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PROBLEM RESOLUTION IN PARTNERING: A CASE STUDY

Heng Li
Professor, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Eddie W.L. Cheng
Research Associate, The Hong Kong Polytechnic University, Hung Hom, Kowloon, Hong Kong

Peter E.D. Love
Associate Professor, School of Management Information Systems, Edith Cowan University, Perth, Australia

Luke H.W. Leung
Senior Structural Engineer, Binnie Black & Veatch Hong Kong Limited, Hong Kong

ABSTRACT
This paper aims at identifying the principles of problem resolution and exploring associated activities. As partnering helps to resolve conflicts and disputes and key problems in traditional procurement methods, the paper focuses on the resolution studies in partnering. As a result, nine salient principles are identified and expected to be appropriate for the development of a problem resolution mechanism for construction projects. The paper uses a case to ascertain whether these principles are included in a local construction project that involved partnering. Six of these principles have been found in the case. The case also helps to reveal the derived activities of the principles. Organizations may apply these activities to their normal resolution practices.

KEYWORDS
Partnering, Problem resolution, Construction, Project, Management

1. INTRODUCTION

In recent years, the partnering concept has been introduced to the local industry and is well received by the public sector. There is an increasing trend of project partnering in the local construction industry. Partnering arrangements can be found amongst the major local players and authorities (McInnis, 1998a). Amongst construction projects, Lam Tin Estate Phase Five of Hong Kong Housing Authority was probably the first public partnering housing project in Hong Kong (McInnis, 2000). It is expected that interest in partnering will increase in both public and private sectors once stakeholders have perceived that collaboration can provide greater returns than confrontation (McInnis, 1998b).

This increasing trend is attributed to the ability of partnering in improving the relations between construction partners. According to Cowan et al (1992), conflicts are one of the main sources for an arms-length relationship. Dealing with conflicts is therefore a major activity of partnering. Apparently, conflicts are generally derived from technical and managerial problems as well as different views on construction issues. These conflicts can lead to explicit disputes or in the worst situation litigation and arbitration. The local Construction Industry Review Committee (CIRC, 2001) admitted that in each year a lot of construction disputes have been referred to the Hong Kong International Arbitration Center for settlement by arbitration. Sometimes, contractual disputes may lead to

litigation among multiple parties. Therefore, how to manage the problems and avoid the conflicts becoming worse are of primary concern of the construction parties. Partnering provides a solution to these by emphasizing monitoring and a resolution mechanism. Because this paper focuses on the general features of resolution mechanism, such terms as conflict, problem, dispute, and issue are expected to be synonymous despite their specific meanings. The term "problem resolution" is used throughout this paper.

Partnering provides a better solution for problem resolution. The existing literature suggests that partnering helps to resolve conflicts and disputes and key problems in traditional procurement methods since it establishes an infrastructure for communication (e.g. Cheng et al, 2001; Li et al, 2001). This paper is thus intended to identify the salient principles of problem resolution and use a case to ascertain whether these principles are included in a local construction project that involved partnering. To achieve the research objectives, the study is organized to first review the existing literature that has identified the key problem resolution principles. This helps to extract the salient principles for a general problem resolution mechanism. A case study is then presented to reveal the application of the resolution principles to industry practice in Hong Kong. Research and practical implications are also presented.

2. PRINCIPLES OF PROBLEM RESOLUTION

Nine salient principles for problem resolution have been identified from the literature (e.g. Cheng et al, 2000; Cowan et al, 1992; Stephenson, 1996; Matthews, 2000; Warne, 1994).

- observing early warning and identifying problems;
- identifying root causes and severity of problems;
- resolving at the lowest level of authority;
- moving unresolved problems up to the next level of the escalation ladder;
- making timely decision;
- supporting joint problem solving;
- open communication;
- exchanging views, ideals and resolving tactics; and
- proposing solutions with innovation.

In general, these nine principles represent the key components of a resolution mechanism. First, all stakeholders need to identify the problem as early as possible. As Davy (1996) suggested, collaborative problem solving should include early identification of critical project issues and help to address ongoing problems in an open, timely manner. Second, it is crucial to identify the root causes of a problem (Straus, 1993). Having a clear definition of the problem, the severity of the problem can also be determined. Straus (1993) stressed that the resolution methods for simple single-party conflicts and complex multiple-party conflicts are different. The former can often be resolved through face-to-face meeting in a collaborative setting by all the stakeholders, while the latter requires the establishment of a detailed collaborative problem solving process.

