
Juran's Lectures to Japanese Executives in 1954: A Perspective and Some Contemporary Lessons

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In 1954, at the invitation of the Union of Japanese Scientists and Engineers, Joseph M. Juran gave a series of lectures on quality management to senior executives and middle managers of Japanese industry. These lectures, together with those given by W. Edwards Deming in 1950, have been credited with being seminal contributions to the Japanese quality control movement. Focusing on the lectures to senior executives, this article examines Juran's own annotated manuscripts of his 1954 lecture notes in order to identify the actual content of the lectures and assess their impact at the time, as well as their contemporary relevance. They contain a remarkably comprehensive and modern view of quality management, which supports the contention of Japanese industry leaders and quality experts that Juran's lectures had a strong and enduring impact in Japan.

Key words: history of quality management, Japanese quality control, Juran, quality management

INTRODUCTION

The passing of Joseph M. Juran in February 2008 at the age of 103 prompts a critical re-examination of what might be one of his most significant contributions to the modern international quality management movement—the legendary lectures on quality management that he gave to Japanese industrial executives in 1954. The primary sources for this inquiry are the original lecture notes prepared by Juran, the verbatim translations of the lectures as actually delivered into Japanese, together with a transcript in Japanese of the question-and-answer sessions during the lectures, and several interviews with Juran himself. (The translations were done by the Union of Japanese Scientists and Engineers (JUSE), and the original documents are now in the library of the Joseph M. Juran Center at the University of Minnesota (Juran 1954a; 1954b)). Juran's lectures were given in two parts. The first was a two-day seminar for senior company executives and the second was a 10-day program for midlevel managers and engineers. This article focuses on the senior executive program, and the major themes of this examination are to clarify what Juran actually taught in these lectures, and to determine if one can find therein, in the words of Juran himself, some “lessons to be learned.”

Certainly, the modern quality management movement has reached a state of maturity that invites reflection about its origins, where it is now, and where

it should be going. Participants in and scholars of quality management should be asking, "What are the origins, strengths, and weaknesses of contemporary approaches as diverse as the Baldrige framework, ISO 9000, and Six Sigma?" Aware of the faddish aspects of past initiatives such as quality circles, benchmarking, and business process reengineering, many in the field seek enduring concepts and approaches. The recent article by Latham (2008) in this journal is one such introspective inquiry into what is required for enterprises to sustain and extend high performance. The author's conclusion is that a number of valuable and enduring elements that can help organizations both achieve and then sustain high quality are indeed contained in the 1954 Juran lectures.

Over a professional career that spanned a remarkable 70 years of active work, Juran made many diverse contributions to the field of quality management (Donaldson 2004; Butman 1997). It is not the purpose of this article to survey those accomplishments, but rather to focus on one particularly significant event—Juran's 1954 lectures in Japan. It has long been the conventional wisdom that in the 1950s Americans—particularly W. Edwards Deming and J. M. Juran—taught the Japanese quality control, which they immediately implemented more intensively than was being done in the United States, and then improved on the Americans' home-grown but neglected concepts (*BusinessWeek* 1979; Crawford-Mason 1980; Port 1987). Then, in the 1980s, the Americans reclaimed from the Japanese the refined quality control concepts. American firms further developed and expanded the concepts and techniques in the 1990s, culminating in initiatives such as competitive benchmarking (Xerox Corporation 1989) and Six Sigma (Motorola, Inc. 1988).

It has not always been clear, however, exactly what the Americans originally brought to Japan. This article comes out of the author's own attempts to better understand the contributions of the American quality experts in Japan in the early post-war period. There were three main initiatives: First were the management courses of the Civil Communications Section (CCS) of the Allied Occupation Forces that were given to representatives of the Japanese

electronics industry in the immediate post-wars years (Hopper 1982; 1984; Kume 1980; Nonaka 1995; Kobayashi 1986; Butman 1997). Quality management was a significant component of the CCS course. Second were the famous 1950 statistical quality control lectures of W. Edwards Deming (Deming 1951; Kolesar 1994), and third were the 1954 quality management lectures of J. M. Juran (Nonaka 1995; Ishikawa 1985).

