

# FRIENDSHIP AMONG EQUALS

Recollections  
from ISO's first fifty years





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Recollections  
from ISO's first fifty years

This book is structured around the recollections of seven people who have worked for ISO over the last 50 years. As a way of commemorating the history of an organization, this approach has both attractive features and limitations.

One of its attractive features is that it captures something of the experience of being involved with ISO. As Larry D. Eicher, the Secretary-General of ISO, writes in his Foreword: "The essence of ISO's history...could not be expressed in cold facts and numbers...it is made up of the visions, aspirations, doubts, successes and failures of the people who, over the past fifty years, have created this rather remarkable organization." Consequently, there is no decade-by-decade summary of committees, resolutions and numbers of products in this book. However, the introductions to each of the seven "interviews" give background historical information about the topics covered.

The recollections in this book are edited extracts from interviews that lasted about four hours. Though the contributors have approved the final text, and several have written their own material into the text, inevitably much of what they have done and witnessed has been left out. This is one limitation of the book. If you know ISO well, you will find another limitation – many themes, episodes and individuals from the organization's 50-year history are missing.

However, this book is not the end of ISO's attempt to draw together the strands of its 50-year history. We are setting up a "history page" on ISO's Internet site, where we hope to gather and publish further personal recollections and information for the archives. If you enjoy what you read in this book, or disagree with it, if the material sparks off your own memories, or makes you want to pay tribute to a particular individual, please contact us. The address is given below:

In a book that is based on personal testimony, I will say a few words. I have spent only a few months with ISO. I have liked the people I have met. I value my laboriously acquired knowledge of the organization, and I hope to learn more. May ISO enjoy its celebrations in September 1997.

Jack Latimer

The address is <http://www.iso.ch/fifty>

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# FOREWORD

Lawrence D. Eicher

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Secretary-General of ISO



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Lawrence D. Eicher

## FOREWORD

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At a point in time during the preparations for the celebration of ISO's fiftieth anniversary we came to the realization that if we did not make an attempt to write a history about the first fifty years of the ISO story, no one else would do it for us. It was a now-or-never opportunity – if there was to be an attempt to capture a part of the essence of the ISO phenomenon in written words in one place, we had to do it now. Although we have no doubt that the 75th and 100th anniversaries of ISO will be momentous occasions, it certainly will be too late by then to do justice to the beginning.

But what is the essence of ISO's history? We were quickly convinced that it could not be expressed in cold facts and numbers. While we are certainly proud of the growth in the number of countries who have become ISO members, or impressed with the number of ISO meetings held each year, or pleased with the constantly increasing number of ISO Standards that we have published year after year, such numbers, to be honest, are of fleeting interest and quickly forgotten.

On the other hand, I believe that the essence of ISO's history is made up of the visions, aspirations, doubts, successes and failures of the people who, over the past fifty years, have created this rather remarkable organization and contributed to its legacy. There have been hundreds of such people working to sustain the organization itself and thousands more in hundreds of ISO's technical committees striving to accomplish their own visions for International Standards that carry the ISO logo and are respected, trusted, and used throughout the world. ISO's real history is recorded in the memories of these people; we have tried to capture a small part.

Obviously, within the limitations of human health and longevity, as well as available time and money, we needed to find a few individuals who could paint an international mosaic of personal recollections covering the ISO development from 1947 onward to 1997. We also needed to find a writer and editor to carry out the interviews and organize the presentations in a coherent way. We found a young

Englishman, Jack Latimer, for the job and I am sure you will enjoy his renditions of the personal recollections of a small sample of our illustrious predecessors:

Willy Kuert, the only living survivor of the meeting in London when the establishment of ISO was agreed;

Roger Maréchal, whose loyal and steadfast service helped to hold the ISO Central Secretariat together during its early and turbulent years in Geneva;

Vince Grey, who better than most others knows the why's and how's of ISO's many success stories, and particularly when it comes to freight containers and multimodal transport systems;

Raymond Frontard, already at AFNOR when it hosted ISO's first General Assembly in Paris in 1949, and one of our inspirational leaders during many important expansions of ISO's programmes and membership in the 1960s and 1970s;

Olle Sturen, who as Secretary-General during eighteen years from 1968 to 1986 guided ISO's step-by-step growth in international relevance and importance from the days in which it was mainly an executive's discussions club for national standards bodies;

Anders Thor, our today's champion of the metric system, "Système international" – following in the footsteps of other great metric advocates who with infinite patience, and the virtue of unassailable logic, have nearly won their game;

Roseline Barchietto, who came to work at ISO in Geneva as a beautiful young girl forty years ago and is now our longest serving employee, still beautiful and with fascinating memories.

It therefore remains for me to say something about the past ten years, and these have certainly been full of significant events for ISO.

- Our membership has grown, because of global political restructuring and better understanding of our core business, from about 90 countries in the early 1980s to more than 120 today.
- We now publish about 1000 International Standards per year compared to some 500 in the mid-1980s, and the number of technical pages published each year is more than three times what it was in 1985.

- The new World Trade Organization (WTO), following in the footsteps of the GATT before it and by policy declarations of its signatory governments, is more than ever supporting ISO's objectives to remove trade barriers through the development and use of International Standards.
- The ISO 9000 Quality Management System standards captured worldwide attention and respect at the beginning of the 1990s, and with them ISO's name has come into the boardrooms of industry throughout the world. Being known in the world of business and industry is no longer a problem for ISO.
- Following a highly successful worldwide strategic assessment effort in the 1992-1994 period, ISO embarked on developing standards for Environmental Management Systems and related issues in a new technical committee, TC 207. Already that committee has produced the first of the ISO 14000 series standards which are sure to receive equal and possibly more attention during the next few years than the ISO 9000 series.
- The character of standardization for ISO's members in Europe has changed significantly, culminating in 1992 in response to and support of the creation of the single market of the European Union – which decided that it would have to have its own set of standards for regulatory harmonization and other purposes – whenever possible using direct adoptions of International Standards from ISO, IEC and ITU. Theory and practice are still closely watched.

The pace of ISO's work in the past five years has increased to such an extent that we found it necessary to revise our Statutes and Rules of Procedure in 1993 to introduce much tighter schedules for our policy-setting and management bodies. Similar steps within our technical committees and subcommittees are reducing our delivery times, helping to continuously ensure the market relevance of our work programmes, and improving our management level contacts in industry.

Fine, but these are more numbers and hard facts from the fellow who said that ISO's history has a more interesting personal side. So, let me put on Larry Eicher's hat and express a few personal thoughts about why I love my job.

Certainly there are other noble professions in the world, but standardization work is an occupation which regularly produces results in the form of standards that are clearly worth the considerable effort that goes into reaching consensus agreements on their contents. When ISO succeeds, benefits accrue not only to industry but also to consumers and governments worldwide.

Because we are privileged to belong to the noble profession of standardizers, and because ISO is a truly international organization, my strongest memories of the past ten years are of the people with whom I have worked and with whom I have sensed a sharing of the personal convictions and satisfactions of our profession.

These people, definitely including the staff in Geneva who represent more than twenty nationalities and speak more than thirty languages, together with our elected ISO Officers and the leaders of our member bodies make up the impressive circle of personal contacts of an ISO Secretary-General. If you think about it you will realize that in the past twelve years I have had six direct bosses as ISO Presidents, each with a different nationality, language and cultural background. While that sounds as though it could be difficult to handle, it has not been difficult at all. I am sure the reason is that the men, Mr. Kothari from India, Mr. Yamashita from Japan, Mr. Phillips from Canada, Mr. Hinds from the USA, Mr. Möllmann from Germany, and now Mr. Liew Mun Leong from Singapore were and are some of the world's finest leaders and managers in private business. I have learned a great deal from each of them, and consider myself fortunate to have had the opportunity.

On the member body side, the 1990s have seen considerable strengthening of the regional groupings of ISO's members. The regional group acronyms, for the record, are ACCSQ (South-East Asia), AIDMO (Arab region), ARSO (Africa), CEN (Europe), COPANT (the Americas), EASC (Euro-Asiatic) and PASC (Pacific Rim). The agendas for the meetings of these regional groups nearly always have an important focus on ISO and IEC issues, and the meetings themselves have provided greatly increased opportunities for communication and dialogue for the ISO Officers – particularly the Vice-Presidents and the Secretary-General – with the other leaders from a very broad base of the ISO membership. From such meetings and from a more frequent rotation of members elected to the ISO Council, I am sure that the ISO membership family is even closer and stronger than in the past, and even more focused on making ISO work as well as possible. Also, it pleases me very much to see that since the mid-1980s many forms of tangible help are now being given by ISO members to each other, and particularly to our developing country members.

Unless there is a secret no one is telling me, this is not a farewell message. I plan to be around for a while longer, and to keep pushing ISO ahead whenever I am able. I like the phrase “built to last” as applied to companies and organizations, and I am sure it applies to ISO.

I guess that if you asked the staff in Geneva to say one thing about the current boss, they would probably say he is the one who is not afraid of changes or

computers – and that sometimes they wish he was. In line with this mode of innovative approaches and as explained in the preface, this booklet is intended to be “only a start” in the gathering of personal recollections of ISO’s history from those who have been deeply involved in shaping it during the first fifty years. Through the wonders of modern electronic communications, the history of the first fifty years of the ISO story will continue to be built on a Web site and will be easily available on the Internet. You are invited to add your contribution at your leisure – the Web site address is <http://www.iso.ch/fifty>

Please join us with your memories.

# THE FOUNDING OF ISO

“Things are going the right way!”

Willy Kuert

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Swiss delegate to the London Conference, 1946



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Willy Kuert

## Background

The conference of national standardizing organizations which established ISO took place in London from 14 to 26 October, 1946. The first interview in this book is with Willy Kuert, who is now the sole surviving delegate to the event.

ISO was born from the union of two organizations. One was the ISA (International Federation of the National Standardizing Associations), established in New York in 1926, and administered from Switzerland. The other was the UNSCC (United Nations Standards Coordinating Committee), established only in 1944, and administered in London.

Despite its transatlantic birthplace, the ISA's activities were mainly limited to continental Europe and it was therefore predominantly a "metric" organization. The standardizing bodies of the main "inch" countries, Great Britain and the United States, never participated in its work, though Britain joined just before the Second World War. The legacy of the ISA was assessed in a speech by one of the organization's founders, Mr. Heiberg from Norway, at an ISO General Assembly in 1976. On the negative side, he admitted that the ISA "never fulfilled our expectations" and "printed bulletins that never became more than a sheet of paper". On the other hand, he pointed out that the ISA had served as a prototype. Many of ISO's statutes and rules of procedure are adopted from the ISA, and of the 67 Technical Committees which ISO set up in 1947, the majority were previously ISA committees. The ISA was run by a Mr. Huber-Ruf, a Swiss engineer who administered the organization virtually single-handedly, handling the drafting, translation and reproduction of documents with the help of his family from his home in Basle. He attempted to keep the ISA going when the war broke out in 1939, but as international communication broke down, the ISA president mothballed the organization. The secretariat was closed, and stewardship of the ISA was entrusted to Switzerland.



The conference of the national standards bodies at which it was decided to establish ISO took place at the Institute of Civil Engineers in London from 14 to 26 October 1946. Twenty-five countries were represented by 65 delegates.

Though the war had brought the activities of one international standardization organization to an end, it brought a new one into being. The UNSCC was established by the United States, Great Britain and Canada in 1944 to bring the benefits of standardization to bear both on the war effort and the work of reconstruction. Britain's ex-colonies were individual members of the organization; continental countries such as France and Belgium joined as they were liberated. Membership was not open to Axis countries or neutral countries. The UNSCC was administered from the London offices of an international standardization organization which was already venerable – the International Electrotechnical Commission (IEC). The IEC was founded in 1906. Its Secretary at the time of the Second World War was a British engineer called Charles Le Maistre.

Le Maistre has some claim to be known as the father of international standardization. He played a significant role in the history of many organizations. As well as being involved in the IEC since 1906, it was he who initiated the series of meetings which led to the founding of the ISA at the New York conference in 1926. Already in his 70s, he also took on the job of Secretary-General of the UNSCC, doubling this post up with his IEC duties. One of the IEC secretaries at the end of the war was Miss Jean Marshall (now the wife of Roger Maréchal, interviewed later in this book). She describes Le Maistre as: "...an extraordinary man.

He was the old school – very much the gentleman. Very diplomatic. He knew everybody. But you could see him quite often looking terribly worried and tired because he had a problem to solve. You could almost say he was married to standardization.”

The problem Le Maistre had to solve at the end of the war was how to create a new global international standardizing body. In October 1945, UNSCC delegates assembled in New York to discuss the future of international standardization. Delegates agreed that the UNSCC should approach the ISA with a view to achieving forming an organization which they provisionally called the “International Standards Coordinating Association” (hence the proposal, described in Willy Kuert’s interview, to include the word “coordinating” in ISO’s title). As the war came to a close, Le Maistre informed the Swiss caretakers of the ISA of the existence of the UNSCC. He asked whether the ISA would be willing to be incorporated into a new postwar standardization organization.

There was no easy answer to that question. According to its constitution, the ISA had lapsed out of existence. A General Assembly could only be called by the ISA President, or two members of ISA Council, and the term of these officers had long since ended. There was a flurry of correspondence between ISA members, and they decided that the 1939 ISA Council was still capable of acting. The Council was convened in Paris in July 1946, and Le Maistre opportunistically convened a separate UNSCC meeting in Paris on the same date. By the close of the first day’s discussions, the ISA Council had agreed on the need to join forces. On the second day, they met the UNSCC Executive Committee. It was resolved to convene a conference of all member countries belonging to the UNSCC and ISA three months later in London in October 1946.

