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# A Visit to Complex Systems, Inc.

*J. M. Juran, Editor*

This department has periodically looked back into quality control history to secure perspective for its readers. Now we deem it desirable to look into the future to provide our loyal readers with a preview of an ominous shape which is looming directly ahead.

The year is 1980, and I have just returned from an arduous but rewarding visit to Complex Systems, Inc. ( "Arduous" implies that have turned feeble as well as grey, but facts must be faced.) It is indeed fortunate for our readers that my sense of duty to *Management's Corner* dictated that I make yet one more field trip. A dying effort, as it were, yet a fruitful effort, since it permits the readers of this journal to see Complex Systems, Inc. through the eyes of so experienced an observer.

Manifestly, my visit was intended primarily to study the Complex organization form – the most intriguing of all organization forms yet devised – for defining and achieving the quality objectives of a company engaged in manufacture and sale (for profit). I will shortly report on this. However, it would not be remiss to relate some of the incidental aspects of my visit. The experienced observer notices all details, and skillfully weaves their significance into his conclusions.

Even as I opened the handsome entrance door, Complex Systems, Inc. commenced to extend its hospitality. A TV camera, cunningly concealed from all but the most alert, whisked my image to the Security Office. Simultaneously and diabolically, the door-knob transmitted my finger prints for check against those of known security risks. Evidently, and happily, my record was clear, since a few paces later the coveted photographic badge popped out of a slot, and the door marked "Cleared" swung open invitingly. I

 

entered it gratefully, since the "Rejected" door led to a greased chute, destination unknown but probably undesirable.

This exemplary hospitality continued. I inserted the code side of my badge into the directory slot of my host, Mr. Yoos. Immediately the ceiling exhibited a long row of distinctive colored lights. This was my guiding path to his office – a modern Ariadne's thread through the labyrinth. To be sure, the route was long, but the evidence of thoughtfulness persisted at regular intervals. At one point I was provided with the brochure "Welcome to Complex Systems, Inc." at another, with the latest annual report to stockholders; at still other points, with still more helpful documents. As weariness set in, I sat momentarily in a chair nestled in a convenient niche. To my delight, the act of sitting started a little cine-projector on an informative five minute color film entitled "This is Complex."

I could go on in this vein, but I must return to the main stream of the story. In due course I entered my host's office, having traversed a formidable route without seeing one human being. Yet, thanks to the wonders of our age, I strayed not a single step.

My host, who had followed my progress on his TV screen, waved me into a chair, and we lost no time in coming to the point.

"It has all been a logical evolution to the inevitable climax," he assured me. "At the turn of the century Complex had no quality control. Everything was in the hands of operators, foremen, and superintendents. What inspectors there were reported to the foremen. It was awful."

"Did Complex in those days sell its products, and were they well received?" I queried.

"Their products had an excellent reputation. Our old salesmen tell us that the quality of Complex products was an asset in selling them. The company had a rapid growth in those days."

"But why then was their quality system so awful?" I interrupted.

Mr. Yoos turned on me one of those looks I have learned to interpret with

 

precision. It said "You may have been good in your day old-timer, but this is 1980." To his credit, however, his words remained discreet.

"They had no organization. No Statistical Quality Control. No Reliability. No Maintainability. Nothing, just inspection, and not independent at that. How much worse can you be?"

"Sorry for the interruption," I apologized. "Please continue."

"Our first step forward came in 1938 when we created a central inspection department. Mr. Inns had been advocating this for years. But in the late 30's, Complex got into military contracts, and the military hinted strongly that Complex would be smart to set up a central inspection force. Mr. Inns got the job of Chief Inspector."

"Is Mr. Inns still around?" I asked, alert to finding an added source of history.

"No, he died in 1948, of a broken heart."

We both bowed our heads for a moment of silent respect, and Mr. Yoos continued.

"The Central Inspection Department greatly improved the skill of inspection. Measurement became more precise, instruments were better maintained, inspectors were well trained and so on. But the production people seemed to have lost their pride, and the defects gushed out. Inspection did find most of them, but the costs were awful."

Mentally I noted the recurrence of the word "awful."

"The big need was prevention" continued Mr. Yoos. "At that time the courses in Statistical Quality Control were sweeping the country. Mr. Inns sent a few young fellows to take the courses. One of them, Mr. Statt, came back and made out a persuasive case for creating a new department on Statistical Quality Control. That was in 1946. There was a surge of SQC in the company – lots of charts, sampling tables, training with dice and so on. There was also a lot of argument on how to organize for quality control. Mr. Statt argued that

 

SQC and Inspection should be coordinated under one Manager of Quality Control. This was done in 1948."

I could not forbear interrupting. "So Mr. Statt became Manager of Quality Control and Mr. Inns died of a broken heart."

Mr. Yoos looked at me with a hint of admiration. "It's amazing that you guessed it." But he quickly recovered his composure.

"Of course, the excesses of the SQC boys caught up with them, and Mr. Statt was living on borrowed time. The end came in about 1955. Complex had gotten into new military contracts for intricate, precise products which were to perform in new environments – space, radiation and all that. The real limitation was the ability of the designers to prove the reliability of their designs. That was when Mr. Relly proposed creation of a Reliability Department."

