

Homer Sarasohn and American involvement in the evolution of Quality Management in Japan, 1945 – 1950

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Summary

The history of Quality Management, and of the role of Statistics in Quality Management, is inextricably bound to the reconstruction of Japan immediately following the Second World War, and then to developments in the United States over three decades later. Even though these periods are, in societal history, just moments ago, yet there is profound lack of agreement about what was actually done, and who should be recognized for their contributions. This article draws on historical materials recently made publicly available in order to clarify what actually took place between 1946 and 1950, and in particular the contribution of a remarkable engineer, Homer Sarasohn.

Key words: Civil Communications Section; W Edwards Deming; Union of Japanese Scientists and Engineers; General Douglas MacArthur; Charles Protzman; Homer Sarasohn; Statistical Process Control; Total Quality Control.

1. Introduction

The history of Quality Management is inextricably bound to the reconstruction of Japan immediately following the Second World War, and then to developments in the United States

over three decades later. Even though these periods are, in societal history, just moments ago, yet there is profound lack of agreement about what was actually done, and who should be recognized for their contributions, despite the considerable efforts of two outstanding scholars. None of the original contributors is still alive, so we have very little information available in the form of primary resources (with one outstanding exception, mentioned below).

The purpose of this paper is two-fold:

- (a) To set out what appear to be largely undisputed **data** – in other words, what might reasonably be accepted as factual.
- (b) To provide an interpretation based on the factual information and other more subjective material from secondary sources, including the author's own experiences from interactions with primary contributors.

The discussion draws heavily on the work of the two leading scholars in the area: Myron Tribus, who has studied historical developments very broadly; and Kenneth Hopper, who has devoted a lifetime to studying what happened in post-war Japan, and subsequently in the USA. The perspective of this article is that of a statistical scientist, so there is explicit focus on what is often termed 'Statistical Quality Control'.

Key sources of information for this paper, including articles and correspondence recently made available by the late Homer Sarasohn's daughter, Lisa Sarasohn, are provided in Section 6.

For more information about developments in Quality Management and Quality Practice before 1945 and after 1950, the reader is referred to Fisher & Nair (2009) and references therein.

2. Events prior to 1945

(a) Data

Tsutsui (1996) reported on pre-1945 work related to Quality Control, based on studying Japanese resources:

- 1931: A Japanese engineer, Ishida Yasushi, studied the latest American techniques and developed a distinctive "scroll" (*makimono*) system of control charts for use in Tokyo Shibaura Electric factories
- 1934: Kiribuchi Kanz published a monograph on the use of statistical analysis in the production process to ensure conformity to standards
- 1942: Ishida Yasushi and Kitagawa Toshio (from Kyushu University) published a Japanese translation of E. S. Pearson's industrial statistics book (Pearson 1935).
- 1943: A public-private 'research group' (*kenky tonarigumi*) was formed under the auspices of the Technology Agency (Gijutsu-in) to study mathematical approaches to mass production.

(Quoted largely verbatim from Tsutsui (1996), where the specific references in Japanese can be found. Important note: Japanese-language references cited by Tsutsui *have not been checked directly* by the author.)

3. 1945 – 1947

(a) Data

(a1) Civil Communications Section (CCS) activities

At the end of 1945, General Douglas MacArthur (Supreme Commander of the Allied Powers – SCAP) was charged by US President Harry Truman with commencing the process of post-war reconstruction in Japan. One of the Sections of SCAP was the Civil Communications Section, which included an industrial division that was responsible for working with, and advising, Japanese communications equipment manufacturers (Hopper 2007).

Homer Sarasohn (*b* 24 May 1916; *d* 28 September 2001) was an American radio engineer.

During the Second World War, he fought with the 161st Airborne Engineers, until he was given a medical discharge around Christmas 1943. He proceeded to work on Project Cadillac (to do with radar) at Massachusetts Institute of Technology, and then subsequently put his radar knowledge to civilian use in the development of transcontinental microwave transmitters. His responsibilities included ensuring a rapid transition from prototype to production. He was summoned to Japan (see Appendix, Item 1) arriving in April 1946, aged 29 years. In Sarasohn's words (Sarasohn 1997; see Appendix, Item 2),

[MacArthur] ... issued a series of edicts. The first of these were:

- Japan's military forces would be dissolved.
- The *zaibatsu*, the industrial cartels that had supported the military's war adventures, would be abolished. Their executive managers would be removed from positions of influence.

Other proclamations addressed these subjects:

- Workers would be free to form and join labor unions.
- Women would have the same legal status as men.
- Democratic forms of education would be established. Elementary school education would be compulsory.
- Child labor would be banned.
- Political prisoners would be released from jail. The secret police would be abolished.
- Freedom of religion, thought and political expression would be the right of all people.

But then, a practical problem surfaced. How were the people to be informed about these edicts, their meaning, significance, and all the other details involved? There was a group in SCAP headquarters called the Civil Information & Education Section (CI&E) charged with responsibility for getting the word out to the public. It was important that the people be told about these reforms. They amounted to a major cultural change affecting their lives. The immediate stumbling block, however, was that at this time there were no widely circulated newspapers. The telephone system was not working. It was difficult to travel around the country. There was no radio broadcast system. A communication facility was needed, but none was available.

There was another group in SCAP headquarters working to solve that problem. It was the Civil Communications Section (CCS). Its immediate task was to restore the local and long distance telephone and telegraph networks to an operating condition. But, the problems being encountered were staggering. Aside from the war-time damage that had been done to the central and switching stations, and the loss of interconnecting lines that had been destroyed, the lack of adequate maintenance work during and prior to the war years resulted in much of the equipment now being unusable. Added to this, there were few trained technicians available to be put to work to correct the situation.

Even more serious was the total lack of a supporting communications equipment manufacturing industry. What was needed was a dependable source of supply of equipment and system components, such as telephone instruments, switches, cables, vacuum tubes, electrical relays and transformers. These were the kinds of things it would take to restore the networks to operation. But, the companies that had produced these products previously were now, to a large extent, out of business. Their factories had been destroyed. Their workers had been drafted into military service or had otherwise disappeared. Machine tools and production equipment had been lost or had been deployed out to the countryside to escape air-raid damage. An entire class of senior managers had been dismissed in the *zaibatsu* purges. This was the situation the Industry Branch of the Civil Communication Section faced as the Occupation got under way.

I was in charge of the Industry Branch. My assignment was to do mainly three things:

1. Supply domestic radio receivers to the Japanese people as an immediate communications medium in support of SCAP's CI&E Section.

(We would use army transmitters as the broadcast source.)

2. Meet the needs of the Occupation Forces (and also domestic users) for a reliable nation-wide telecommunications facility.
3. Assist the Japanese communications equipment manufacturing industry to become a major contributor to a revived national economy.

According to Sarasohn's account, he devoted his efforts to the first of these tasks, with a colleague (Wilbur Magill, from American Telephone and Telegraph (AT&T)'s Hawthorne plant; see Appendix, Item 3) working on the second. He also commented, "I did not worry too much about the third task. If we were successful in accomplishing the first two, the other would take care of itself". (In fact, Sarasohn related in the interview that a measure of success of their efforts was that this was the first Japanese industry to be taxed, after the war.)

Sarasohn continued:

It was not easy getting to this point. There were physical problems, and there were cultural problems. Among the more pressing physical problems were these. Factory sites had to be cleared of rubble so that shacks could be put up to house production machinery and workers. Machinery had to be installed, repaired and refurbished. Workers had to be recruited and trained. Supplies and raw materials had to be located and brought in. Supervisors and managers had to be chosen, some almost at random, and put in place. Most of them were strangers to their jobs. They came with little or no managerial experience. In their previous positions, they essentially had been conduits for the flow of instructions between their superiors on one side, and the workers on the other. They were not business planners. They were not leaders nor decision makers. They were more accustomed to following orders, rather than giving direction. They had little understanding of industrial strategy or policy. They were confused, lacking in self-confidence and uncomfortable in the positions into which they had been force-fit. They had to be instructed on a day-to-day basis how to set up, run, and manage a mass production system. And, that is what we in CCS did.