BACKGROUND ON THE JURAN LECTURES

In the summer of 1954 Juran gave two series of lectures on quality management to Japanese senior and midlevel managers that have been widely acknowledged as being influential in the development of Japanese industry's implementation of quality control. But beyond typically brief acknowledgments of their occurrence, only a few facts are available in print about what Juran exactly did in Japan. Butman, in his 1997 biography of Juran, and Juran himself, in his autobiography *Architect of Quality* (Juran 2004), both gave highlights of Juran's five weeks in Japan, but did not discuss the content of the lectures. Nevertheless, it is clear that the Japanese have long believed that Juran's influence was very significant. Kaoru Ishikawa (1985), who assisted during Juran's 1954 lectures, and who was perhaps the most significant innovator in the Japanese quality management movement, expressed his feelings about the significance of Juran's message when he wrote, "To help solve the problem (of an over-emphasis on statistical methods) Juran was invited to Japan in 1954 to give a seminar for executives and department section managers. Quality control at last started to be used as a management tool." Junji Noguchi, who was the long-time executive director of JUSE, the organization that invited both Deming and Juran to Japan and that continues to be the main proponent of quality in Japan, was very candid in his remarks during a 1987 interview with the author that he considered Juran's contribution second to none. Noguchi also confirmed that JUSE had offered to name the Japan

Quality Award, JUSE's follow-up award that can only be won by Deming Prize winners, after Juran, but he had declined the honor.

Juran's invitation to give the 1954 lectures was a direct result of his publication in 1951 of the seminal *Quality Control Handbook* (Juran 1951; Godfrey and Juran 2006). JUSE's mission in inviting Juran was to have him address what they saw as the imbalance and over-emphasis on statistical methods and control charts in Japanese quality efforts in the early 1950s. Juran's career to that point had prepared him perfectly for the job that JUSE put before him. His foundation in quality management had been built during his long employment at the Hawthorne Works of AT&T, which he had joined in 1924. At Hawthorne, Juran moved steadily up the management ranks, holding a variety of staff positions related to quality, culminating in his appointment as corporate chief industrial engineer of Western Electric in 1941. At the end of the war Juran went into private practice as a management consultant, and for a time he served as chairman of the Industrial Engineering Department at New York University (Juran 2004; Butman 1997). Juran's writings from the 1940s and 1950s give evidence of his broad managerial interests and his particular searching inquiries into the problems of quality management (Butman 1997).

THE SENIOR MANAGEMENT LECTURES

Between July 3 and August 17, 1954, Juran gave two renditions of a two-part lecture series. As was mentioned previously, the first part, for senior managers (mostly CEOs), was two days in duration, while the second part, for midlevel managers, was 10 days long. The programs were given first near Tokyo and then near Osaka. In all, some 124 senior managers and 266 middle managers attended. The program for middle managers was designed so that Juran lectured for half the day and during the other half, while the participants were in workshops, he visited numerous factories. Among the companies he visited were Nippon Kogaku (Nikon) and Tokyo Shibaura (Toshiba.)

Prior to his trip Juran prepared detailed lecture notes in English. These ran some 265 typewritten pages and JUSE had the notes translated into Japanese. Each participant received an advance copy and was expected to have read them before the lectures. The left face of each double page in the book contained the English original and the facing right page contained the Japanese translation. This document is the key source for this article. In delivering the actual lectures Juran did not so much follow his script strictly as comment on and augment his prepared text with additional case histories, examples, and side remarks. JUSE staff members took verbatim notes of the proceedings, which were translated into Japanese, and in 1956 JUSE published the full text of the lectures—including both the prepared text and the additional comments in Japanese only. As Juran did not keep an English language version of his spontaneous comments, the author has, with the assistance of his Japanese students at Columbia Business School, retranslated these back into English.

Juran's explicit mission in this two-day session was to give Japan's most senior executives a clear view of their role in managing for quality. It had been noted by the Japanese experts who invited Juran that, despite the emphasis of the CCS course on management's responsibilities and despite Deming's special lectures to some 150 senior managers on their responsibility to lead the quality efforts, Japanese industry had fallen into an excessive emphasis on statistical methods and that senior managers gave quality issues little of their personal attention. It was the *managerial* content of Juran's 1951 *Quality Control Handbook* that had attracted JUSE. (Although, the main interest here is on the senior executive program, it is also relevant to consider the managerial content of Juran's 10-day course for midlevel managers. Therefore, an outline of these lectures is included in the Appendix.)

