

CENTER FOR QUALITY OF MANAGEMENT JOURNAL

Reprint No. RP06400

A Message from the Chair Page 2
David Walden

Learning: What Does It Mean? Page 4
Thomas H. Lee

**A Conversation About Conversations:
Analog Devices CEO on Building
High Performance Organizations** Page 15
Ray Stata

Language for Action: Page 21
**New Concepts to Address
Soft Side Management Issues**
Gary Burchill and David Walden

Understanding Unclear Situations and Each Other Page 29
Using the Language Processing Method
Ted Walls and David Walden

Managing the “Soft Side”
Special Issue

Vol. 4, No. 4

WINTER 1995



Understanding Unclear Situations and Each Other Using the Language Processing Method

Ted Walls and David Walden

Ted Walls is manager of research and publications at CQM. He has taught LP as part of new product development, continuous improvement, and redesign efforts.

David Walden is director of research and development at CQM. Dave applied LP as part of CQM's original design study and as a senior manager at Bolt Beranek and Newman.

I. Introduction

Since 1990 people from CQM member companies have been learning and using the Language Processing™ Method (LP) to analyze qualitative or language data. For instance, in March and April 1990, the CQM Design Team completed dozens of LP diagrams to organize data from lectures by Shoji Shiba, from reading about TQM, and from visits to a number of U.S. and Japanese companies that had won Baldrige or Deming awards for quality.¹ In the intervening years, several thousand people in CQM member companies have learned to use the LP method and have applied it in a large variety of situations. Companies frequently use LP to help choose a theme as part of the Seven Steps,² or to organize the data for an Ishikawa diagram,³ or to discover key customer needs and perspectives from the voice of the customer and customer image data as part of the Concept Engineering Method,⁴ or to sort out and understand any of the myriad other situations where there is lots more qualitative or language data than quantitative or numeric data. Hayakawa's guidelines on semantics⁵ are a key component of the LP Method and are frequently used in all of the above applications.

One of the striking characteristics of the LP Method is that, in addition to helping people organize and understand qualitative or language data, it usually brings about consensus about the meaning of the data and new insights derived from the data. Somehow, as part of its basic working, LP does away with the necessity for conflict resolution as a follow-up process.

Since that first use in 1990, we have often thought about how LP works and why some of the specific LP instructions are important to the way it works.⁶ More recently, we took part in a CQM study that explored many issues relating to conversation and language beyond semantics and the LP Method.⁷ Other participants in this study were Ross Brown, Gary Burchill, Fred Cunningham, Judy Gordon, Brad Harrington, Capri Keogh, Steve LaPierre, Tom Lee, Ray Stata, and Toby Woll. We'll refer to this activity as the CQM Study Group on Conversation.

The combination of knowledge and experience with the LP Method and semantics plus the new knowledge gained from the CQM Study Group on Conversation provide two complementary benefits that we cover in the rest of this paper. First, the new knowledge from the CQM Study Group on Conversation gives us improved insight into how and why the LP Method works. Second, the LP Method serves as an example of application of the new knowledge that came from the CQM Study Group on Conversation—an example numerous people in CQM member companies who know LP

very well will be able to follow easily.

In the rest of this paper we do the following:

Section II: Sketch the steps of the LP Method and methods of semantics for readers not already familiar with them or readers who need a reminder.

Section III: Introduce three sets of ideas resulting from the CQM Study Group on Conversation: (a) a model for moving from individual points of view to a shared point of view through mutual understanding, (b) a model for how people reason, and (c) a distinction between types of facts.

Section IV: Describe how the LP Method leads from individual viewpoints to a shared point of view through mutual understanding. We will also explain the logic behind several of the detailed steps of the LP Method.

Section V: Present a summary and conclusion.

II. A Sketch of the LP Method and Semantics

We sketch the LP Method in terms of the four phases of the method as presented in the most recent manual,⁸ and for each of these phases we sketch the important tasks. We don't attempt to match the detailed steps listed in the manual. We also give no detailed explanations in this section of the meaning or reason for the various parts of the LP Method; the detailed steps are covered in *The Language Processing Method*,⁹ and the meaning and reasons are covered in section IV of this paper.

Preparing the teamwork environment

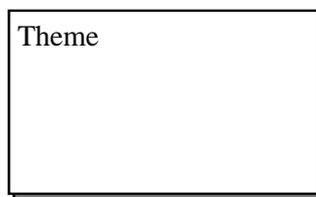
1. Provide a supportive physical environment. Team members—a maximum of 8 people—sit shoulder to shoulder at a table, facing a large piece of paper taped to the

wall on which the LP diagram will be constructed. (We'll refer to the piece of paper as the LP wall chart.) The table should be clear of items not relevant to the LP activity.

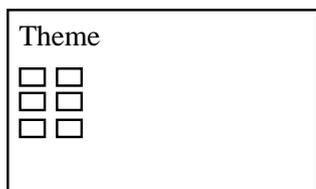
2. Use a structured problem-solving approach. The team carries out the LP Method step by step as described in the LP manual. One team member is chosen as leader. The leader follows the process in the manual and reminds the team of succeeding steps as necessary. The leader also keeps track of time and prevents the team from getting bogged down. After certain steps of the LP Method the team says "yo-one" loudly in unison.