More studies have emphasized the different levels of problem resolution and the escalation concept in solving problems. Bainbridge (1996) stressed that if partnering is not working well, more often it is because the escalation process is not being utilized properly. Escalation is treated as the control and resolution mechanism for dealing with problems by Cowan et al (1992). Lazar (2000) realized that the escalation ladder helps expedite and track the resolution process of critical conflicts that jeopardize the partnering relationship and disturb job progress. The underlying principle is that problem resolution should be attempted at the lowest possible level within a set time frame. As most problems are apparent on site, this may usually form the lowest level of authority. Yet, with respect to management issues, the lowest level may be at middle management or even upper management levels. It is important to determine the level necessary to deal with the decision (Cowan, 1991). For example, because people issues are not as easy to raise as technical issues (Bainbridge, 1996), they always start to resolve at upper levels of authority.

On the other hand, it is critical to set the time limit for resolution (Cowan, 1991). If no conclusion can be made within the time frame, the unresolved problem needs to be referred to the next level of authority in the escalation ladder as soon as possible. Speedy resolution has to be stressed. This helps to avoid the cause of project delays (CIDA, 1993). The problem will escalate to the next management level if unresolved until the final level that most

probably is the top management of the involved parties (Miles, 1997). In fact, parties should be co-operative and open-minded in order to achieve a mutually acceptable, timely solution. This helps to prevent the problem to become large and complicated resulting in unavoidable disputes and litigation (CIB, 1997; Cowan et al, 1992). The following three examples highlight the important features of such an escalation mechanism.

Stephenson (1996) proposed an issue resolution mechanism with four steps of escalation (i.e. prevention, negotiation, informal exterior neutral, and formal exterior neutral). The process of resolution becomes increasingly complex when an issue escalates from the first step to the final step. The steps are described below:

(a) Issue resolution through prevention is a simple and inexpensive conflict avoidance and management. Measures are taken very early in the project life to prevent the issue becoming severe.
(b) The second step involves alternative dispute resolution, which uses internal negotiation techniques, attempting to obtain consensus from the disputing parties.
(c) If the settlement cannot be achieved by internal negotiation, the resolution expectation will rely on an informal exterior neutral for recommending a course of action.
(d) When the parties still disagree with the recommendation from informal exterior neutral, the last step will be the use of formal exterior neutral for binding arbitration or litigation.

According to Matthews et al (2000), a project team would expect that issue resolution is to release grievances and should be undertaken at the lowest level of management. He suggested similar rules of issue resolution procedures:

(a) Each level of resolution authority should have a time scale.
(b) Any partnering parties can raise an issue if they find it.
(c) Any problems should be dealt with at the lowest level. If no agreement can be achieved within the stipulated time frame, then the issue will be handed to the next higher level.
(d) No jumping of levels is allowed.
(e) Ignoring problems or resulting in "no decision" is not accepted.

Warne (1994), on the other hand, suggested the four "musts" to promise that the escalation works for issue resolution system, which are described below:

(a) Issues to be solved must be put in front of those parties in dispute. No one is allowed to avoid any discussions.
(b) All problems must be resolved. "No decision is the best decision" is unacceptable.
(c) Project managers need to coach and encourage their people to make decisions rapidly.
(d) Co-worker empowerment and "the ladder" of structured issue escalation cannot give a chance to push all decisions to the top of the authority hierarchy.

It is essential to focus on joint problem solving (Cheng et al, 2000; Gans et al, 1996; Warne, 1994). Within the agreed time scale, a mutually agreed solution and the required resources to the problem is determined by collective decision-making. The joint problem solving procedures reiterate in different levels of authority until the problem is ultimately resolved. In essence, all members of the partnering team should be involved in joint problem solving. Many researchers have agreed that it is critical to involve a management team to make collective decisions with sufficient decentralization (e.g. Bresnen and Marshall, 2000a, 2000b; Cowan et al, 1992; Larson, 1995). Moore and Woodrow (1999) advocated that the collaborative approach to organizational problem solving allows stakeholders work together to develop a solution that can benefit most or all of their individual and common interests. If there is a solution that is beneficial to the majority, in order for the problem resolution to be effective, all the involved parties must reach a consensus decision without being forced to accept it. The Working Group 12 of the Construction Industry Board (CIB, 1997) set the team behavior, which include:

1. Focusing on solutions to problems but not finding parties to blame;
2. Remembering the folklore that adversaries waste time and money;
3. Active involvement including better discussion, less paperwork, as well as more constructive communication;
4. Equality of rights of all involved parties; and
5. Pursuing "win-win" solutions.