On 14th October 1946, at the Institute of Civil Engineers in London, Charles Le Maistre called the conference to order. Twenty-five countries were represented by 65 delegates. Willy Kuert attended as the Secretary of the Swiss Standards Association (SNV). The ISA’s status at the conference was changed on the very first day. Mr. Huber-Ruf, the former Secretary-General of the ISA, wanted the ISA to continue with him at its head. He had met Charles Le Maistre a month before the conference, made much of the unconstitutional irregularities in the ISA’s position and requested to speak at the conference. When Le Maistre gave a report of this meeting to the ISA members at the conference, they reacted by deciding to liquidate the ISA at once. The conference between the UNSCC and the ISA was therefore abandoned on its first morning, but was immediately reconvened as a conference of the UNSCC and various other national standards associations.

Thereafter, the conference was plain sailing. In his interview, Willy Kuert describes how subcommittees were set up to break the back of complex areas, such as editing the final constitution and agreeing on the formula for calculating member subscriptions. He also describes how some of the practical issues were settled: the name of the organization ; the location of the Central Secretariat, the official languages to be adopted. Encouraged by this success, the UNSCC and ISA held separate meetings in the course of the conference in order to bring their own activities to an end. The UNSCC agreed to cease functioning as soon as ISO was operational; the ISA concluded that it had already ceased to exist in 1942. By the time the conference finished on 26th October, meetings of the provisional ISO General Assembly and the provisional ISO Council had already been held.

Willy Kuert retired as Director of the SNV in 1975, having never missed an ISO Council meeting in the course of Switzerland's five 3-year periods of Council representation.

### “Things are going the right way!”

We went to London, we Swiss, hoping to create a new organization which would do the work of standardization in a democratic way, and not cost too much money. At the end of the London conference, we had the feeling that the new statutes and new rules would permit us to do such work. Real, effective work. “Things are going the right way!” That was the feeling.

I must say, it was a year after the end of the war, and London was still partly destroyed. It made quite an impression on me. All the hotels were good, but very short of supplies. Eating was a matter of – how can I put it? – limiting one's appetite. It was naturally very difficult for the country to act as a host for foreigners, but they did it, and they did it well.

The atmosphere at first was a bit uncertain! We were sizing each other up. We feared that the UNSCC didn't want an organization like the ISA had been, but an organization which was dominated by the winners of the war. We wanted to have an organization open to every country which would like to collaborate, with equal duties and equal rights. The inch system and the metric system were also constantly at the back of our minds. There was an inch bloc and a metric bloc. We didn't talk about it. We would have to live with it. But we hoped that ISO might provide a place where we could get consensus in this area.

Later, however, the atmosphere became very good. It was friendly and it was conciliatory. I was astonished that the Soviet Union delegates were such good



At the London conference in 1946, Geneva was elected by a majority of one vote as headquarters for ISO.

working delegates. They proposed some very good ideas and were prepared to accept democratic rules. We had heard: "With Russians, you can't talk about anything!", but they were reasonable and friendly. At the end of the meetings in the evening, though, they were picked up by people from the Embassy without any contact with others.

The first question that had to be settled in London was that of the name of the new organization. There were different proposals. The English and the Americans wanted "International Standards Coordinating Association", but we fought against the word "coordinating". It was too limited. In the end ISO was chosen. I think it is good; it is short. I recently read that the name ISO was chosen because "iso" is a Greek term meaning "equal". There was no mention of that in London!

The work in London was split up, and a subcommittee was set up to deal with each question. There was a finance committee and a committee to edit the constitution; everything was prepared by small groups of delegates. The subcommittees met in the evening after the normal, official meetings, and prepared the papers for the next day. It worked very well and consequently, at the conference itself, there were no great debates.

But there were a few points of discussion, and the first point was the constitution. What voice should members have in the organization? Should they be guided only by a body like a Council, or should we have an organization which permitted everybody to speak freely? After a long discussion, it was decided to have both a General Assembly and a Council. There was to be a President and a Vice-President and a Treasurer. (The Treasurer was going to be called an Honorary Treasurer to begin with, but nobody quite understood what "Honorary" meant!)

Then there was a lengthy discussion about languages. Naturally enough, English and French were proposed first. Then the Soviet delegates wanted to have Russian treated in exactly the same way as English and French. Today it is another story but, at that time, nobody knew Russian! However, the Russian delegate said: "There are so-and-so many people who speak Russian, including people in Estonia, Latvia, Lithuania, Poland and many others..." After a long discussion, we decided to ask a small group to work on this. The group came back and said that the Soviet Union was prepared to translate all the documents and to send translations to every member of the new organization. However, the Soviet Union wished to have no distinction between Russian and English and French. We could accept this proposal and it was set down.

Then there was a very interesting discussion about finance. A committee had been set up to prepare a formula for deciding membership fees. One of the

delegates proposed to let each member body decide how much it would pay! Others wanted to combine the membership fee with that of the IEC. But eventually a formula was found, which depended on the population of each country and its commercial and economic strength. Everybody could accept it, and it was agreed on the spot exactly how much all the countries present would have to pay.

Finally, there was the question of the seat of the new organization. First of all, the Soviet delegation was in favour of Paris. Paris is a central town in Europe. Then Geneva was proposed, and Montreal in Canada, and a few others. We had a series of ballots, and at the end Geneva was elected by a majority of one vote. So the Central Secretariat came to Geneva.

I can't say that ISO today is the same as the one we founded in London. The world has changed, the statutes and by-laws have been revised, and special committees have been formed by ISO, like the committee for the developing countries. But the idea, the main duties and the purpose – those are the same, I think.

# THE EARLY YEARS

“We had some good times”

Roger Maréchal

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Assistant Secretary-General of ISO, 1964-1979 (joined ISO in 1949)



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Roger Maréchal

## Background

Roger Maréchal began working for ISO in 1949, and retired as Assistant Secretary-General in 1979. He joined the Central Secretariat when it was two years old, and his interview focuses on what one might call the “early years” of the organization, the period before the rapid expansion of ISO which started in the late 1960s.

Properly speaking, ISO came into existence in 1947, the year after the London conference. Delegates had agreed that the constitution must be formally ratified by 15 countries within six months, and Denmark sent the necessary 15th approval on 23rd February. Several crucial steps forward were taken the same year. In April 1947, a meeting in Paris produced a recommended list of ISO Technical Committees. (There were 67 of these initially, about two-thirds of which were based on previous ISA committees.) In June, a Secretary-General was appointed. “Mr. Henry St. Leger,” reported the President of the Selection Committee, “is an American with close French connections, a wide experience in diplomatic questions, and a perfect knowledge of both English and French.” By the end of 1947, ISO had been granted Consultative Status (Category B) by the United Nations. Considerable work began to establish links with the many international organizations which had an interest in ISO’s fields of standardization. Roger Maréchal describes his own part in this process.

By the early 1950s, the Technical Committees were starting to produce what were known at that time as “Recommendations”. The basic idea of postwar international standardization, as Olle Sturen put it in his first speech to the ISO Council as Secretary-General in 1969, was to “evolve international standards from those already evolved nationally, and then to re-implement them nationally”. ISO’s Recommendations were therefore only intended to influence existing national standards; they were not referred to by businesses as independent

international standards. They nonetheless took a long time to produce. Only two Recommendations had been published by ISO's fifth birthday. Even by ISO's tenth birthday, in 1957, the figure had only risen to 57. According to ISO's first Annual Review in 1972, "it was in the sixties that international standardization really began to break through". Whereas about 100 Recommendations were published in the fifties, about 1400 documents were approved in the sixties.

One consequence of this productivity was a dramatic increase in the workload of the Central Secretariat. By the mid-fifties this was starting to cause concern. Roger Maréchal describes how on some Saturday mornings the entire staff pulled together to despatch documents to member bodies. It became increasingly evident that there were not enough staff available – particularly skilled staff. In 1957, the Council agreed a 50% increase in the subscription of member bodies. The same year, Gordon Weston of the British Standards Institution (BSI) was asked to review the Central Secretariat's working methods. A decade later, the subscription had to be increased again by 30%, and Roy Binney of BSI was reviewing the Central Secretariat, recommending (among other things) the appointment



When Roger Maréchal joined ISO the offices were in a small private house. The office of the Secretary-General looked onto the veranda.

of more engineers. Later in this book, Olle Sturen describes how this review contributed to the eventual resignation of Henry St. Leger.

Roger Maréchal's interview touches on one further theme – ISO's relationship with the long-established International Electrotechnical Commission. The minutes of the ISO Council meeting in June 1947 record that the IEC had resolved to "affiliate with the ISO...and is prepared to cooperate immediately as the Electrical Division of ISO". This was on condition that "the name and technical procedure of IEC will be maintained". The IEC's Secretary, Charles Le Maistre, was asked to offer all possible help to his counterpart, and the two organizations embarked on a fifty-year collaboration which, if not always trouble-free, was invariably guided by the understanding that they needed to present a united front. The IEC and ISO have shared a building throughout their postwar existence. At the time that Roger Maréchal began working at ISO, the building in question was a pretty villa at Route de Malagnou, Geneva....

### “We had some good times ”

That is Malagnou – ah, yes! Oui, oui, bien sûr! When I joined ISO, the offices were in a small private house. That verandah was just outside the office of the Secretary-General! ISO was on the ground floor and had two offices on the first floor. Those two windows there, on the ground floor – the first was my office, and the other was Mr. Salt's. (Ah, Salt was funny! On some mornings he came in, said hello to everybody, went in his office, locked the door, and left through the window!) The other offices on the first floor were occupied by the IEC. That one was the office of Mr. Ruppert, the Executive Secretary of the IEC. And this was the office of his secretary, my wife. She was secretary at the London Conference. Did you know that? And on the second floor, when it was a nice day, the fellow working there dried photocopies on the tiles on the roof. Provided there was no wind. If there was a wind....!

ISO was a small organization. Nearly a developing organization, if I may say so. There were five of us. (In fact, there were five and a half; one employee was working in the morning at ISO, and in the afternoon at the IEC.) The Secretary-General was Henry St. Leger. Before Henry St. Leger joined ISO, he belonged to the American delegation to the International Military Tribunal in Nuremberg. Now, I belonged to the French delegation and I needed his help because my office was in Paris. For liaison between Paris and Nuremberg, I was obliged to contact St. Leger, and we became friends. When the Tribunal came to an end, for two years I was

involved in the international trade of chemical products. But I stayed on good terms with St. Leger and when my father died, and I felt lost in Paris and felt the city was a desert, St. Leger understood and said: "If you want, come and join me at ISO."

As I said, I was the fifth employee. It was very funny because I discovered that – well, nothing was done! There was a beginning of an administration, but nothing much. There were three files, something like that! My priority was to organize the Secretariat; I left the technical part to the engineers. At that time, it was recognized that it was necessary to get on closer terms with people at the UN, the Economic Commission for Europe, WHO, ITU, and so forth – organizations which were active in the fields of our Technical Committees. There were some liaisons already, but they were arranged personally between friends. It was impossible to get an overall view. One of our first priorities was to let these organizations know what we were doing. At the beginning, I might attend a meeting of FAO, and a delegate from FAO would say: "We are very pleased to note the activity of ISO in our field of interest, but what are the results?" I was obliged to say: "In spite of all the work done, none of our Technical Committees has yet reached the stage of Recommendations." But after a certain number of years, 50 questions were solved and 200 others were born! Later, when ISO was mentioned in an international body of the UN people asked: "What does ISO think about that question? What can ISO do to help us?" Nobody asked: "What is meant by ISO?" It was finished, that period.

We had practically no money, and the subscription was made in dollars. As far as I remember, the minimum that the Council decided to ask from its members was USD 500, and the big five countries at that time were supposed to pay USD 6000. (One among them never paid.) The total, as far as I remember, was less than CHF 500000. It was very small. And it went on like that for a long time because the first Secretary-General asked for money periodically, but never asked for very much money. He managed to get by, but not to develop the organization.

We only recruited junior staff: typists, manual workers, people to help with the documentation, because we were publishing more. At the beginning, we still used stencils for reproduction. We were sending maybe 10 copies of a document, but it was quite a business, you know! I remember, even when we were free on Saturday mornings, we were requested to work to finish the despatches to member bodies. (At that time, there were 34 member bodies, something like that.) We were all involved, even the engineers: one girl was typing the address on the envelope, another was dictating the address, another had a list of the number of documents requested by each member. After that, an engineer



As ISO grew, the Central Secretariat moved in 1956 from its first office to the International Centre in rue de Varembe.

checked the documents. Everybody was kept busy! We left the office when everything was arranged: the papers were in the Post Office, the papers were archived, and so on. It was something! But in fact, at that time, we had the feeling that we were participating in an important activity. In fact, I think each one was supposed to bring his own stone with him, you know, to help to build the house. Personally, that's how I felt.

