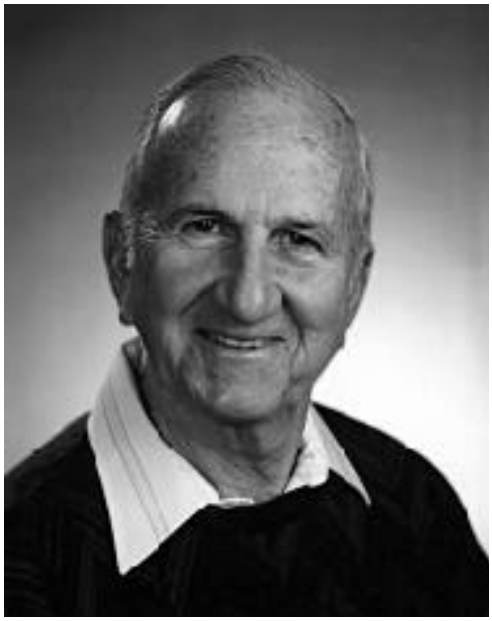
SETTING STANDARDS

"A phenomenal success story"

Vince Grey

Former Secretary and Chairman of ISO/TC 104



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Background

At the time this book was written, ISO had published 10 850 Standards. Any text that did justice to the variety and scale of the Technical Committees' achievements in setting these standards would be unreadable. The story of one achievement – the successful standardization of freight containers – must be seen to represent many.

Vince Grey joined the American Standards Association in 1952 and attended his first ISO General Assembly in the same year. As an ASA staff engineer, he was initially assigned to international work on what he calls "some of the early projects", covering such subjects as "ball and roller bearings, gears, limits and fits, surface roughness, waviness and lay". A marine engineer, he was personally interested in the work of ISO/TC 8, Ships and marine technology, and his interview also refers to two Technical Committees that pioneered the standardization of information technology: TC 95 and TC 97. The real hero of Vince Grey's story, however, is TC 104, Freight containers; the committee that helped the container industry "take off" in the 1960s.

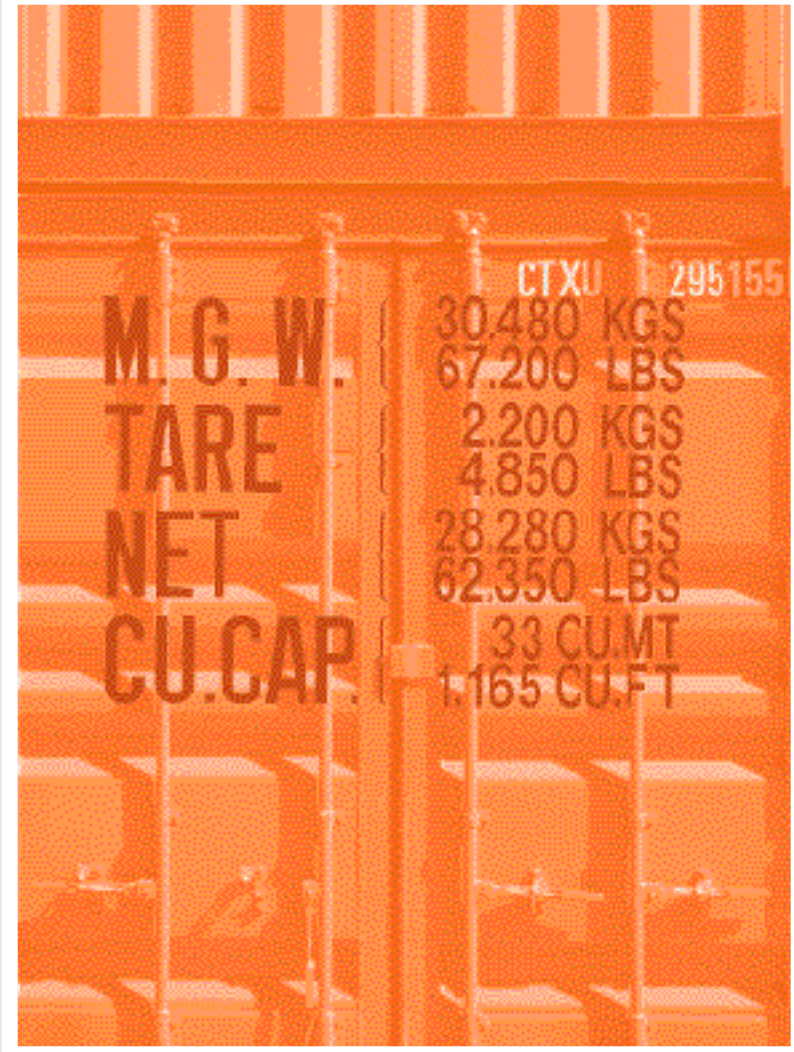
The committees that Vince Grey describes can be seen as representing trends in the general history of the Technical Committees. To begin with, the standardization fields addressed by ISO concerned basic mechanics: screw threads, rolling bearings, pipe sizes, shafts, couplings and power transmission. This work was rooted in the accomplishments of the ISA committees before the Second World War. In fact, the first ISO Recommendation, published in 1951 and titled: "Standard reference temperature for industrial length measurement", would have helped settle a debate at the founding conference of the ISA in 1926. Delegates were in dispute as to whether the length of a metre varied with the temperature in which a measurement was made, or whether the metre, as a unit of measurement, was exactly the same regardless of the temperature. A representative of the