The theme of the executive program was the responsibility of the top executive in controlling (that is, managing) quality. Juran's 1954 use of the word "control" would, in many instances, be better captured today by the word "manage." Juran laid out five primary areas of executive responsibility:

1. Responsibility for high policy or doctrine on quality
2. Responsibility for choice of quality of design (grade)
3. Responsibility for the plan of organization of the company with respect to quality
4. Responsibility for setting up the measurement of what is actually taking place with respect to quality
5. Responsibility for reviewing results against goals and for taking action on significant variations

This article will discuss, in turn, the most vital of the points that Juran made within each of these five categories.

1. Doctrine on Quality

Issue one, the responsibility for high policy or doctrine, was seen by Juran as a set of ethical issues that he emphasized by posing three challenging questions to his executive audience:

- Will the enterprise truthfully represent its products when offering them for sale?
- Will the enterprise sincerely take steps to make its products to the contract provisions?
- Will the enterprise, in the case of quality failures, acknowledge them and sincerely meet its obligations under the contract?

Regarding the moral tone of the lectures, Juran states explicitly, "Quality is an ethical imperative for the senior executive." Ethical concerns are raised later in the lectures when he discusses motivating the work force. Throughout his career, Juran frequently emphasized the moral responsibility of leadership, not only to the shareholders and employees, but also to the broader community—as he frequently termed it, to society's "life behind the quality dikes." Juran shared this moral tone with his fellow pioneer, Deming, who opened his own 1950 Japan lectures with a dedication to striving for world peace through quality (Deming 1951; Kolesar 1994.)

Juran then clarified the executive's responsibilities: "Their responsibility is not only to decide these things and to make their decisions known throughout

the enterprise; it is equally their responsibility to show by repeated acts that they themselves truly follow the principles they have enunciated."

2. Choice of Quality of Design

On issue number two, the responsibility for choice of quality of design (grade), Juran stated that "It is axiomatic that if the enterprise is determined to remain in business for a long period of time, the quality of the product or the service which it is selling must be adequate to meet the needs of the consumer. Failing this, the consumer justifiably will turn to other, competing products or services which do meet [his] needs." Design quality was seen by Juran as a fundamental, as a strategic choice of the markets to be served and pricing structure employed. He was categorical: The senior executive *must* be the decision maker on these issues.

With respect to defining quality Juran stated that while a higher quality grade usually costs more, conformance to the design usually costs less. On this issue of quality and cost, which is to this day often misunderstood by many executives, Juran was very clear in 1954. His next point is one that companies still struggle with—the integration of the views of all impacted parties on new product design. He suggested that all affected departments, such as R&D, production, procurement, marketing, and so forth should participate in the choice of design quality and that this is best done via a standing "new products committee" reporting to and advising the CEO, who in Juran's view should be the decision maker on new product introduction. He was adamant that this participation not be left to chance, but must be organized by the chief executive. While today one might not wish to execute via such a standing committee, Juran's insistence on integration of the design process is now broadly accepted—though the intent is not always implemented effectively.

3. Organizational Plan

On issue three, responsibility for the company's organizational plan with respect to quality, Juran

offered a corporate model with a quality department that is part of manufacturing and that includes many functions related to inspections (incoming, in-process, outgoing), measurements and instrumentation, quality assurance, quality control, defect prevention, and statistical analysis. Thus, this department's functions are clearly "quality control" in the classic sense of the word. But he also called for a standing "quality committee" whose functions included the identification of unsolved and chronic quality problems, the identification of and recommendation of solutions to these problems, and monitoring the progress on quality, the latter being what Juran himself would later call "holding the gains." It is interesting that a number of the questions from Juran's audience asked him to further elaborate on the distinctions between the roles of the quality department and the quality committee, and to describe for them exactly how these groups were staffed in American companies. Remarkably, the questioners even wanted, and got, from Juran specifics about the differences between chemical companies, textile companies, and electronics companies.