Making qualitative data uniform

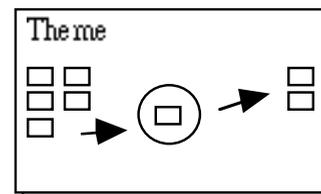
3. Agree on a topic. A "theme" or question for consideration is posed and refined by the team. It is then written at the upper left of the LP wall chart.



4. Write the data. Each team member writes down several facts they know about the theme or thoughts they have about the theme.¹⁰ Each fact is written on a separate slip or "card" (e.g., Post-it). Typically, all team members bring the same number of facts to the table. The cards are posted on the wall chart as they are written for all to see.



5. Understand the data. Once each fact or thought is in writing on a card, where it may be examined by all team members, the leader and the group working together clarify the wording of each card—in writing on the card—with the aid of three semantics guidelines. Cards are moved to the center of the LP wall chart, examined individually, and moved to the right as the work on each one is completed. This "scrubbing" step concludes with all members of the group understanding the meaning of the facts or ideas on all the cards.



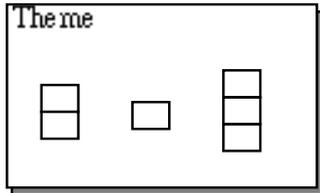
The semantics guidelines are as follows: (1) Seek to eliminate affective (emotion-laden) language and to use report (fact-based) language. Eliminate judgments ("the word-processing program is a dog") and inferences ("the company that makes the word-processing program doesn't care about customer satisfaction") from the language on the cards to help move from affective to report language ("the word-processing program made by company X took a long time to load a 100,000-word file"). (2) Also, convert vague "two-valued statements" ("took a long time") to more specific "multivalued statements" ("took 15 minutes"). (3) Finally, in clarifying the language on the cards, move down the "ladder of abstraction" from general to specific statements.¹¹

Finding structure in the data

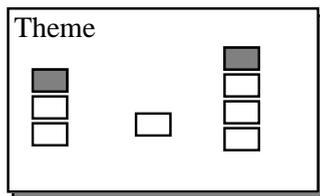
6. Group similar data. The team members move the cards on the LP wall chart around to group facts that their intuition tells them are related



to each other. People develop this intuition by concentrating on mental images stimulated by the statements on the cards, rather than by working from the literal writing on the cards. No more than three cards are put together in a group, and single cards are often left ungrouped. For the most part, the team members do this grouping without talking.



7. Title groups. The team members work together to give a title to each separate group of facts. The titles should express the overall meaning or image of the group of facts, but at the next higher level of abstraction. The leader writes each title on a card and posts it above its group on the LP wall chart. The semantics guidelines help the team refine draft titles.



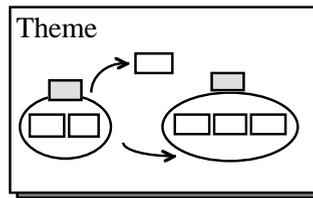
When done, each card with the title of a group is placed so it covers the cards in its group. These title cards are then used as if they were new "fact" cards, and step 6 above is repeated. Then step 7 is repeated for the new groups. This continues until there are five or fewer titled groups at the end of step 7.

Forming hypotheses

8. Lay out groups and show relationships among the groups. The group hierarchies are then laid out on the LP wall chart to show clearly the internal structures of the groups and the relationships (e.g., cause and

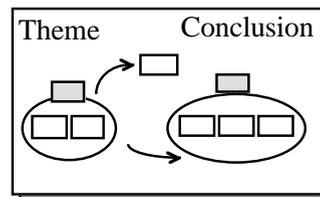
effect) among the groups.

9. Vote on most important low-



level facts. Once the team has reached a common understanding of the individual facts, their grouping and hierarchy, and the relationships among the groups, the team votes on the most important low-level facts (a first-level group title or level that never made it into a group).

10. Draw conclusion. From the important low-level facts, a conclusion is drawn, thus finishing the preparation of the LP diagram. Finally, the LP process finishes with some reflection on this instance of use of the LP process.



III. Three Additional Concepts

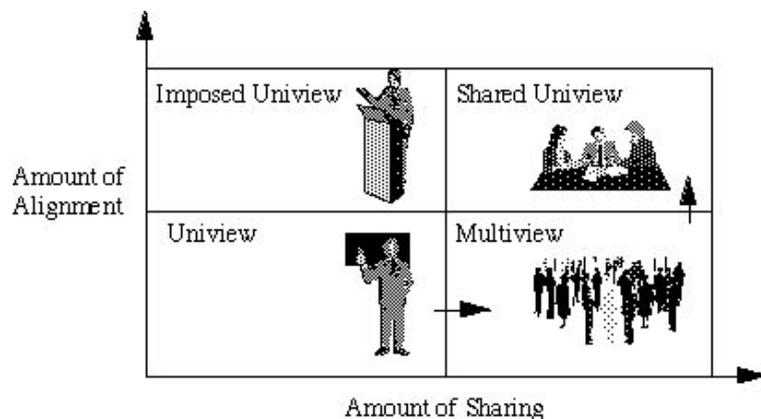
In this section we review some linguistic concepts we learned from our participation in the CQM Study Group on Conversation—what we call "cognitive consonance," what we call the "reasoning cycle," and the notion that there are different kinds of facts.¹²

Cognitive consonance

The degree to which we effectively communicate our viewpoints or, conversely, the degree to which we listen to others' viewpoints impacts our ability to align viewpoints and work together. Figure 1 shows sharing and alignment of viewpoints on separate axes—a model that we call "cognitive consonance." The cognitive consonance model helps us understand the processes embedded in the LP Method.

