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A Process for Consulting for Improvement in Quality and Productivity

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ABSTRACT

This paper describes the consulting process employed by the author, and data and analyses used to improve it. This process is initiated by a manger who decides to improve some work process and negotiates a contract with a consultant for that purpose. It is sustained through regular meetings. The meetings focus on: (1) how to collect and use data to facilitate communications, make decisions, and improve work processes; and (2) the management environment required if people are to do this. Each meeting is documented in a memo. the memos help sustain project momentum; they are also data on this consulting process.

KEYWORDS: *Consulting; Deming; Statistical quality control; Total quality control.*

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1. INTRODUCTION

Figure 1 is a description of the author's consulting process for supporting process improvement activities. The major features of this consulting process are the following:

1. Before anything can happen a manager must be committed to doing something to improve a work process. This commitment will include the initiation of an improvement project.

2. Project work is coordinated in a series of regular project meetings. A consultant attends and guides the development of the project. However, the leadership for the project comes from the manager or a designated project leader.

3. After each meeting, the consultant writes a memo to the project team. The memos serve multiple purposes including the following:
   a. they help sustain the momentum of the project;
   b. they provide a valuable audit trail when the time comes to report on the project; and
   c. they are a form of data for the consultant to use in studying this consulting process.

This consulting process has two primary purposes:

1. to improve the work process under study; and
2. to increase the problem-solving ability of the people involved in the study.

This consulting process formalizes many aspects of what Marquardt (1979) calls "total involvement". Effective consulting requires careful attention to interpersonal issues. These include the client-consultant relationship discussed by Boen and Zahn (1982) and Isenberg (1983). When consulting for process improvement, the effectiveness of the consultations may also be enhanced by

- accurately diagnosing the organizational dynamics and
- using such diagnoses to decide which individuals to approach and how to work with them.

There are two major sections in this paper. Section 2 presents a detailed description of the consulting process I use. In section 3, I describe how data can be collected and utilized to improve consulting performance.

In this paper, the term "process" refers to a step-by-step procedure for doing something. "Management environment" refers to the management culture of the organization including the way in which decisions are made, the general level of fear, and the range of issues discussed by Deming (1982). Statistical Quality Control (SQC) refers to a collection of techniques for studying and improving processes using data. Total Quality Control (TQC)

refers to the application of these techniques to every aspect of an organization's activities.

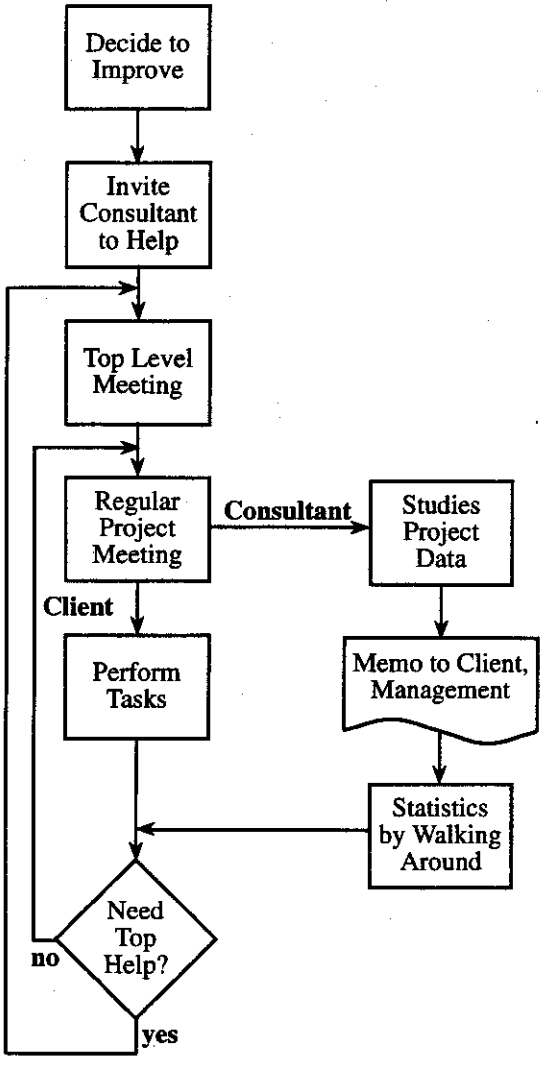


Figure 1. *The Consulting Process*

2. THE CONSULTING PROCESS

A manager hears about dramatic improvements in a similar area resulting from the use of statistical techniques. The relevance to that manager's operation is seen. A decision is made to try to achieve similar results.

