

A quality world, a quality life

A conversation with Joseph Juran on
the past, present, and future of his field

By Monica Elliott



Juran shares a family moment with his first great-granddaughter Brooke Blackiston (left) and his first granddaughter Joy Blackiston.



Juran reunites with siblings Minerva Juran Goldberg and Nathan Juran in 2001.



Juran and his wife Sadie celebrated their 75th wedding anniversary in the summer of 2001.

Fortune magazine's 2002 top 10 ranking of quality product and service providers includes companies based in the United States, Japan, Germany, and Finland. World industry seems to have taken its cue: Even if companies are not implementing a successful quality strategy, they are at least aware of the need for one. The main reason quality receives the attention it does today is because of the life work of Joseph M. Juran, Ph.D., who has taken theories based in statistics and created an enduring quality manufacturing and management philosophy. Juran's global influence is reflected in those who follow his doctrines, his numerous accolades from organizations and heads of state, and the legacy of the Juran Institute he founded in 1983.

Still unwilling to rest on his laurels at the age of 98, Juran continues to assess the industry he is credited with pioneering. Although he notes that he has been out of the arena for the past few years and consequently is not well informed on the latest developments, his perceptions on quality's progress in his heyday and in the coming years are as sharp as ever.

IIE: How do you feel about the state of the quality movement today?

Juran: The U.S. is not at the top as far as quality is concerned. The Japanese are — that's as of a few years ago. Some of our companies are quality leaders. They moved in and they did pretty much the same thing that the Japanese companies did in order to become quality leaders. That's not

true of the bulk of the economy. As for why not, let's put it this way: I've examined the things that the Japanese have done different from our companies, and I've listed that and published that. I've also examined what our leading companies, our role models, have done different than the companies that are still not at the top. That list is pretty much the same list as the Japanese list of things they did. And why are we not at the top? Because our companies have not undertaken that list of things: the chief executive personally in charge, the training of the entire hierarchy and how to manage for quality, putting quality goals into the company's business plan, learning how to measure performance against the plan, reviewing that regularly, trying to get the workforce to participate, applying added recognition, revising the reward system. Those are the kinds of things that need to be done and most of our companies have not done them.

IIE: Are you saying that U.S. companies have not fully grasped the ideas behind the quality movement?

Juran: I don't think they've grasped the things that have to be done in order to achieve quality leadership. Some of them know what those things are, but for various reasons, they've not acted. Or some of them have started that way and then, because of a change in their leadership, that was abandoned. If somebody sets out to achieve quality leadership, they have to include in the planning how they are going to plug that into the company so that it goes on and

on and doesn't get abandoned when there's a turnover in presidents.

IIE: Are Six Sigma and other quality ideas adding anything new to the quality cause?

Juran: Six Sigma is essentially a new name for quality improvement. There are a few new things about the way it's practiced. One is that the top executive is the initiator, at least that was true in the case of General Electric and Motorola — the names that are usually associated with the origin of Six Sigma. The top management leadership seems to have characterized the willingness to go into so-called Six Sigma. The other thing that's new — well, whether it's new or not is open to debate — is a new name for what we used to call the facilitators. The idea of facilitators has been around for some decades except they aren't called facilitators; they're called belts — black belts, green belts, belts of different colors. I don't regard that part of it as anything new because we've had facilitators for a long time.

IIE: Do you consider Six Sigma a fad?

Juran: I don't think the returns are all in. It has not been properly researched. We don't know, at least I don't know, whether the rate of companies going into that is declining or whether it's steady or growing. That has never been researched to my knowledge.

IIE: Which country will be America's main competitor on quality in the next decade?

Juran: I would say certainly the Japanese because it took them about 30 years starting at the end of World War II to

REFLECTIONS ON JURAN

Shaping the philosophy

My industrial engineering degree and background coupled with health care experience gained over the years, as well as involvement in various quality improvement initiatives, resulted in my being appointed a co-executive sponsor of a major total quality management/continuous quality improvement initiative in a health care organization during the late 1990s.