We each have a viewpoint that is based on our own beliefs, experience, models of how the world works, emotions, and so on. We call this a uniview, and it is at the bottom left of the figure. In this simplest case, there is no sharing or alignment of viewpoints. People often fail to recognize that anything except their own uniview is possible (the reason for this is described in the following section). In fact, all too many discussions take the form

Figure 1: Cognitive Consonance



of each of us trying to convince others of our own uniview, possibly not recognizing that any uniview except our own is valid, or even exists. Usually, when this happens, nothing gets decided and nothing gets done.

In other cases, a dominant person may explicitly or implicitly force his or her uniview on others. We show this in the top left of the figure and call it the imposed uniview. The dominant person forces alignment around his or her uniview, but the alignment did not come through a process of arriving together at shared viewpoints. Thus, there is risk that the alignment resulting from the imposed uniview will not last once the other people get out of sight of the dominant person.

As mentioned above, people often think the way they see something is "the way it is." It is important to identify and recognize our own uniview. It is equally important to recognize that others have their own univiews. Once we recognize that each of us has our own uniview, we can simply try to get everyone else to convert to our uniview (as with the imposed uniview).

Alternatively, we can try to communicate our understanding of things and at the same time see the value in the univiews of others. We call this developing the multiview, and it is shown at the bottom right of the figure. Ability to cope with a multiview demands ability to hold multiple points of view in mind simultaneously.

In the cognitive consonance model, by seeking to see the validity of the univiews of others, a group of people may be able to move thorough the multiview state to build on one another's viewpoints and eventually to reach the powerful position of having a shared uniview. The shared uniview is one that all agree on—and that may be better than any one person would have thought of alone. The shared uniview is at the top right of the figure.¹³

The Reasoning Cycle

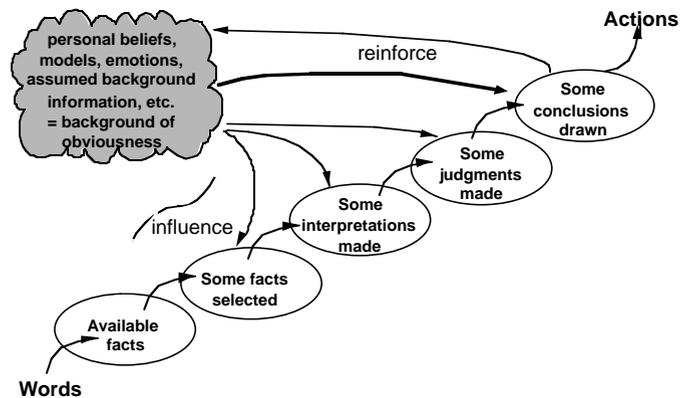
In the section above on cognitive consonance, we noted that people may not recognize where others' ideas are coming from. We expand on that point in this section.

As shown in figure 2, when any person considers a situation, that person sees or selects some facts and doesn't see or doesn't select other facts. Then the person interprets the selected facts and makes judgments based on those interpretations. Finally the person draws conclusions based on the judgments and takes actions based on the conclusions.

ground of obviousness, again mostly without much conscious awareness. Thus, unaware of the explicit steps in our reasoning, we can get caught in an ingrained cycle in which it is difficult for us to recognize the need to open up our mind or make changes.

We call the cycle shown in the figure "the reasoning cycle."¹⁴ As normal effective human beings, we go through this reasoning cycle with great speed and facility. Often we are unaware of our own reasoning process; it occurs without much conscious rational thought. Our ability to reason subconsciously is

Figure 2: The Reasoning Cycle



However, each person has their own "background of obviousness"—shown at the top left of the figure. A person's background of obviousness is his or her own beliefs, experiences, models of the way the world works, emotions, and so forth. These influence or filter a person's selection of facts, the interpretations given to the facts selected, and the conclusions drawn from the interpretations. Most of the time the "background of obviousness" is so natural to each of us that we don't feel any need to enunciate its components. We may not even be aware of the influence of our own background of obviousness on the way we reason. Also, the conclusions we draw tend to reinforce the elements of our back-

ground of obviousness—in many situations it's not possible or appropriate to think things through rationally.¹⁵

Unfortunately, however, when two or more people are trying to understand, discuss, and act on a complex business situation, the fact that each person has a different background of obviousness and therefore reasons differently can lead to confusion and unproductive effort. We talk past each other. We



defend points of view that the other person may not actually disagree with. We fail to agree on the fundamental facts of the situation. And we don't embrace and pour our full energy into carrying out group decisions.