To do this, the manager suggests that an individual or group, the "client", work on a project. For a client group, a project leader must be designated. Ideally, the project leader is the manager him/herself, although it could be someone reporting to that manager. As consultants, we avoid being designated the project leader as it might lead to a confusion of our role relative to the formal structure of the organization.

The consulting process described in this paper begins when the client agrees to work on something and to meet regularly with a consultant for assistance. The agreement may be formalized in a meeting involving the manager, the consultant, and the client or client group. The purpose of the project is discussed and the relative roles of manager, client, and consultant are clarified:

1. what services the consultant can and cannot deliver; and
2. what the manager needs to do in order to achieve the desired process improvement.

Complete understanding of these issues cannot be achieved in one meeting; however, they must be discussed. Later, when questions of relative roles impinge on the project, the consultant has a basis for raising the issue.

2.1 THE MANAGER AND THE CONSULTANT

As Deming (1982, p. 65) notes, people search for "instant pudding". There is a natural human tendency to want some magic elixir that will make things better without requiring a change in habits and world view. Things are rarely that simple.

Easy problems tend to get resolved fairly quickly. If a situation remains relatively unchanged for some time, people involved develop attitudes, beliefs, and practices that resist change.

A manager can start the change process by allocating resources to an improvement project. This displays one important change in the attitudes of management; however, it is very likely that there will be other management attitudes and practices that must change before the desired improvement can be achieved. The consultant must work to keep the manager involved in the project in a way that will help the manager see what must be done to make the project a success.

If a project is stagnating, the consultant must try to diagnose the problem – people may be afraid that an improvement for the organizations may create troubles for them or their friends. They may have no time to work on the project. They may have no authority to act on what they find. People's perceptions of their mandate may be influenced by management actions on seemingly unrelated issues.

In such situations the consultant must recognize that there has been a breakdown in the consulting process. A consultant may not know how to handle a situation of this nature. This lack of knowledge could

engender fear, which could lead to a failure to even look for such problems, and denial may occur. Zahn and Boroto (1985) suggest that a consultant view such a situation as an opportunity to study and improve consulting skills.

The consultant needs to cultivate a sensitivity to such breakdown situations. When they occur, the consultant must find a way to share these concerns with the manager. Managers want to do the right thing. If the manager does not do what the consultant asked, there is something the consultant failed to understand. This creates tasks for the consultant:

1. verify the data collected on the reason for slow progress on the project;
2. analyze the consultant's process of working with managers and clients in general and with the manager in particular;
3. look for other situations with a higher likelihood of success.

In my consulting practice, I support project meetings only when the project leader is present. If the project leader comes late or leaves early, we have a short meeting. If the project leader can't come at all, we find other uses for our time. There are two reasons for this policy.

1. A major purpose of our involvement is to train the project leader in the techniques of process improvement. Training others is important but secondary to developing the project leader.
2. If progress is to be made on the project, the primary person with decision authority should be present.

If the consultant refuses to participate when the project leader is absent, the leader is more likely to give the project the attention it deserves. If the leader cannot give it that attention, it is better that the project die early or that another leader be designated.

This approach has increased my effectiveness as a consultant and freed me from the stigma of being associated with failed projects.

2.2 SELECTING A FOCUS

In some instances, there is commitment to work on something but the objective of the project has not been clearly defined in advance. In such situations, the manager can begin by working to develop a "shared responsibility team" as described in Bradford and Cohen (1984, pp. 71-75, 169-203). This means getting everyone to work together in support of a single purpose.

Bradford and Cohen (1984, pp. 83-86, 99-131) discuss the importance of codifying this purpose in a single statement that everyone can support. One step in developing such a purpose statement can be to answer the following questions:

1. what services do we provide? People buy physical goods for the services they expect to get from those goods. In a multi-step process, our work is intended to provide a service to the next step;
2. for whom do we perform these services? I call these people our customers or constituents; and
3. what is important to these customers?