Anyway, the thing developed, and developed, and developed. Several years later, we installed our office in a new building – Rue de Varembeé. At that time we occupied the fifth floor together with the IEC. I'm obliged to mention the IEC periodically, because there was always a link. At the beginning, Henry St. Leger was helped by the Secretary-General of the IEC, Mr. Le Maistre. (Le Maistre was an English engineer. He was "Mr. Standardization", in fact – I think he belonged to IEC from the beginning, from 1906!). But Mr. St. Leger didn't appreciate this help. They weren't on good terms. Mr. Le Maistre, who was not always in Geneva, asked his assistant, his Executive Secretary Mr. Ruppert, to be of help to St. Leger. But again sparks flew! Whenever we mentioned the IEC within the ISO Central Secretariat, it was as if a storm had blown up suddenly. We were supposed to work all together, but the relationship was everything but friendly. Still, we had to discuss common questions; there were some technical committees from ISO in liaison with IEC technical committees. I often called on Mr. Ruppert at home after working hours to tell him what was going on. We were close friends.

It was almost as if the organization expanded without us noticing it. It was later on, when we made a report, that we realized that there had been an increase. I remember, for a long time, we were talking about documents, the amount of documents. And at one point, I realized that meant nothing, because there were documents which consisted of one sheet of paper and documents which consisted of fifty sheets of paper! So from that time on, I reported on the number of sheets of paper. And that changed everything! One year we might have 2 650 pages, for instance, and the following year with the same staff, we had 4 000, and the following year we had 9 000... Then you realized that something had to be done.

The ISO Council realized that it was necessary to develop the Central Secretariat more than it was developing. First, I think, we increased the staff, but it was still only manual staff, typists and single juniors. At the same time, it was arranged that those Secretariats which were held by English-speaking countries or French-speaking countries could send the number of documents necessary to be circulated. That meant that instead of sending one copy in English, they sent 200 – if possible – and the French translation would be made and circulated later. So, yes – that cut the time of reproduction, and of course we increased the

speed of circulation. Then it was decided to increase the subscription by 50%. But the beginning of the development of the organization is really after 1965. What made the development of the organization impossible was the personality of the Secretary-General.

Henry St. Leger gave up at the end of 1965, and for eight months there was no Secretary-General. There were two Assistant Secretary-Generals: Mr. Rambal, a Swiss engineer from the Polytechnical school in Zurich, and myself. Mr. Rambal took care of the Technical Committees, and I took care of the administration and the relationship with the other international organizations. After eight months, the council nominated an English fellow, Mr. Sharpston. Mr. Sharpston was not an engineer; he came from the British electrical industry in Brazil, I think. After two years Sharpston gave up. Then Olle Sturen came in 1968. The real development was when Olle Sturen came. There was another spirit!

You know, working with ISO we had some good times. During meetings, it was serious – we were very serious! But once, there was a discussion at the Council (at that time there were 14 countries on the Council, maybe 25 people around the table) and a delegate expressed an opinion, and thought the others would be in agreement with him. Unfortunately, the President, who normally didn't ask for a vote (he was looking for consensus) said: "I'm sorry, but this question is serious and we must proceed to a vote." And everybody was against the proposal made by this delegate. So the President turned to the delegate and said: "Look, I'm awfully sorry, but your proposal cannot be maintained." We continued to the agenda, and the fellow became red, stood up and said: "And you call that democracy!" Very seriously. Nobody said a word. But one of the delegates stood up too and said: "Exactly sir!" Everybody laughed. Even the man who had said: "You call that democracy!" was obliged to see the joke.

I don't want to make ambitious claims, but I have a feeling that I contributed to the work of the organization, and to its development. I was very proud of my nationality. Joining an international organization, I had the feeling I was serving my nationality by being at the service of other nationalities. When I wrote a letter to a correspondent who didn't speak French, I always drafted it as simply as possible to give the person as much help as I could.

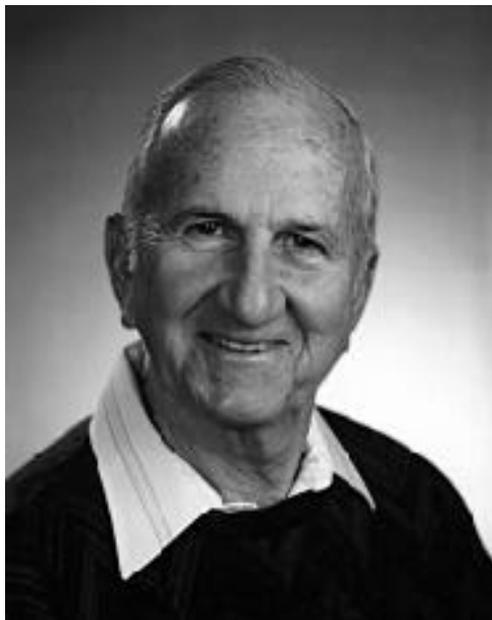
# SETTING STANDARDS

“ A phenomenal success story ”

Vince Grey

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Former Secretary and Chairman of ISO/TC 104



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Vince Grey

## 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.

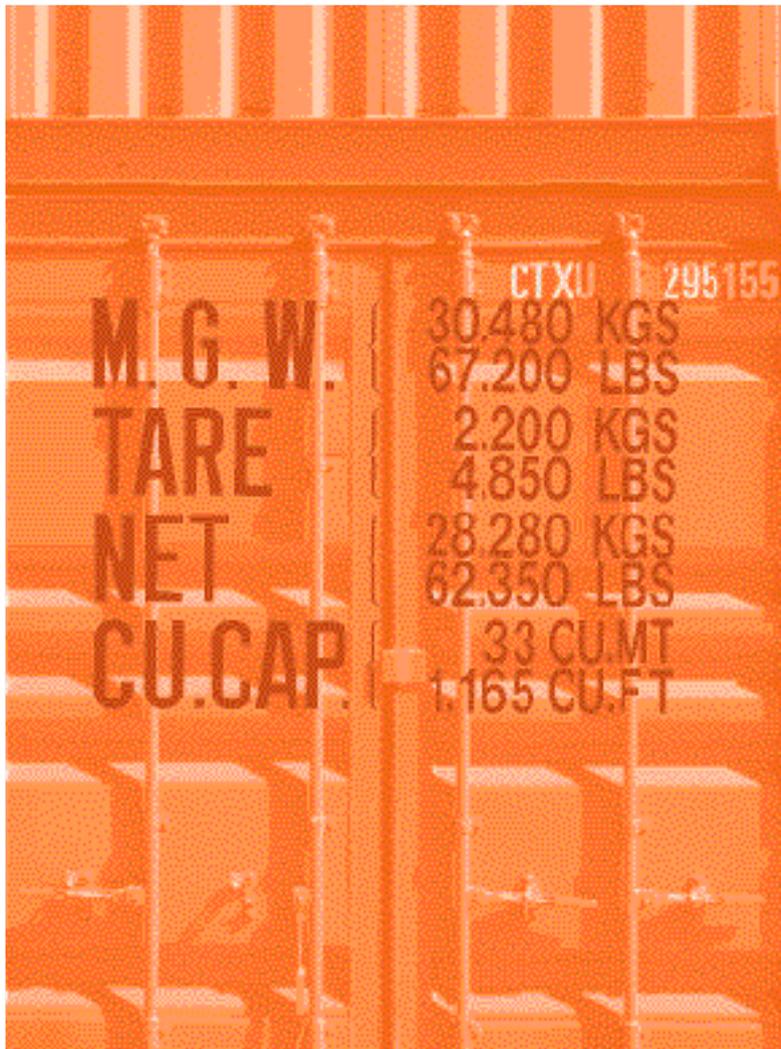
The committees that Vince Grey describes can be seen as representing trends in the general history of the Technical Committees. To begin with, the standardization fields addressed by ISO concerned basic mechanics: screw threads, rolling bearings, pipe sizes, shafts, couplings and power transmission. 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!

# STANDARDS- RELATED ACTIVITIES

“The global view”

Raymond Frontard

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Former Director-General of AFNOR



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Raymond Frontard

## Background

Over its 50 years of existence, in addition to establishing Technical Committees to set standards in specific technical fields, ISO has established a range of committees to address broader issues in standardization. Once categorized as “standards-related activities” in a report to ISO Council, in 1997 there are four of these Council committees: COPOLCO (which deals with consumer policy), CASCO (which deals with conformity assessment), DEVCO (the committee on developing country matters) and INFCO (the committee which, among other concerns, supervises the ISONET information network). The existence of these committees, which are administered at the Geneva Central Secretariat, reflects some key themes in the development of international standardization over the last fifty years.

Raymond Frontard joined the French standards body, AFNOR, in 1945, and retired as its Director-General in 1977. He served on ISO Council for many years, and his interview pulls together key strands in ISO’s history, from the relationship between ISO and CEN (the European regional standards body), to the events and thinking that have led to the foundation of the Council committees.

One of the first topics in Raymond Frontard’s interview is an early Technical Committee that embraced two themes that have assumed increasing importance over ISO’s 50 years: conformity assessment and consumer policy. ISO/TC 73, of which he was once the chairman, began its existence in 1949 with the title “Marks Indicating Conformity With Standards” and ended it in 1983 with the new title of “Consumer Questions”.

The first line of descent he traces from TC 73 is that of conformity assessment initiatives: the committee developed from the work done to develop the NF mark in France and the BS mark in Britain. Raymond Frontard makes the link to the ISO 9000 series of quality management standards, and the CERTICO

committee (which was established in 1970, and was succeeded by the modern-day CASCO committee in 1985).

The other line of descent from TC 73 is to consumer policy. In the immediate postwar period, industry was not only the producer, but the main user, of the items covered by ISO's standards. Increasingly, however, international standardization became involved with issues directly related to the consumer (for example, food products, sports and recreation equipment, the sizing of clothes and shoes, and the care-labelling of textiles). Over 50 years, various bodies have been set up within ISO in order to help standardization respond to the needs of the consumer. ISO/TC 73 was the first but, as Raymond Frontard says, "we had a lot of possible tools within ISO". In 1968, in order to enhance cooperation with the consumer movement, ISO and the IEC established an International Standards Steering Committee on Consumer Affairs (ISCA). This was a forum at which representatives of the consumer organizations could advise ISO and the IEC on priorities for international standardization and review progress. Ten years later, in 1978, the present-day Council committee on consumer policy, COPOLCO, was set up.

Another demand that ISO has had to respond to is the special needs of development countries in relation to standardization. When ISO was founded, it was mainly, as Olle Sturen put it in a 1977 speech, a "European club". However, in the course of the 1950s and 1960s an increasing number of new ISO member bodies came from the developing world. The first landmark in ISO's attempts to respond to the needs of these members was the establishment in 1961 of the DEVCO committee (initiated on the basis of a memorandum to ISO Council from Mr. F. Hadass of Israel). Other initiatives followed. In 1967, a developing countries conference was held in Moscow. In 1968, a new class of "correspondent" members was established, so that developing countries could play a role in ISO's work without incurring the cost of full membership. In 1980, the ISO Council (recently expanded to 18 representatives) passed a resolution recommending to member bodies that "when they make nominations to fill seats of Council...they should bear in mind that six members should be member bodies from developing countries". DEVCO now supervises ISO's programme of standards-related training and support for the developing countries, with the aid of a team of Regional Liaison Officers.

One of the main functions of the 1997 committee on information systems and services (INFCO) is the supervision of the standards information network ISONET. INFCO held its first meeting in 1968 in Moscow, and by the following year a working group on "Indexing" was assigned the task of: "...proposing a common system of indexing and retrieval of Recommendations, Standards and

other standardization documents for use of the ISO Information Centre and the documentation services of the ISO Member Bodies.” This “common system” was to become ISONET. The original concept of ISONET was of a centralized database into which members would enter information concerning their own technical documents and national standards. This evolved into what Albert Tunis, then Chairman of the ISONET Management Board, described in 1989 as: “a standards information ‘federation’ made up of the ISO Information Centre which has a responsibility for international standardizing documents; and the national standards information services of ISO Member Bodies responsible for national standards, technical regulations and related documents”. ISONET was given additional momentum by the 1980 “Standards Code” of the General Agreement on Tariffs and Trade (GATT) which obliged signatories to the code to provide a national enquiry point to deal with questions related both to standards and to technical regulations. By 1989, 26 national members of ISONET were acting as GATT enquiry points.

As the founder Chairman of the ISONET Management Board, the former Chairman of DEVCO, and the initiator of ISO/TC 73, and with an involvement in ISO dating back to the first General Assembly, Raymond Frontard is in a better position than most to take a “global view” of such developments.

### “The global view”

In Paris, 1949, I had the honour of organizing, on behalf of AFNOR, the first ISO General Assembly. It was inaugurated by a public meeting held in the grand amphitheatre at the Sorbonne: a full house, including the President of the Republic, Vincent Auriol, and the Director General of UNESCO, Jaime Torres-Bodet, listened to the speeches. Then came the translations (consecutive, of course – simultaneous interpretation had yet to be invented). In English first, then in Russian... In what? Yes! It really is Russian. A quiver of curiosity runs through the enormous assembly. It is as though men from Mars have landed.

Young people today find it difficult to imagine how far we were, at that time, from the global view that now seems so familiar. The earth did not yet shake at the slightest tremor in its most remote region. It was, instead, an archipelago of distinct worlds. In the years that followed, standardization missions took me to the four corners of the world: Argentina, Lebanon, Japan, Russia. Each time, when I got back, someone would ask me for an article or a speech about my adventures.

It was not a job to be a “standards man” in 1945. The standardization engineer was a rather bizarre specialist. He worked in a narrow field, sliced vertically for him into “committees” for screw threads, steel, building, electricity...My friends would say: “Yes, you are a standards engineer. Well, how interesting. And then, what do you intend to do?” But I sensed the growing possibilities of standardization. In addition to my engineering diploma, I arrived at AFNOR in 1945 with university degrees in law and economics fished out of faculties in Paris and Toulouse. Whether by chance or by natural disposition, I have always been drawn as much to take a global view as to specialize. This is perhaps what made me so inclined to take an interest: standardization was rapidly taking on global proportions. It was becoming a major factor in production and trade, an element in national and industrial policies on quality, safety, the environment, and consumer protection.