Thus, there are times when we have to slow up and share our reasoning with one another. We can do this by verbalizing our reasoning in concrete and specific language and in a way that makes each step of our reasoning explicit. For instance, the companion paper by Burchill and Walden¹⁶ suggests stating which facts were selected and why, what interpretations and judgments were made, and what conclusions were drawn. There are other techniques for making reasoning explicit to one another. At the minimum, making our language concrete and our reasoning explicit helps us clarify our univiews to ourselves—until we verbalize our reasoning, we typically don't actually know what we believe. Writing things down also often helps.¹⁷ However, sharing our reasoning with each other also is the first step in moving from univiews to the multiview in the model of cognitive consonance.

Kinds of Facts

Data or facts can be qualitative or quantitative in form. Facts also can be categorized in other ways. First, some statements of fact describe with words that which we observe in the physical world.¹⁸ For these facts, there is a "world-to-word" relationship—the world precedes the words. An example of this type of fact is "Everyone in the engineering department is eating lunch." Other facts are created by people who use words to create new reality.¹⁹ These facts come into existence through a "word-to-world" relationship—words create the world. For example, a CEO can make the declaration, "We will provide customer support within one to two

days of a request," and thus create a new fact about treatment of customers.

Unfortunately, people frequently fail to distinguish between these two kinds of facts. People routinely treat declarations created out of the human mind as if they were facts about the physical world. It is important to distinguish between the two kinds, because facts created through human institutions such as business organizations can be changed. Changing the words can actually change reality. The Declaration of Independence, for example, changed the course of history. Similarly, the declaration that a company is going out of an old business area and into a new business area changes the company's reality.

IV. How the LP Method Works

Having provided a reminder of the outline of the LP Method (section II) and three linguistic ideas that came out of the activities of the CQM Study Group on Conversation (section III), we are now ready to explain why we think the LP Method works so well.

The benefit of the LP Method is perhaps inversely proportional to what may be considered a failing in human behavior: Deep in our hearts many of us really may not want to hear what others have to say. Mostly, we want others to hear what we have to say. By beginning with each person writing his or her most important observations on cards, LP permits us to go straight to the step of telling others what we want to say. We don't have to wait our turn to speak, holding our tongue while others say things we may not agree with. Rather, each individual's statements become part of the data that the group considers, contribute to the understanding of the topic, and often become part of any consensus that the group achieves. In fact, groups using LP achieve consensus

very often.

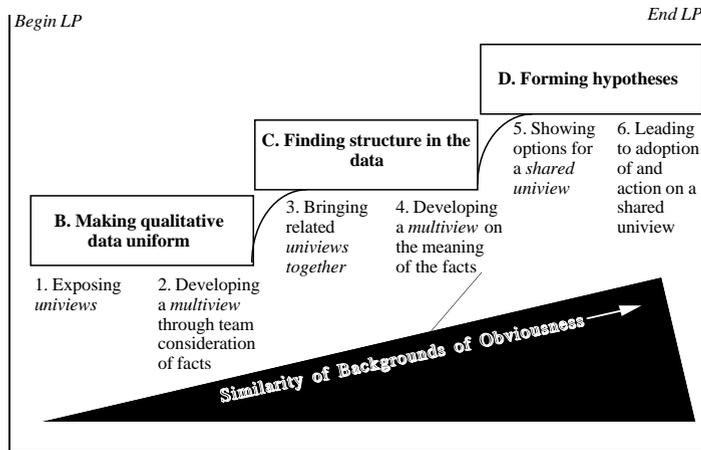
We believe that the LP Method achieves consensus because it provides a structure for moving through three quadrants of the cognitive consonance model—from the initially expressed univiews to a multiview to a shared uniview—and avoids the fourth quadrant, the imposed uniview. As the group goes through the steps of the LP Method, each person has the opportunity to state his or her uniview of the situation (writing cards) and then develop a multiview (scrubbing, grouping, titling). When the method is used well, a shared uniview usually results. The individual steps of the LP Method work to expose the kinds of facts the group is considering (whether world-to-word or word-to-world) and to reveal the reasoning cycles and backgrounds of obviousness of the participants.

To illustrate and explain specifically how LP moves a group through the key stages for cognitive consonance, we review key parts of LP's four major phases (as outlined in section II) together with the three relevant quadrants of cognitive consonance (figure 1). These relationships are summarized in figure 3, which we will reference throughout the rest of this section.

A. LP provides a teamwork environment

Figure 3 shows a three-sided frame around the phases of the LP method—this "container"²⁰ is the teamwork environment in which the LP process takes place. It is a controlled environment specifically designed to create the conditions for group members to express their viewpoints. By establishing an effective teamwork environment, the LP process lays the foundation for the group to work towards a shared uniview. As described in section II, LP's teamwork environment establishes a supportive physical environment and utilizes an explicit, structured problem-solving approach.