Dr. Juran's writings played a very significant role not only in my personal learning process but also in influencing our approach on many TQM/CQI-related projects. He and others, like Crosby and Deming, have totally shaped the philosophy of quality in America.

Charles M. Jones
Senior Vice President and Chief Information Officer
Baptist Health System
Birmingham, Ala.



become quality leaders. It takes a long time to do those things. And I think to a high degree, they've locked that into their culture and their approach so it will survive changes in leadership, become institutionalized. Another candidate for main competitors would be South Korea — that certainly was my impression when I lectured there some years ago. I thought, those guys are going to give a lot of competition to everybody, including the Japanese, and that turned out to be the case.

IIE: What are the key roles of a quality director?

Juran: There we have to raise our sights quite a bit. There's a parallel we can look at: the financial head of the...company or the financial vice president. He is concerned with putting together the financial budget. A financial budget is a lot of figures, but what's behind it is the deeds. What deeds are the company going to do in the future — in a year or the next period? So those deeds are different kinds of things — they're going to build a new warehouse, they're going to develop a new product, they're going to do this and that. You can't make a budget out of things as different as that; you have to translate each one in terms of money. What will it cost to build that warehouse? What will it cost to develop that product? So we price out all of those deeds we're going to do, and we also estimate what we will gain by doing those deeds — the increase in income and the increase in cost and how much is left over. And we look to see if that makes sense, and if it doesn't make sense, we change here and there until it does make sense. That's finance.

The quality director that we see as emerging is going to do with respect to quality what the financial [director] does with respect to finance. It means that the quality director is faced with identifying what will be the quality goals for the company in the years ahead and what kinds of plans are needed in order to reach those goals. The drafting or proposal of what goals are to enter the business plan, the drafting of plans on how to reach those goals are an area in which the quality director has to play a major role. This is over and above what have been the traditional roles of the quality director.

IIE: So essentially planning is a big part of that.
Juran: It's the biggest part of it. We've had

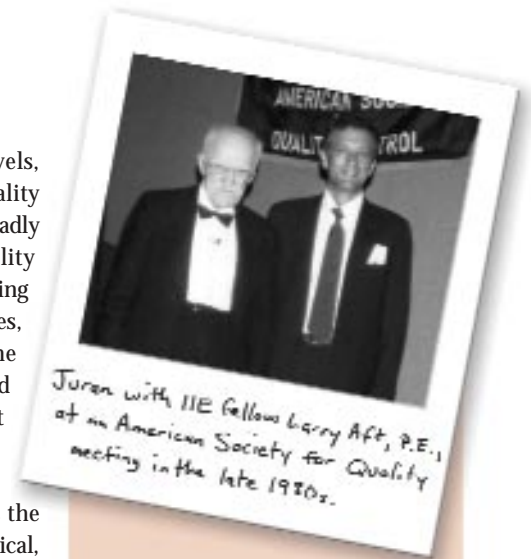
quality planning down at the lower levels, in the grass blades so to speak, but quality planning as it applies to the company broadly is a new phenomenon. And the quality director is the aid to the executive in getting that done. That's a new role that requires, of course, somebody who has had the training, experience in management, and has the foresight to look high and not step down to traditional roles.

IIE: In achieving quality goals, what is the relative importance of managerial, statistical, and technological concepts?

Juran: Managerial is at the top of that list since it encompasses all the means by which we achieve quality goals, which includes use of statistical tools and technology. In fact, some would argue that statistics is a part of technology. Look at your definitions. The technologist, the engineer — a scientist to begin with — is faced with discovering the laws of nature and properties of materials and so on. Engineers, the technologists, are faced with utilizing the properties of materials and the laws of nature for the benefit of man. The manager is faced with utilizing the forces of people for the benefit of man. Of course the forces of people are also based on sciences but they're based on the behavioral sciences, the soft sciences.