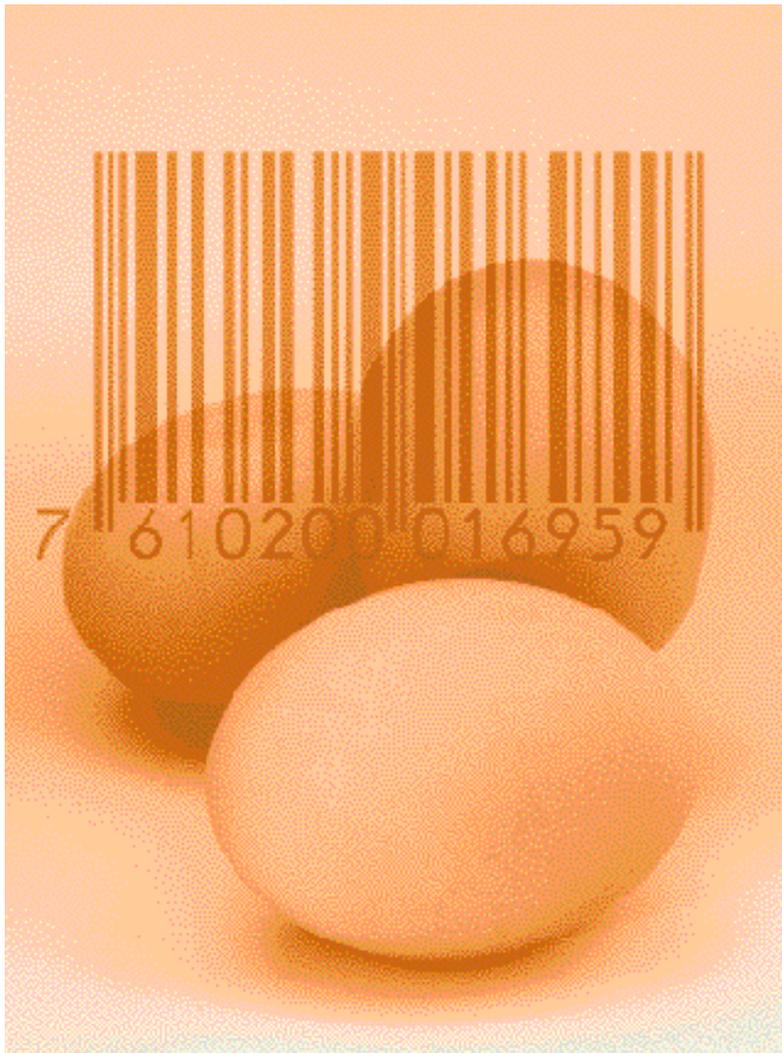
From 1945 to 1987, half of the time at AFNOR, the other half with ISO, its Council and its committees, I took part in the diverse facets of standardization, dabbled in everything, taking a global view rather than specializing. I have never ceased to find it fascinating.

## Quality and conformity to standards

My first job at AFNOR was to create the National Mark of Conformity to Standards (NF). I am rather proud of it, because it is a rather large system. It dealt with millions of goods. I built up the components of the system one by one, and by 1949 the first stamps were appearing on products in shop windows. At ISO's first General Assembly in Paris, I interested the delegates in this form of standardization activity. A committee, “Marks of Conformity with Standards” was set up under the designation ISO/TC 73.

We met in Paris, in Stockholm, in Harrogate, in Helsinki, in Oslo. The committee quickly proved to be both lively and difficult to manage. Two recommendations were issued: operational principles for marks of conformity with standards; and informative labelling. Studies followed on how to adapt these marks to consumer needs, and on the role that standards should play in comparative testing.

However, the international consumer organizations turned out to be difficult negotiating partners. Partly tempted, partly dubious, there was resistance in the air. Consumer representatives were saying: “You're proposing to us a ready-made system saying that this product is good for us. We want to be able to measure for ourselves if the product meets our requirements or not.” A number of big



During its 50 years of existence, ISO has established bodies which provide expert guidance in particular fields related to standardization, such as consumer questions, assistance to developing countries, conformity assessment and information systems and services.

companies also resisted: “We are grown up enough to take our own responsibility for quality. We want neither the BSI system, nor the AFNOR system, nor any ISO system.” So there was a curious alliance between a big company and a consumers’ organization, preaching for the liberty of the wolf to eat the sheep, and the liberty for the sheep to be eaten. (I exaggerate, of course!) But there was no universal agreement about the qualities, the universality and the usefulness of certification through standards marks. In 1964, I tried to introduce an ISO delegation to an international consumer convention held in Oslo. Despite the joint efforts of BSI, the Nordic member bodies and AFNOR, supported by the ISO Central Secretariat, we received a rather cool welcome. The problems were more political than technical.

Being a member of ISO, we had a lot of possible tools within ISO, so we decided, with Mr. Roy Binney, to scuttle ISO/TC 73 and to induce the ISO Council to create CERTICO, as well as (I’m simplifying) COPOLCO. We told ISO: “After all, we have not taken a wrong step, but an insufficient first step, towards meeting the problem.” For want of a better approach, we had applied the methods of the technical committee to a problem for which they had not been designed. We went to the idea of creating two forums for debate and analysis. CERTICO tried to answer the question of how to certify conformity to quality requirements; and COPOLCO considered how to manage things technically and politically in order that consumers ceased to react negatively towards the work of standardization. That was how things evolved. Experience has shown that this was the right formula.

CERTICO’s work was extended to cover all aspects of certification, but did not stop there, far from it. I believe that I contributed to bringing it closer to the specialized organizations in quality control and then quality management: AFCIQ in France, EOQC, ASQC, JUSE in Europe, in the United States, in Japan. There was then a further evolution in the certification of quality. A very strong school of thought said: “We are very happy that there are quality inspectors throughout the world. But companies, before agreeing to be inspected by outsiders, should be able to organize their own approach to the problem of quality.” From the certification of quality, the next step was to go to management of quality. All of this culminated in the famous ISO 9000 series of 1988.

I will surely be forgiven for seeing in the ISO 9000 series the granddaughters or grandnieces of my old ISO/TC 73. No problem has ever been solved definitely. A problem met with in the 1940s more or less continues into the 1990s. I have tried to show how the ISO Technical Committee TC 73 developed out of the BS mark and NF mark, and finally developed into ISO 9000. The same problem has taken different forms year after year.

## DEVCO

Among the countries that came to ISO at the very beginning, I believe that India was the only country that corresponded more or less to the definition of a “developing” country. But year after year, other countries asked for admission to ISO, particularly from 1950 to 1960. The moment came when a number of developing countries (or countries considering themselves to be developing) were members of ISO, and felt that their problems were not totally met with by ISO as it was. Their problems are numerous. The first one is that, for instance, even a country like India was not much interested in problems like threads, bolts and nuts and so on. They had practically adopted the British standards, and they had no other way to contributing to standardization than accepting the successive modifications of the British standards. Conversely, they would have preferred ISO to deal with problems with which they were specifically confronted. For example, the measurement of water quantities in open canals was a very important problem for India. They had to distribute water, and measure the quantity of water to be paid for, so a committee concerning the measurement of running fluids was much more important to them than ISO’s number one problem (ISO/TC 1 concerned screw threads).

The proposal to constitute an ISO special committee to serve the developing countries’ interests came, if I remember correctly, out of a joint initiative taken by the member bodies from France, India and Israel. Mr. Jean Birlé, of AFNOR, was named as Chairman, and I provided him with assistance at the secretariat level before succeeding him as Chairman in 1965. However, beginning in 1960, I travelled extensively in Africa, the Middle East, South America, India, organizing seminars and symposiums, calling on engineers from around the world to attend standardization training courses in Paris or in Bordeaux. (I would later continue this work, in particular at the request of UNIDO [the United Nations Industrial Development Organization] and the ACCT [Agence de Coopération Culturelle et Technique]. I was “selling” them on ISO standardization, that’s why I mention it here.)

Can DEVCO be regarded as an ISO success story? Its first impact hardly qualifies as a success: it shattered a dream. A few international civil servants had toyed with the idea of parachuting standards institutes into the third world, providing “turnkey systems”, the way an Emir would have a sea water desalination plant installed on his desert island. (As far as I know, there was only one successful venture of this sort – Mauritius – and even this owes nothing to DEVCO and remains the exception that proves the rule.) Two or three failures caused more damage than

positive results, and the dream was abandoned. So DEVCO followed in the footsteps of Winston Churchill when he promised the British sweat and tears. It set guidelines and indicated possible paths, but swore there would be effort, expenditure, obstacles and disappointment. But after all, the example of our “developed” institutions is not that discouraging. We struggled for decades before getting recognition; we have the right to affirm that bringing things to fruition takes time.

We can look elsewhere for a measure of success. It’s a fact that ISO has attracted some 100 or so third-world countries. Although they rarely participate in technical meetings, these members pay their contributions with reasonable diligence and send delegates to ISO General Assemblies. At the General Assemblies held in recent years in Madrid, Nice or London, I was very touched when three or four participants approached me on each occasion, pleased to introduce themselves as “my students” and proud to show me that they had attained management rank within their own institutes. If I was twenty years younger, and the chairmanship of DEVCO was offered to me once again, I would say, “Count me in.”



In 1949 in Paris, AFNOR entrusted Raymond Frontard with the organization of the first ISO General Assembly, which began with a public session in the grand amphitheatre at the Sorbonne.

## ISO and CEN: from the 1970s to the Vienna Agreement of 1991

I was asked to take on the chairmanship of CEN in 1972 at a rather crucial moment in relations between CEN and ISO. CEN's calling was not yet clear. Its intentions could seem a bit vague. Its own members were pondering what was, most of all, a matter of extreme preoccupation for the non-European members of ISO. The day I was elected, I thought it was possible to present the following analysis:

- Europe is the mother of ISO. Our institutes pay 43% of its contributions. They provide support for 80% of its technical committees. They are technically active in 100% of its working meetings. Their votes clearly carry a lot of weight.
- At CEN, our budget is 16 times smaller.
- I think that our policies must agree with our maths, as well as with the global role that our subcontinent has, by right. It is within ISO that we must seek the substance of the unified standards that Europe needs.
- As for the work we will entrust to CEN, each task must find its justification: in the impossibility of finding a successful outcome in any other way; or in an emergency combined with a real chance at reaching a successful conclusion more quickly; or in the necessity of a concerted application.

After heated discussion with Mr. Nikolaus Ludwig, among others, we agreed to the formula adopted in 1973; the CEN standard would not be a kind of competitor to the ISO standard, nor even a third level between the ISO standard and the national standards. It would be a system of collective preparation and publication of national standards, on a given subject, identical in their technical content, issued in parallel in as many languages as necessary, by a qualified majority of CEN members.

On that day, certain people found my position timid. In later years, with the growing ascendancy of CEN, I started to ask myself if I had not indeed lacked ambition. I was rather relieved to find the same view, 20 years later but in nearly the same terms, set out in the Vienna Agreement between CEN and ISO, reached in 1991.

One may wonder why I mention details here that seem to belong to CEN's history rather than to ISO's. The fact is that, even in Brussels, I always wore two hats – CEN's and ISO's.

## From ISO/TC 46, Documentation, to ISONET

In 1947, AFNOR helped to establish ISO/TC 46 on Documentation. I was assigned to follow its progress. I chaired the subcommittee “Documentary Reproduction”. I took great pleasure in the marvellous atmosphere of this committee, both professional and cultured. For me, ISO/TC 46 was my first opportunity to deal with ISO’s normal activities. (There were later a number of other opportunities, the most significant probably being the enormous TC 97, Information processing: you can’t be a standards man, and be unable to deal with a standards committee!) TC 46 also opened the door to dealing with something more important and wide-reaching.

At that time, there was a kind of blind dash throughout the world to develop national standards. The French collection of National Standards was maybe 2000 to 3000, without counting the thousands of drafts in preparation. Germany had two or three times as many; Britain, twice as many. Everybody felt that the minimum of standards necessary for a developed country for meeting industrial problems was nearer to 15 000 or 20 000 than to 2000. It was the same in almost all countries. Even the smaller countries like Denmark, even the developing countries, believed it necessary to build significant collections of National Standards.

Consequently, each day a vast number of documents were produced, published, issued and dealt with by the traditional system of exchanging documents. In the course of a few years, the documentation centre of AFNOR daily despatched 30 “standards of the month” to 50 countries that were supposed to take them in, to classify them, to organize them, and to introduce them into their libraries. I had the occasion of circulating throughout the world, and the waste of paper and money was horrifying. I saw what a collection of French Standards turned into in a very respectable South American institute! German Standards, American Standards, Indian Standards, Japanese Standards – they kept coming and were all jumbled together, with great care, in a room devoted to the purpose, in approximate historical sequence. The system of dispersing collections of National Standards throughout the world became more and more impossible! At the same time, it became more and more necessary to have access to, for example, the Norwegian Standard for building a platform in the North Sea. We also had to recognize that, in addition to what are properly called standards, those prepared by our national institutes, by ISO and by its sister organization IEC, a lot of other organizations issued technical regulations and other reference documents which presented a normative character. 10% to 20% of the questions raised at our documentation centres dealt with subjects such as telecommunications or

Codex Alimentarius, and so on. For all these reasons, we had to find another way of doing things.