Figure 3: LP and Cognitive Consonance



A. LP Teamwork Environment

The physical setup of sitting shoulder to shoulder facing the LP wall chart helps the team to avoid distraction and concentrate on the task at hand. The LP process also has everyone participate equally (even the leader, who has no extra rights, only the responsibility to keep the team following the process); therefore, no one is in a position to impose his or her uniview.

The structured, step-by-step process has two benefits. First, the particular process followed by LP moves the group from exposing their univiews through developing multiviews to finding a shared uniview, as we'll describe below.

Second, without a structured or explicit process, people tend to come out of a group discussion with the same viewpoint they had going in; it's as if they haven't heard each other. With a structured group process, however, people's viewpoints are changed by exposure to one another's thoughts. This finding is consistent with our own observations of group behavior and with the research of John Warfield regarding a process having some similarity to the LP Method²¹ and the research of Arthur Keigler relating to improving coordination in product development.²² In normal meetings, when we often don't have a struc-

tured environment or process to help us communicate with one another, it is much easier to drift mentally and not listen to one another or talk at cross-purposes.

Every few steps in the LP process, everyone stands up and claps while loudly saying "yo-one!" This is a verbal indication that the previous few steps are finished and that no one may reopen issues that should have been dealt with during previous steps. This technique prevents the familiar situation in which one or more members of a group attempt to reopen issues that the rest considered settled. The LP Method adheres to the principle that it is better to go around the entire Plan, Do, Check, Act (PDCA) cycle again later than never to get past Planning. In fact, the LP Method has explicit steps for going back in a nondisruptive way; for example, to introduce a key omitted fact after the first round of grouping. "Yo-one" also momentarily breaks the tension of concentration and announces forward progress.

B. LP works to make qualitative data uniform

As discussed earlier, qualitative data inherently mean different things to different people.

Qualitative data are often ambiguous, because people perceive the meaning of what they see and hear differently. Further, individuals can derive multiple meanings from data, and those interpretations can change over time.

1. Exposing univiews. The LP step of scrubbing qualitative data to make it uniform enables participants to discover and share their univiews. And as the process goes forward, the background of obviousness and reasoning cycle that form the foundation of each person's uniview become part of a new mutually understood context. By allowing time and giving people semantic and form guidelines with which they can develop shareable articulations of their univiews, LP succeeds in allowing us to do something that is fairly unusual—to say what we mean in a form that we know others will understand and can work with.

When people write their facts or thoughts on the LP cards, they typically make statements that are high on the ladder of abstraction and somewhat subjective. In other words, because they are highly influenced by their own background of obviousness, they typically jump to the top of the reasoning cycle. People often don't remember, or don't think about, what caused them to form a particular opinion. Although it is fine for participants to write down whatever comes to mind in order to get the thoughts out, more work is needed to develop statements that will help the group move forward. The challenge for people writing cards is to be reflective enough to remember the actual facts that gave rise to the formation of each opinion (e.g., "we have lousy workplace morale") and to refine each statement to express an actual "symbolic fact" (e.g., "several line staff have complained about staff room resources") that represents the situation in a way that will be mean-



ingful to others.²³ This symbolic fact should be specific and based on something observed in the past. LP allots the necessary time for people to do this difficult thinking. This is the work of making our uniview explicit to ourselves and refining it so that we can share it with others more effectively.

Although people often assume as they begin to write LP cards that no one will have ideas different from their own, diverse ideas emerge during card writing. As group members see other ideas appearing on the wall in front of them, they often think about new areas of concern. Multiviews then begin to form.

2. Developing a multiview through team consideration of facts. As the group helps each author clarify his or her univiews (statements on cards), using semantics guidelines to improve the articulation of each uniview, the group learns about the reasoning behind the uniview; why the author selected a certain symbolic fact, why the author added various inferences and judgments, and why the author drew certain conclusions are made evident. The original statement becomes much clearer to everyone—even to its author. And as each team member shares his or her cards and the group talks about and understands the statements and the reasoning behind them, group members gather new insight into one another's backgrounds of obviousness and reasoning cycles.

The individual and group experience of searching for symbolic facts to represent the thought behind a statement is a mutual learning process. There are many facts in the past. The group needs to help the card authors select the most critical and most important single case that symbolizes the situation they want to communicate. At this point, the group can decide on a case-by-case basis to what extent

the statements qualify as facts and whether they are world-to-word facts or word-to-world facts. It is human nature to start from our opinions and generalizations—but mutual understanding comes in the group's efforts to go back to find that one symbolic fact that will most accurately represent a given situation. The reflection involved in moving from opinion to symbolic fact leads to the group's development of a shared understanding, or multiview.

C. LP helps the group find the structure in the data

As described in section II, once the cards have been scrubbed, the LP participants move the cards around on the LP wall chart, placing cards that are intuitively related together in little groups of no more than three cards.

3. Bringing related univiews together. The purpose of the intuitive grouping of cards is to help the team break from their preconceptions and from superficial connections in the data. This break is beneficial in and of itself; it also frees participants to develop multiviews and perhaps later a shared uniview.