Product assignments were given out, manufacturing quotas were set and delivery schedules established. Progress was closely monitored by continuous plant inspections. Direction and assistance were given on site, and on-the-job training was a requirement at every location. I had no illusions as to the level of product quality we would achieve. Pre-war Japan's commercial products were not

examples of high quality. In fact, the legend "Made in Japan" stamped on the bottom of an item was a notice to the buyer not to expect a high degree of reliability. This was also true of Japan's war-time production. For example, Koji Kobayashi, who became chief executive officer of Nippon Denki, wrote in an article published in the magazine *Quality Progress* of April 1986, "During the war, NEC manufactured military communications equipment. However, the quality was not good. For example, I remember that the yield of vacuum tubes for aircraft was one percent. We promptly studied the design of experiments and took measures to improve quality, but the prevailing policy was 'one tube today rather than ten tubes tomorrow'".

Quality problems are first and foremost management problems. What better proof of that is needed than Kobayashi's statement? If the leaders of an enterprise do not know and understand that quality is the essence of their business, it is inevitable that they are doomed to failure. And, if they do not know the elements that comprise the system of quality, their fate of failure is sealed.

Quality control is not a "band-aid". It cannot make a bad system good. It is not a therapy to be applied to an ill-conceived or poorly managed function. To be effective as a control, the total process to which it is applied must be well designed to begin with.

By the middle of 1946, a start had been made in reviving the communications equipment manufacturing industry. But, there was such a great distance yet to go. Production facilities were primitive and unreliable. Working conditions were deplorable. Materials wastage was intolerable - all the more unacceptable because raw materials were hard to come by and their cost was exorbitant. Work spaces were contaminated by dust and dirt. In this environment, upgrading product quality was impossible.

The new managers had to be brought to the realization that we were now in the process of building for the future. From now on they would be dealing with the demands of mass production and modern technology. That meant they would have to understand the concept of a total system in which every part was important and interrelated. It was essential to know the functional relationship of each part to its adjacent part. The ordinary workers seemed to have a better understanding of this concept than their managers. What the workers lacked in skill was offset by their industriousness and honest effort. There was no slouching on the job on their part. They seemed dedicated to the idea of making a personal contribution to rebuilding their country and their lives. But, they needed managers who were leaders.

With this in mind, I called a meeting of plant managers at my office in the Dai Ichi [Daiichi Seimei] Building. I had the managers gather around a large table in the conference room. I sat at one end with my interpreter. My agenda was to form a consensus from the suggestions they would volunteer as to the major manufacturing problems they recognized that had to be resolved. I began by saying we had made a pretty good start on the production of radio receivers and their components. Nevertheless, I was still disappointed with the level of quality being achieved. The poor yield was causing an unacceptable waste of valuable materials and worker time and effort. I looked around the table at the men. I asked them to tell me what in their opinion was the reason for the problem, and what action should we take to cure it. My purpose was simply to get them started on some analytical and creative thinking. I wanted to get them out of their old habit of only taking orders from higher authority. I wanted to get them involved in *participative management*.

At first there was dead silence. They seemed shocked and surprised. No one had ever asked for their opinion on anything before. I put my question to them again. Then, they all got up and moved down to the far end of the table. They began a discussion among themselves. This went on for a while and I became increasingly impatient. I turned to my interpreter and asked him what was it they were talking about. Why couldn't they come up with a quick answer to what I thought was a simple question. He said the men were trying to decide upon a response they hoped would be "most pleasant for me to hear". It didn't matter that their answer might not fit the facts. It was more important to them that I not be disturbed. That was not the answer I wanted, and that was not the relationship I wanted with these men.

That episode made me adopt a couple of firm resolutions. First, I would learn as much as I could about Japanese language, culture and mentality so that, in the future, I could deal with the people in a direct and forthright manner without having to depend upon an interpreter. Second, I would break through the tradition that insulates Japanese executives from personal accountability for what happens in their areas of responsibility. Ceremony and circumlocution would be replaced with positive action. My objective was to get these managers to recognize they had serious operating problems that demanded prompt attention. The list was imposing: workplace cleanliness, scheduled machine maintenance, on-time work flow, effective job training, realistic quality standards, and much more. Each of these items called for careful analysis, timely decisions, corrective action and, above all, management follow-through.

That first meeting was followed by a series of other such meetings. Each attendee had to be prepared to identify an operating problem and suggest its solution. Each one was committed to go back to his own company and hold similar discussions with his people. My idea was simply to get everyone involved in an on-going process of *continuous improvement*.

I particularly wanted to inculcate these managers with three fundamental concepts:

Progressive management demands of each person:

- * *Commitment* to the defined goals and spirit of the enterprise.
- * *A personal sense of Ownership* of and in the organization.
- * *Feedback*, up, down and across the lines of the organization, of the information needed to do the job right the first time; of the kind that keeps the sense of commitment and ownership alive and well.

Some Japanese official statistics encompassing the period in question are given as Item 4 in the Appendix.

(a2) Union of Japanese Scientists and Engineers (JUSE)

In May 1946, two months after Sarasohn arrived in Japan, the Union of Japanese Scientists and Engineers (JUSE) was created, with founding chairman Ichirō Ishikawa.

(a3) Visits to Japan by W Edwards Deming

There are various reports of W Edwards Deming visiting Japan in 1946, 1947 and 1948:

- Nancy Mann, in her book *The Keys to Excellence* (1989, page 14), says that
“... in 1946 ... Dr. Deming made a trip around the world under the auspices of the Economic and Scientific Section of the U.S. Department of War. While he was in India working with Mahalanobis ... he received instructions to continue on to Japan. He did so and stayed there for two months to assist U.S. occupation forces with studies of nutrition, agricultural production, housing, fisheries, etc. Thus, he became friends with some of the

great Japanese statisticians.”

- In an article on website of the Japanese Statistics Bureau, Kitada (1995) recorded that “In response to the request of the General Headquarters to the U.S. Government on October 31, 1946, the first mission came to Japan on December 22 of the same year, just before the Statistics Commission was organized, to research and recommend on reform of statistical affairs of the Japanese Government and other matters. The mission conducted research in cooperation with the Statistics Commission and, on May 28, 1947, submitted to the General Headquarters a recommendation titled “Modernization of Japan’s Statistics.” The leader of the mission was Dr. S. A. Rice, Assistant Director of the Bureau of Budget (BoB) and Director of the Statistical Standards Department of BoB of the Executive Office of the President The mission also included ... Mr. W. E. Deming. Dr. Rice submitted [a report] to the General Headquarters on January 11, 1947 and returned to the U.S. at the end of the month. [At the time, Rice was also President of the International Statistical Institute – NIF.]

In the Manuscript Division of the Library of Congress, where Deming’s records are stored, the *International File, 1930-1992, n.d.* reports that “In 1947, Deming visited Japan as a statistical advisor to the Supreme Command of the Allied Powers.” This is supported by a statement in a letter from Sarasohn to Lloyd Dobyns (quoted more fully below) to the effect that “Deming was a statistician who had been on loan to SCAP from the Census Bureau in 1947 when we were trying to understand the local demographics relative to food distribution, health statistics, social services, etc.” Deming may also have been doing some planning for the 1951 census in Japan. Various reports suggest that this trip occurred in January 1947, as part of a world trip that also included a visit to India in

December 1946 – January 1947.

The import of these two paragraphs is that Deming may not have joined Rice's mission in Japan until January 1947. Deming is also recorded as giving a lecture on sampling at the Institute of Statistics and Mathematics at Tokyo in March, 1947.

- Mann (1989 page 15) also quotes Deming as making a visit to Japan in 1948 "... to do more of what I had done before."

Myron Tribus (1994) records that "...when General MacArthur needed to make a population survey in Japan in 1948, he called upon W. Edwards Deming", although he does not state that Deming actually made the visit in 1948. Deming visited Japan in 1950 for this purpose (amongst others).

(b) Interpretation

There is little of contention about this period. Sarasohn was working on the basic task of developing manufacturing capability for domestic radio receivers, JUSE had just been formed, and Deming was involved in census work and other basic studies relating to restoring the Japanese economy.