A group can answer such questions and use the answers to develop a purpose statement for the department or organization. They can then establish procedures for measuring whatever is important to customers. Data are then collected and used to monitor and improve the business.

A client can also use work sampling to decide what to study. Fuller (1985) discusses applications of this technique. He classifies work activities as "real work" or "complexity". He says we should try to eliminate "complexity" and get more efficient at the "real work".

Prior to project selection, the discussion revolves around the objectives and functions of the organization. The manager's participation at this stage is essential to insure that the project will get the high level of support it will need for success.

2.3 PROJECT MEETINGS

During the course of a project, several aspects of it will require discussion:

- the purpose of the project;
- data that have been collected;
- what data might be collected;
- how such data might be collected;
- how such data might be analyzed;
- how all this relates to the purpose of the project;
- what to try next;
- what support is required from clients and from higher management if the project is actually to result in change.

The consultant's primary role is to help the client keep focused and progressing. Occasionally, it will be appropriate for the consultant to provide training in SQC techniques and TQC philosophy. However, this should only be offered as needed to keep the project on course.

In particular, if the client does not get the message from one lecture on a certain topic, a second lecture is unlikely to make the point. The consultant

needs to ask the client questions:

- to diagnose why the particular message was not communicated; and
- to better learn the client's framework so new concepts can be more effectively introduced in the future.

Once particularly effective approach is to illustrate a point by asking a client to perform certain calculations based on the client's data. The consultant must ask that data be brought to the meetings. Without data there can be endless discussions without resolution of the issues. With relevant data in hand, meetings are much more focused; progress is much more assured.

Each meeting ends with a discussion of task assignments and deadlines.

The client and consultant continue to meet. A natural termination for this process comes when the client develops sufficient skill to conduct improvement projects without the consultant's assistance.

2.4 PROJECT MEMOS

Shortly after the meeting, the consultant writes a memo on the meeting and the project. The memo serves several functions:

- it helps everyone maintain an awareness of the opportunities represented by the project and what needs to be done to achieve the desired goal;
- it helps remind client and consultant of agreements to perform tasks;
- it keeps the client's manager informed of the progress of the project–this helps the manager help the client;
- it can be used to communicate with other departments whose cooperation may be needed;
- it provides a record of the project or things tried and improvements made. This record will prove valuable when the time comes to prepare a report on the project; and
- it is a primary source of data for the consultant working to improve the consultant process. This is particularly important for a consultant
  - *i.* without a lot of experience with this consulting process;
  - *ii.* in a new organization; or
  - *iii.* with projects and clients of special interest to higher managers.

It is easy to underestimate the value of such memos. In my consulting practice, I have estimated that the memos represent roughly two-thirds of my value added to the project. In many cases, the memos seem to make the difference between a project that doesn't quite get off the ground and one that achieves its objectives.

Before writing a memo, a brief look at available data might reveal issues previously overlooked. The consultant may experiment with alternative analyses. In addition, managerial aspects of the project need to be considered.

The consultant then writes a memo. Several topics that may be discussed are:

- the goals of the project and how the meeting and current activities support those goals;
- any additional ideas that may have come out of a second look at the history of the project and the data in hand;
- tasks people agreed to perform;
- why one approach might be preferred over another
- suggestions for future directions
- relevant aspects of TQC philosophy and SQC techniques.

The memo goes to the client. With most projects, the client's boss also receives a copy. Sometimes with the permission of the client the memo is routed to other people who can provide assistance to the project team.

Timeliness can contribute immensely to a memo's effectiveness. If a memo is distributed within a day or two after a project meeting, it can help motivate people to work on the project. At another extreme, when a memo was recently distributed at the next meeting, people seemed less prepared and the meeting was not as productive as other meetings.

The need for timeliness may conflict with a desire to coordinate the text with team members prior to distribution. The consultant needs to develop a style that encourages participation in the project without avoiding problems.

Occasionally, the consultant may have difficulty getting enough contact with a project leader to develop a good working relationship. More contact can be arranged by asking the leader to approve each memo prior to distribution. While discussing the project and the memo, the consultant can learn more about the leader's concerns. With this knowledge, the consultant should be better able to help that person learn about managing for process improvement.

At some point the client may assume the task of preparing the project memos. If this happens with a project group, the memo writer should be the project leader. The memo is a vehicle for providing leadership and direction to the project; it can only do

this if written by someone in a leadership position.