This standing quality committee that Juran recommended was an embryonic form of what he would later call the "Quality Council." As previously described, he also called for a new products committee to unify and assemble the views of the affected department on new product design issues. As part of the quality infrastructure Juran also laid out the structure of a rather Six Sigma-like "defect prevention program," the components of which included:

- Computation of quality costs and losses
- Identification of where quality losses are concentrated
- Estimates of how much of the loss can be eliminated economically
- Estimates of the budget required to do so
- Fact finding to discover causes of principal chronic defects
- An improvement quota for line departments, set by agreement with them

- A timetable
- A plan for action and definition of responsibilities
- A plan of communication to enlist cooperation of all employees and supervisors
- A system of scorekeeping
- A plan for coordinating the program and reviewing results
- Appropriate training for top executives and for both line and staff groups

4. Measurement

On issue four, responsibility for setting up the measurement of what is actually taking place with respect to quality, Juran offered a succinct, yet rich, set of recommended measures. (It is remarkable that today many firms still struggle with what their quality metrics should be.) In these 1954 lectures Juran suggested a set of "essential" measures of quality including:

- Share of market
- Complaint rates
- Costs of customer adjustments
- Direct outgoing (physical) quality characteristics and defect rates
- Costs of quality
- Scrap, rework, and so on
- Overhead and hidden factory costs
- Delays and upsets
- Lost goodwill
- Reduced morale

5. Reviewing Results

On the last of his five issues, responsibility for reviewing results against goals and for taking action on significant variations, Juran argued that "... the issue is to meet this responsibility through a scheduled, constructive review of results rather than through letting matters take their course until some serious difficulty arises." In his opinion, such a review, to

be effective would require that a plan for the quality function and standards of performance be in place; that measures of actual performance against the standards be available; and that management regularly undertake analysis of significant departures from the standards to determine causes.

Juran realized that while CEOs can request or command subordinates to act on a quality agenda, effective implementation is not automatic. He examined the conditions that are conducive to obtaining subordinates' action, postulating that the probability of subordinates' action is related to whether they know what their performance is supposed to be and what the standards are; whether they know what their performance actually is; and the extent to which the system's performance is truly under their regulation and control. In Juran's view, the probability of action is enhanced by the extent to which the subordinate participated in the establishment of the standard in the first place; thinks that the standard is reasonable; and is convinced that the measures report actual performance. Juran stated that it is also critical that the subordinate be convinced that meeting this standard is important in relation to other demands made on him or her and be morally convinced that the standard should be met not just because the hierarchy demands it, but because it is in the best interests of his fellow human beings. Here again, one sees Juran's moral imperative.

CONTROL, MANAGEMENT, AND KAIZEN

These 1954 lectures bear the title "Lectures on Quality Control," so one should consider the discussion on the concept of "control" in Juran's opening lecture of the middle manager course. He stated: "Control is the *totality* of means by which we establish and achieve standards." He then substituted into this formulation "quality control" and "statistical quality control" and elaborated on each in an obvious manner. His use of the term "totality" makes the definition broad, and when he went into detail about his "cycle of control," one could see the richness and

the managerial flavor of the concept as he employed it. Juran's cycle of control had these elements/steps:

- Pick the objective
- Develop a plan for achieving it
- Carry out the plan
- Provide the resources
- Assign responsibilities
- Have those responsible execute the plan
- Determine if the plan is being met (control)
- Select control points
- Define measures and a method of measuring
- Select performance standards
- Interpret the difference between actual and standard
- Decide action to take and implement

This is a very rich and detailed structure with careful attention to the managerial aspects and responsibilities. This articulation was unique at its time and preceded the Baldrige Award framework by 34 years.