The grouping is done silently, for the most part, which helps everyone reflect on their tentative groupings calmly and thoughtfully. It also prevents anyone from dominating the grouping. Thus, there is maximum sharing of the univiews. LP participants sometimes complain that they are not allowed to discuss things in this part of LP (and other parts); however, the participants are in fact holding a precise written discussion.

Participants also sometimes complain about the limitation of three cards to a group. However, this limitation leads the participants away from forcing facts that are not so similar into groups; unless there are actually duplicates, it is unlike-

ly that more than three facts are equally similar. By preventing people from grouping facts prematurely, the LP process keeps various combinations of facts available to give rise to new insights later. To put it another way, unrelated univiews do not get hidden in a group of univiews where they do not necessarily belong.

In fact, during the first round of grouping, people often express concern that their ideas will get "lost." The ideas cannot literally get lost, because they cannot be removed from the paper. Further-more, because the qualitative data have been made uniform by being scrubbed, the cards can be moved around and their meanings seen in different contexts, rather than their meanings being lost. Pre-conceived univiews of the structure within which a certain card belongs "should" be lost. As the group simultaneously moves cards around, everyone displays and may even talk about why they think the meaning of a certain statement most strongly correlates with one or two other cards. That is, each person shares his or her uniview by asserting or challenging groupings. Thus, a new understanding—a new multiview—begins to emerge, just as it did during fact recording when participants could see one another's cards being posted.

4. Developing a multiview on the meaning of the facts. The team works together to articulate the multiview implicit in the groupings by writing titles that abstract the meaning or the image of each group of facts into new words. Again, the semantics guidelines help participants refine titles, and again some elements of various participants' univiews will come out.

The alternation of expressing univiews through grouping, thus creating understanding of the multiview, and then articulating the mul-

tiview through titling is repeated until only five groups remain and the participants have successively and increasingly built on and aligned their views into new understanding of the issue. In effect, in the grouping and titling, the participants have done a bottom-up analysis and synthesis of the facts they started with, with the analysis and synthesis being done in a way that breaks up preconceived notions and categories and allows new notions and categories to emerge based on the facts and the viewpoints of all participants.

D. LP helps the group form hypotheses

The hypothesis formulation part of the process is critical. It is in this phase that a group reaches consensus on how problems are interrelated and on priorities for action.

5. Showing options for a shared uniview. As final groupings and titlings are completed, participants have already begun to notice a new overall structure of the issue. Since they have created the structure through the steps of LP, all participants understand the structure, whether they agree with the emerging outcome or not, as evidenced by the fact that participants often verbally anticipate the emerging outcome ("Oh, I see where this is leading!"). In any case, people speak in terms of the newly created statements and structures. This is particularly apparent as the causal connections between the cards are identified

(a process that can be likened to grouping, as people move cards and arrows around and talk about their thoughts). And as the group talks, a common understanding and articulation of the structure begins to develop. Participants begin to have an opportunity to

think about whether or not they as individuals have faith in the emerging shared uniview. Individual participants may begin to applaud the impending outcome verbally or in some way to imply hesitation about the outcome. By giving these intimations of their thoughts on the emerging structure, they are in effect again communicating their univiews and adding to a new multiview.

6. Leading to adoption of and action on a shared uniview. When the structuring of the data in the LP diagram is complete, it may be appropriate to take action immediately or the resulting understanding may be fed into the next stage of a larger process. For example, the group can follow up with other analytical methods of analyzing qualitative data, such as tree diagrams and matrix diagrams.

Many processes allow us to understand the issues; few processes simultaneously prepare us to come to agreement and decide to take the next steps together. LP does this by providing the team with the opportunity to vote on the most important issues. After the key issues have been selected, the team can take action²⁴ If the frequency with which teams vote similarly on the issues is an indicator of whether or not shared univiews emerge through the LP process, then the method has a high success rate. We have frequently seen LP diagrams from senior management courses and CQM company projects achieving more than 80 percent agreement on the top two issues.

V. Summary and Conclusion

Since 1990 people in CQM member companies have used the LP Method and principles of semantics to analyze and understand qualitative (language) data. During this

period we and others have frequently observed that the LP Method not only exposes the underlying facts of a complex situation but helps a team of people agree on which facts are important, what they mean, how they relate to each other, and what consequent course of action they dictate.

The concept of cognitive consonance provides a model that helps us understand the sharing and alignment processes embedded in the LP Method. The concepts of the cycle of reasoning and the distinction between kinds of facts (world-to-word and word-to-world) provide clear examples of the kinds of confusion and lack of distinction that often result if a structured problem-solving method like LP for analyzing qualitative data is not available.

As a result of our CQM Study Group on Conversation, we now have deeper understanding of the LP Method and have additional tools for understanding and dealing with complex situations involving the qualitative data that pervade our lives.

Acknowledgments

Many of the ideas in this paper were developed through interactions with other members of the CQM Study Group on Conversation. Presentations to the study group by Fred Cunningham, Rafael Echeverria, Bill Isaacs, Beebe Nelson, Bob Putnam, and Jack Reilly influenced our thinking. Gary Burchill was a partner in developing several of the key ideas that led to this paper, and Gary and Toby Woll read drafts of this manuscript. Cyndi Adams, Diane Benison, Jay Howland, and Stella Tarnay helped with the preparation of the manuscript.