In particular, a naive client should not be asked to write the memo. The memo writer needs a reasonable appreciation of the philosophy and techniques of process improvement based on experience with successful applications.

As another person begins to write memos, the consultant can help by reading and commenting on the memos. This can be an important part of the learning experience for the memo writer.

2.5 STATISTICS BY WALKING AROUND

Statistical consulting involves walking around. This is necessary to: (1) develop rapport with the client; (2) perform tasks; and (3) collect data on this consulting process.

1. The consultant needs to develop the confidence of the client. Participants need to believe that they will benefit from the project and that data collection or other project activities will not reflect poorly on them.
2. The consultant may agree to collect data or perform other project tasks outside the formal meetings.
3. There are several kinds of data the consultant needs:
   - the consultant needs to find out what the people do and how they describe it. This knowledge will help the consultant translate process improvement concepts into terms that the client can more easily understand. It will also help the consultant guide the process of project selection and performance;
   - the consultant needs to check to see if points previously discussed were actually communicated;
   - there are many opportunities for inconsistencies to arise in data collection. The data collection scheme may be complicated. Random sampling may be employed. Data collection procedures may be ambiguous. The consultant needs to find out how data are actually being collected as it may be necessary to raise these issues in future project meetings;
   - the client may be having trouble performing tasks. If so, the consultant needs to understand why; and
   - interpersonal conflicts and managerial styles sometimes prevent a project from achieving its potential. Such problems arise so often that the consultant must be continually sensitive to their possible occurrence. Then when something of this nature arises, the consultant will be able to decide what action if any is required and when it could be taken.

     A group that is quietly stagnating is sure of such problems. By walking around, the consultant can get earlier and more complete data on these issues.

Walking around can even be formalized. A consultant can describe this as part of the consulting service. The consultant can promise the report back to the group on activities and quality problems observed. Such a report might also include suggestions for improvement projects derived from such observations.

Each member of a group can then be approached at unannounced times and asked what that individual is doing at that moment. The consultant can also arrange to watch someone work or to have someone explain the job.

After something is observed it is important to write notes. Even activities that seem at first to be necessary and straightforward may ultimately contribute to exposing great opportunities for improvement. If notes are taken only on obvious problems, many opportunities may be overlooked. I have found that the act of making notes helps me analyze the situation and evaluate what I might do with it.

2.6 CLIENT DEVELOPMENT

The consultant may lead the first brainstorming session with a client or client group. For later brainstorming sessions, the consultant can ask someone else to lead the activity. The same thing can be done with making cause-and-effect diagrams, process flow diagrams, or any other SQC tool.

Similarly, when discussing what to do next, the consultant may offer suggestions. As the client gains more experience improving processes, the consultant can ask the client more about what could be done next. This can lead to healthy discussions of alternative courses of action.

With a project group, the project leader's job includes developing agendas with the assistance of the consultant. The consultant will usually lead discussions over the philosophy and techniques of process improvement. Subject matter discussions are best led by someone else.

In some cases it may be necessary for the

consultant to take a more active part in leading a project. While doing this, the consultant needs to help the project leader develop group facilitation skills.

Eventually, the client can be encouraged to perform the documentation function; see the discussion in subsection 2.4 above.

2.7 THE CONSULTANT'S WORKLOAD

The primary objective of consultation is to change the management culture of the organization so process improvement activities become part of each person's job. The most important results of a successful project are what managers learn from it: (1) what kinds of improvements are possible; and (2) what managers need to do to achieve those improvements. One project that saves $1000 per month may have a greater long-term impact than ten projects that save $300 per month each. This will be especially true if the one project addresses a key concern of top management. Besides, it might be easier to get managers to remove institutional obstacles to the success of one highly visible project than to remove obstacles to the success of one highly visible project than to remove obstacles for ten less-visible projects.

In my practice, for each hour in a meeting, I may spend an hour or two thinking about the project and writing a memo, and three hours walking around. With a normal amount of overhead time, this means that a full-time consulting workload is five or six projects which meet weekly.

There is a natural tendency to equate greater productivity with more projects. If this tendency is not resisted, the result could be more activity but less productivity.