National Bureau of Standards in Washington was called in to settle the impasse. Without reservation, he declared that the latter statement was correct.

However, as Olle Sturen points out in his interview later in this book, not all the early ISO standardization activity dealt with mechanics. (In fact, by 1972, only about 20 % of ISO's published standards came from the mechanical field; standards in the chemical field accounted for 30 %). Sturen cites TC 61, Plastics, as evidence that ISO was willing to address the needs of new technologies, and indeed a glance through the list of ISO's Technical Committees published in ISO Bulletin shows how the organization was called on to reflect the emerging technologies and concerns of the twentieth century. Nuclear energy is TC 85 (set up in 1956); Solar energy is TC 180 (set up in 1980). Committees on Air quality and Water quality were set up consecutively in 1971, and Ergonomics was tackled in 1974. Vince Grey's interview mentions how TC 97's work in the field of Information technology overlapped with the work of IEC, and the two organizations coordinated their efforts in 1987 by founding a Joint Technical Committee.

There was a general shift in the 1960s away from producing international standards covering basic test methods and terminologies towards producing standards related to the performance, safety and health aspects of particular products. This trend was reinforced by the 1980 GATT Standards code which called on parties to: "...play a full part in the preparation by appropriate international standardizing bodies of international standards for products" and added that: "...wherever appropriate, Parties shall specify technical regulations in terms of performance".

In ISO's speeches and publications, particular achievements of the Technical Committees are repeatedly mentioned. Among the early mechanical standardization activities, the "cleaning-up operation" on screw threads is often hailed as one of ISO's achievements (by the mid-seventies the UK was replacing 74 imperial sizes of threads with the 13 ISO metric sizes). ISO's work in standardizing paper sizes and film speeds is frequently cited, as well as its contribution to the SI system of metric quantities and units. There are well-known standards relating to musical pitch, and Open Systems Interconnection in information systems. In the 1990s, the ISO 9000 series of Quality management standards and the ISO 14000 series on Environmental management have taken centre stage. Time and time again, however, the standardization of freight containers is referred to as a landmark in international standardization. Vince Grey, who served as both Secretary and Chairman of TC 104, is best placed to tell the story.



To describe a freight container, you can't do without standards, yet it took till the Moscow meeting of ISO/TC 104 in 1967 to be able just to go out and order such a thing as "an ISO container".

"A phenomenal success story"

Just to set the stage. We are sitting on an outdoor porch at the rear of my home, and we are looking out over Vernon Valley in New Jersey on a beautiful sunny day. We have a railroad track running down this valley that carries the latest development of railroad cars in the United States. Double stack container trains down my little old valley! I find it amusing, you know, since I played such a big part in developing these things. If I go into town, I have to stop at the railroad crossing while a container train goes by!

How did I ever get involved in standardization, of all things? I went through the United States Merchant Marine Academy, so my schooling was in the maritime field, and in later years transportation came as an unending area of special interest to me. I sailed, after graduation, aboard ships as a Marine Engineering Officer, and to advance my education I came ashore and enrolled in a Masters Degree programme at Columbia University as a mechanical engineer. It was at Columbia University that I came across a job offer for a mechanical engineer, an electrical engineer and an industrial engineer in one person. It was with the American Standards Association. I applied for it, and was selected.