The origin of the famous plan, do, check, act (PDCA) cycle that is so central to the kaizen process improvement initiative and is characteristic of much of Japanese-style total quality management (TQM) (Imai 1987; Ishikawa 1985; Lillirank and Kano 1989; Mizuno 1988) has been an interest to some. The PDCA cycle, or Deming cycle as it is sometimes called, has been attributed by many to Deming, who himself had acknowledged Walter Shewhart as the originator (Shewhart 1986). Deming had in fact included a version of the "Shewhart cycle" in his 1950 lectures in Japan (Kolesar 1994). The Shewhart cycle, however, deals with product design, not with problem solving or process improvement. It appears that someone in Japan had probably taken the Deming/Shewhart cycle icon and made the PDCA process out of it. Some have speculated that the designer may have been Kaoru Ishikawa or Shigeru Mizuno. Perhaps one will never know who was the creator, but the author's examination of Juran's 1954 lecture notes suggests that his cycle of control may well have been among the stimuli that led to PDCA.

A JUDGEMENT AND CONCLUSION

During his life Juran was reluctant to make great claims regarding his impact in Japan. In print he opined that, had he and Deming never been to Japan, the Japanese would have made the same progress. But Japanese experts disagreed with him—JUSE invited him back for another extensive series of lectures in 1960—and in subsequent years for a dozen shorter lectures on special topics. Over the years a stream of Japanese visitors would make Juran's New York office a stopping point on their tours of the United States. And, in May 2004, at the celebration of Juran's centenary year, the distinguished Japanese quality leader, Professor Noriaki Kano, made a point of traveling from Tokyo to Stamford, Conn., to honor Juran.

The author's review of Juran's 1954 senior management lectures leads to the conclusion that Juran was indeed wrong in his modest self-assessment of his impact. His lectures—both the senior executive program discussed here and the middle manager program outlined in the Appendix—are astounding in their thoroughness and comprehensiveness, and the forward-looking concepts they contain. Two aspects stand out: Juran's emphasis on management's critical leadership and execution roles, and his articulation of a program of defect prevention and process improvement were both well ahead of the thoughts of his contemporaries, many of whom were still emphasizing sampling inspection. Moreover, the nature of the many questions put to him by the Japanese participants reveals the relatively naïve state of their own thinking and approaches at that time. The specificity and depth of the responses and advice that Juran gave to their detailed questions is remarkable. Juran's audience was large and influential, and JUSE took great pains to follow-up. In short, it is clear that Juran's 1954 lectures were a major accelerating factor in the progress of Japanese industry's quality progress. The lecture content shows that he had precisely fulfilled the mission for which JUSE had invited him.

Those who have seen Juran lecture in person would agree that the impact he had over the years

was not just from the compelling strength of his arguments and data. Part of his impact came from Juran as a person. He was very Socratic, more inclined to ask questions than to pronounce ironclad dicta. One can recall him in one of his seminars saying during thoughtful response to a question, "Well, here is my opinion, but others may differ." He drew his audiences and clients into the act of understanding. This tone is evident in Juran's thoughtful responses to the questions raised by his 1954 audience. He was modest about his own contributions and that was appreciated by the Japanese (Noguchi 1987).

It is remarkable just how much of Juran's later work is clearly outlined in these lectures. Almost all the classic Juran principles are there already. While there is not terminology such as the Pareto chart, quality trilogy, or breakthrough process that Juran employed in later years, the ideas are there. See for example, Juran (1964; 1989; 1993).

And what is the relevance of Juran's 1954 vision of quality management for today? His lectures to the senior managers contain a clear set of imperatives that, if followed today, will position an enterprise for quality improvement. That they are still relevant is evidenced by the viewpoint expressed by Robert W. Galvin, the former chairman of Motorola who led Motorola's creation of Six Sigma in the late 1980s. In 2004, Galvin attended a luncheon talk given by the author about Juran's 1954 lectures, which described their content much as has been done in these pages. Galvin stated, "If only I had known all this back when we were getting started on Six Sigma, it would have made my task much easier. We had to discover much of this for ourselves. And, if only we could keep focused on Juran's agenda every day, we could better hold the gains."