In TC 46, I was able to learn all I needed to design, set up and operate the AFNOR Documentation Centre. One thing led to another, and I gradually began evolving ideas together with members that had also set up documentation centres and the ISO Central Secretariat. We were faced with a global problem of information management. Standardization has become an information phenomenon, generating hundreds of thousands of publications – perhaps a million by now! Each of these publications has exceptional technical and economic influence in its field and geographic area, and can tip a significant share of the market one way or another. At its current rate, the documentation doubles every eight years. All technical information is in the same boat. It seems that there are as many researchers on this planet now, living and publishing, as there have been since the beginning of mankind, and as many technical documents published every ten years as there have been since Gutenberg. This amounts to a process of self-suffocation.

Standardization, however, can avoid this curse. The “population” of standardization documents can be considered homogenous, in that the form and content of its constituent parts are analogous. The population is finite and has a finite growth rate; thus it cannot be compared to the wild proliferation of research papers, theses, and journal articles. There are even procedures designed to eliminate obsolete documents. In short, a reasonable investment in computer technology will allow documentary control to be exercised over the global collection of standards reference materials. Recognizing this led quite naturally to the idea of organizing an information “network” to link up all entities issuing standards. UNESCO found the idea interesting, and ISONET was set in motion in 1977. I accepted the chairmanship, which I held for three years.

It was simple to define and proclaim the fundamental principle that can make ISONET successful. Anyone anywhere who has undertaken to assemble the skill, effort, and responsibility required to publish a standard or significant standardizing document, whether in a national, regional or international framework, and in any language, should also make a point of adding the elements of a bibliographic reference, that will make the document directly accessible within the ISONET network. The process involved in reaching this goal is well under way. It will have succeeded according to plan when 90% of all documents directly relevant to its field – and 100% of all documents considered of importance to international trade – can be accessed through the network. Easier said than done.

## The fascination of ISO

I hope the fascination exerted by ISO on the people involved in its work will appear in these pages. It is a fact I have been happy enough, during my professional life, to be one of the few men that, arriving at their desk in the morning, can say: "What interesting things have I got to do today?" That has been my case for 40 years. I can't say why. (It is like loving a lady, you can't say why!)

The fascination exists not only among people of my seniority, but among small-business representatives building an apparatus for enlarging microcopies, who were admitted in ISO meetings, and played their role. I was not very popular within the ISO Council, because I was a little annoyed by the self-importance of the discussions. I used to say: "You know, here within ISO Council, all we are doing is having a chat. The real ISO is within Working Group Number So-and-So that is even now trying to solve a difficult problem somewhere in Canberra or in Oslo. We count much less than they do! Because the words they say now will take their place on a document that will last years and years, while what we say now will disappear in the archives of ISO."

I have been happy enough to operate both horizontally and vertically, from time to time taking a global view, and from time to time discussing the interchangeability of the bobbin. But I strongly feel this to be the case: ISO consisted then – and it consists still – of something like 30000 people working together in small groups on precise points. It is a question of one millimetre here or there. You have added one width to a series of the screws. You have discussed this for three years or five minutes. But you have discussed it, and decided on it, and your decision takes its place in a document that will last for a long time. That is ISO.

But ISO is much more, it is the key component in a worldwide standardization system. It is accepted as such, because it respects the competence and autonomy of all the other elements of the system, while being careful to keep in view the necessary synergies and compatibilities.

# THE EXPANSION OF ISO

“Decade by decade”

Olle Sturen

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Secretary-General Emeritus of ISO



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Olle Sturen

## Background

In 1986, when Olle Sturen attended his last ISO Council meeting as Secretary-General, the ISO president, Mr. Yamashita, was handed a sheet of paper to provide information for his farewell speech. The sheet of paper included a list of the following “challenges” that ISO had responded to from 1968 to 1986, the eighteen and a half years of Sturen’s leadership. The challenges were as follows:

- a six-fold increase in the number of available ISO standards;
- the establishment of 58 new technical committees, responding to new needs for international standardization in fields ranging from graphic technology to air and water quality;
- the establishment of special programmes in ISO for developing countries (DEVPRO), testing and certification (CASCO), standards information (INFCO/ISONET), standards and consumer interest representation (COPOLCO);
- the granting to ISO by the United Nations of Category I consultative status with the UN Economic and Social Council;
- the establishment of the GATT standards code (1980) calling on all signatory governments to rely on international standards as the basis for technical regulations.

This list gives some sense of the expansion of ISO that had taken place since 1968. The number of staff of the Central Secretariat had more or less

doubled, and the annual production of published standards had doubled as well (in addition to the other duties the Central Secretariat had taken on). Clearly, as Olle Sturen would be the first to say, this was not all due to one man. According to ISO's first-ever Annual Review in 1972, the underlying causes of the acceleration of the pace of international standardization included "an explosive growth in international trade" caused by a "revolution in transportation methods". "By the mid-sixties," the Review claimed, "a demand, not only a desire, for international standards had developed." The sources of this demand included multinational companies, standards institutions in developing countries, and government regulatory authorities.

In one of his last speeches as Secretary-General, given in 1986 at the Standards Institute of Israel, Olle Sturen made the further point that what had laid the foundation for the growth in the output of ISO during the seventies was the "turn in emphasis from national to international standards which took place in the late 1960s." This change in emphasis was underlined by the decision in 1971 to begin publishing the results of ISO's technical work as International Standards rather than Recommendations. As Sturen commented to ISO Council in 1975:

"As long as ISO published only Recommendations... ISO was hardly anything more than a federation of national bodies. With the publication of the ISO results as International Standards and the extension of the ISO contacts with inter-governmental organizations engaged in the harmonization of technical regulations in which reference could be made to ISO standards, ISO has started...to be directly involved in the international community – as an international specialized agency."

It was this new profile in the international community which led to ISO being upgraded by the UN Economic and Social Council in 1975 from consultative category II to category I.

Olle Sturen's interview surveys four decades of ISO's existence, from 1947 through to 1986. He is in a good position to conduct such a survey because, as he points out, his own forty years' involvement with standardization coincided with the same period. On the way to becoming ISO Secretary-General, Olle Sturen organized his first ISO technical meeting in 1953, organized the ISO General Assembly in Stockholm in 1955, and became Director of the Swedish Standards Institution in 1957. That led him to serve on ISO Council, and in his interview he describes how in 1966 he chaired a committee "assigned to look into the future of ISO" and, at a time of "discontent and turmoil" for the organization, was approached and asked to take on the job of Secretary-General. His achievements in the role are spoken of admiringly by many people in the standardization world. Olle Sturen was designated Secretary-General Emeritus on his retirement.

## “Decade by decade”

When I left as ISO Secretary-General in 1986, I had forty years of standards activity (national and international) behind me; forty years which coincided with the first four decades of ISO operation. On the basis of my involvement with ISO over the years, I would divide the period 1947-1986 into four parts, decade by decade. The first part was the establishment of ISO; the second – discontent and turmoil; the third – rebuilding confidence; and the fourth – enjoying the fruit of our efforts.

ISO took on a very ambitious programme right from the beginning. Sixty-seven technical committees were established in 1947, which was a huge workload to assign to an organization which as yet had neither a proper Central Secretariat nor enough trained secretarial staff at the technical committee level. Most of the 67 committees were inherited from ISO's predecessor before the war, the ISA. But there were a few new committees, such as Plastics, which illustrated that ISO was prepared to take on new technologies as they developed. There were also a couple of committees which had nothing to do with products of any kind. We had one committee dealing with Documentation which was primarily directed at librarians (TC 46). This was a very successful committee which inter alia developed the International Standard Book Numbering (ISBN). Today you will see this ISO standard referred to on almost every new book published in the world. Out of these 67 committees, some 50 are still operating, which is amazing.

So ISO had a big programme, and it was a question of how to tackle that programme. The first Secretary-General of ISO was very good at this point. He built up a good system for the classification, handling and distribution of all the documents circulated within technical committees and between member bodies, so the Central Secretariat could keep all the work under control. This helped to stabilize the decentralized ISO structure, and the system is still, in the main, intact. For several years things went smoothly. Meetings were held and some progress could be recorded. New technical committees, such as the committee for Nuclear energy and the one for Information processing, were added to the programme. Both were examples of ISO's ability to mirror in standardization the development of society at large.

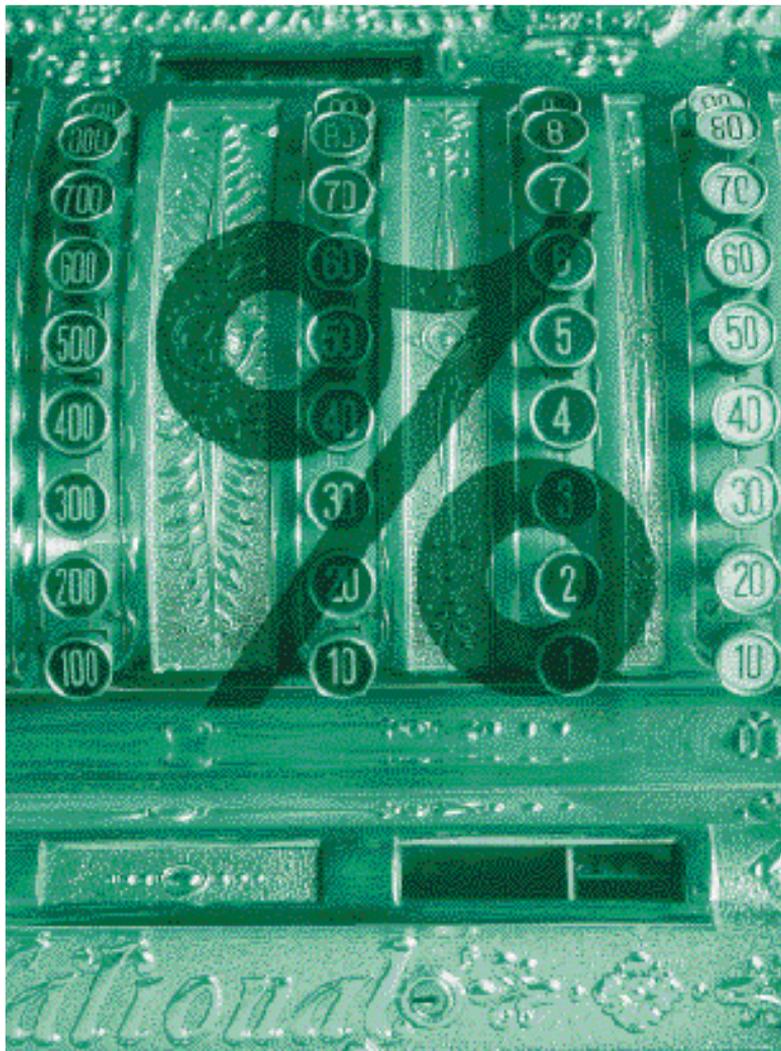
I attended my first ISO meeting in Paris, 1951. It was Technical Committee 73, the embryo of the ISO Certification programme. International meetings at that time were nothing like today. A meeting lasted for a minimum of three days and very often took care of a whole week. There were receptions, luncheons and dinners. International cooperation was a rather virgin territory. It very much served the purpose of getting people acquainted with each other.

In the middle of the 50s, the technical committees started to produce results which called on the Central Secretariat to perform. The first few Recommendations, as they were called at that time, went through all right, but then production expanded dramatically – after all, there were some one hundred committees working for that purpose. Drastic changes were necessary in order to cope with the workload.

That was then the beginning of the second decade. Cracks appeared, and there began to be more and more criticism. This really came to the forefront at the ISO General Assembly in New Delhi in 1964. A number of members were critical and there was a heated discussion. The Dutch member body presented a paper to the General Assembly, which asked for a study to be made of the role of ISO in the future. The General Assembly responded by setting up a study group which was baptized NEDCO (the Netherlands Committee, so to speak). Parallel with that the ISO Vice-President, Roy Binney (UK) proposed that an organizing committee be formed with the main task of finding suitable people – engineers – to strengthen the technical competence of the Central Secretariat. So two committees came out of the '64 General Assembly. It is not surprising that the Secretary-General interpreted this as a no-confidence vote in himself. He therefore resigned and accepted an offer to become an international adviser to the Bureau of Standards in South Africa. Then started what was supposed to be the building up of ISO after the turmoil we had had for almost ten years.

The Organizing Committee (ORCO), where Roy Binney had been appointed Chairman, was set up to sort out the catastrophic situation at the Central Secretariat. But when it came to getting a new Secretary-General, there was a new conflict. The first Secretary-General had been an American. The French therefore thought that the new Secretary-General should be a European, and were sure that their candidate was the best. ORCO in corpore, however, was not convinced. There was no enthusiasm either for the candidate put forward by Roy Binney. I became aware of what was going on when some members of ORCO approached me and asked if I was available. But I declined the offer – I was not prepared to take over as Secretary-General at that time. So the British candidate was the one who ultimately was appointed. However, he turned out not to be a success. He listened too much to different people and tried to accommodate whatever proposal they put forward instead of having a plan of his own. Therefore ORCO was soon back at zero.