So if we keep those distinctions in mind, I think we have some degree of answering that, but I don't know how to quantify the relative importance of those things. I remember a time that these statistical tools were pretty prominent back in the late 1940s. I remember asking the Japanese, of all the things that you've done in order to make progress in quality...if 100 is the total contribution, what's the contribution of statistics? And they generally thought around 10 percent. That was their evaluation, not mine, but in those days the statisticians had come up with a means of helping to interpret data and the like. And they were dominant. ...They had a monopoly on some useful tools and in their view that was it. In fact, W. Edwards Deming over and over was convinced that statistical quality control was the equivalent of total quality control; nothing else was needed.

IIE: But you don't agree with that?
Juran: No, not at all. He sincerely believed that. I don't think he was trying to exaggerate or anything like that. He was mistaken and he



Juran with IIE fellow Larry Aft, P.E., at an American Society for Quality meeting in the late 1980s.

REFLECTIONS ON JURAN

Make me a believer

In 1964, as a young Ph.D., I was director of quality control and product assurance for Andrew Corp. in Orland Park, Ill. Since I had limited background in quality control, I attended a three-day course conducted by Dr. Juran. Overall, the course was exactly what I needed and wanted except for some weird ideas espoused by Dr. Juran. In my trip report on the meeting, I reported that Dr. Juran really understood quality, but that he didn't understand management. Dr. Juran actually thought that top management should be interested and involved in assuring that the company produced a quality product!

At that point, it was beyond my mental capacity to understand the point that Dr. Juran was making. Today, everyone accepts this position as part of TQM, but 38 years ago this was heresy.

I've come in contact with Dr. Juran on a few occasions since then, but I've never forgotten my out-of-hand rejection of the words of the prophet.

Keith E. McKee
Director, Manufacturing Programs
Illinois Institute of Technology
Chicago



Juran with his IIE membership certificate in the background. He joined IIE Dec. 1, 1955.



Juran at Burndy Corp., Norwalk, Conn.

Courtesy of "An Immigrant's Gift"

REFLECTIONS ON JURAN

Precision engineer

I had the privilege of working with Dr. Juran in 1966 and 1967 when he consulted with Allis-Chalmers and I was a corporate staff quality engineer. Again in the mid-'80s, he conducted the training for McDonnell Douglas Corp. that I oversaw. I've always been a Juran disciple because he is the one quality guru that has been able to closely tie business performance with quality performance while providing a systematic process for driving continual improvement.

At Allis-Chalmers, he would spend one to two days, three or four times a year meeting with our senior leaders and sharing his views on quality management. He understood more than 30 years ago what many are just beginning to learn: Quality can only be obtained and assured by those doing the work, that the leadership must create the environment to allow this to happen, and that there is a systematic approach to causing continual improvement.

He patterned his personal life in keeping with his teachings, or perhaps it is the other way around. He is a very disciplined person that paid extreme attention to the process. I remember that he would ask to be picked up at, say, 7:32—not 7:30 or about 7:30. And you could set your watch by his appearance—no waste in Joe's managing of his time or yours. And he provided specific specifications for the arrangement of the room where he would teach—things like the size of the screen, the type of overhead projector, the size of the table to support the projector, and the layout of the room. Every detail was covered. As a result, there were no surprises for him or his audience. He had incorporated lessons learned into a clearly defined process.

The thing that I most remember and respect about Juran is his understanding of the importance of a systematic approach to quality in driving business performance. The relationship between good business and quality is what has driven his teachings for more than 40 years. Good quality doesn't just happen. It must be planned.

New approaches, tools, and techniques continue to appear in the quality discipline. All of these are repackaging of concepts that Dr. Juran shared more than 30 years ago. It is his thinking that continues to provide the foundation for the quality movement.

Gene Barker, CQE
Boeing Technical Fellow
The Boeing Co.
Commercial Airplanes Group
Seattle

believed it. Some people get a strong notion, they believe strongly in it and they can't be dislodged. So he was completely sincere in my opinion.

