Views on Life, the Universe, and Everything

Quality of Quality Systems – A Critical Review

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1 Introduction

Quality is a dazzling term without a universal, broadly accepted meaning. If you ask three people for their interpretation of the word "quality", you will most likely get three different answers. Looking at technical literature, there is no consensus and even in norms there are different definitions. This is not the place to expand on this interesting topic, instead I will give a fitting definition for our purpose:

> *Good qualitiy means that everything* IS *as it* SHOULD BE.

"Good quality" implies that there is also "bad quality", which is true. Quality is neither good nor bad, but maybe the word is used – generally and in advertisements – to imply specifically good quality.
So quality is nothing more than the nonvaluated result of a target-actual comparison.
With this simple definition we want to take a look at the quality of quality systems – especially the quality of international quality norms.
But first some comments on the structure of industrial systems for quality assurance, with which (good) quality is ensured along the value chain. Today we talk about integrated quality assurance systems or about quality assurance along the process of product realization. The fundamental idea of this system and the importance of the single elements can easily be illustrated using the historical development.
In the beginning, there was the final inspection. After having finished his product, a craftsman or artist took a step back and inspected his work to check whether it IS how it SHOULD BE. You can already find this critical inspection of ones own work in the first chapter of the Bible: "And God saw that it was good." (Gen 1,10).
Only through Taylorism, with its division into industrial corporations, it became necessary and reasonable to establish an independent control in the production, before the customers conducted the IS/SHOULD BE comparison with their own eyes.
I want to exemplify this with an example from my professional life: The final check of a car tire is the inspection of the visual surface and the inner part of the tire. Apart from that, further measurements are being conducted like out of balance measurements that we all know from the balancing of wheels.
The second logical step in quality assurance is the control during the production process. This follows logically from the insight, that the end point control can only remove flawed products but cannot prevent them. It is the objective of process control to avoid mistakes and perform permanent target-actual comparisons during the production process. Apart from the examination of the semi-finished products, process control is mostly about assessing the pro-

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cess itself. Only machines and processes that are controlled and work steadily can produce good and flawless products.

A car tire consists of about 30 pieces, all of which have to be manufactured accurately and then have to be assembled precisely. One single flawed element can make the whole tire unusable. It is easy to imagine that many parameters have to be controlled here.

The next step in the evolution of quality management is the inclusion of product development into the system, because mistakes in the development cannot be compensated even in the best controlled production. For instance, during the years of its use the surface of the tire is subjected to a variety of environmental influences such as exposure to direct sun light, oxygen and ozone. That is why the rubber – especially the outer layers – is blended with ageing inhibitors. It is the job of product development to determine the right inhibitors and amounts for a long lasting tire.

The forth step in this short description of the development of the quality system – the analysis of customer requests – can again be explained by a flaw in the value-added chain: The product development might be very good, but if it starts with wrong assumptions the product will not be bought. As customers all of us have probably left something at the store because it was not in accordance with our expectation of how it SHOULD BE.

Therefore – and this is the fifth and last element – the observation of the own products in the market and during their utilization is of great importance. This is quite a complex task for tires because not only the drivers but also the retailers, the car manufacturers, the car journalists, the repair shops and waste disposal companies have to be included.

Of course the single steps in this system have not been developed strictly one after another and they were, on a very rudimentary level, present in early companies. But only since the 80s and 90s, an integrated system with many feedback loops has been described and implemented.

With the constant development of the quality system in companies, major customers have increased the standards for their suppliers. Whereas before, it was sufficient to provide proof of a good final product, customers are requiring more and more proof of an integrated quality system. With this, the sharp distinction between supplier and customer has been more and more blurred in favor of a better collaboration. The high accuracy and reliability that industrial production shows today is, next to the general technical development, in no small part thanks to a comprehensive system of quality assurance.

Based on the motto "trust, but verify", the major customers have used audits to check the quality of quality control systems of their suppliers. A rather unattractive byproduct of this development is the additional expenditure on both sides, which is sometimes jokingly called "auditourism". Sometimes the auditors of different major customers came and went through the doors of the same supplier, asking the same questions.

A quality standard which defined the main demands of a modern quality system was supposed to help here. The idea was that the conformation to this norm would be certified by an accredited, neutral institution. In 1987 the first edition of this norm, ISO 9000, was published by the International Organization for Standards (ISO) in Geneva. Since then there have been a number of revisions.

Looking back, one has to call this norm a success story like no other. The ISO 9000 is estimated to be the world's most widely spread book recognized in 170 countries. It outnumbers even the Bible or the Koran. Today, more than one million companies are certified according to this norm worldwide.

A success story! But for whom? Certainly for all the new careers that began to form around the new norm: Auditors, certifiers, accreditors, consultants and trainers. But what is the benefit for certified companies? What is the contribution of this norm to the quality of the products? Or is this norm – as it is often claimed – just a blind formalism to which the industry has succumbed?

To answer these questions, it is helpful to take a look at the older editions of the norm, for example from 1994. The title of this edition was: *"Quality Systems – Model for quality assurance. . . "*

This title says without question that this is a norm for quality systems. But if one closely inspects the norm something completely different becomes apparent in the introduction:

> "They (the standards) specify **requirements** that determine which elements quality systems have to encompass. . . "

and

> ". . . but is not the purpose of these international standards **to enforce uniformity of quality systems**".

Therefore the ISO 9000 is not a **standard for a system** but (only) a **standard for the requirements regarding the system** which is something completely different. So we see false labeling already in the title, resulting in dramatic consequences for the companies affected as well as the development of the certification process.