4. 1948 – 1950

(a) Data

(a1) CCS activities

In November 1948, Charles Protzman arrived in Japan to join CCS. Kenneth Hopper (1982, pages 15, 19) provides the following background information:

After joining Western Electric in 1922, Protzman had risen to senior production management levels before being assigned to SCAP at the age of 48 as a civilian advisor to the Japanese communications industry.

... Protzman had been instructed before he left the U.S. that, with his substantial knowledge of manufacturing, one of his prime duties would be to help improve quality. When he arrived in Japan in 1948, he concluded that while 'in some individual cases, good quality levels had been attained,' in general 'it was still far below reasonable standards'.

[Protzman continued] 'I understood my job was to advise the Japanese on rebuilding their communications system I found, however, that they did not understand and apply the systems and routines of production management. Within a month of arriving in Japan, I had concluded that rather than try to correct each company individually, we should present a set of seminars on the principles of industrial management for top company executives. I recommended this, and found Sarasohn in agreement.'

Hopper (1982) recounts that there was resistance to this from their immediate superior officer, so the preparatory work was done discreetly. However, this superior officer was replaced by Frank Polkinghorn (Appendix, Item 5), who was far more supportive, and they were able to proceed.

Continuing with Sarasohn's (1997) account:

In carrying out our "arms length" posture with the communications industry, we in CCS adopted two new concepts. One was product quality certification. The other was management qualification. My first move was to establish a national electrical testing laboratory. Managers and engineers cooperated with me in drafting and agreeing to uphold performance specifications and test criteria that covered the entire spectrum of communications products. An edict was issued that required all electronic, radio, telephone, telegraph and related equipment to be type-tested and quality certified by this laboratory before being offered to the public. If approved, all production units must then adhere to the same test criteria. To ensure continuing compliance by the manufacturers, tests would subsequently be run from time-to-time on items taken at random from store shelves. If there were any failures, manufacturers would be required to withdraw all products of that type until a re-certification test was completed.

The rationale behind this was simple. By this time, radio receiver production was meeting our goals. The CI&E program was getting through to the public. The telecommunication system was working with an acceptable degree of reliability. Now, we could go back and make each manager individually

responsible for the quality of his product and his function. Manufacturing quantity might suffer. But, the long-term benefit of quality control would make that cost quite acceptable.

(In other words, Sarasohn established an electrical standards testing laboratory, the fore-runner of the Electrical Test Laboratory that still operates in Japan.)

The second step taken toward the end of 1949 was aimed at improving and broadening the quality of management. Up to this time, junior level managers had been squeezed into senior level positions. By and large, they had responded admirably to the challenge. They were becoming increasingly effective. Nevertheless, it was obvious there was no depth to the available resource. Moreover, the cultural influence of the feudal environment from which they had emerged was still quite evident. It was clear to us that an intensive management training course was needed.

To get a more precise measure of just what the scope and content of that course should be, a colleague of mine and I made a detailed investigation of six companies typical of all those in the communications industry. What we found was disturbing. In the report written at the conclusion of our survey, we stated, in spite of the progress being made at the factory level, it was clear that "the weaknesses of management at the top level were causing a tide of regression which, if allowed to go unchecked, might well culminate in the collapse of the industry".

We said these top level executives had to come to a management school. CCS would be that school. Charles Protzman, my colleague who was an AT & T industrial engineer, and I would be the teachers. We knew there was no textbook available that covered the subjects we had in mind for our students, so we would write the textbook ourselves. Certain rules would apply to our school:

- * We would select the senior executives who would be our students. They would be required to attend. Substitutes would not be permitted. Certain government officials and university professors would also be selected to attend.
- * Classes would meet four days a week for eight consecutive weeks, four hours a day. There would be homework for our students to do. [cf. Item 6]
- * Each student would be expected to apply each lesson learned to his company as soon as possible
- * The CCS Seminar lessons would be repeated in each student's company. The students of this first course would be the teachers of the next level of managers.

- * The final examination for each of our students would be the Progress made in his company in one year's time.

Protzman and Sarasohn were now in a position to propose teaching the Japanese about industrial management. However, opposition emerged from the Economic and Scientific Section (ESS), which was essentially responsible for all Japanese industry except communications. ESS officers were concerned about the impact on American companies if Sarasohn and Protzman proceeded with their course.

When our plans for the CCS Seminar became known elsewhere in SCAP headquarters, a series of objections were raised. Statements were made that we should not teach the Japanese about progressive management; there was a competitive danger in raising the industry's productivity level too high; we might make it more difficult for American companies to get a commercial foothold in Japan.

We were not dissuaded by such argument. So, the matter was brought to General MacArthur's attention for his final decision.

The spokesman for the opposition and I went to MacArthur's office. He made his presentation first, pointing out all the reasons why the idea of the CCS Seminar was so bad. Then I got up and spoke for my allotted time – fifteen or twenty minutes. My main point was that strong managerial leadership built upon the base of the country's industrious workers would assure a progressive future for Japan. During all this time, MacArthur sat at his desk smoking his corn-cob pipe, saying not a word, never changing the expression on his face. 'I finished my presentation and sat down, thinking that I had failed to get my story across to him. Suddenly, he got up, and started walking toward the door' He stopped, turned around and glared at me. "Go do it!" he blurted; turned around, and walked out. (Sarasohn 1997)

As recounted by Sarasohn in the interview with Myron Tribus (and reported in other sources, *e.g.* Dobyns & Clare Crawford-Mason 1991), he and Protzman then went off to a hotel in Osaka for

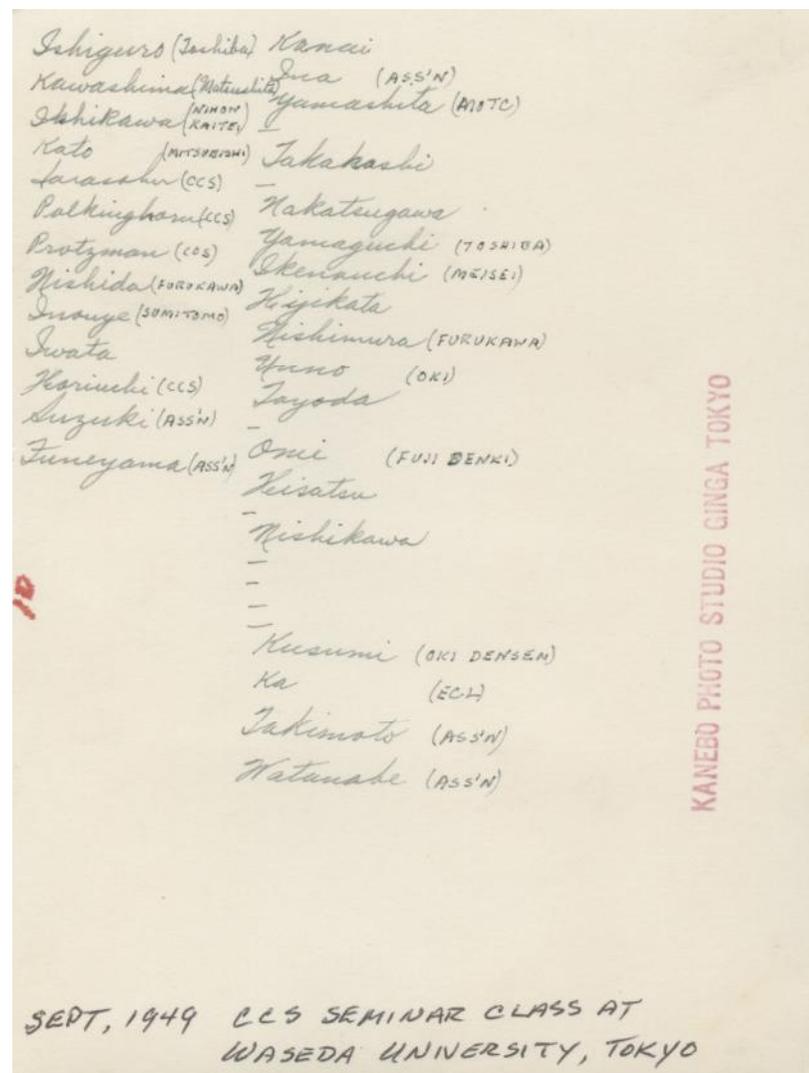
one month, sat down in separate rooms, and proceeded to write a complete manual on Industrial Management (Sarasohn & Protzman 1949). Sarasohn (1997) continues

... It is not a philosophical or academic treatise. It lays a practical and pragmatic foundation for progressive management. Protzman's half of the book covers such subjects as manufacturing engineering, cost control, factory layout and inventory management. My half deals with management policy formation, long range strategy and planning, organizational structures, research and product development and quality control. Statistical quality and process control occupied more space in the book and more time in the lectures than any other subject.