Again I interrupted. "A subsequent need arose to coordinate the Reliability Department with the Quality Control Department, so the post of Manager of Quality and Reliability Control was created, and Mr. Relly became the new Manager."

Again that look of hinted admiration. "It's uncanny how you guessed it again, but you were just lucky. Actually, it was a close question. The Operations Research Department had been created in 1951 and for a while it looked like they would take over Quality Control. But the OR manager, Mr. Opper, and his chief assistant once got into a bitter public debate about what OR meant. The department was disbanded in the recession of the mid-fifties."

He returned to the narrative. "It was in 1960 that Mr. Main first proposed the idea of creating a department on Maintainability. There was plenty of justification. Our appliances were inaccessible to repair-men. Our systems were designed for easy assembly in the shop, but with no thought of easy replacement for spare parts. Our tests required facilities readily available in the factory but not readily available in the field. It was awful."

My impetuousness again overcame me. "When was the new department created, how was it combined with the old, and what happened to Mr. Relly?"

 

"It was created in 1963. A year later Mr. Main became manager of Quality, Reliability and Maintainability Control. Mr. Relly landed on his feet – he became Manager of Quality and Reliability Control in Monstro Systems, Inc., our despised but backward competitor."

"By the way," I asked, "what became of Mr. Statt?"

"Oh – he also landed on his feet. Brontosaur Systems, Inc. had gotten into SQC, and he got the job on the recommendation of a reliable firm of management consultants."

"To go on," he continued, "our Sales Department invaded the picture during the sixties. Mr. Sell, one of our product sales managers had noted a disturbing trend in our ability to sell. Our products had been designed and made to simplify life for our engineers, foremen, and inspectors, but not for our salesmen. In consequence, our salesmen were at a serious disadvantage when compared to salesmen of other companies. Our products were harder to demonstrate, to display, to advertise, to promote, to store and everything else. It was awful."

I recognized I was about to be waltzed around again, so I cut in to make it short. "So in 1971 a department on Saleability was created, and a year later Mr. Sell became Manager of Quality, Reliability, Maintainability and Saleability Control."

His admiration was now less restrained – a sort of I-didn't-know-the-old-boy-had-it-in-him look. "Actually, it took two years, but it did happen that way. And, oh yes, since you seem to be interested in such matters, Mr. Main has set up an independent consulting office on maintainability. The place is swarming with clients."

"Where were you all this time," I suddenly asked.

"I was hoping you'd come to that. I came to Complex in 1955 as a sales trainee. I'm an engineer, you know. Our products are so complex it takes engineers to sell them. I was selling systems until 1965, when I was moved into sales service, where I remained until 1978. Meanwhile I had noticed that the really big problem faced by the company was that our products were not

 

useable enough. From the viewpoint of the customer, mind you, our products were less convenient to use, less relaxing to the user. Our products did not convey the inner peace of mind, the serenity that should come from use of product in an industrial civilization. Think of how the Europeans spend hours savoring and relishing a well-prepared meal. That was our problem – how to put into our products that mysterious ingredient which would engender in customers a feeling of usage akin to savoring and relishing a well-prepared meal. I coined the word Useability to describe this ingredient."

It was evident that Mr. Yoos was on familiar ground, for he was visibly warming up to his mission. In such cases it is unwise to interrupt.

"I pondered long on this lack of Useability, and after much soul-searching succeeded in conveying the idea to my superiors. My labors were rewarded by the creation, in 1978, of the department on Useability. But I soon found that there was a grave need to coordinate the work of this new department with that of Mr. Sell. This need was met early this year by creation of the post of Manager of Quality, Reliability, Maintainability, Saleability *and* Useability, the post I now hold. It saddens me to add that this move lacked the wholehearted concurrence of Mr. Sell."

My interest in the fate of my fellow men once more provoked an interruption. "And where is Mr. Sell now?"

"Oh – he is assigned to special studies. But I hear, via the scuttlebutt, that he is near to accepting a post as Manager of Saleability for a hated competitor."

With the recklessness of the unemployed, I now put to him the key question: "Mr. Yoos – what is the next stone in this pyramid? What embryo department, now in gestation in your company, will, in its turn, mature and swallow up your admirable edifice?"

The countenance of Mr. Yoos took on a strange look – a mixture of paternalism, pain and pity. Such must have been the look the young General Pompeii gave the old Emperor Sulla when he told him,
There are more men who worship the rising sun than the setting sun."

Your analogy, sir, is not really appropriate. This is not an inanimate structure

 

which admits of piling chunk upon chunk. This is a living structure which grows only until maturity. And that, sir, is where we are – at maturity."

There was no need to pursue the matter. The extinct voices of Messrs. Inns, Statt, Relly, Main and Sell might well, in their turn. have given equally confident answers, in blissful ignorance of impending doom.

With the lessons of the tale fresh in my notes, I returned to my hovel. Once at my desk, the story which you have just read poured out in a torrent. At its conclusion I penned a brief personal note to the Editor of this journal and placed the manuscript in a mailing envelope addressed to:

Prof. Irving Burr, Editor
Industrial Quality, Reliability,
Maintainability, Saleability and Useability Control
Journal of the American Society for Quality, Reliability, Maintainability, Saleability and Useability Control
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