References

- 1 "CQM Design Study," Center for Quality of Management, Cambridge, MA, April 1990; *A New American TQM*, Shoji Shiba, Alan Graham, and David Walden, Productivity Press, Portland, OR, 1993, pp. 264–269.
- 2 *The Seven Steps Method*, Center for Quality of Management, Cambridge, MA, 1995.
- 3 For instance, in constructing the Ishikawa diagram during step 3 of the Seven Steps Method, the LP method is sometimes used to understand the hierarchy of the facts—to decide which data items are branches and which are leaves of the Ishikawa diagram.
- 4 *Concept Engineering*, Center for Quality of Management, Cambridge, MA, 1995.
- 5 *Language in Thought and Action*, 5th edition, S. I. Hayakawa and Alan Hayakawa; *A New American TQM*, Shoji Shiba, Alan Graham, and David Walden, Productivity Press, Portland, OR, 1993, pp. 161–169.
- 6 Ted Walls has studied LP and Advanced LP with Shoji Shiba. David Walden participated in the initial CQM Design Team in 1990, thus becoming one of the first people from a CQM member company to begin to learn and practice the LP Method. Between them the authors have taught and used the LP Method on numerous occasions and in a variety of situations with many hundreds of people, and one or the other author has been involved in every revision of the LP manual since the first draft. Some of the personal experiences recounted in this paper are from one of the authors, some are from the other, and in some cases we participated jointly; for simplicity, we describe these experiences in the first person plural.
- 7 "Language for Action," Gary Burchill and David Walden, and "A Conversation about Conversations," Ray Stata; Center for Quality of Management Journal, Volume 4, Number 4, Winter 1995.
- 8 *The Language Processing Method (LP)*, Center for Quality of Management, Cambridge, MA, 1995.
- 9 *Ibid.*
- 10 Sometimes the data comes to the LP process from a prior process, such as when the LP Method is used to analyze statements of customers collected during visits to customers. In other cases the participants in the LP process will give their own thoughts that address the theme.
- 11 Same citations as in endnote 5.
- 12 These concepts are also introduced in the companion paper in this issue by Burchill and Walden—see endnote 7. That paper synthesizes these concepts with concepts about types of conversations for building relationships and making and keeping commitments among people. This paper uses the three concepts to help explain how the LP Method works. By including the three concepts, each paper contains all the background necessary to be read on its own.
- 13 During the CQM Study Group on Conversation, our thinking about what we call the uniview and multiview was stimulated by the thinking of the biologist and philosopher Humberto Maturana, who distinguishes between what he calls the "universe" and the "(universe)," with the word in parentheses being used to indicate the reality derived from each person's viewpoint.
- 14 The cycle we call the cycle of reasoning is called "the ladder of inference" in *The Fifth Discipline Fieldbook* (Peter Senge et al.) and other writings more specifically on Action Science. We don't use the name "the ladder of inference" to avoid confusion with the "ladder of abstraction" that we learn about as part of semantics. The ladder of abstraction is about moving from the more general to the more specific. Sometimes this happens in the shift from affective language to report language. Sometimes this happens within report language; e.g., from "let's count the corporate assets" to "let's count the money in the cash register." The reasoning cycle is a description of the reasoning process that can be applied to many situations. Sometimes this cycle leads us to jump rapidly up a ladder of abstraction; e.g., from a bit of data through an interpretation to a conclusion. It could also lead us to jump down a ladder of abstraction; e.g., from the more general "the plant is on fire" to the more specific "there probably was a spark in the old wiring in the attic of the plant." Or it could lead from any other facts to any other conclusions, up or down or across.
- 15 We are merging here the idea of domain of obviousness that we learned from our study of the Language/Action Perspective with the ladder of inference idea that we learned from Action Science field.
- 16 See endnote 7.
- 17 Bob and Gordon Mudge passed on to us the following quote from Oren Robinson, president of Middlebury College: "We don't know what we believe until we put it in words. We don't know it with precision until we write it down."
- 18 The philosopher Searle calls these "brute facts."
- 19 Searle calls these "institutional facts"; i.e., of human institutions.
- 20 A methodology called "Dialogue," which was developed by the British physicist David Bohm, also is said to take place in a "container" of sorts and bears some characteristics similar to LP in helping people move from a uniview to a multiview to a shared uniview. The LP Method has the advantage of staying within a more clearly defined topical area and concluding with a complete, well-articulated written summary of the experience—the LP diagram.
- 21 "Complexity and Cognitive Equilibrium: Experimental Results and Their Implications," John Warfield; presented at the February 19, 1991, Annual Meeting of the American Association for the Advancement of Science, Alexandria, VA.
- 22 *Improving Product Deployment by Improving Coordination*, Arthur L. Keigler, II; Master of Science Thesis, Massachusetts Institute of Technology, June 1992.
- 23 The concept of a symbolic fact was first described by Shoji Shiba in March 1994 during the CQM's redesign efforts. The symbolic fact can be identified by the author alone, or with the help of the group as described in section IV-C.
- 24 Using the methods described in the two companion papers in this issue may be one way to take action after completing an LP diagram; see endnote 7.