NEDCO, which was assigned to look into the future of ISO, was a group of seven people, and I became Chairman of the group. We were the ones who called for better technical coordination by the Central Secretariat and proposed that Recommendations should be called International Standards. We took up the



Olle Sturen took up his post in Geneva in September 1968 as Secretary-General. On arrival, he discovered that the Organization had virtually no money...

wider aspects of consumer questions and developing country participation in standardization. The architect behind most of what we discussed in NEDCO was the Dutch member Franz van Rhijn (a director from Phillips). One day he said: "We must develop a system for information retrieval." I had never heard of the word "retrieval". I had to look it up in a dictionary. On the basis of his knowledge we initiated what ultimately became ISONET. When we had presented the final NEDCO report to the ISO Council in 1966, I was attached to ORCO in order to be available for any implementation problem linked to the NEDCO report.

In February 1968, the ISO Council was called to an extraordinary meeting in Geneva. The subject for discussion was the problem with the Secretary-General. There was a lot of criticism of him at the meeting but no decision or plan of action was agreed upon. In spite of this, within a few months a number of Council members contacted me and asked me to agree to take over as ISO Secretary-General. Then things moved very quickly. In mid-April my wife and I gave our consent. In June, the incumbent Secretary-General was relieved of his duties and at a follow-up Council meeting in London, at which I was not even present, I was appointed the third Secretary-General of ISO. Here I was with a new challenging responsibility, and I had not yet given notice to my employer in Sweden! Only one person outside my family had been continuously informed – Ake Vrethem, then President of the Swedish Standards Institute.

I arrived in September as the Secretary-General in Geneva. When I started to look at things, I found that the organization had hardly any money – not even enough to pay my salary. I therefore made an arrangement by which the Swedish Standards Institute paid my full salary up to the end of the year, though I worked half-time for ISO and half-time for Sweden. That gave me some months to try to see what I could do about the financial situation at the Central Secretariat, which was worse than I had believed. With the help of Jean-Claude Hentsch, the ISO Treasurer at the time, we made gradual improvements. Jean-Claude Hentsch was my adviser – he was the professional, I was the amateur. His assistance to ISO was crucial. He was the first recipient of the ISO cuff-links.

In the talks with ORCO members and other members of Council before I agreed to become the new Secretary-General, two "conditions" were constantly stressed: my first priority (beside the reorganization of the Central Secretariat) should be to restore confidence in ISO among the member bodies and other organizations with an interest in ISO's work; the second priority should be, together with my wife, to restore the family feeling within ISO.

To these "conditions", I added two priorities of my own. One was that I wanted ISO to be known as an important international organization, outside the

circle of professional standardizers. The next was that I wanted to show that ISO was a global organization – that all the members could be players in ISO.

Consequently, in February 1969, I made courtesy visits to the Head of the UN office in Geneva, to the Directors-General of all the UN specialized agencies located in Geneva (ILO, ITU, WHO, WIPO, WMO), and to the Executive Secretaries of the UN Economic Commission for Europe, EFTA and GATT. I also met with some 25 ambassadors stationed in Geneva where they were accredited to the UN and other international agencies. These were in many ways superficial contacts, but they had a certain meaning – they emphasized that ISO was important in the international arena. It was therefore with some satisfaction that I received a new Norwegian ambassador in my office. He had been to a meeting in the Palais des Nations and the other participants had laughed at him when he asked: “What is ISO?”

My next personal priority concerned the fact that ISO was created by 25 countries in 1947, but only European countries had become fully active in ISO. A lot of the others did very little, besides attending the General Assembly every third year. Thus, my first long trip as ISO Secretary-General was scheduled to prove that a new time had come. The trip included Iran, Pakistan, Thailand, Australia and New Zealand, and, on the way back, USA. Was it worth it? It seemed so when soon afterwards we had our first ISO technical committee meeting in Australia, which was followed by many more meetings. In addition, the Director-General of the Standards Association of Australia became Chairman of the ISO Technical Board, and his successor became Vice-President of ISO. My first visit to Japan then followed, and resulted in the Japanese taking on secretarial duties for a number of ISO technical committees. Subsequently, at the ISO General Assembly in Tokyo in 1985, a Japanese businessman was elected as ISO President.

There remained two important parts of the world: China and the developing countries. One day in 1978, John Paton (Australia) contacted me and told me that, as the representative of the only “active” ISO member in the south-eastern part of the world, he had been invited to visit China with a view to establishing cooperation between the two countries and exploring ways in which China could get more involved in ISO’s work. This contact resulted in my wife and I being invited on an official visit, and soon after China became active, not only within ISO, but in the international standards world at large.

Visits to developing countries were important and sometimes had unexpected spin-offs. At a meeting in New Delhi (India) in 1972, I met Robert Oteng, the Director of the Ghana ISO member body. He impressed me, both then and

later at a meeting in Mexico, so I invited him to come to the Central Secretariat and take care of our Developing Country programme. We had had some political difficulties with developing countries. Oteng came and it was smoothed out! It was amazing. He became the king among all the standardizers of the developing countries – he was in complete command!

So, this is how we started to rebuild confidence in ISO. The 70s were a hectic and compressed period, given that I was both making contacts all round the world and finding qualified staff for the various functions at the Central Secretariat. It was important to bear in mind that we needed a good geographical distribution of employment in order to be looked upon as the International Organization for Standardization. In this, I think we succeeded: we had on average 25 nationalities represented, among them mastering 30 to 40 languages, and nationality meant nothing in the daily work.

On the technical side, some interesting initiatives were taken in parallel with the rebuilding of ISO. Environmental issues had already been debated in



One of Olle Sturen's priorities was to internationalize the Organization as widely as possible and to get more non-European members to participate actively in the work of ISO. It resulted in several long trips including an official visit to China.

NEDCO (1965-66), but had been put to rest for a while. However, in 1971 we asked ourselves whether there was not some need for standards in this field. This resulted in two new technical committees being created – one for Air quality and the other for Water quality. A committee for Solar energy followed later in 1980. This modest beginning of an ISO environmental programme ultimately picked up momentum so that we now have an ISO standard for Environmental management (ISO 14000). Other new technical committees were set up to deal with Implants for surgery and Ergonomics. ISO was on its way to show society that international standardization was about much more than nuts and bolts – the prevailing view when I entered the standards world.

For many years, ISO was participating in seminars dealing with testing and quality control, but not until 1978 did ISO start its own programme. The initiative was taken by “Spike” Spickernell, Director-General of the British Standards Institution, and stimulated a lot of discussion before the title and scope for a new technical committee were agreed upon. The result was a technical committee for Quality management and quality assurance (TC 176) which would eventually produce one of our most spectacular standards – the ISO 9000 series.

By 1980, a lot of what we had set out to do had been achieved. During the remaining years that I was Secretary-General, we enjoyed the fruits of what we had achieved in the 70s. There were many who had provided ideas and support, and who I had the pleasure of serving. In addition to two of the best Presidents ISO ever had – Frank LaQue (USA) and Ake Vrethem (Sweden) – there were four strong personalities who were fully devoted to the future of ISO: Roy Binney (UK), Nikolaus Ludwig (Germany), Donald Peyton (USA) and Franz van Rhijn (Netherlands).

At the time I became Secretary-General, my intention was to stay on only until the end of the 70s. But as this date approached, a number of member bodies expressed the wish that I should remain in the job for a few years for “political reasons”. In the end, this turned out to mean an extension of seven years.

Through the job of ISO Secretary-General, I got two corner stones of my wishes. I was working for international purposes, and I was involved in a very interesting activity which, in the main, was without human and political conflicts. Those two combined were ISO. In my first speech to ISO Council in 1969, I said: “Political nationalism will most probably prevail as long as we live. Economic nationalism is about to disappear. And technical nationalism has disappeared!” Technology is international; standardization should be international. I’m rather proud of this saying. I still stand for it 28 years later – perhaps with the modification that economic nationalism has now almost disappeared, and today there are signs of cracks in political nationalism.

# KEEPING UP STANDARDS

“Pretty darn quick”

Anders Thor

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Secretary of ISO/TC 12 and ISO/TC 203



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Anders Thor

## Background

As ISO's 50 years of history have progressed, the organization has faced new pressures. One force at work is that ISO has an ever-expanding catalogue of standards which it needs to keep up to date. (As far back as 1973, the Council was told that: "The need for maintenance of published ISO standards...is becoming more and more apparent.") Another challenge is that ISO's standard-setting procedures have to keep up with the accelerating pace of technical innovation. Anders Thor's interview, which concerns the more recent history of ISO's long-established TC 12, Quantities, units, symbols, conversion factors, touches on both themes.

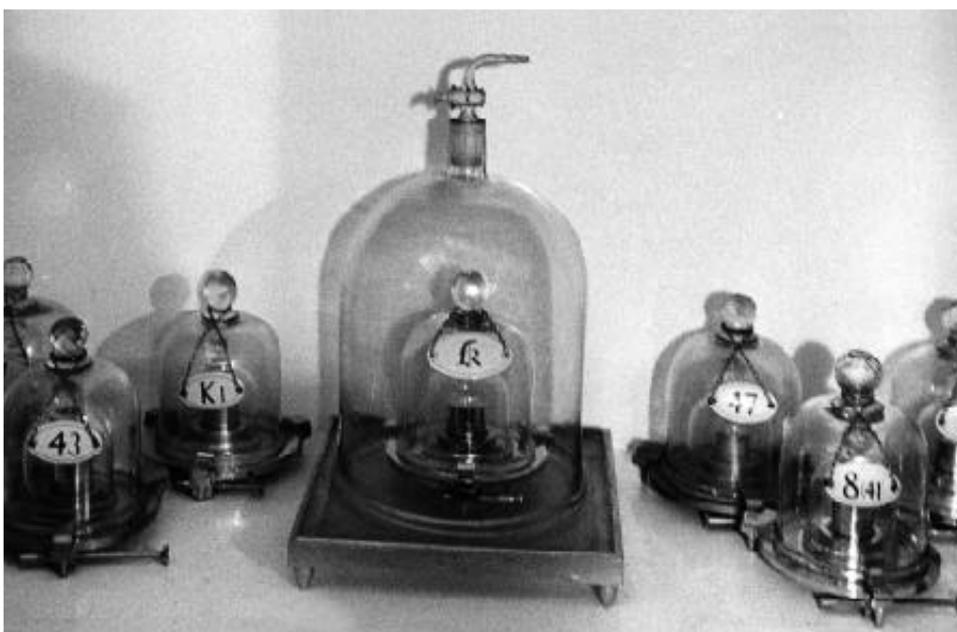
Anders Thor is currently Secretary of two ISO Technical Committees based at the Swedish General Standards Institution. As he puts it: "Secretaries do two kinds of activities: you work out new standards, and you revise existing standards." His interview is mainly about the latter activity, the laborious process of revising TC 12's ISO 31 standard for approval and publication. Although to him this revision seemed to have taken "a pretty long time", Anders Thor was among those singled out by the ISO President in 1991 for having updated an existing standard "pretty darn quick".

In part, the story of attempts to speed up the production of International Standards is one of moving "bottle-necks". In the late 60s, for example, as described earlier in this book, the Central Secretariat was understaffed and unable to deal promptly with the final stages of the standardization process. By the early 70s, this issue was resolved but a back-log had become apparent at the Technical Secretariat level. By 1977, however, the pendulum had swung back the other way. Whereas in 1973 seven member bodies had held 75 % of the TC secretariats, the Secretary-General could now report that a group of member bodies including Australia and Canada had substantially increased their share of the international workload. Once again: "The problem now facing ISO is...the necessity of building

up the capacity of the Central Secretariat.” The site of the bottle-neck moved, but the underlying issue was that demand was outpacing supply (which in itself is a token of ISO’s success).

Another strand of the story of speeding up standardization relates to modifications in the standard-setting process itself. Anders Thor describes how one local variant was introduced into the procedure in TC 12 for the sake of creating “consistency” in the final standard. In general, however, changes to the overall process have been implemented either to harmonize the procedures with that of another standardizing body (for example, the IEC or CEN), or to speed up the process. From 1990, for example, it was no longer necessary to submit a Draft International Standard to ISO Council for final approval. The basic methodology for creating an International Standard, however, has not changed fundamentally since ISO was founded in 1947.

In 1978, Olle Sturen reported to ISO Council in 1978 the “shocking fact” that the average time for preparing an International Standard was calculated at seven years: five years for work at the TC/SC level, and two years for the final stages of approval and publication. ISO is currently aiming for a maximum



The international prototype of the kilogram (centre), in force since 1889, is kept in Paris. The process of metrification that has gone on for 200 years is still making headway.

development time of three and a half years for setting certain new standards. From the longer perspectives of history, time may not matter. As Anders Thor says: “The metrification process has gone on for 200 years and it is still going forward...it doesn’t really matter if it is this year or next year, but only that you go in the right direction.” Nonetheless, ISO in the 1990s would very much like to be known, like the Secretary of TC 12, for going “pretty darn quick”.

### “Pretty darn quick!”

Maybe I should present myself? I’m an Assistant Professor of Classical Mechanics at the Royal Institute of Technology here in Stockholm. I work part time at the Swedish General Standards Institution. There I’m responsible for two projects. One is Quantities and units, where I have the Secretariat of the Swedish National Committee, and the Secretariat of ISO/TC 12. I am also responsible for ISO/TC 203, Technical energy systems, and the corresponding Swedish National Secretariat. We Secretaries do two kinds of activities: you work out new standards, and you revise existing standards. In TC 12, we are more or less only revising existing standards and implementing new decisions. In TC 203 it’s quite different. We start from nowhere! Revising published standards needs a lot of consideration – oh yes! – but to start from scratch is a tremendous job.