Obviously, *no one* has read this far carefully, especially not the certifiers. Because the ISO 9000 was not implemented as "system requirements", but as "systems". Certifiers came to the companies demanding a quality handbook – an account of the established quality system "according to ISO 9000" i.e. structured after the 20 elements of this norm. However, these elements are – as experience shows – absolutely unsuitable for structuring quality systems.

In the beginning, some companies – including Continental AG – refused to give up their handbooks, which had proven successful in practice. For the certifiers, we constructed a correlation matrix to create a link between the elements of the norm and the chapters in our handbook. While it was hard enough to convince the auditors that this was in fact the right way, we soon had to realize that the auditors were not adequately qualified for this task. Knowledge about quality systems alone is not enough for the application of the norm. A basic understanding of the products and processes in question is also required. In the end, we – as many others

– went the way of least resistance: A handbook "according to ISO 9000" for the auditors.
From there on, the quality manager in a factory had two tasks: First of all (as always), to ensure the quality of products and processes according to the established system and second, to get the stamp for an ISO 9000 certificate as cheap as possible.

So what has resulted from the implementation of the ISO 9000?

- In reality, the norm IS not how it SHOULD BE.
- Wishes of customers were not fulfilled.
- For a company, the certification is added expenditure with hardly any improvement of the product.
- In the evolution of quality systems the ISO 9000 has been a step backwards.
- With regard to the definition we started out with, the ISO 9000 is an example for bad quality.
- Customers still audit suppliers.

It should not be withheld here that the ISO 9000/2000 – a completely revised edition from 2000 – removed some of the more rough deficits of its predecessor. Firstly, the title was corrected and is now (correctly) "Quality System **Requirement**". Secondly, the structure was fully revised. It is now process oriented and fits roughly the Continental AG handbook from 1985. In the tongue of quality assurance this is called a "silent recall".
Sadly, these and later corrections of the norm, which were overdue, had no effect on real practice. Still, handbooks are not written for the company's need, but only "according to the norm" for the sake of getting a certificate. On the contrary, many companies delegate this cumbersome task to consultants, which at the same time – through a different division of the company – carry out the certification. But this was and is not the purpose of this norm and certification!
The critical review of established industrial quality systems presented here shows at first a positive historical development leading to the introduction of a quality norm (the ISO 9000). While previously the assurance of product quality and performance of the company were paramount, the focus now shifted towards the compliance to formal, external standards. Therefore, the newer development of quality systems has to be said to have bad quality.

This raises a whole lot of questions which cannot simply be answered by looking at them with the systematic view of quality assurance. In fact they are probably more related to fields like psychology, social sciences or maybe even theology. Nevertheless, I want to address these questions here and comment on them from my point of view.

How can it be possible that a widely recognized institution like the ISO publishes such an amateurish first edition of a new norm?

A hint comes from a certain polarization which can be observed within the quality sciences: On the one hand there are people working pragmatically and close to the product. They are part of the value-added chain and are responsible for their products. On the other hand there are people working mostly on the theoretical aspects and the systematic of quality management. This group includes professors, trainers, consultants, normers, certifiers, and auditors; occupations which have no direct contact to a product or the production process.
During the historic development of quality management described in this article, there has been a growing, inflated secondary sphere with whole new occupations. In the course of this process, there is an interesting development. While quality assurance was purely empirical in the beginning, it shows more and more deductive traits with theories and models which are no longer validated in practice. Even reasonable critique or objections from the practical side are hardly noted. The objections and modification proposals by Continental AG for instance – brought forward via the official channels from the DGQ (German Association for Quality, Frankfurt) to the DIN (German Institute for Norms, Berlin) and finally to the ISO (International Organisation for Standardisation, Geneva) – were not considered in the design phase of the ISO 9000.

Why does the industry not fight the – apparently not very productive – practice of certification?

The answer to this is probably complex. First of all, there is no "the industry". The parties involved have no clout on their own or are not properly represented by their professional bodies.
But maybe the most important aspect is the following: Norms and neutral certificates in general are thought to contain an unearthly truth ("The norm is always right and is above my own experience."). It can only be understood in this context that the ISO 9000 survived the turnaround with regard to its content from one edition to the next. (If I personally observe certain analogies to the three abrahamic religions here, it is because of my personal experience on both of the subjects and it is in no way meant as a scientific analysis.)
Another aspect that should be mentioned here is a certain resignation of the industry, bordering on an extortion mentality: Why should anyone fight the superiority of the ISO 9000 paradigm? Especially if it will be in vain because the certificate is mandatory for every company. And for the critics of the norm there is the tale of "The Emperors New Clothes". It is much easier to stand at the roadside with all the others and applaud the emperor.

Will there be an end to the wave of certifications?

Probably not. Now that the market in the industry only shows small growth and is mostly about re-certification, new markets like hospitals, doctor's offices, pharmacies, and retirement homes are being taped into. It is hardly

surprising that the question of how useful these quality certificates are to the parties involved, is not being asked.

Why does the operative quality management work anyway?

From my experience, the answer is quite simple. First we had a working quality management, then the norm. The evolution of quality systems shown here was a long learning process of people and companies. Here structures are stuck in the heads of people that are much stronger than the norms being enforced from the outside.
However, the ISO 9000 – in its present, process oriented form – is not completely superfluous. For me personally the norm serves as a checklist when I come to a new company as a consultant. I look at the norm point by point and ask the questions

1. Is this point relevant?
2. If yes, how is it translated into the system here and now?
3. Is there a need for action?

However, this – let us say reflected – handling of the norm requires knowledge in the field of quality system theory as well as from production. I have only met few people who were lucky enough to gain experience in both fields and this is probably the crux of this norm.

– Translated from German by David Huesmann