Well, it just so happened that it was in 1952, and ISO was holding a General Assembly at Columbia University. So I was fortunate enough to be able to attend, and that was my initiation into standards – not only into the domestic standards programme of the American Standards Association, but into the international aspects as well. Right from the starting gate, I was just thankful that I had this broader view of seeing standardization from an international aspect, as well as a domestic aspect. You know, I was completely taken by the idea of standardization as a way of solving repeated problems. You can have a problem that you come across once, and you can make a decision as to how to solve that dilemma. But when the problem is repeated over and over and over again, and it goes beyond your own discipline, and you need to get the cooperation of others, then you begin to see the need for standardization – to record a solution to the problem.

The staff work that I had was mainly in the mechanical field. I was involved in some of the early projects: ball and roller bearings, gears, limits and fits, surface roughness, waviness and lay. ISO/TC 8 was the maritime interest, and I perked up my ears, even though the United States at that time was not really interested in a maritime standardization programme. I was also assigned to work with TC 95. We're looking now at a period (this is post-World War II) when there were colossal potential international markets for industries which had previously been only domestic. TC 95 was important because office machines was one of those industries.

Then ISO/TC 97, Computers and information processing, came on the scene. It was a power house. It had all of the big, big, wealthy companies participating. There was an IEC committee that also dealt with the information processing field, and a really major dispute arose as to which organization should carry on the standardization programme. Should it be the existing IEC committee, or this new committee that was just established – ISO/TC 97? Well, at that time the first chairman of ISO/TC 97 was a fellow named Bob Chollar. He was Executive Vice-President of National Cash Register – a very long-standing company in the United States. In order to resolve the scope for these two committees, we had a meeting in Milan. It's a strange story. Here we're talking about two organizations: the IEC committee, which was a well-established, well-structured, electrically orientated standardization activity; and this ISO/TC 97, which was a Johnny-come-lately group, full of young guys that were ready to move at the drop of a hat. At this meeting in Milan I really think the IEC people expected to go down a sort of shopping list dividing up areas of work. You take that one, we'll take this one!

What happened, which I say was most unusual, is that Bob Chollar said no. He said this was not a subject that could be divided. It was the reverse of the decision made by King Solomon. Chollar said: "Don't divide the baby!" He said: "We have a different approach in TC 97. We're not talking about what kind of plug

Vince Grey was also assigned to work with ISO/TC 97, Computers and information processing, as it was then. In 1965, he took on the secretariat on character recognition. Vince Grey is sitting on the left, with, standing behind him, Raymond Frontard from AFNOR.

should fit into a socket in order to make the machine go. That we readily agree is in your IEC bailiwick. We're talking about the logic of these machines: the internal codes, the communication codes. That is not a divisible subject. Consequently, ISO/TC 97 is not going to relinquish the study of these areas. It all has to hang together." That was the prevailing view that came out of Milan. The IEC people accepted that approach and they directed their efforts very appropriately to the quality of the power, which was different from the logic that went into the computer hardware. Looking back now, 25 years later, it was a very appropriate position to take, and is justified by the cross-relationships that we have in the data processing industry. I mention it, because it was novel that the wisdom of this man, this Bob Chollar, did prevail! It wasn't that he was just saying, "It's our show! We want to be centre stage!" He had reasoning behind his position.

I left the ASA to go into the Navy, but I continued to be interested in transportation. In 1956, upon my return to ASA, I received a call from two people who were beginning to see the need for standardization of containers. One was Herbert Hall, a retired engineer from ALCOA (that's the Aluminum Company of America). He was interested in containers that could go intermodally, so that they could be taken from a highway vehicle, and put on a rail car or put aboard a ship. The other was a fellow called Fred Muller, and he became the head of the US delegation in what emerged from this discussion as ISO/TC 104.

I worked with Muller and Hall, and we called together a room full of organizations that were interested in containers towards the end of 1957. The decision was yes – we should have a standards programme in the ASA. (It was called MH5 – MH stood for materials handling.) The committee was composed of 75 trade associations and technical societies. Now that's a large number! TC 104 grew out of an American proposal to establish an ISO committee on containers. We presented a formal paper to the ISO Committee at the initiation of ISO/TC 104, saying: "This is a reflection of the national consensus of the United States. We're presenting this American standard as an initial working document for ISO/TC 104."

I'm going to tell you a little side story that is very interesting. We Americans are not really good at parliamentary procedures, but our British colleagues were pros. At the first TC 104 meeting, the head of the British Delegation was a man named George Downie. (George, he must have been military. His backbone was straight, and he had red hair, and he had one of those long red moustaches that stuck out past his face!) We were breaking up the technical work into subcommittees, and George was such an excellent parliamentarian and so persuasive that the BSI ended up getting the secretariat for three out of four subcommittees! But financial concerns are a real problem for national standards

bodies, and just before the last day George had to come back and say: "Look, we really can't handle that much work. We'll take one." He was so good at getting the support for BSI being the secretariat! A really fine guy!