IIE: So what do you think? Obviously it entails statistics, but what else?

Juran: Managerial approach...you're talking about leadership, you're talking about planning and goals and incentives, all kinds of things like that. But Deming had never managed anything. It was a field that just simply he'd never gone into to any consequence so he didn't understand the importance of it; at least it seemed so to me. And he did understand the statistical tools and issues and that was it.

IIE: Should the scope of quality activities be directed at quality alone or at a broader concept such as performance excellence?

Juran: That can't be answered by yes or no because the word excellence is not defined. How does that relate to the word quality—the definitions? But I might point this out: When the quality competition began to become intense, which took place pretty much in the last century (There was some of that in earlier centuries but not nearly as much as arose in the 20th century because of the Japanese quality revolution), the first areas where it took place were in the manufacturing companies. And people tended to associate quality improvement with improvement in factories.

But then it became and emerged that the tools, the ideas and concepts by which quality was improved in manufacture were also applicable to non-manufacture. The manufacturing company has office work, and the ideas for improving the factory were applicable to improving the office work in the manufacturing. [When that] ended, we began to call that big Q in relation to little Q, which was just applied to factories. Then as the big Q concept began to be examined and utilized here, it can be extended to service companies, so the concept of big Q grew. And beyond that, they began to realize it can be applied to any human activity. Actually, the enormous industries such as government, education, and health—we came to realize those industries are proper targets for quality and of course we've begun to invade those industries. So you can see that this growth of the big Q concept has been an ongoing thing, and whether that conflicts with performance excellence, I say we can't say unless we get down to defining those terms with great clarity.

IIE: Can company leaders delegate the duties of a quality program or do they have to be more directly involved?

Juran: Well, if they want to become quality leaders, they've got to be personally involved. I haven't really seen any company become a quality leader unless the

chief executive took charge of the initiative to do that, so that's indispensable.

IIE: How would you compare your work to other quality gurus such as W. Edwards Deming, Walter Shewhart, and Philip Crosby?

Juran: Deming and Shewhart were statisticians. Deming started out as a physicist, but he switched over to statistics — that became his field. My field was engineering, but within the Western Electric Co. I became a manager — that became my field. So I was in different fields from either Deming or Shewhart. Now Crosby was different altogether; his strength was in, you might say, advertising. His approach to improving quality was to motivate the workforce. Well there was no way that that could be useful because when you analyze why do we have quality failures, the great majority of those have their origin in the system, not in the worker. Nevertheless, he was very clever at getting that message across, and quite a few companies went into those motivational approaches — put up the banners, slogans, and all the rest — and usually it backfired. The workforce knew very well that they were not the fault of the problem so the posters began to collect some pretty nasty remarks.

As I understand it, a guru is somebody who has knowledge in depth of a subject. I don't think any of those three had knowledge in depth about quality. They had narrow approaches with various kinds of results.

IIE: What role do you see IEs playing to support the quality movement?

Juran: The training that IEs get makes them good candidates to go into the quality field if they elect to do that. They have good training for that. Moreover, the scope of that training makes it easy for them to adapt to various specialized fields. They bring their tools and concepts and apply them to a lot of fields. We've seen them do that. So they're candidates for that.

IIE: What do you think about the lean manufacturing concept as it relates to quality?

Juran: Well there again, I think you'd have to define quality movement and define lean manufacturing. Those terms have different meanings to different people. Unless I understood the meaning behind the question, I doubt I could answer that.

Take for instance the problem of reducing the time required to achieve something — to process invoices, to build customers orders, and so on. We've learned in the last century that a great many of these processes — we call them business processes — consist of a series of steps. And we get an invoice and before we pay it, we have to assure first of all that we even ordered what the invoice covers and that the thing actually was delivered and the right quantity was delivered, the right identity



REFLECTIONS ON JURAN

Copernicus' apprentice

I met Dr. Juran in 1976 when I attended his seminar in New York. I had just taken over as manager of quality control at Smith Corona in Cortland, N.Y. Manufacturing employment at Smith Corona in that area was about 4,500 souls, and we had about 250 people in QC, most of them inspectors. My challenge in this new position was to make a quantum change in the level of quality across all our products.

