Charlie was probably right in not fighting for the job. The odds were against it once the project leader had started to question the legitimacy of the task. The deputy project leader, having the role in the project to be the one who is well informed, saved the day for Charlie as well as for the project leader and Exterior. By leaving the issue without any decision one way or the other the solution which were already on its way was allowed to run its course and everybody would be allowed to do their thing.

The issue to be bracketed and dealt with changed character during the exchange from a relatively undefined noise problem (of strategic importance) to a well specified solution that was likely to cost nothing for the project. Could/should Charlie have acted differently? He was successful in getting his point on the agenda, but he was not able to persuade the project leader who perceives the arguments (noise due to high speed, trim moulding probable solution) differently. The reason for this was that he was already hard pressed on his target costs and thus sensitive to unfinanced additions. That is why he is not eager to have any formal decisions on this once his deputy points out that it is financed as it is. Quality will fix a solution and it will be installed in this car. The project will look better without any expense!

Charlie could only have used this argument if he had contacted Exterior in advance of the meeting (which Exterior points out in his comments) and he did not know that the trim moulding task was already in motion (which is remarkable for the properties engineer). If he had had the knowledge the outcome would be the same, except he might have chosen not to bring the issue up (and just monitored the new solution).

If Charlie would have briefed the project leader before the meeting and heard the scepticism he might have acted differently in anticipation of the refinement argument. Since the project leader also did not know that Quality had started the trim moulding task the outcome would have been the same.

Had Charlie had a large amount of prestige to back up his bid for the wind noise job, one can easily imagine that the point had been taken as a matter of routine, but it is likely that consequent action would have followed the same path. We arrive at the Panglossian conclusion that in this case all turned out for the best.

But this case also serves to highlight the myriad of opportunities for things to turn out differently in a large and complex project like the development of a new car. The meaning av a proposal is constructed when the "bracketed" proposal (the "figure") is reconnected with several different "grounds" in the course of the discussion. Several meanings emerge and possible "paths" leading to different emergent strategies offer themselves.

There are many devices to discipline a project and keep it on track. In this case one of these devices, the engineer in charge of Properties, almost caused a minor deviation, and he had good arguments for this.

References

Bowden, J., and Marton, F., 1998, *The university of learning. Beyond quality and competence in Higher Education*. London: Kogan Page.

Dorriots, B., and Johansson, I-L., (1999), Communicative Power: A linguistic approach to the study of the microdynamics of organizations. *Scandinavian Journal of Management*, vol 15, no 2, pp 193 – 213.

Ekvall, G. (1988). *Förnyelse och Friktion - Om organisation, kreativitet och innovation (Renewal and friction - On organisation, creativity and innovation)*. Stockholm: Natur & Kultur.

Grice, P., (1989), *Studies in the Way of Words.* Harvard University Press: Cambridge, Mass.

Hayashi, T. (1996). Politeness in conflict management: A conversation analysis of dispreferred message from a cognitive perspective. *Journal of Pragmatics*, 25(2), 227-255.

Lundin, R.A. and Söderholm, A., (1995), A theory of the temporary organization. *Scandinavian Journal of Management.* Vol 11. no. 4, pp 437 - 455.

Mintzberg, H., (1988), Opening up the definition of strategy. in J.B. Quinn, H. Mintzberg, and R.M. James (eds.), *The Strategy Process: Concepts, Contexts, and Cases*. Englewood Cliffs: Prentice Hall.

Munro, R., (1996), Alignment and identity work: the study of accounts and accountability. in Munro, R & Mouritsen, J., (eds.*), Accountability – Power, Ethos & the Technologies of Managing.* London: International Thomson Business Press.Rovio-Jovansson, A., (1999), *Being good at teaching*. Göteborg: Acta Universitetis Gothoborgensis.

Searle, J., (1983), *Intentionality: An Essay on the Philosophy of Mind. Cambridge*: Cambridge University Press.

Silverman, D., (1998), *Harvey Sacks – Social Science & Conversation Analysis*, Cambridge: Polity Press