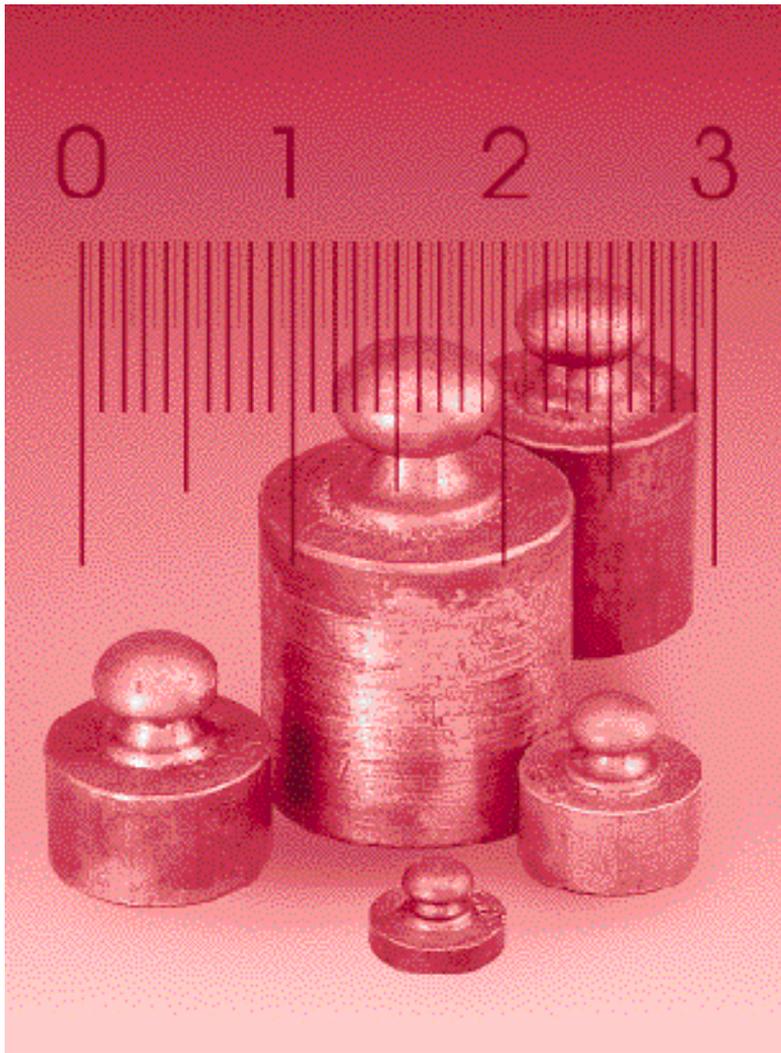
TC 12 started its work in 1947. It was one of the first ISO committees. The Secretariat was at that time in Copenhagen at the Danish Standards Institution, and the Secretary was the famous Vibeke Simonsgaard. Have you heard about her? I thought so. At that time there were very, very few female Technical Secretaries, and she must have been the first, I guess, because she was there from the beginning, from 1947. She was employed by the Danish Standards Institution when the Second World War broke out. She had a strong will and she was charming – she really could make progress during cocktail parties! It was Vibeke that really made TC 12. She laid down the structure of the International Standard ISO 31 which I inherited.

During her period as Secretary, the first standard, ISO 31, was issued. It was very difficult in the beginning. In the plenary meetings, there were no agreements. Vibeke Simonsgaard decided to do something that is against all by-laws and directives in the ISO, and establish an Advisory Panel to the Secretariat; a secret, informal panel of 5 or 6 leading scientists, selected by the Secretary herself. This panel worked out the proposals and then put them forward to the plenary meetings. It was a very good idea to have this Advisory Panel, because it is

important to get consistency in this field. In fact, I think that's the most important thing when we work with systems of quantities and units, not only to get an agreement, but one based on a mathematically sound principle. Otherwise, sooner or later the conflict will come up to the surface, and it will be very, very difficult to correct.

Now, to where I come in. I am 61 years old. The whole thing started when I was a teenager discussing quantities and units with my father, who was also an engineer. I remember it so well! We were discussing a formula for the area of a triangle. It is the square root of four factors, each factor having the dimension of a length; since there are only three sides in a triangle, you need a fourth factor to make it dimensionally coherent. I remember saying that this extra term was necessary, and my father was absolutely astonished. "How did you find out that? Who told you?" I said: "Nobody told me. I figured it out myself." Then he said: "That's very clever of you – you ought to work in that field!" That's how my interest started, and it continued during my studies at the Royal Institute. I was so annoyed that in different departments of the Institute they had different notations for the same quantity. It confused the students. I thought: "We must standardize this!", and I got the opportunity. When there were public enquiries about standards, I worked out the replies for the Royal Institute. Then, when I was 39 years old, in 1975, they asked if there was someone who was willing to take on the Secretariat for the Swedish National Committee on Quantities and Units. I said: "OK, that seems very interesting."

The first plenary meeting of ISO/TC 12 I ever went to was in 1978 when they discussed the last edition of ISO 31 during Vibeke Simonsgaard's time as Secretary. One thing I would like to tell you about is the supplementary units. The supplementary units are the unit of plane angle and solid angle – the radian and steradian respectively. You could either consider the radian and the steradian as a base unit, or as a derived unit, but if you treat the corresponding quantity as a base quantity, the system of quantities becomes very complicated. However, many people argued when the International System of Units was worked out, that we needed these quantities as base quantities. That conflict was impossible to solve, and therefore Jan de Boer, who was the leading man in one of the consultant committees for units within BIPM (the Bureau International des Poids et Mesures) invented the supplementary units, and didn't specify if they were base units or derived units, but left that question open. Thus they could get the International System of Units adopted in 1960. This is in principle an imperfection in the system, and, over the years, it became more and more evident that the units and corresponding quantities had to be derived, but there was still a great reluctance.



The usual timeframes are difficult to keep for developing such fundamental standards where the content is expected to hold good for centuries...

The SI system of units, one of the cornerstone of measurement, took several decades to finalize.

In 1978, at my first plenary meeting, the Swedish delegation was led by Erik Rudberg. Rudberg and I had talked before, and he had convinced me that these two units – radian and steradian – must be derived. But the two other gentlemen in the Swedish delegation were really of the opinion that they were base units. We had a famous dinner at Pizzeria Stefan O’Porta (I like Copenhagen so much, I know it so well!), and Rudberg and I said that we thought the time had now come that these units should be considered as derived units (that was 18 years after the adoption of the system!). So I got the signature of all four of us on the back of the bill, and on the following day this proposal was put forward by the Swedish delegation outside the agenda of the plenary meeting, and was unanimously adopted by TC 12. The proposal was adopted by the CIPM (the Comité International des Poids et Mesures) in 1980 and eventually implemented by TC 12. However, not until 1995 did the CGPM (the Conférence Générale des Poids et Mesures) finally confirm the decision.

For practical purposes, this doesn’t mean very much! But for the principle this is a very important decision. And it’s so strange to see the whole cycle! What started as a compromise to get the International System, the SI, adopted in 1960,



The Bureau International des Poids et Mesures (BIPM) was set up by the Convention du Mètre in 1875 in Paris. Cooperation between BIPM and ISO has been exemplary, and has enabled points of view to be brought closer together.

had to go 35 years before this imperfection was corrected! That's a third of a century! I must say it's very interesting to have seen the drama unfold from the inside, and to know what an important role ISO/TC 12 has played in this development. Metrication, of which the SI is only the top, has gone on for 200 years and it is still going forwards. Therefore it doesn't really matter if it is this year or next year, but only that you go in the right direction. Then, if we have patience, after another 100 years the metrication process will be complete. Of course, I would have hoped that it could come while I'm still alive...

A few questions of principle were asked during the plenary meeting, and I remember one question extremely well. It was whether you should have the unit for angular frequency and angular repetency in parallel as radian per second and radian per metre, or as second to the power of minus one, and metre to the power of minus one. It was a very, very even vote, but the outcome was they said they should have radian per second and second to the power of minus one for angular frequency, but only metre to the power of minus one and not the corresponding radian per meter for angular repetency. That is so inconsistent! That is why the 1978 plenary meeting was the last plenary meeting of ISO/TC 12! The plenary meeting had decided, and the Secretariat had no choice. TC 12 had to issue an inconsistent standard on this specific point. But when Vibeke Simonsgaard retired, we decided that we would only present the proposals from the Advisory Panel, and let the members vote by correspondence. In that way we got much more consistency.

When I took over the Secretariat in 1982, we started to discuss the 5-year review of the oldest standards. Olle Sturen was the Secretary-General, and I remember I visited him in Geneva, and had a talk with him about the revision of ISO 31. He inspired me to prepare all the parts so they could be issued and voted on at the same time. He said you shouldn't revise the parts one by one, because then you can't have an up-to-date handbook. At that time, the oldest standard was four years old, and I expected the 5-year review of the oldest standard to start the following year. So I accumulated the prepared drafts of the fourteen parts of ISO 31, and when the last standard was five years old, we just pressed the button. The committee drafts went out for voting and were accepted, and then the Draft International Standards were circulated, and accepted in 1991. After that we only had to edit, and the whole series was prepared during a one-week meeting of the Advisory Panel. At the General Assembly in Madrid in the autumn of 1991, people came up to me and said that the President of ISO had mentioned me in his speech as someone who was preparing the standards very quickly. Then I got a letter from him saying I was one of the few Secretaries who he had picked out as doing the work PDQ. PDQ was "pretty darn quick"! That was his expression.

I don't think we worked very quickly really. I thought it had taken a very long time! But I was very happy to be singled out!

Now, a few words about the cooperation with the IEC and its corresponding technical committee, which is IEC/TC 25. In the beginning, cooperation between the IEC and ISO on the subject of logarithmic quantities and units was not too good. ISO preferred natural logarithms, and the IEC decimal logarithms, and that's good grounds for a conflict! When the Swedish national member of the IEC proposed to adopt, as a Swedish Standard, the IEC Standard for logarithmic quantities, I went to my boss and said: "Look here, they are proposing a Swedish Standard which is in conflict with the ISO Standard. It will then be impossible for me to transform the ISO Standard into a Swedish Standard!" He told me to write a letter to the highest board in Sweden which is responsible for adopting Swedish Standards. When the people from the electrical committee learned that I had stopped their standard with this letter, they were furious, and my chairman had to apologize and calm things down. But the outcome was that I was invited to become a member of the IEC Committee in Sweden.

When the IEC had a General Meeting in Stockholm in 1980, I was also invited as an observer and guest to meet the corresponding IEC committee for quantities and units – that's IEC/TC 25. At that time, the new Chairman of TC 25 was a Swiss, Erna Hamburger. When I then took over the Secretariat of TC 12 at the beginning of 1982, Erna Hamburger invited me as an observer to TC 25's working group (they had a working group corresponding to our Advisory Panel). I, of course, immediately replied by inviting Mrs. Hamburger to be a member of the Advisory Panel. Since we were both electrical engineers, we got along very well, and when she revised the IEC standard she accepted the basic principles for logarithmic quantities and units from ISO. For our part, we accepted a principle from IEC (which is that the fundamental unit is the bel, and that the decibel – which is much more commonly used – will be treated only as a sub-multiple of the bel). So there was give-and-take. What we took was the most consistent part, I think – on both sides.

Late in the spring of 1988, suddenly and unexpectedly Erna Hamburger died, and TC 25 was without a Chairman. At that time Arthur McCoubrey from the United States was the Secretary of TC 25 (he was also on the panel, by the way – I invited him too!) and he asked if I wanted to be the Chairman, because I was an electrical engineer and he had seen me in action as a member of their working group. So in late 1988 I became the Chairman of TC 25. We now have really close contact – practically the whole Advisory Panel of TC 12 is on the IEC working group and vice versa!

The result is that the IEC standard and the ISO standard on quantities and units are practically identical. (There are small differences, which have had the effect that the IEC standard has been adopted by CENELEC as a European standard, so CEN has not been able to adopt the ISO standard as a European standard. We thought that was ridiculous!) DIN, the German national member of ISO and IEC, has made a proposal to harmonize the two standards from ISO and IEC. So that's what we are going to start with this year, to revise the IEC standard and the ISO standard. It will come out as one single standard for quantities and units, with a double logo. I know how much work it takes to make these standards; it will probably be even more now that we have to circulate it in two committees and two organizations. It is very annoying that there are still differences in the process within the two organizations! Quite a few people, like myself, work in both organizations, and it's so difficult to remember what are the ISO rules and the IEC rules. Why can't they have only one set of rules? But I foresee no real difficult technical problems, because the technical problems are already solved.

When I took office as Secretary I enjoyed much more freedom than I have nowadays. The Directives have become much more strict in recent years. In the 1970s, they changed the name of the standards from Recommendations to International Standards, and that was when they began to tighten up the rules. Since then, it has come step by step: time limits, target dates, all that has been much more specified. I think it should be specified. But I do have another strong opinion. They make small changes in the Directives so often that I don't remember what the current rule is. They should have strict rules, but there should be one rule, and it should be stable for some years before they change it.

Could we touch in some way on the difficulty of raising money for basic standardization? When Vibeke retired, there was some discussion of moving the secretariat of TC 12 to the Central Secretariat in Geneva, because these basic standards have such an impact on all other standards. But the solution was that the Secretariat was transferred to Stockholm. Everyone needs these basic standards, and no one wants to pay. That's my great concern for the near future, how to raise money...