3. DATA ON CONSULTING

Anything important can be made the object of scientific study. Nothing is more important than the activities that consume most of a consultant's time and which generate income. I have attempted to study this consulting process, collecting data in various forms:

- the project memos;
- notes taken while walking around;
- a diary;
- the consultation record described below; and
- work sampling, as described below.

Our analyses of such data have contributed to our understanding of what we do. This has led to an increase in our overall effectiveness.

3.1 A CONSULTATION RECORD

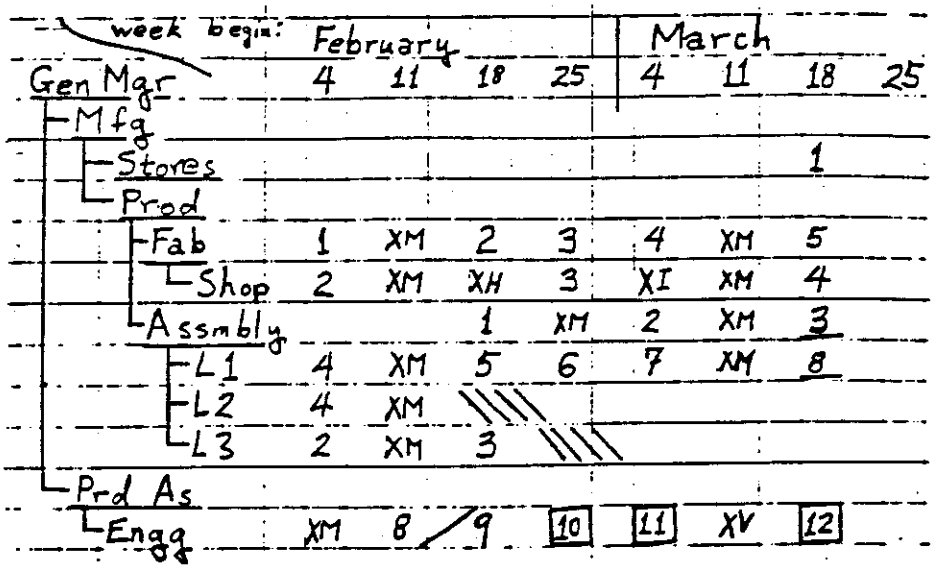
As mentioned above, the memos provide a record of the project that can be used to evaluate the project and this consulting process. A number of questions can be examined.

- Can we compare situations where this approach succeeds with other situations where it fails? By doing this we might learn something that will improve our success ratio.
- What is a reasonable commitment to ask for before starting a project? How many sessions and how much of a client's time will likely be required before they begin to see results?
- How many process changes might clients experiment with before they get one that really pays off?
- Under what circumstances might it be appropriate for a consultant to ask someone else to serve as a scribe.

The "consultation record" of Figure 2 is one type of data display we have used to try to understand this consulting process. This figure is rather cryptic; however, it is sufficiently informative that it can be used with personal memory and other records when analyzing this consulting process or making a presentation. It is hand drawn to make the point that most of what can be learned from data can be derived from handmade charts.

Figure 2 summarizes seven weeks of hypothetical consultations. These took place in an organization with a Manufacturing Manager (MFG) and a Product Assurance Manager (Prd As) reporting to a General Manager (Gen Mgr). The record indicates one project in an Engineering function (Engg) reporting to the Product Assurance Manager and projects in Stores and Production (Prod) under the Manufacturing Manager.

The project meeting in Product Assurance Engineering was canceled the week beginning February 4. The following week was the eighth meeting in this area. By the ninth session, a new project had been selected. Appreciable progress was reported on this new project during the tenth, eleventh, and twelfth meetings. No meeting on this project was held the week beginning March 11 as the



Legend:
1, 2, 3,... = session number
X = cancelled
XH = cancelled for a holiday
XI = cancelled, client ill
XM = cancelled by management
XS = cancelled because statistician not available
XV = cancelled, client vacation

underline = very productive session
partial box = process improvement apparent
box = definite process improvement
/ = new project
\\\\ = project cancelled

Figure 2. *Consultation Record (illustrative data)*

client was on vacation.

In Manufacturing, the record indicates six projects in Production and one in Stores. The project in Stores just began the week beginning March 18.

In Production, the record depicts two projects in Fabrication (Fab) and four in Assembly. During the week beginning February 11, all project meetings in Production were canceled by one manager or another; this happened again the week beginning March 11.