Galvin's remarks about holding the gains prompts consideration of points that were raised in Latham's (2008) report on the 2006 Montfort Summit's inquiry into the dilemmas that companies face in sustaining high levels of performance. Latham identifies a series of challenges, several of them emanating from "turnover" issues. Turnover in senior executives and turnover in employees are dynamic challenges to

companies that strive to maintain an enduring focus on performance excellence. Juran's 1954 precepts of quality control, that is, precepts of management for performance excellence, are not at all natural. They encompass substantial changes in patterns of behavior and organizational structures that need to be embedded in many stakeholders of the organization. But that job, once done, is unfortunately never really finished, for so much is continually changing—even within the firm's managerial cadre. Few organizations are attentive enough or have put enough resources against *reintroducing* the precepts to successive waves of new participants, as turnover robs the organization of many of those already indoctrinated. It is unfortunate that one must count Motorola and Xerox, which were both substantial contributors to the 1980s' quality renaissance in the United States, and early winners of the Baldrige Award, as having lost their momentum and pre-eminence. While a full diagnosis of the causes of the declines at Motorola and Xerox remains to be made, it is clear that change in leadership played a significant role. Neither Gavin at Motorola, nor David Kearns at Xerox, were succeeded by CEOs who were as passionately and competently dedicated to the performance excellence agenda of those firms. It would seem that an original performance excellence immersion (TQM, Six Sigma, and so on) needs periodic booster shots.

There have been many developments in the world of quality management in the 50-plus years since the Juran 1954 lectures were given, yet they hold up well as core advice to any executive looking to manage for improved quality.

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Much of Kolesar's recent work has focused on increasing the effectiveness of implementation of quality management and control. He has twice been an examiner for the Malcolm Baldrige National Quality Award. Kolesar has been a consultant to many firms in the United States and abroad on issues concerning quality and productivity. He can be reached by e-mail at pjk4@columbia.edu.

APPENDIX

Planning and Practices in Quality Control—Lectures on Quality Control—by Joseph M. Juran (July and August 1954)

Outline of Lecture Series on Quality Control

1. **The nature of control**, showing how the control cycle is fundamental to all activity, and how control of quality parallels control of anything else. (18 pages)
2. **Division of the subject**, listing the quality problems of the enterprise, the tools available for solution of these problems, and the organization necessary for these tools into active use. (4 pages)
3. **Economics of quality**, discussing the means by which the enterprise can strike the economic balance in quality matters. (2 pages)
4. **Specification of quality**, discussing the problems of expressing consumer and manufacturing quality needs in the form of quality specifications. (16 pages)
5. **Manufacturing planning for quality**, discussing the manufacturing and production preparation necessary to meet the specification. (16 pages)

6. **Production department quality problems**, discussing the quality problems of the production workmen, and the production supervisors, foremen, superintendents, and managers. (18 pages and an appendix)
7. **Organization for inspection**, discussing the organizational problems of inspecting and measuring product. (26 pages)
8. **Measurement**, discussing the problems of choice of instruments, maintenance of accuracy of instruments, and standards for nonmeasurable characteristics. (20 pages)
9. **Vendor inspection**, discussing the problems of inspection and measurement of products purchased by one company from another company. (26 pages)
10. **Process inspection**, discussing the problems of inspection and measurement products wherein the making and using departments are within the same company. (26 pages)
11. **Final inspection**, discussing the problems of inspection and measurement of products that are to be shipped by a company to its customers. (26 pages)
12. **The staff quality functions**, discussing those activities directly associated with quality that are best carried out by a staff of quality control engineers. (26 pages)
13. **Defect prevention**, discussing the means for preventing defects from happening in the first place. (18 pages plus reprints of Juran colleagues' articles for a total of 84 pages: Day n.d.; Seder n.d.)
14. **Quality assurance**, discussing the means for preparing and presenting to the high executives facts of what is taking place in a quality function. (No original notes, lecture based on section 6, Quality Assurance, of Juran's *Quality Control Handbook*.)
15. **Training for quality**, discussing the need for, and the content of training programs for, various groups in the enterprise. (16 pages)
16. **Quality mindedness**, discussing the means for achieving, among the various groups in the enterprise, and adequate state of mind with respect to quality. (2 pages and reference to a reprint of a paper: Juran 1954c.)
17. **The role of statistical methods**, discussing the uses and limitations of statistical tools for quality control intended to improve quality and reduce costs. (16 pages)
- 18., 19., & 20. **Launching a program of quality improvement**, discussing the principles that determine the success or failure of a program. (No notes available.)