Our third meeting was in The Hague in 1965, and it was there that we became concerned about what are called the corner fittings. The corner fittings on a container are so important because they provide the place where the container is lifted and where it's secured during transport. The thing that concerned everybody was – well, what are we going to use as a criterion for testing these corner fittings? That was a typical problem that had to be discussed in these early meetings – and I mean thrashed out! For example, to check whether or not a corner fitting is adequate, obviously for rail motion it's got to take whatever speeds there are on impact when a train is being made up. However, the impact speeds of each country were not uniform. In the United States they had a cushioned coupler, so that when a moving railcar hits a standing railcar there is a certain amount of energy absorption by the coupler. But in other countries the impact speeds were higher, the location of the impact was different, many of them didn't have cushion underframes... You really had to talk in depth about your own nation's railroad operation activity.

Anyhow, when the United States presented its standard, it had a great deal of financial and economic support behind it. Nevertheless, the corner fitting that had been designed in the United States had to be tested, and the committee agreed on what these test criteria should be. So in Detroit, in the United States, a container with the American Standards Association fitting attached was subjected to the test loads. We were in The Hague, waiting for some sort of communication back from the United States. How did the container do? Did it survive? The answer came back, and it was negative. The fitting that the US had designed was not adequate to take the loads TC 104 said it would be subjected to in worldwide commerce.

So we spun off a committee. We created an ad hoc committee to design a corner fitting with greater strength in whatever areas were needed so that it would pass the test. It was probably one of the most expensive sets of drawings that have ever been prepared in ISO. In that ad hoc committee, there were the Executive Vice-Presidents of these major companies, and they sat at a drafting board and drew these drawings. The ad hoc committee came back with its work and it was adopted. It's hard in 1997 to think of how fast containerization was emerging back in 1965, but for the next year containers were ordered and the purchase specification said "the corner fitting shall be the ad hoc committee corner fitting". The terminology had got out and that's what people wanted; not

the old ASA fitting, which was inadequate, but the beefed-up fitting that was adopted at this plenary meeting in The Hague.

I want to touch on one thing that I think is of broader interest than just the containers. When we began this TC 104 project, one of the first problems we ran into was various countries trying to have the international standard reflect their own national practices. We really didn't want to do that. We weren't just looking to affirm what existed, we were creating something new. The trouble was, that when we decided to get into the middle type of container size, the ones that are like a truck body, the metric countries wanted to confirm the container sizes that had been in use in the UIC (Union internationale des chemins de fer). I'm bringing it up because I think how we approached that subject in TC 104 may have value. Instead of locking horns, and saying "no way!", we accepted these container sizes and called them Series 2 containers. (The Series 1 were the 40, 30, 20 and 10 foot sizes; they were something new.) Then the Russians wanted their Eastern European sizes put in, so we called them Series 3. The first standards that came out in ISO Standard 668 included all three series. But when it came to the market place, no-one bought Series 2 or Series 3 for this new service called "intermodal containers". Everyone went to Series 1, and several plenary meetings later, it was agreed to drop the Series 2 and 3. That was a most tactful way to let something like that happen! It's better to get on with the work as long as you can achieve the basic goal and let the merits of each series be judged by the users.

There are certain standards that are essential to describe a freight container, and it wasn't until the Moscow meeting in 1967 that someone could really go out in the manufacturing field and say: "I want an ISO container." We had a set of different documents which, when assembled, defined what is today 95 % of the population of containers – a standard box, you know, with doors at one end, and a closed roof. Anyhow, once that last peg was put in place at that Moscow meeting, so that people could go out and procure standard containers, the industry just took off! Everybody started placing orders for containers. Until that time, the fear was that you would spend a lot of money buying the wrong containers.

For myself, I went from originally being the Secretary of the Committee for about 10 years, to being the head of the US delegation for another 10 years, and then Chairman of the Committee for 15 years. I established a trust that I would act without showing favouritism to anybody; that was what led to my acceptance. I'm 69 now, and from the time when I started as a 24-year-old engineer, I've seen an industry emerge, mature and be a phenomenal success story. The whole committee had the satisfaction of a job well done. We achieved our wildest dreams!