Team members must establish open communication that includes immediate communication channels to appropriate persons (Cheng et al, 2000). Bainbridge (1996) suggested that the team should develop a chart that defines the principal communication spots for each party as well as the levels in the issue resolution process. During problem

resolution, views, ideas, and resolving tactics are exchanged in the resolution team. Each member's point of view should be discussed and could not be ignored. Members are encouraged to propose solutions with innovation. This requires members to be open minded and positive, and view the process as a learning experience. Team members should also learn group problem solving, decision-making, conflict resolution, and interpersonal skills (Davy, 1996; Dershimer, 1993). Nevertheless, where the issue is not resolved internally, putting the issue "off-site" (i.e. using external agent) would be the next decision (Bainbridge, 1996). Certainly, arbitration, meditation, or any other combinations of these approached should be the final choice in a construction dispute (Stipanowich, 1997).

3. METHODOLOGY

By applying and adapting the experiences from overseas construction industries, it can be foreseen that there is likely to be a noticeable growth in local partnering construction projects. It is reasonable to expect companies to adopt a very pragmatic approach to partnering, emphasizing the use of existing tools and techniques to "engineer" collaboration. This research aims at exploring the resolution practices of local partnering. It is anticipated to bridging the gap between existing academic research and useful practical recommendations (Bresnen and Marshall, 2000a). This empirical study of project partnering practice focused on a local construction contract in the public sector. Yet, the findings may be applied to the private sector as well as overseas projects.

In the current study, four key players (one director and three senior managers of the project) of the project to obtain the primary data of a partnering project were interviewed. Data were collected based on three methods: review of documentation, direct observation and focused interviews (Yin, 1994). Relevant documents pertaining to partnering practices include reports on partnering workshops and development workshops and minutes of partnering meetings in the site office. Partnering practices were also recorded by direct observation from partnering meetings. Finally, four core partnering team members were interviewed to elicit their opinions on partnering. The following were basic questions asked:

- What were the principles agreed for solving problems?
- How were the problems addressed? Any exchange of views and ideas? Any joint problem solving?
- How were the potential solutions identified? Any innovative solutions? How could the promising solution be implemented?

Table 1: Demographic Information of the Case

Demography	Description
Project name:	Aqueducts between Tai Po and Butterfly Valley
Client:	Water Supplies Department
Procurement method:	Design and build
Who initiated partnering:	Main contractor
Number of partnering parties:	Six
Project nature:	Civil engineering work
Project amount:	Approximately US$140 millions
Any facilitator:	Yes

The authors of this paper examine if the case has established the salient principles for problem resolution. The decision on whether the principle has been involved depends on whether there are any activities associated with the principle. For example, if the studied case indicated that the partnering team tried to see the other person's point of view, then a joint problem-solving behavior was embedded. Due to the methodology used in this study, it is considered exploratory. This implies that the case study could only examine superficially the partnering practices of the target projects. Table 2 lists the preliminary findings. It is clear that partnering cannot be used to remove disputes and problems on the work site but creates conditions for collaborative or joint problem solving. This requires proactive attitude and commitment of all stakeholders. Other important components may include consensus about problem solving at the lowest possible level, empowerment of decision making for co-workers, time scale for resolving problems and built-in escalation ladder. As McInnis (1998a) suggested, stakeholders can address problems quickly by regular meetings, early warning of problems, time setting for decision making, referral up the management chain, objective reference criteria and alternative dispute resolution methods, all of which result in an increase in the likelihood of a successful project.

Table 2: A Preliminary Analysis of the Case to the Nine Salient Principles of Problem Resolution

Principle of problem resolution	Existed in the Case
Observing early warning and identifying problems	No
Identifying root causes and severity of problems	Yes
Resolving at the lowest level of authority	No
Moving unresolved problems up to next level of the escalation ladder	Yes
Making timely decision	Yes
Supporting joint problem solving	Yes
Open communication	Yes
Exchanging views, ideals and resolving tactics	Yes
Proposing solutions with innovation	No

4. DISCUSSIONS

In this section, the empirical findings of the case are discussed in greater detail to explore how to incorporate problem resolution in construction projects. Findings indicate that problems were collaboratively resolved, which are consistent with the views of Cowan et al (1992), Davy (1996), and Straus (1993). Evidences also indicate that the partnering team members exchanged their views and ideas and resolved tactics in order to generate multiple potential solutions, and identified corresponding resources required during joint problem solving. These findings also support the studies of Crawley and Karim (1995) and Cheng et al (2000).