Coming from industrial engineering, I knew that there was more to modern quality than "catching the bad ones," but just what to do was a mystery. Spending a day in Cornell's Engineering Library, I charted the footnotes in every book and article that I could find on the topic. What I found was that Juran was cited as a source more often than anyone else. I enrolled in Juran's seminar in New York the next month.

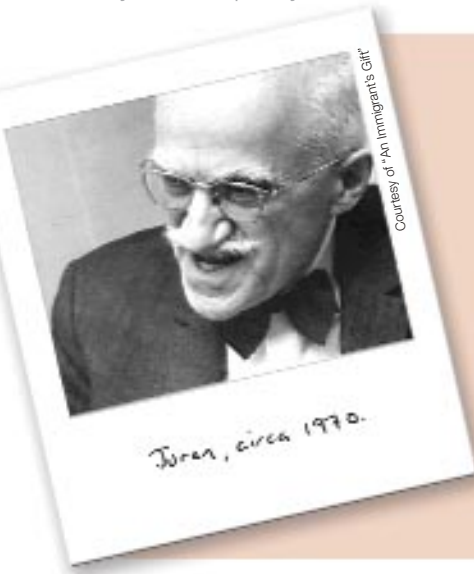
Sitting in a group of 20 or so other quality practitioners, I soon learned that most of the things I inherited with the job were wrong! Looking at large systems outside of my direct control for improvement was not the way to get where we needed to go. I listened in rapt attention as Dr. Juran unfolded the logical and factual approach to achieving a breakthrough in quality.

A few years later, when I was running a factory in the United Kingdom, I sent my quality manager to London for the same seminar that I had gotten so much out of. Just as I had, he came back a changed manager.

That week not only changed my approach to quality improvement but it also changed my whole approach to managing for change. The techniques in Juran's *Managerial Breakthrough*, when judiciously applied, have never failed to get outstanding results. I was successful at applying them at three other large manufacturing companies before going into my own technical sales business in 1989.

I have written to Dr. Juran that studying quality with him was akin to studying astronomy with Copernicus! All these years later, I believe it even more true.

Ken Jones
Manufacturers' Representative
Wilson/Reilly Associates
Nashua, N.H.



REFLECTIONS ON JURAN

Time and tide

Dr. Juran is methodical and precise. Some of his colleagues joke that when the observatory in Greenwich, England, needs to check the precise time, they call Dr. Juran.

Dr. Juran and I presented seminars together. When an attendee asked a question or made a comment, Juran often made notes about the question or comment. Attendees would ask me why he was taking notes. He was learning from the question or comment and wanted to retain that learning for the future. With all of his experience, he was forever learning. This made a deep impression on the attendees.

Frank Gryna
Co-author with Juran on *Quality Planning and Analysis*
Distinguished Professor of Industrial Engineering Emeritus
Bradley University
Chesterfield, Mo.

was delivered, that its quality is right, that the price on the invoice is correct, and so on. Looking to see whether all those things are correct is done by a series of different functional organizations — the purchasing department, the receiving department, the quality department, the financial department. And in the way most companies plan that activity, they will not only want each of those functional departments to do the planning for that particular function; they also want them to execute, to approve the invoice with respect to that function. That takes a lot of time. When we staple ourselves to an invoice and follow it through all those steps, we find that even though it might take three weeks for that invoice to get approved, actual time in which somebody is working on that invoice is only about an hour. The rest of the time is waiting time, transport time, and the like.

Now is that a part of quality? Well, in the service industry, time required for delivery is one of the most important qualities to be achieved. If we fill a customer's order in four weeks and our competitor fills it in one week, we're going to lose that business. So that has gravitated into the quality field.