The first CCS Management Seminar was then presented during the 8-week period September 26 – November 18, 1949. It was for top management only; no substitutes were permitted. As planned, the course ran for 4 hours each day, 4 days a week, with homework each night. As Sarasohn relates, there was no final examination at the end of the course. Rather, participants were told that their success or failure would be judged by the performance of their companies at the end of 12 months. A photograph of the participants may be seen in Figure 1. The list of participants included Takeo Kato from Mitsubishi Electric, Hanzou Omi from Fujitsu, and similar top executives from Furukawa, Hitachi, N.E.C. and Toshiba, or their predecessor companies.



Figure 1. Participants in the first CCS Seminar Class, photographed at Waseda University, Tokyo in September 1949. The reverse side of the photograph identifies the participants. Photo kindly supplied by Lisa Sarasohn.



The second CCS Management Seminar ran in Osaka from November 21, 1949 to January 20, 1950, and included Bunzaemon Inoue from Sumitomo Electric, Masaharu Matsushita from Matsushita Electric, and the top executives from Sanyo Sharp (or their predecessor companies). Akio Morita and Masaru Ibuka, the founders of Sony Corporation, were schooled separately by Sarasohn (Donkin 2001, Chapter 15). Polkinghorn wrote the Preface for the Second Seminar; see Hopper & Hopper (2007b).

Polkinghorn introduced each Seminar, and the presenters were Sarasohn and Protzman (with Sarasohn teaching in Japanese). In particular, Sarasohn presented the six sessions on Quality Control (which was allocated more time than any other topic).

It is worthwhile to look at how Sarasohn commenced the Seminars, as it shows the primacy given to the issue of Quality (Sarasohn & Protzman 1949, vii-viii).

Why does any company exist? What is the reason for being of any business enterprise? Many people would probably answer these questions by saying that the purpose of a company is to make a profit. In fact, if I were to ask you to write down right now the principal reason why your companies are in business, I suppose that most of the answers would be something of this sort.

But such a statement is not a complete idea, nor is it a satisfactory answer because it does not clearly state the objective of the company, the principal goal that the company management is to strive for. A company's objective should be stated in a way which will not permit of any uncertainty as to its real fundamental purpose. For example, there are two ways of looking at that statement about profit. One is to make the product for a cost that is less than the price at which it is to be sold. The other is to sell the product for a price higher than it costs to make.

These two views are almost the same — but not quite. The first implies a cost-conscious attitude on the part of the company. The second seems to say whatever the product costs, it will be sold at a higher price.

There is another fault that I would find in such a statement. It is entirely selfish and one-sided. It ignores entirely the sociologic aspects that should be a part of a company's thinking. The business enterprise must be founded upon a sense of responsibility to the public and to its employees. Service to its customers, the wellbeing of its employees, good citizenship in the communities in which it operates — these are cardinal principles fundamental to any business. They provide the platform upon which a profitable company is built.

The founder of the Newport News Shipbuilding and Dry Dock Company, when he was starting his company many years ago, wrote down his idea of the objective — the purpose — of the enterprise.

He put it this way. "We shall build good ships here; at a profit if we can — at a loss if we must — but, always good ships."

This is the guiding principle of this company and its fundamental policy. And it is a good one too because in a very few words it tells the whole reason for the existence of the enterprise. And yet inherent in these few words there is a wealth of meaning. The determination to put quality ahead of profit. A promise to stay in business in spite of adversity. A determination to find the best production methods.

Every business enterprise should have as its very basic policy a simple clear statement, something of this nature, which will set forth its reason for being. In fact, it is imperative that it should have such a fundamental pronouncement because there are some very definite and important uses to which it can be put. The most important use of basic policy is to aim the entire resources and efforts of the company toward a well defined target. In a general way it charts the course that the activity of the company will follow in going toward the target. (See Fig. III.)

Making a clear statement of the objective of the enterprise is like providing a target for a man shooting an arrow with a bow. Figure No. III shows such a man who represents company management holding a bow which represents company policies and an arrow which represents the total efforts and resources of the company. If no target is provided for management (the man), toward which company efforts and resources (the arrow) can be aimed and directed, company policies (the bow), no matter how good they may be will be utterly useless. But altogether, policies, efforts and resources and ultimate purpose to which they are to be put are all part of a single picture.

Any one part has a definite intimate inter-relationship with every other part, and no one part is able to stand alone. Each demands the co-existence of the other elements in order to comprise the total picture which is the entire business enterprise.

A great advantage to be gained in a statement of the objective is the stabilizing effect it is bound to have on all features of the organization. For one thing, employees will better understand the use to which their efforts are being put in relation to the total enterprise. At the same time, the statement of the objective will build up confidence in the customers by letting them know just what they can expect from the company. Then too, the part that everyone in the company must play in relation to the attainment of the desired goal is more easily recognized because of the stated objective.

The statement of purpose also serves as a point of measurement, a standard, against which current operations can be measured in order for management to assess the accomplishments of the company. Not the least of the advantages to be gained is the opportunity afforded for pre-determining all the factors involved in attaining the sought-for goal.

Thus, the basis of the organization lies first of all in the enunciation of the basic policy, the fundamental objective of the enterprise.

Obviously, there can be as many different stated objectives as there are different business enterprises. But one point stands out clearly. A very necessary preliminary to the establishment of any company is a clear, concise, complete statement of the purpose of the company's existence.

After presenting these two courses, Sarasohn and Protzman had planned to continue with a program for middle and plant level managers [see Appendix, Item 7]:

Our follow-on plan was to continue after the CCS Seminar with a series of shorter, more detailed courses [see Appendix, Item 8] aimed at middle and plant level managers. The topics to be covered included industrial engineering, manufacturing cost control, product development transition, and statistical quality control. The first of these was presented in Tokyo in the Spring of 1950. However, our plan was suddenly interrupted when South Korea was invaded by forces that came down from the north. The focus of our attention in SCAP immediately shifted to that crisis.

Nevertheless, it was important to me that we not lose the momentum toward success that had been building over the past several years. At least, I wanted our work in quality control to carry on even if we could not continue it ourselves. I tried to get Walter Shewhart to come to Japan to be the teacher. But, he was ill at that time, and was not available. We thought of others who might take over. We finally decided Dr. W. Edwards Deming should be invited. He was a statistician and an early student of Shewhart who is deservedly known as the "Father of Quality Control". Deming came and was very well received. His contributions to the improvement of quality management made a lasting impression upon the Japanese industrial scene.

(Sarasohn 1997)

In fact, Sarasohn had gone so far as to prepare a book on Statistical Quality Control in Japanese (Sarasohn 1952), and may have taught from this during return visits to Japan.

And so Protzman and Sarasohn departed, Protzman returning to the USA and Sarasohn accompanying MacArthur to Korea. Protzman and Sarasohn each received letters from the officer in charge of CCS, acknowledging their contributions. Sarasohn's letter (Back 1950a) read:

GENERAL HEADQUARTERS
SUPREME COMMANDER FOR THE ALLIED FORCES
Civil Communications Section
APO 500

8 August 1950

Dear Mr Sarasohn,

On the occasion of your departure from Japan, I wish to express my appreciation for the invaluable contribution you have made to the Occupation in your capacity as Industrial Engineer in the Research and Development Division of the Civil Communications Section, General Headquarters, Supreme Commander for the Allied Powers.

Your outstanding work in connection with the rehabilitation and re-orientation of the Japanese communications equipment manufacturing industry has materially aided in the task of re-establishing Japan as a completely stable nation.