Experience told us that a problem resolution mechanism should be set up in early partnering workshop (Cheung, 2000) and involves brainstorming (Lazar, 2000). As the case reveals, two kinds of face-to-face gathering (i.e. partnering workshop and partnering development workshop) were used to create the brainstorming sessions for the team to identify critical issues and concerns, which might impinge on the charter performance, and to identify the most promising solutions. Innovation has to be brought into the structured problem-solving framework, without which solutions cannot be generated for selection (Gans et al, 1996). After having chosen the promising solution, parties can create the action plan (Bainbridge, 1996; Edelman and Carr, 1997).

As Ko et al (2000) and Cheung (2000) suggested, corresponding action plans could then be drawn up using the template shown in Figure 1, which is used to record each course of action including by whom the action is undertaken and the agreed time frame. The case indicates the setting up of similar action plans. For example, when the parties had to handle complaints from local villagers and resolve water inflow problem inside the aqueduct tunnel, they needed to set up action plans until problems were resolved and cleared. How to enforce the action plans is a key factor. Responsible parties should be given full support from the top management with sufficient resources in terms of manpower, money, information and skills.

Ref.	Actions	By whom	By when

Figure 1: Action Plan

In order to enhance the problem resolution, an effective communication framework should be set up in the partnering workshop (Ko et al, 2000). Others refer to the open lines of communication (Bainbridge, 1996; Davy, 1996; Stephenson, 1996;). The case reveals that two charts were constructed to illustrate the lines of communication for formal communication and day-to-day communication on site respectively. Other than “mapping” the flow of communication, further assurance of its effectiveness is needed. In the case, the partnering charter stated that the need for monitoring the attainment of open communication and mutual understanding of the team was one of the mutually agreed partnering goals. In addition to the problem resolution mechanism, it is suggested that the effective communication framework is a valuable asset to the construction parties.

It is anticipated that critical issues are always detected by the partnering charter goals' evaluation, which is a kind of regular assessment of the progress of the construction project. Common goals are set in the partnering team and stated in the partnering charter signed by all involved parties for showing their commitment to achieve them. Partnering team members would rate the goals according to an agreed scale in order to track the progress of the achievement of these goals. During each partnering assessment exercise, those goals with low score would always be perceived to be associated with the critical issues that need to be solved (Ko et al, 2000). These "bottleneck" performance indications were extensively used in the studied case. Joint charter goals' performance reviews have been known to explore surfacing issues and conflicts between the parties (Bainbridge, 1996; Cowan et al, 1992; Stephenson, 1996). These new insights could be reflected in the proposed mechanism.

The case indicates that the partnering team identified the root causes and consequences of problems during joint problem solving. For example, during partnering meeting No.32, team members identified the root causes for buckling failure of the aqueduct's steel lining and methods and located the defective areas for amendments. In projects without partnering, the project team may also convene regular meetings to unveil the project problems. Open discussions in a friendly and collaborative environment are desired. This was also noticed in the studied case where team members exchanged opinions, ideas, and comments in an open and proactive manner during joint problem solving discussions. Joint problem resolution has been highlighted in other publications (e.g. Cheng et al, 2000; Moore and Woodrow, 1999). The case also indicates that commitment from senior management of all involved parties was crucial to joint problem resolution.

Time set for resolving problems benefits the case. Here shows an example of the case. When the parties were aware of the difficulties to recruit local skilled labors for TBM tunneling and semi-automatic welding processes for the installation of steel aqueduct lining, they turned to overseas for such labors. Yet, in Hong Kong, there was a bundle of formalities needed for the recruitment of imported skilled labors, while such applications involved three governmental bodies, Labor Department, Immigration Department and Education and Manpower Department. Being aware of the problem that fast importation might not be achieved due to a quota and job matching system, the partnering team came up with a solution to use of a more flexible and non-conventional approach to deal with the official members instead of traditional way of formal correspondence. This approach included the establishment of effective communication and specific liaison parties, with special concerns of external parties including careful management of labor unions.

However, the case did not support three of the principles. They are "observing early warning and identifying problems", "resolving at the lowest level of authority", and "proposing solutions with innovation". For example, there is no indication that the case adopted any structured escalation ladder. Their resolution mechanism only exhibited the need for this escalation principle but no structured procedure was presented.

5. CONCLUSIONS

This paper identified the principles of problem resolution and explored their derived activities in Hong Kong. Regarding the value of their practical application, the problem resolution principles serve as basis for industry experts and professionals to understand the associated attributes and form the necessary steps to design and set up associated tactical action plans. Besides practical application of the mechanism, this paper may attract the attention of other researchers and provide the basis for them to formulate more research propositions for studying both local and overseas construction problem resolution issues. Enhancing the limited success in local problem resolution due to the lack of a structured escalation ladder necessitates more intensive research for probing deeper insights of this essential component of construction project management.

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