Now going back to lean manufacturing, is that something that belongs in lean manufacture? The people that are interested in lean manufacture would say so. People that study benchmarking and want to apply it, they would say that's a case of benchmarking: It takes us three days or whatever to pay an invoice and our competitor takes less than that. So you have a situation where there are a number of activities that can be claimed by several of these movements. I don't particularly say it's important it goes to

this movement or that movement. Whoever can do it best is where it ought to go.

IIE: Do you still believe your quality trilogy is appropriate and effective?

Juran: I believe it's very useful. My trilogy applies to processes: the planning process, the control process used to assure that the plans are being met, and the improvement process. And what I did was to spell out a series of steps, like this is done in all three of those cases, and I elaborated on that and published on that in some of my books. And by no means is that all there is to quality management, but it's critical. There's no way of managing quality without engaging in those three, so I think it's been very useful to identify those processes and to spell out what they consist of.

IIE: Quality affects both sales income and costs. Are these two relationships equally important?

Juran: It depends on whom you are talking to. In the case of the upper managers, focus on sales income is top priority. If you don't have sales, everything else is academic. And in fact, when there's some hot new product that comes into being, there's no control on the costs because sales income is pouring in and the big thing is to get a big share of the market and get that locked in before competitors do. In most cases, the costs are usually in poor shape. In due course they'll get to the costs, but to the top people, sales income is top priority.

Now when you get down to the functions — there the functional goal may well be to reduce costs. In fact, in some companies one of the top goals is to be a

low-cost producer. In the economy, you've got several layers. You've got the Tiffany level of quality — in terms of the total number of purchasers that's a minor thing, but the top-level of quality. There the goal is to see to it that the quality is top level because you get a premium price by higher quality. Then you have the Macy's level — it's for moderate-income people, to some degree for affluent people, and there you strike a balance between people who are very affluent who buy Tiffany quality or are not affluent at all, they are operating on tight budgets and have to watch costs very closely.

IIE: So it's Tiffany versus Macy's...

Juran:...versus Woolworth. You have different levels of quality, different levels of buyers; that's the way it is, and you have to plan for those different levels. You have to decide which of those businesses you are going to be in and [plan] accordingly. So goals of sales income and the goals of costs are both there, but they apply to different people.

IIE: What are your thoughts about how quality is taught in universities?

Juran: That's a recent phenomenon, a 20th century phenomenon, and it's been growing rapidly. In fact, I think in the current century we're going to see a great deal of expansion of quality being taught in universities. I think during this century we're going to see degree-granting colleges created relative to quality. When anything gets big enough, we spin off a new [discipline]. Take engineering: At the outset all you had was civil engineering. That term was used to distinguish civil engineering

The BOOK TOUR

Juran's Quality Handbook
with A. Blanton Godfrey
Originally published in 1951
5th edition, The McGraw-Hill Companies, 1999

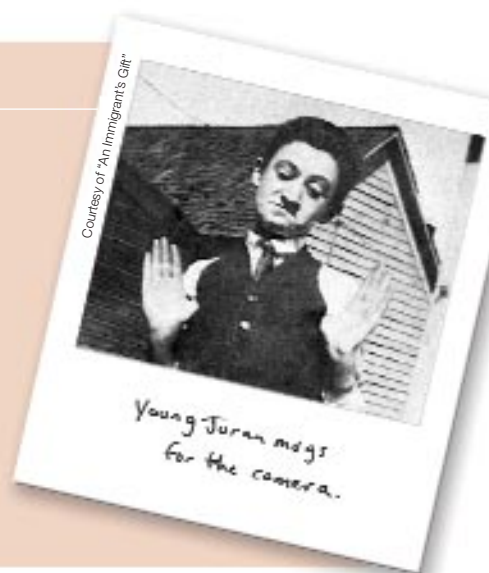
Managerial Breakthrough
Originally published in 1964
2nd edition, revised, The McGraw-Hill
Companies, 1994