Through the introduction of the ideas of scientific industrial management you have helped to raise the engineering standards and promote the use of modern manufacturing methods and practices to such an extent that the industry is now one of the most reliable and important adjuncts of the Japanese economy.

I wish to commend you for your outstanding work in introducing in Japan the modern concepts and practices of statistical quality control and for your development of the series of courses in modern industrial management methods through which you have so ably indoctrinated Japanese management personnel in up-to-date techniques of production management, manufacturing methods, production engineering and design engineering practices.

Your advice and assistance on the many problems in the field of research and development in the Japanese communications equipment manufacturing industry have contributed materially to the accomplishment of the Civil Communications Section's mission.

Please accept my best wishes for continued success in connection with your future endeavors.
Sincerely,

GEORGE I. BACK
Brigadier General, USA
Chief, Civil Communications Section

Back's letter to Protzman (Back 1950b) was dated March 28, 1950 and read:

Dear Mr Protzman,

On the eve of your departure from Tokyo, may I take the opportunity of expressing to you my appreciation for the assistance you have rendered during the period of your assignment to Civil Communications Section, General Headquarters, Tokyo, Japan.

From the date of your assignment as Wire Equipment Engineering Supervisor on 13 November 1948, and later as Research and Development Engineer (Telephone and Telegraph Manufacturing), you have discharged your duties in an exemplary fashion.

Your recent accomplishment in planning, preparing and giving the Management Training courses to the Japanese telecommunications manufacturers have demonstrated your unusual ability to analyze and solve the unique telecommunications problems facing us in Japan. Your achievements in this field may well set the pattern for a truly democratic system of management and may prove the difference between success or failure of the telecommunications manufacturers. Furthermore, your advice and guidance on numerous and varied problems has contributed materially to the accomplishment of Civil Communications Section's mission.

Please accept my best wishes for continued success and happiness.

(a2) JUSE activities

In March 1948, JUSE established committee to study Statistical Quality Control (SQC). Tsutsui (1996, pp305–306) cites sources documenting

“... a generous grant [awarded in 1949] from the Economic Stabilization Board [Keizai Antei Honbu] to produce a report on recent technological advances abroad. The project not only ensured solvency, but it allowed the organization's staff to investigate the relevance of new scientific discoveries to Japan's economic reconstruction. ... After combing the Occupation's American library at Hibiya and evaluating subjects such as atomic energy and ultra-high-frequency communications, JUSE's leaders finally settled on a topic that could serve as the fulcrum of the organization's

research, educational and promotional activities. The new technology judged most relevant and promising for JUSE-sponsored introduction was statistical quality control.

By September 1949, the Quality Control Research Group was in a position to present a "Basic Course on the fundamentals of statistical quality control". It was repeated in 1950.

(a3) Deming's activities

The background to W Edwards Deming's return visits to Japan is a matter of speculation, and so taken up in (b) below.

Professor Tadashi Yoshizawa has kindly provided the following information from Moriguti's (1987) paper (in Japanese):

“Deming visited Japan [in 1947 and 1948?] on a task related to official statistics. During his stay, he had a meeting with Japanese academic professors and statisticians and gave his books and new information on statistical studies. Professor Jiro Yamauchi (University of Tokyo, at that time) attended the meeting. He suggested subsequently that Professor Sig eiti Moriguti read one of Deming's books: "Statistical Adjustment of Data" (Wiley and Sons, 1943). Moriguti began to translate the book and to correspond with Deming to clarify questions concerning translation of the book. In 1949, Moriguti was informed by Dr. Deming of his plan to visit to Japan in 1950 in their exchange of letters concerning the translation. Then Mr. Koyanagi of JUSE learned of Deming's intention from Moriguti and wrote a letter to Dr. Deming asking Deming to present an SQC Seminar at JUSE. The translation was published in August, 1950.”

Mann (1989, p15) quotes Deming as saying that

In 1948, I went again to Japan, this time for the Department of Defense, to do more of what I had done before.

Of greater significance was the trip in 1950 when, during 10–18 July, Deming taught a course on “Elementary Principles of the Statistical Control of Quality” (Deming 1950) to an audience of Japanese engineers and technicians.

On the same visit, he had dinner with the presidents and senior officials of some of Japan’s leading industries to talk about quality (Dobyns & Crawford -Mason 1991, Chapter 1).

This trip led to many other trips in subsequent years, with Deming making presentations attended by all levels of management. He donated the royalties from his notes, published in English and Japanese, to JUSE, and they were used to set up the Deming Prize. He also recommended to the Japanese that they study Joseph Juran’s (1951) *Quality Control Handbook*. Juran’s first visit occurred in 1954, the beginning of his own contribution to Japanese management.

(b) Interpretation

This section addresses two issues:

- (i) The ‘scholarly authority’ of Sarasohn and Protzman in preparing the CCS Management Seminar.
- (ii) The origins of the invitation to Deming to visit in 1950 for the purpose of teaching Statistical Quality Control.

It is difficult to find agreement amongst the many competing accounts, especially in relation to

(ii). The difficulties include:

- Up until the late 1980s, Deming himself professed to be unaware of any contributions by other Americans prior to his lectures in 1950 (see Appendix, Item 9). On page 486 of the 1986 edition of *Out of the Crisis*, Deming states:

The whole world is familiar with the miracle of Japan, and knows that the miracle started off with a concussion in 1950.

John Butman (1997, page 96) also relates an incident described by Dobyms & Crawford - Mason in which Deming, at a dinner party in the mid 1980s was

[p]ressed to say what had made the difference in Japan, a question he had always avoided ... Deming drew himself to his full seated height, slapped his hand on the table, and said firmly and finally, 'one lone man with profound knowledge.' – referring, of course, to himself.

- The point made by several different people: How could Sarasohn, with no proper management experience (especially senior management experience), be in a position to write and deliver a course on management? (Protzman had had several years of experience in senior production management.) In the interview that Myron Tribus conducted with Sarasohn, and subsequently in a letter to Homer Sarasohn dated 20 July 1988, Tribus captures the essence of the issue:

I for one still continue to ponder how it came about that a youngster, such as you were, had the audacity to impose upon the Japanese, with the force of the military behind him, a method of management which was NOT the one that won the war, was not the dominant mode of US management, was not born of personal experience in managing a large enterprise and was not just lifted from the textbook of some acknowledged leader in management. Instead the philosophy represented ideas born out of a sensitivity for humanism, out of an engineer's logic and a feeling of what is "right". What you had to say represents, today, 43 years later, what we now regard as the best philosophy of management – one which excites the imagination and spirit of thousands of people. I know this to be true, because it forms the basis for what I teach. Using these ideas I have lectured on 5 continents and found the same

eager reception. What is the genesis? Who put it all together for the first time? Was it really Sarasohn? If so, how did it happen??

The answer to (i) can be found in Sarasohn's indirect response to this, which is contained in a letter to Clare Crawford-Mason two years later, dated 14 August, 1990. Sarasohn quotes the above passage from Tribus' letter, and then continues:

It really was Sarasohn who put it all together. It happened because there was a special situation and a special need. The situation was the American Government's decision to rebuild the Japanese economy; and the need was to start the process, literally, from the ground up. There was no precedent to follow, and there were few, if any, material or human Japanese resources available to begin with. So, I was not bound by any American tradition, and I had free rein to do what had to be done.

You asked whence came my authority. Authority stems from two sources. One is implicit in the job responsibilities that are assigned. The other is given by the people who willingly follow the leader. My authority came from MacArthur and from the Japanese people who followed my lead. And, I made the best use of it.

I was no "youngster" at the time. I was almost thirty when I arrived in Japan. I did what had to be done. And, by means of logical analysis, decision and determination, the job was accomplished. I am puzzled that there should be any wonderment about that. By the time Deming arrived on the scene to make his contribution (which I do not minimize), a solid industrial operating base had been laid. He carried on from there.

There are two reasons why I believe it is reasonable to accept Sarasohn's explanation.