# THE WORK OF THE CENTRAL SECRETARIAT

“I’ve got the virus”

Roseline Barchietto

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Staff member of the Central Secretariat since 1957



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Roseline Barchietto

# THE WORK OF THE CENTRAL SECRETARIAT

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## Background

Roseline Barchietto has worked at the Geneva Central Secretariat for 40 years, from October 1957 until the present day. Convinced that “we were doing something that was useful worldwide”, she never left the job that she thought she would try out for six months, and has been part of the growth of one of the biggest technical publishers in the world.

In the year when Roseline Barchietto arrived, 15 members of staff were employed by the Central Secretariat. There are now 170 staff, drawn from 16 different countries. The annual budget for the Central Secretariat when Roseline arrived was CHF 340 000, and now it is CHF 29 890 000. Incidentally, the staff in Geneva owe a debt of gratitude to Jean-Claude Hentsch, ISO’s Treasurer from 1966 to 1971. By arranging for ISO subscriptions to be paid in Swiss francs rather than American dollars, he saved the Central Secretariat from the vagaries of the exchange rate.

As it grew, the Secretariat experienced several restructurings. In 1966-67, a period over which staff numbers were doubled, four Technical Divisions were set up at the Central Secretariat, with a newly appointed engineer at the head of each. Olle Sturen initiated a major reorganization in 1982, and there has been a recent “re-engineering” exercise in 1996. Growth has also led to the push for more space. In 1956, the Secretariat moved from its original pretty villa at Route de Malagnou (described by Roger Maréchal earlier in this book) to the International Centre in rue de Varembe. The fifth floor was occupied at once, and in the course of the 1960s ISO expanded to take over the second floor as well. In 1971, the Secretariat’s print-shop was moved to premises at Voie-Creuse near the International Centre, which were large enough to accommodate the entire department for the processing and distribution of documents.

Roseline Barchietto was among the staff who moved to Voie-Creuse, because she has always worked on what she describes as the “technical side” of

the Secretariat. Up until the late 1960s, the main technology she worked with included mechanical typewriters for letters, and stencils rotated on Gestetner machines for in-house reproduction of documents. Final Recommendations at that time were produced by external printers. By 1969, however, Olle Sturen could report to Council that changes made in the print-shop “should enable the Central Secretariat to print all ISO Recommendations in future, without resorting to outside printers”. An IBM golf-ball composing machine was purchased, soon followed by offset printing equipment. The production process has been revolutionized recently by on-screen editing and electronic work flow management.

Roseline Barchietto’s experience of technology was that “we were always at the very top” and that new tools “were very soon placed at our disposal”. Several factors have combined to encourage the Central Secretariat to innovate. One is the sheer complexity of the documents ISO is required to publish. Pages from ISO 31, Quantities and units, have been used as promotional material by Compugraphic to show off the potential of its photo-typesetting equipment. The Secretariat also has a certain responsibility to take the lead as the hub of an international communications network; one of Olle Sturen’s first acts as



Roseline Barchietto (seated, third from left) pictured here in the lobby at the International Centre with the delegates at the ISO Council meeting in 1959. Roger Maréchal is standing second left in the front row.

Secretary-General in the late sixties was to introduce the telex in order to communicate with national standards bodies. Naturally enough, ISO must also implement its own standards. Immediately after International Standard ISO 8879 on Standard Generalized Markup Language was published in 1986, the Secretariat introduced an experimental publication system based on IBM 9370 software.

Despite being surrounded by such technology, Roseline Barchietto's "virus" is not a computer bug. "To have the virus" is a phrase used at the Central Secretariat for people infected with enthusiasm for international standardization. As Roseline Barchietto is the longest-serving member of staff, she may well have introduced the disease in the first place.

### "I've got the virus!"

I came to ISO in October 1957. I was 19 when I started. I had a diploma in German, and had just finished Commercial School in Geneva, and one day the school asked me if I wanted a job. "There is an international organization looking for somebody. Of course they need English, not German." My parents had agreed that I could go to Spain or to England to improve my languages, so I didn't need to work yet, but I said: "Oh, I will go for six months. It might be interesting." So I went and did a small typing test and wrote a short letter, and they asked about my English. I said: "Well, I learnt English at school, but only from books!" "It doesn't matter," they said. "If you can read it, and if you understand it, that'll do."

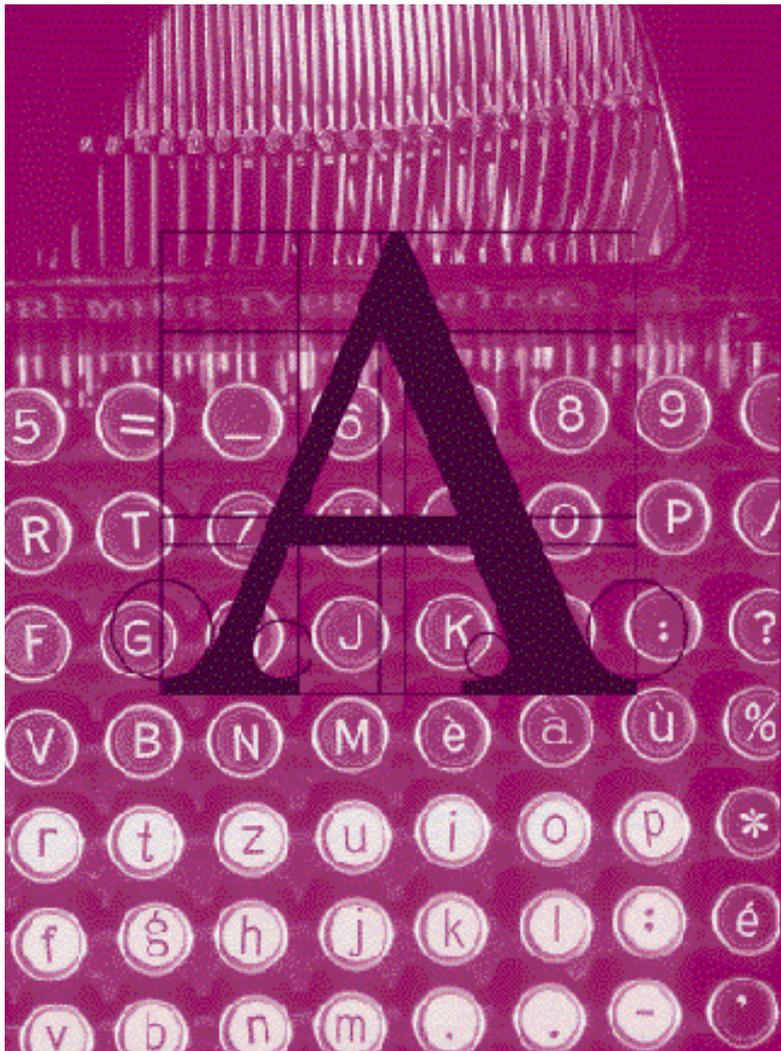
And it was so nice! It was very small, only 15 people. At school, I thought working was something difficult and stressful – I was very anxious! But, in fact, I was really surprised. Yes, we had to work, we worked a lot, but in a very pleasant atmosphere. The conditions of work were good too, from 8.00 in the morning to 4.00 in the afternoon (which was unusual at that time in Geneva). So in summer we were free to go to the swimming pool, or go sailing on the lake, which is nice when you are 19 years old. I thought: "It's a very good job! I don't want to go to school anymore. I'll stay here!"

First, I was just asked to do clerical work. After a few months, I became the secretary to Mr. Rambal. He was the Assistant Secretary-General for all technical matters. On the technical side, there was a boss (him), an assistant, a secretary (me), two or three typists, a translator, an editor, and a draughtsman. We were preparing the draft recommendations and submitting them to member bodies for approval. (There were 52 ISO Recommendations published when I arrived at ISO.) When the draft recommendations were approved, the final text was prepared

outside by the Technical Secretariat, and then we sent it to ISO Council for acceptance. The ten or more publications we produced per year were published at an outside printing office. This was the main work, and around this, we were typing the related correspondence, the notices of meeting, the agendas for the meetings, and the documents for ISO Council and the General Assembly meetings.

All this was so new and so rewarding. Not the job itself – the interesting part is learning every day about new subjects to be standardized. No – really! When you were 19 years old, particularly in those years, you didn't think of these complicated technical questions; that a screw thread made in Switzerland should be interchangeable with one in another country. I enjoyed my job because every day I was discovering new technical fields in standardization. Nowadays we have – I don't remember the exact number – more than 10 000 standards. You can imagine, I have seen all those subjects standardized: the common names for pesticides, nuclear energy, cinematography, rubber, containers, computers, and now quality and environmental management. I am interested in the things I am most closely involved with, such as the sizes of clothes and shoes, and the care-labelling on textiles. I'm interested in agriculture (TC 34) because it concerns fruits, vegetables, coffee, tea, spices – all those! When I had my first car in 1958, I remember that there were no symbols for the dashboard controls. When you drove another car you had to ask how it worked. So I was enthusiastic when we started the standardization of the symbols in automobiles. I have seen all these interesting things, because industry keeps requesting standards. I have got the virus! So I never changed – I never looked for anything else! I was convinced we were doing something that was useful worldwide.

After six or seven months, I was asked to go to the General Assembly in Harrogate. It was a very valuable experience which gave me an impressive insight into the world of standardization. All those important delegates from far-away standards bodies getting together in a vast meeting-room! It was very exciting. The downside was that the job was not very easy because we had a typewriter with an "English" keyboard, and the characters were not in the same place as we were used to. We had to type complete minutes of the meetings late into the night because we made a lot of mistakes. I remember my boss writing and writing, by hand, practically everything which was said. Then during the day, we were in the meeting-room distributing the documents and the resolutions. It was very interesting because we could follow the discussions. I remember the first time I didn't understand very much of what was said, especially about ISO's technical work or complicated procedures. In the evening we had cocktails and dinner, which was an opportunity to discover more about ISO's world.



Pioneering days with mechanical typewriters. But new tools were soon made available, and the staff were quick to pick up on new techniques to speed up production.

Outside, among my acquaintances, people had practically never heard of ISO. When I said that I was working in an international organization for standardization, I had to explain the role and scope of ISO because they always asked me about the plugs. It was something they found very inconvenient. They said: "Well, that's nice. So maybe in a few months, we will have proper plugs when we travel round the world." In fact, of course, we were standardizing in every field but electrical and electronic standards.

I worked as the secretary to Mr. Rambal, the Assistant Secretary-General, until 1967. The work was practically always the same, dealing with the preparation and publication of recommendations and the voting. Of course, the tools were different – we got better machines, electrical typewriters. At the very beginning we only had mechanical typewriters and the draft recommendations were typed on the stencil. Do you know what a stencil is? You typed on special paper to perforate it; then you turned it in a particular type of printing machine and the ink came through the letters. When you made an error, it was very complicated to correct. We put on a product like varnish which was coloured pink, and then retyped very firmly. If a complete paragraph was to be retyped, we had to cut and paste, and it took a long time. Of course we only had 20 or so recommendations per year, so it was OK. After that, we had a new photocopying machine, so we started to type on normal paper. That was progress! We have always improved. We were always at the very top. When new tools became available, they were very soon placed at our disposal. The telex was introduced very quickly, and things became more urgent. When you have a letter which takes 15 days to arrive, you think: "Well, it can wait. I will do it in a few days!" But when you have a telex, you feel obliged to answer immediately. You get to know the meaning of stress.

I had the privilege of working for ten years with Mr. Rambal in the technical department before he retired from ISO in 1967 (after 20 years of service). I had the chance to learn a great deal from him; he had great qualities, and was very capable and clever. He passed on some of his wealth of knowledge to me. After his departure, as the workload was increasing, the technical department was split into three groups with three Technical Officers. I became the Administrative Assistant of Mr. Allardyce, who was the Director of the Engineering Group. He was both an extremely human person and very competent. Then Mr. Sturen came as Secretary-General in 1968 and ISO took a great leap forward and started to grow very rapidly. He has a brilliant mind. You will meet him, you will see! He already had a lot of experience of standardization and a successful career in the field. Among other things, he was the Director of the Swedish member body. So he was – what do you call it? – a "standardization man".

The organization has changed and expanded a lot, but in fact the structure has not altered very much. There is still a technical department which processes the standards, and an administrative one. The difference is that at the very beginning one person (me!) was able to follow through everything from start to finish, and now the same work has been split up among different units or departments. Compared with 20 Recommendations per year when I arrived, we are now publishing about 1000 standards per year, so progressively over the years with each reorganization I have had to give up part of my work to my colleagues. Each time I felt a little disappointed, but after a few months, as things evolved and there were new challenges, the work became fascinating again. We are producing more and more, and we are asked to go quicker. The number of employees as such is not growing, but thanks to electronic publishing, e-mail communication, and documents coming on diskettes and being edited directly on the screen, we should achieve more and reach our objectives.

For my last four years, I hope to be in good shape to continue, and perhaps still see a lot of new technological developments. With the re-engineering that has taken place, I am training some of my colleagues to do the job I used to do. I hope to be less in demand after a while; every day people come and ask me questions. They know they will get an answer, because I try to make myself available. I also have (maybe it's not nice to say so) a good memory, particularly for figures, which is very useful with 8000 projects being processed. One of our bosses, our sadly missed Mike Leaman, always said: "I don't need to have a computer because I already have a live one!"

As for ISO, I am very hopeful for the future. Standardization is a fact; technical progress cannot be stopped. The next generations will certainly see new developments, and things will be organized in a different way, but ISO will continue! Over these 40 years, I have never found my work a strain. I have been surrounded from the first day until now by very valuable, capable and reliable people.