CQM

1995 MEMBER LIST

EAST COAST CHAPTER CORPORATE MEMBERS:

Allegro Microsystems
American Power Conversion Corp.
Analog Devices
AT&T Tridom
Balco, Inc.
Bolt Beranek and Newman Inc.
Bose Corporation
BTU International
Bytex
Champagne/Lafayette Communications, Inc.
dataCon
Digital Equipment Corporation
Federal Reserve Bank of Boston
Ford Heavy Trucking
GE Aircraft Engines
Harvard Community Health Plan
Health Data Sciences Corporation
Hewlett-Packard Company
Ionics, Inc.
ITT Barton
Keane, Inc.
Kollmorgen Corporation
Lily Transportation Inc.
Lotus Development Information Systems
LTX Corporation
MARKEM Corporation
Mercury Computer Systems
Microcom, Inc.
Millipore Microelectronics Division
Millitech Corporation
Naval Undersea Warfare Center (TRICCSMA)
New England Electric System
PictureTel
Polaroid Corporation
Pratt & Whitney
Reading Municipal Light Department
Sippican, Inc.
Stratus Computer
Sun Microsystems, Inc.
Synetics
Teradyne, Inc.
Texas Instruments Incorporated
Titleist and Foot-Joy Worldwide
Unitrode Integrated Circuits Corporation
Varian Associates
W.R. Grace
Xylogics, Inc.

EAST COAST CHAPTER ASSOCIATES:

Citibank
DataCard Corporation
Fluke Corporation
Heidelberg Harris, Inc.
L.L. Bean

EAST COAST CHAPTER UNIVERSITY AFFILIATES:

Babson College
Bentley College
Boston College
Boston University
Dartmouth Thayer School of Engineering
Endicott College
Harvard Graduate School of Business
Lesley College
Massachusetts Institute of Technology
Tufts University
University of Massachusetts - Lowell
Wentworth Institute of Technology
Worcester Polytechnic Institute

WEST COAST CHAPTER CORPORATE MEMBERS:

ADAC Laboratories
Hewlett-Packard Company
Intel Corporation
National Semiconductor Corporation
Optical Coating Laboratory, Inc.
Raychem Corporation
Read-Rite Corporation
Solelectron Corporation
Synopsys, Inc.
Watkins-Johnson
Wyse Technology, Inc.

Stanford Business School



Editorial Board

David Walden, Chairman
Center for Quality of Management

Stephen Graves
Professor & LFM Co-Director
Massachusetts Institute of Technology

Ted Walls
Boston College

Robert Chapman Wood
Writer

Alan Graham
Consultant
Pugh-Roberts Associates

Shoji Shiba
Tokiwa University

Production Team

Eric Bergemann
Publisher

Kevin M. Young
Design & Production

Jay Howland
Copy Editing

CQM Officers

Ray Stata
Chairman

Gary Burchill
President

Thomas H. Lee
Treasurer and President Emeritus

William Wise
Clerk

The Center for Quality of Management Journal is a forum for disseminating the experience of organizations learning to implement modern management practices. It seeks to capture experiences and ideas that may be useful to others working to create customer-driven, continuously improving organizations.

The CQM Journal is refereed. However, it is not an academic publication. Experiences and ideas will be published if they seem likely to be useful to others seeking to improve their organizations.

Send to:

The Center for Quality of Management Journal
Editorial Department
One Alewife Center, Suite 450
Cambridge, MA 02140
Tel. 617-873-8950 Fax 617-873-8980
E-mail: publications@cqm.org

If you have thoughts for a paper and you would like to discuss it with us, please write, call or submit an outline. We welcome your ideas.

Final Manuscript Requirements:

Entire manuscript should be double-spaced, including footnotes, references, etc. Text should include all the elements listed below. Generally, The CQM Journal follows the editorial principles of The Chicago Manual of Style. We strongly prefer submissions in electronic format for all text and as many of the figures as possible. IBM-based software (particularly Microsoft Word for Windows) is preferable to Macintosh-based software if you have a choice, but is by no means a requirement.

Please include:

1. Title page, stating the type of article (e.g., 7-Step case study, research paper, short communication, letter to the editor, etc.), main title, subtitle, and authors' full name(s), affiliation(s), and the address/phone/fax of the submitting author;
2. All needed figures, tables, and photographs (see below);
3. Footnotes (if appropriate), numbered consecutively from the beginning to the end of the article;
4. Reference list, if appropriate.

Figures, Tables and Photographs:

If you can, insert each figure or table into the text where you would like it to fall. Figures should be composed to conform to one of two widths: 3 1/8 or 6 1/2 inches. The maximum height for any figure is 9 3/8 inches. Text within figures should not be smaller than 5 points and lines not less than 1/4 point at the figure's final size. Figures should be labeled with the figure number underneath and title on top. Be sure that the text mentions each figure or table.

Please retain separate PICT or TIFF files of figures generated in drawing programs and a file with the text only for final submission.