The first is that it makes sense. Sarasohn was well read, a student of history, and a particular admirer of the achievements of the British in their Industrial Revolution. His engineering experience meant that defining a goal, developing a plan, executing the plan, and delivering 'on

time, to specification and within budget', so to speak, were second nature to him. In fact, major advances in the success of Quality Management have the names of engineers associated with them; for example William Conway at Nashua Corporation, the first leader of a Fortune 500 company to find an effective way of putting Deming's management philosophy into practice through his concept of Waste (*e.g.* Conway 1992); and Myron Tribus, not least through his re-expression in plain language of the key elements of Quality Management that now underpin the Baldrige Criteria for Performance Excellence. Sarasohn combined his engineering know-how with knowledge extracted from his learning; all informed, in Tribus' words, with "a sensitivity for humanism", to create and implement an outstanding methodology. In Sarasohn's words, "I did what had to be done." Four decades later, he was still surprised that "that there should be any wonderment about that".

The second derives from personal acquaintance with Sarasohn. It is evident from the interview that Myron Tribus conducted with Sarasohn in 1988 that he accepted Sarasohn's account completely. David Howard, who got to know him through a joint consulting project (*e.g.* Howard 2008) wrote, in a personal communication, that

To the extent that Homer was modest beyond measure - a quality not so evident in the members of 'his' modern-day peer group - I would tend to weigh my views in his direction while remembering - as he would insist - that variation infests all things, including our actions and memories.

To me the thing that matters is that his efforts, together with those of a few other Americans, helped Japan make the grade after the War. Homer was perhaps the most distinctive, yet self-effacing, of those. I always thank him when I look at my Sony television.

I (NIF) had the great good fortune to get to know him well, late in his life, when he entrusted me with his only copy of his CCS notes (unopened in nearly 50 years) to re-publish. I found him to

be a person of total integrity, with a dry, self-deprecating sense of humour, and without pretence. He was satisfied that he'd carried out his tasks well, made no false claims about his achievements, and gave credit where it was due. In our discussions, he expressed puzzlement that Deming had been unaware of CCS activities until the last few years of his (Deming's) life, but did say that he'd received a letter from Deming around 1990 acknowledging that CCS had made a contribution. (Sarasohn was unable to find the letter when he mentioned it, and no copy has since come to light.)

The answer to (ii) leads into rather more controversial territory.

Tsutsui (1996) has sought to re-evaluate Deming's achievements in Japan, and those of JUSE, drawing extensively on Japanese resources. However, the analysis appears not to have taken account of a wealth of American resources (not least, materials about Deming's other accomplishments: see Appendix, Item 10), nor is there reference to any attempt at obtaining comment from Sarasohn. As a consequence, little weight can be ascribed to its conclusions, which are best characterized as partial.

A sounder basis for understanding what took place can be found in the scholarly writings of Myron Tribus, whose views about Deming's contributions are summarised in a memorial article, Tribus (1994).

Another source has also become available, namely Sarasohn's own account, in response to a specific query from Lloyd Dobyns. Referring to an earlier letter from Sarasohn, Dobyns writes in a letter to Sarasohn dated 8 October 1990:

In your memo, you say you “arranged his (Deming’s) invitation to come . . .” to Japan. In the interview [Tribus’ interview with Sarasohn] you said you first wanted Walter Shewhart, then asked ESS to get Deming. In an article written in 1960 Kenichi Koyanagi, former managing director of JUSE, reprints the letter he wrote Deming in March, 1950, inviting him to give a series of lectures for JUSE, and he reprints Deming’s letter from April, 1950, accepting. In the letter, Deming offers to lecture two to four hours a day, then he adds, “However, I should explain before being too definite that my time will be under the direction of Mr Kenneth Morrow, Research and Programs Division, Economic and Scientific Section, SCAP. Koyanagi in 1960 wrote that Deming did sampling for SCAP in 1947 and ’50. Deming has told me that he was invited to lecture by JUSE and Japan’s leading industrialists. I have a copy of “Japan 1950”, the privately published diary he kept of the trip, that says the same things.

In the same article Koyanagi says he learned of Deming’s planned visit in 1950 from Dr. Shigeiti Moriguti. He also wrote, “The Civil Communications Section, SCAP, urged Japanese communication equipment makers to adopt quality control methods, offering educational service for this purpose.” He mentions the “Japanese Management Association and some other private organizations” that also helped, then he adds “independent from these organizations” JUSE started working on SQC.

I think you can understand my confusion. Did CCS and ESS coordinate with JUSE or, perhaps, suggest Koyanagi’s letter to Deming. Or was Moriguti an emissary from SCAP? I can see several ways that SCAP could have “arranged” for Deming to give the lecture series, but I can’t find in my research how it was done. Any help you can give me on this I will sincerely appreciate.

[The Associate Editor of ISR noted that Shigeiti Moriguti was then Associate Professor and later Professor, finally Emeritus Professor at the University of Tokyo, and ISI President in 1987 at the time of ISI Session in Tokyo.]

Sarasohn responded three days later (11 October 1990):

Dear Mr Dobyms,

Thank you for your October 8 letter. I particularly appreciate your request for clarification of a couple of salient points of history. I will try to respond carefully, objectively, and as accurately as my memory of the events I lived through in Japan will allow.

It will come as no news to you, I am sure, that people – deliberately, or unwittingly – re-shape history as they wish it had been, or to support a point of view they profess now, or to adorn themselves belatedly with “crowns of ivy”. To some extent, this is what is happening in Japan now, and what has happened in the case of the two points about which you ask.

[Material about the first query omitted]

Walter Shewhart was an expert on quality control in manufacturing and in engineering. Deming was a statistician who had been on loan to SCAP from the Census Bureau in 1947 when we were trying to understand the local demographics relative to food distribution, health statistics, social services, etc. He branched out later to the industrial application of statistics.

After the CCS Management Seminars were established and thriving, I wanted to have a specialized, concentrated course on quality control methods specifically for plant managers as a follow-on to the quality concepts, philosophy and policy issues I had dwelled on with the senior executives who were my seminar “students”. I did not want these people to be fixated on the mechanics of statistics. Rather, it was essential that they understand the entire management function and all of its related parts as a SYSTEM, including the component that was statistical analysis. In other words, statistics was merely a tool that is used to gain an ultimate objective. It is not an end in itself. I felt, and feel, strongly on this, and it has put me at odds with some other folks who speak on the subject of Quality Control.

For example, I had to put my foot down unceremoniously with Koyanagi, Koga, Ishikawa and some others of the Union of Japanese Scientists and Engineers (JUSE). They had a simple-minded view. They had come across some early AT&T reports. It occurred to them that all one had to know was the mathematics of statistics – that was what enabled the United States to win the war!! They saw quality control as an academic exercise. Fortunately, there were others, such as Nishibori and Mabuchi, who were level-headed and wanted not only to learn, but also to understand. So, I blocked the JUSE effort to go wandering off on the wrong track. At the same time, I had another motive. I wanted the plant managers’ attention to be focused on the production matters at hand. I did not want their concentration diverted to abstractions they were not yet prepared to handle. It was a question of priorities, and JUSE was off-base.

By 1950 the CCS Management Seminars were off to a good start and the time was now ripe for the detailed course on statistical quality control that I had had in mind. (Incidentally, I went over all of this history with the JUSE people at a banquet they held for me when I was back in Tokyo several years ago.) Koyanagi knew of my plan, and I have copies of his and Deming's 1950 letters. In my view Koyanagi was precipitous, and Deming's reply was appropriate.

It was clear that Shewhart was the right man for the job I wanted done. However, it turned out he was not available. A second choice had to be selected from among other potential candidates. But, another consideration was to open up the follow-on course to, not only the communications and electronics manufacturers, but to the other industries under SCAP control as well. So, I went to my friends in ESS, Ken Morrow and others, with the suggestion that we sponsor the course jointly. Seeing that the CCS Seminars were successful, they agreed. We began to explore who we might get as the instructor. And, we formed a working committee among the Japanese to handle the matter of attendees and other "housekeeping" chores. Koyanagi was a member of this committee.

Remembering his earlier exposure to Japan, and knowing something about his subsequent university occupation (at Columbia? New York University?), I suggested that Deming be given the job. Then I asked the ESS to take the lead on this program because I was preoccupied with establishing the Electrical Test Laboratory as the authority to perform the required quality certification prototype tests of all electronic and communications products that were proposed to be marketed.