Quality Planning and Analysis
with Frank M. Gryna
Originally published in 1970
4th edition, The McGraw-Hill Companies, 2000

*Juran on Leadership for Quality:
An Executive Handbook*
The Free Press, 1989

Juran on Quality by Design
Simon & Schuster, 1992

A History of Managing for Quality
ASQ Quality Press, 1995



from military engineering. Then along came mechanical engineering, metallurgical engineering, electrical engineering. ...New colleges were created, new textbooks, and so on and so on. Here we've got something that's right now in a growth pattern. If you're going to invade those big industries that I mentioned—health (that invasion has started already) and education and [government], [it will] involve a lot of people. Universities have always lagged behind but once something has burgeoned and gotten to be big enough, they start to go after creating new courses (we've got a lot of that now) and they broaden that out to a complete curriculum and degree. In fact the scouts, the forerunners, we're already getting some extended degrees. To my knowledge, none of the really prestigious schools have gone that far. I think the less prestigious schools have moved quite a bit in that direction. As a result of that I think we're going to see quite a pick up in research. Universities tend to have more interest in research in things like that than the industries have.

IIE: Is there a point you cannot emphasize enough to those struggling to implement good quality standards in their companies?

Juran: I empathize with those people. In many of my training courses, I had questions from somebody who saw the need be blocked—he can't sell it to his company. Of course, facetiously one of my answers has been "Pray for things to get worse." If it's bad enough, then of course people find they can't sell their product and they move in. That's the reason behind the Japanese quality revolution. The Japanese found that

they couldn't sell their products because they had a very bad quality reputation. In fact, they had about the worst quality reputation of any country as far as exported civilian goods was concerned. Of course when you can't sell your product the chief executives are going to move in, and that's what happened. That was really the basis of the Japanese quality revolution. It took several decades to be completed.

But if there's one constructive thing I've been able to tell those people who struggle, [it's] watch the language. It's not enough to go to top people and tell them we've got so many percent defective. They don't understand how to relate percent defective to their problem, which is how to improve return on investments. And one of the things that the quality director needs to become is bilingual. He understands already the language of the factory, the language of the warehouse, the language of the office, the language of things, but he needs to understand the language of money because that's the language of the top people—sales and especially return on investment. If he's going to propose a means for improving quality, he should get estimates of the potential gains and the ROI and make that presentation so that the chief executive can compare that opportunity with the various other opportunities he has that are expressed in terms of ROI. That would be an important step for people who are struggling because they can't get their ideas across.

IIE: Who do you most admire and why?

Juran: I doubt I'm going to go public with that information. I talk of colleagues and I do have a short list of what seem to be the

most brilliant minds I've met. I don't think I'm going to make that public because some other good minds might resent [not] being on that list.

IIE: What have you enjoyed the most about your work?

Juran: Being a freelancer. As a youngster and for quite a while after that I was pretty much a social misfit...so I was out of place in a big bureaucracy. And I served in two big bureaucracies. One was Western Electric, which today is called Lucent Technologies; it was a part of the Bell System, the AT&T Co. I was a pretty bright youngster and I was able to progress rapidly because I was a good analyst. My rewards were to be made a manager and then a higher manager, and that was not a good idea because my limitations in human relations were a handicap, and they got to be too big a handicap. The other big bureaucracy I was in was the federal government during World War II. I was an official in that government. Again I was a misfit. So at the end of the war, I had to figure out what am I going to do when this war is over, and of the different options I had I concluded, I'm going to be freelance; my subject is going to be management; I'm going to research and philosophize and lecture and write...you know, the works. And that's what I did. I had a transition there of how to support my family while I would become a freelancer, and that took a few years, but after that I [have really] had a wonderful life for about four decades.

The author would like to acknowledge Larry Aft, Tina DeCosta-Fortune, Bill Frazier, Frank Gryna, Kevin McManus, and Junelle Scheeres for contributing questions and observations for this article.