Both the Fabrication manager and his Shop Supervisor are leading projects. The Shop Supervisor started before his manager; however, the Shop project meeting was canceled for an official holiday the week beginning February 18. The week beginning March 4, the meeting was canceled because the ship Supervisor was ill. Neither project yet has any appreciable progress to report.

Figure 2 also indicates one project led by the Assembly Manager and one each by the supervisors of Lines 1, 2, and 3 (L1, L2, and L3, respectively). However, the projects in Lines 2 and 3 were canceled in late February.

The remaining projects led by the Line 1 Supervisor and the Assembly Manager are continuing. In the opinion of the consultant, both had very productive meetings the week beginning March 18.

A record like that of Figure 2 can help a consultant ponder questions like:

- Is one client making better progress or suffering more interruptions than the other?
- Can I attribute such observations to the consultations or the management environment or both?
- Is there something different I can try that might make progress faster?

Questions such as these can be profitably addressed using an overview like Figure 2 – supporting reference can be made to project memos and other records such as a diary kept by the consultant.

This display can help a consultant decide when to report to a particular manager, what to say, and what to ask that manager to do. It can also help the consultant make that presentation.

3.2 OPERATOR VS. MANAGEMENT CONTROLLABLE DEFECTS

Juran (1974, p. 18-23) says that "operator controllable defects generally are less than 20% of the total". Juran calls the remainder, over 80%, management controllable. This assertion has been more widely interpreted as: over 80% of problems are built into the system which management controls.

On the other hand, the force of denial is great. Human beings – managers and consultants included – tend to see external sources for the difficulties. Certainly every problem can be blamed on one or more individual(s). However, in over 80% of the cases, such information on individuals will not contribute to reducing the rate at which problems occur in the future.

In attempting to relate this to a consultant's experience, I examined my consulting records for occasions where clients seemed to have difficulty achieving reasonable progress. In over 80% of the cases I looked at, it was my impression that the lack of progress was due primarily to things beyond the client's control; their managers failed to support the project adequately or failed to appreciate the negative aspects of some of their actions.

Our professional growth as consultants depends on teaching ourselves how to identify such situations early and work with managers to avoid such problems.

3.3 WORK SAMPLING A CONSULTANT

The consulting process can also be studied using work sampling. For two weeks (including work time on a weekend) I wore a watch programmed to beep every 47 minutes. Each time it beeped I wrote down what I was doing. This record is summarized below.

The categories of "real work" and complexity" are defined in general terms in Fuller (1985). "Real work" includes trying to communicate an idea to someone for the first time. It also includes collecting data on how to approach an individual with a new idea. "Complexity" includes a second or subsequent attempt to communicate an idea to a particular person. It also includes working around poorly performing telephone or computer systems. Clerical functions like copying memos are included in this category as well.

The period of this work sampling study was quite different from my normal activities in two major ways:

1. more of my clients were beginning to deal with statistical aspects of their projects as opposed to things that were not directly related to data; and
2. I was heavily involved in writing a professional paper. The time spent on the paper would normally have been spent working with managers regarding managing for process improvement.

Considering the differences between this period and others, I feel this record is consistent with the discussion in subsection 3.2 above. We spend less than 20% of our consulting time talking about how to collect and analyze data to make decisions, facilitate communications and improve processes. Over 80% is spent working with managers regarding managing for process improvement.

4. SUMMARY

There is a process to consulting for improvements in quality and productivity. Knowledge and awareness of this process can help insure consistent delivery of a high-quality consulting service. Documentation of this process can help a consultant communicate with clients regarding roles and expectations. It can also provide a framework that allows a consultant to study and improve consulting performance.

ACKNOWLEDGMENTS

My understanding of this process and especiallythis description of it, has benefited from discussion with Tom Bielman, Søren Bisgaard, Jim Duarte, Ken

	OBSERVATIONS	*PERCENT OF DIRECT LABOR*
Real work – statistical	14	20
Real work – non-statistical	9	13
Complexity	48	68
Professional development	49	–
Break	8	–
TOTAL	128	101

Maddox, Tom Menten, LeRoy Nelson, Peter Piet, Sherry Read, Betsy Wolf-Graves, and Doug Zahn, among others.

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