I have known that Koyanagi took great personal pride in associating himself with the honor that was reflected from the popular acceptance accorded Deming by the Japanese. It did not bother me then, nor does it now, that he has represented himself as the instigator of Japan's mastery of the quality control effort. Perhaps he needed that to gain stature among his peers.

What does bother me is that he, in his 1960 article, used a few obscure references to gloss over the significant contributions CCS made to modernize Japan's management methods (cf., "...urged...makers to adopt quality control methods, offering educational service for this purpose"). The "help" given by the Japan Management Association was merely administrative. JUSE's work on SQC came later. The fact is, little is known in the United States, and little is admitted in Japan as to the contributions made by the Americans in CCS to the reconstruction of

Japan's post-war industry prior to Deming's arrival on the scene. Hopefully, your narration, the television documentary and your book will help to set the record straight.

...

So, to summarize this retrospective, Deming was my second choice. I suggested that ESS take over the program so that there would be a wider application of the quality control commitment in Japanese industry. They agreed to bring Deming over and get him started. There was no "coordination" with JUSE, but they were informed, as were others in the government and associations, of what we were doing. Moriguchi was helpful in this regard. I believe that Koyanagi took it upon himself to write his letter to Deming. I believe, further, that ESS's leadership in the program was less than assertive for two reasons: (1) they were lukewarm players to begin with because of the earlier controversy with CCS, and (2) with the prospect of the Korean war, SCAP's focus shifted across the Sea of Japan.

5. Conclusions

(a) Homer Sarasohn and Charles Protzman taught a number of senior Japanese people how to manage a company, using a system of management (philosophy, structure and implementation plan) devised largely by Sarasohn and viewed by a scholar of the eminence of Myron Tribus as being consistent with best current management practice at least 30 years later. (For a contrary view, see Appendix, Item 11.) A very plausible explanation for how Sarasohn, despite his lack of background in line management, was able to devise and deliver the material is that he was an exceptional individual who combined a scholarly historical bent with practical engineering experience in taking products from prototype to manufacture, and was able to bring all of this to bear to produce a practical system of management. *And it worked*, as judged by the progress made by the companies taught by Sarasohn and Protzman and the early recognition of this through early taxation of the telecommunications industry.

(b) Sarasohn had a very general view that Quality is the primary responsibility of management, and that unless this is accepted and adopted by management it is a waste of time introducing technical methods of statistical quality control for operational activities (see Appendix, Item 12). Whilst he didn't coin the term 'Total Quality Management' it captured his approach. In a letter to Malcolm Trevor dated 25 July, 1988, he wrote

Matshushita was one of ... [the] companies that I started or rehabilitated in the communications industry in that post-World War II period. Karatsu, Kayano, Matshushita (elder and younger) are among the people I worked with. What I tried to convey to them and the others ... what is essential in the industrial environment is the quality of management in each of its activities and in the totality of all of its operations. QC is related not merely to product manufacture or to incoming inspection, for example. It is a guiding state of mind, a devotion and dedication. It is a phenomenon, not of statistics, but rather of an integrated system composed of interacting and mutually dependant parts.

(Sarasohn's section of the course notes also reveal very early on that he had a strong stakeholder perspective. The very first section of the CCS manual talks about

... the sociologic aspects that should be a part of a company's thinking. The business enterprise must be founded upon a sense of responsibility to the public and to its employees. Service to its customers, the wellbeing of its employees, good citizenship in the communities in which it operates — these are cardinal principles fundamental to any business. They provide the platform upon which a profitable company is built.

This prefigures approaches half a century later, on drivers of shareholder value, and systemic approaches to performance measurement.)

- (c) The approach taught by Sarasohn and Protzman was a development from the work of Frederick Winslow Taylor (1911) on *scientific management*, with critical differences, most notably in its attitude towards the people working in a company. Whereas Taylor's focus was almost entirely on improving efficiency of operations to optimize financial gain, Sarasohn and Protzman recognised in the very first Section of their Manual the importance of "... the wellbeing of its employees..." in building a profitable enterprise.
- (d) The remarkable impact of the work of the CCS as viewed by Japanese people involved in the original courses is summarised by Hopper (1982, page 29). (A 4-day version of the CCS course continued to run until 1974, under the auspices of the Japanese Industrial and Vocational Training Association, and still occupied the number one position of honour in JIVTA's annual catalogue as late as 1982.)
- (e) More generally, Hopper (1982) describes how the Japanese themselves evolved scientific management taught by the Americans into Japanese industrial management.
- (f) Japan was fortunate to have the opportunity to learn from the collective wisdom of people like Sarasohn, Protzman, Deming, and subsequently others, and then to have leaders in

their own community able to develop and implement their ideas and methods so well in the Japanese setting. Adams & Moranti (2007) expressed the nature of the impact as follows: “The CCS offered a solid institutional foundation that Japanese managers adapted to local economic and cultural circumstances, contributing to Japan’s spectacular takeoff in global electronic markets beginning in the 1960s.”

Finally, a broader observation based not only on the events of this period, but on subsequent developments in America: whilst W Edwards Deming eventually developed a “System of Profound Knowledge” for management, it required a “System of Profound Knowhow” to bring the system to life in an organisation and have it succeed. The latter system was something Deming did not create: his background was as a statistical scientist, with no experience in line management. It required people who had either had line management experience or the sort of disciplined development and production programs typically experienced by engineers (Sarasohn, Protzman, Juran, Tribus, Conway, ...) to make Quality Management work in practice.

6. Key sources of information

The preparation of the article drew significantly on articles and correspondence recently made available by the late Homer Sarasohn’s daughter, Lisa Sarasohn, through the memorial website www.honoringhomer.net. Sarasohn’s papers have been catalogued and are housed by the Library of Congress.

Kenneth and William Hopper’s website (Hopper & Hopper (2007b)) is also an invaluable resource. Other helpful materials include:

- “How Quality First Came to Japan”, a videotape made by Myron Tribus of an interview he conducted with Homer Sarasohn on 17 July 1988 at Sarasohn’s home in Scottsdale, Arizona .

(This interview has been transferred to digital format, with the hope that it will become available via the Web.)

- Sarasohn's own account of this period, presented at a conference in Sydney, April 2007 (Sarasohn 1997).
- Extensive research by Kenneth Hopper, much of which is summarized or referenced in three important publications: the article "Creating Japan's New Industrial Management: The Americans as Teachers" (Hopper 1982), based on a 7-year correspondence between Hopper and Bunzaemon Inoue; a subsequent article "Quality, Japan, and the US: The First Chapter" (Hopper 1985); and a recent book, *The Puritan Gift* (Hopper & Hopper 2007a) written with his brother William Hopper; see in particular the chapter on "Three Wise Men from the West Go to Japan".
- A book written by Lloyd Dobyns and Clare Crawford-Mason (1991), the original broadcasters of "If Japan Can, Why Can't We", the documentary that made W Edwards Deming a public figure in the USA in 1980. After the broadcast, the authors became aware of the activities of the CCS and made contact with Sarasohn, and their 1991 book (Dobyns & Crawford-Mason 1991) reflects this broader understanding.
- KTKK Talk Radio, Provo, Utah. Radio talk-back interview with Martin Tanner, 18 July 1990.

7. Acknowledgements

This paper came about because of a request for information about Homer Sarasohn that I sent to his daughter Lisa Sarasohn. In order to respond, she brought forward her plans to catalogue her father's papers for the Library of Congress , where they are now available . I am deeply grateful for all her assistance. Ken and Will Hopper were also very helpful with comment and generous with materials. I also acknowledge a profound debt to my mentors in Quality Management: Homer Sarasohn, Myron Tribus, Norbert Vogel and Yoshikazu Tsuda, people who have helped to transform companies, industries and nations. The Associate Editor and referees provided very helpful additional information and corrections. Shu Ramada kindly provided a translation of introductory material from Homer Sarasohn's book.

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Appendix: Notes on the text

Item 1. Sarasohn recounts how he received a telegram in his office, stating “IN ACCORDANCE WITH OUR LETTER TWELVE MARCH GENERAL MACARTHURS HEADQUARTERS HAS REQUESTED YOUR SERVICES EARLIEST POSSIBLE DATE UPON RECEIPT REPLY YOUR AVAILABILITY INSTRUCTIONS FOR PROCESSING WILL FOLLOW”.

Sarasohn proceeded to treat this as a joke dreamt up by someone else in his office. A couple of weeks later, he received an irate phone call, asking why he hadn’t responded. (The original was dated ‘1947 Mar 26’ clearly an error.)

In the 1990 KTKK Talk Radio interview cited earlier, in Section 6, Sarasohn identified his pre-Japan experience in managing a rapid transition from prototype micro transmitters to production models as being a key reason why Douglas MacArthur brought him to Japan to establish the radio communications industry.

Item 2. This paper has been quoted extensively, as it has not been published and is available only as a web document. It has important narrative value.

Item 3. Hopper (1982, page 15) says that Professor Yoshio Kondo, of Kyoto University, holder of an individual Deming Prize for Quality, who has been active in the Japanese Quality Movement since the early post-war years, credits Magill with having first advocated that Japanese industry accept statistical quality control. . Magill appears to have been in Japan for about a year. His assistance with quality control at NEC was acknowledged by Koji Kobayashi, who joined NEC in 1929 and was asked to study statistical quality control (Kobayashi 1986). Kobayashi spent his whole working life at NEC, ultimately retiring as chairman of the board

and chief executive.

- Item 4. The following Japanese official statistics were kindly supplied by the Associate Editor. (Note that the precise situation at the end of 1945 is unknown.)

Elementary school of 4 years became compulsory in 1900 ; 6 years from 1907; 8 years from 1941 before occupation.

Number of telephones: 1, 618, 000 in 1944

746,000 in 1945

1,192,000 in 1947

1,735,000 in 1950 (NTT)

Newspaper publication: 24, 245, 000 (copies per day) in 1943

15,518,000 in 1944

14,180,000 in 1945

26,848,000 in 1950

Diffusion of radio: 7,473,000 subscribers in 1944

5,728,000 in 1945

6,443,000 in 1947

9,192,000 in 1950 (NHK)

- Item 5. An article entitled “Frank A. Polkinghorn, Director, 1957 –1958” appeared in the *Proceedings of the Institute of Radio Engineers*, Oct. 1957 Volume 45 no. 10, pp. 1330–1330. It records that “From 1948 to 1950 he was on loan to the Army in Japan, where he was Director of the Research and Development Division, Civil Communications Section, Supreme Command for Allied Powers, in which position he had supervision of all communications research, development, and manufacturing in Japan. In appreciation for this work he was elected an Honorary Member of Denki Tsushin Gakkai, the Japanese counterpart of the IRE.”

- Item 6. Some documents state that the courses ran for eight hours each day, rather than four. However, materials from around the time of the courses (e.g. Protzman 1950)

suggest that formal instruction, at least, was for four hours per day.

- Item 7. In fact: “At about the same time as the CCS programs, the Management Training Programme (MTP) for middle management, and Training Within Industry (TWI) for key supervisors were initiated for business in general. MTP started as a training programme for the Japanese supervisors who were then working at Far East Air Force installations. The course dealt with a comparatively broad range of management subjects, providing instruction in management techniques required for them.” Noda (1970).

In a personal communication, Ken Hopper wrote that “. At the same time US airbases in Japan set up middle management training. That latter became postwar Japanese middle management training. According to my correspondence with Bunzaemon Inoue, it was like CCS training but was for Middle Managers. CCS thus had little direct influence on the eventual training given Japanese middle managers. It clearly had great indirect influence.”

- Item 8. In a report to Western Electric about his tour of duty in Japan, Protzman listed the courses as:

Organisation control

Supervisory Development

Engineering Organization and Control

Quality Control

Budgetary and Cost Control

(Oddly, this report does not mention Sarasohn by name, saying only that "In this survey and the subsequent program of development I was assisted by a CCS radio engineer who was functional on radio and vacuum tube manufacturing".) See http://www.puritangift.com/pdf/protzman_rept_48_50.pdf .

- Item 9. The earliest recognition by Deming appears to be in a hand-written note he sent to Kenneth Hopper dated 22 November 1998, in response to Hopper sending him a

copy of his article “Creating Japan's new industrial management: the Americans as teachers”. The note read: “Dear Mr Hopper, Your letter and article excite me. I am much indebted to you. Your article is just what I need. Sincerely yours W.

Edwards Deming”. (Personal communications from Kenneth Hopper to NIF.)

In a letter to Shirley Sarasohn dated 4 April 1996, William Hopper wrote “My brother Kenneth was close to Dr Deming who strongly encouraged us to pursue our investigations into the role played by the Civil Communications Section of General MacArthur’s Command in Japan under the Occupation. Dr Deming even subsidized the cost of our research. When we submitted our conclusions to him, he wrote back: ‘This is just what I need’ ”.

Item 10. Deming’s accomplishments go far beyond his contributions to management. The web page (<http://www.amstat.org/awards/index.cfm?fuseaction=deming>) associated with the Deming Lecturer Award of the American Statistical Association lists three broad areas of achievement: contributions to sampling, statistical contributions to business and industry, and contributions to management, within each of which he had great impact.

Item 11. An assessment of the work on page 109 of Butman (1997) dismisses the CCS manual as “... a cut and paste job, a synthesis of many people’s ideas, cobbled together with occasional lapses of clarity, a typewritten volume filled with typos and illustrated with rudimentary diagrams”, and notes that “none of them was a recognized authority on business management or quality control ... What’s more, one of the seminar leaders (Sarasohn) was just 33 years old, an engineer with no experience as a senior manager in a large company.” Sarasohn’s annotation in a

draft of Butman's book indicates that he found this a "very disagreeable and perjorative (*sic*) passage". Butman's own account is itself a "synthesis of many people's ideas" (which book isn't?) and contains numerous factual errors just in that chapter (*e.g.* Polkinghorn did not teach any part of the CCS Management Seminar; the Seminar ran for 4 full days per week, not 4 half days per week; Deming was 6'7" tall not 6'1", and so on).

Item 12. Japanese engineers appreciated this as well. Many years later, Tetsuro Nakaoka wrote: "SQC [Statistical Quality Control] was particularly effective when it was introduced into a production line what had already been rationalised along Taylorist lines; a typical example was the telecommunications sector. For example, Nippon Electric, after early guidance of CCS officers, had considerably rationalised its production control system with the help of the JMS [Japanese Management Association]. Then by introducing SQC methods on a large scale, Nippon Electric was beginning to turn out products of notable high quality and to be widely regarded as a model of QC (Nakaoka 1981). Sarasohn regarded this paper as "... one of the most complete and honest discussions of the subject I have seen since the end of World War II" (Letter from Homer Sarasohn to Hakim Mohammed Said, 27 April 1991.)

During his interview with Myron Tribus, Sarasohn also noted that during the latter part of the 1940s, some Japanese people felt that the Americans were refusing to teach them Statistical Process Control, as it was SPC that would help the United States retain competitive advantage. Sarasohn's counter argument was the same: first the Japanese needed to understand broader aspects of good ("quality")

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management. Given his ongoing debate about this issue, his own (1952) book on Quality Control, and his awareness of the work of Walter Shewhart, it is clear that Sarasohn had a good working understanding of Statistical Process Control.

Résumé

L'histoire de la Gestion de Qualité, et le rôle que la statistique y a joué, sont inextricablement liés à la reconstruction du Japon après la seconde guerre mondiale, puis à des développements aux Etats-Unis pendant les trente années qui ont suivi. Bien que dans l'histoire des sociétés ces périodes viennent tout juste de s'écouler, il y a cependant un profond désaccord sur ce qui a été réellement fait, et sur ceux qui pourraient être reconnus pour y avoir contribué. Cet article fait appel à du matériel historique récemment rendu disponible afin de clarifier ce qui s'est réellement passé entre 1946 et 1950, et en particulier la contribution d'un ingénieur remarquable, à savoir Homer Sarasohn.